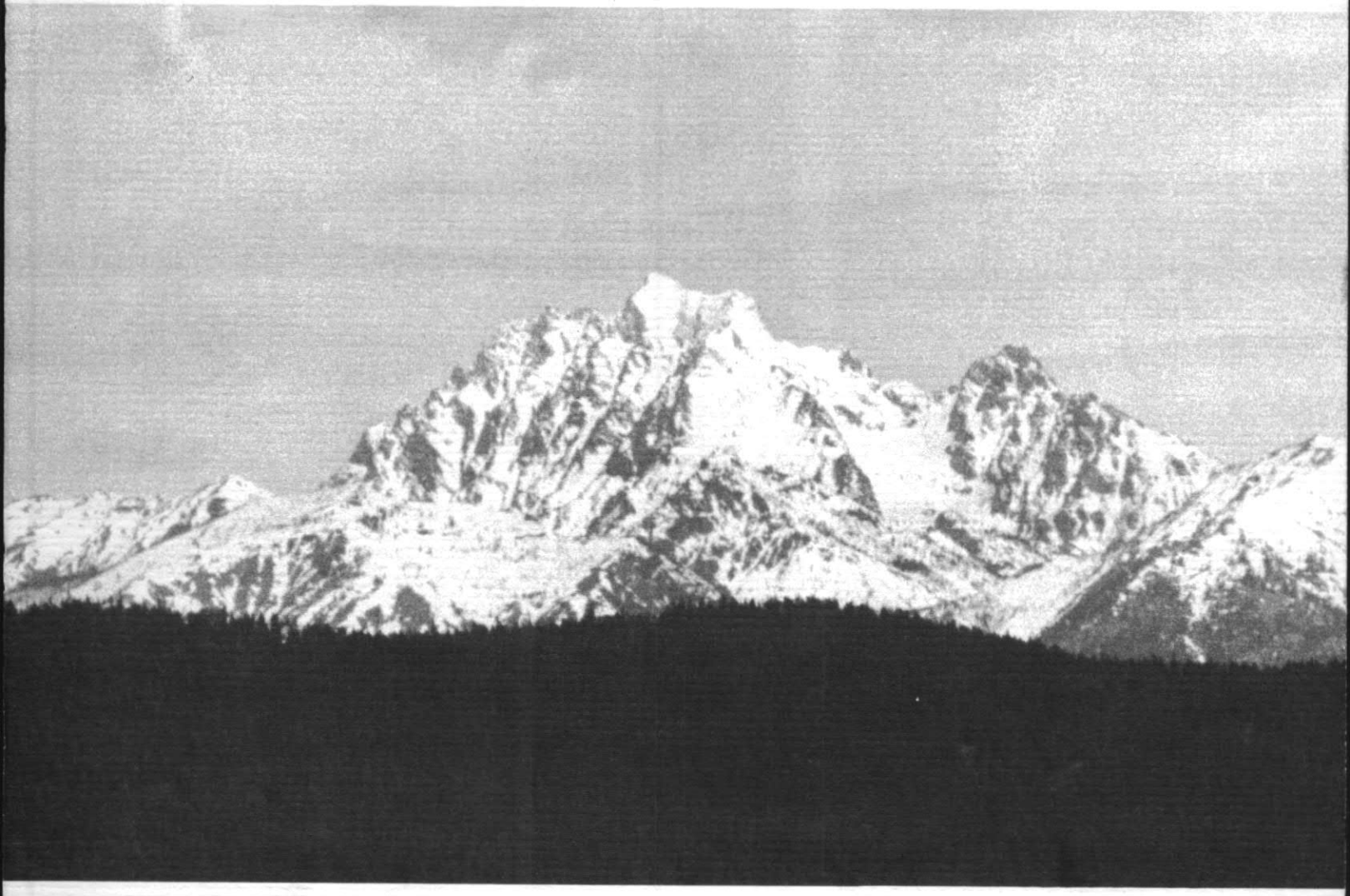
STATE OF WASHINGTON
Booth Gardner, Governor

DEPARTMENT OF ECOLOGY
Andrea Beatty Riniker, Director

Water-Supply Bulletin 52

Hydrology of the Upper Yakima River Basin, Washington



Prepared in cooperation with the
UNITED STATES GEOLOGICAL SURVEY
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HYDROLOGY OF THE UPPER YAKIMA RIVER BASIN, WASHINGTON

By H. E. Pearson

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UNITED STATES GEOLOGICAL SURVEY

1985

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ILLUSTRATIONS

[Plate in pocket]

TABLES

METRIC (SI) CONVERSION FACTORS

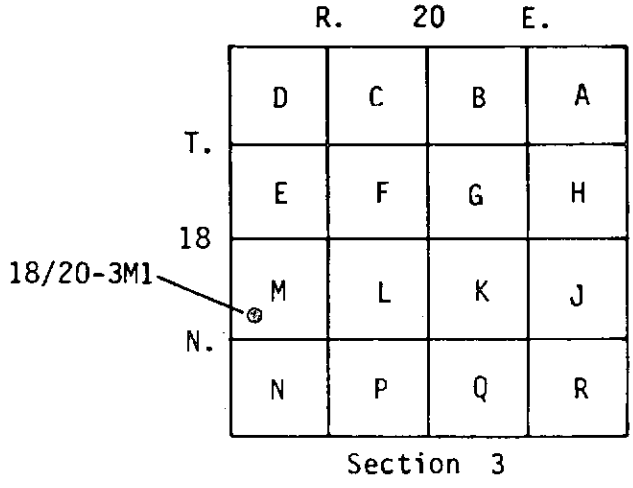
Multiply	By	To obtain
inches (in.)	25.4	millimeters (mm)
	2.540	centimeters (cm)
feet (ft)	0.3048	meters (m)
miles (mi)	1.609	kilometers (km)
acres	0.004047	square kilometers (km^2)
square miles (mi^2)	2.590	square kilometers (km^2)
acre-feet (acre-ft)	1233.	cubic meters (m^3)
cubic feet per second (ft^3/s)	0.02832	cubic meters per second (m^3/s)
gallons per minute (gal/min)	0.06309	liters per second (L/s)
	28.32	liters per second (L/s)
tons, short (2,000 lb)	0.9072	megagrams (Mg)

To change degrees Fahrenheit (°F) to degrees Celsius (°C), use the equation: $°C = 5/9(°F-32)$

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called mean sea level. NGVD of 1929 is referred to as sea level in this report.

WELL- AND SPRING-NUMBERING SYSTEM

Wells and springs in Washington are assigned numbers identifying their location within a township, range, and section. Well number 18/20-3M1 indicates, successively, the township (T.18N.) and range (R.20E.) north and east of the Willamette base line and meridian. Because all wells in this report are north and east of the Willamette base line and meridian, the letters indicating north and east are omitted, except in the computer printout of well records (end of report). The first number following the hyphen indicates the section (3) within the township, and the letter following the section gives the 40-acre subdivision of the section, as shown below. The number following the letter is the sequence number of the well within the 40-acre subdivision; an "S" following the number indicates a spring.



Section 3

GLOSSARY

Acre-foot. Volume of water required to cover 1 acre to a depth of 1 foot, and equal to 43,560 ft^3 or 325,900 U.S. gallons.

Advance outwash. Sand and gravel deposited in front of the advancing ice sheet by meltwater streams. Advance deposits are more compact than recessional deposits, which were not overridden by ice.

Algae. Simple plants, many microscopic, that contain chlorophyll and lack roots, stems, and leaves. Most algae are aquatic, and may become a nuisance when environmental conditions are suitable for prolific growth.

Alluvium. Rock fragments or other material deposited by running water.

Aquifer. A rock formation capable of yielding water to wells and springs.

Bathymetric. Relating to the measurement of water depths, as for a lake.

Cubic foot per second (ft^3/s). The rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second, and equivalent to 448.8 gallons per minute.

Discharge. The volume of water that passes a given point within a given period of time, usually given in cubic feet per second.

Drainage area. The area drained by, or contributing to, a stream, lake, or other water body.

Dissolved. Refers to the amount of a substance present in true chemical solution. In practice, however, the term includes all forms of the substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles.

Drawdown. The lowering of the water surface in a well caused by pumping.

Fecal-coliform bacteria. Bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. Their concentrations are expressed as number of colonies per 100 milliliters of water sample.

Gage height (G.H.). The water-surface elevation, referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when referring to a gage reading.

Gaging station. A site on a stream, canal, lake, or reservoir where systematic observations of gage height or water discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is collected.

Hardness. A physical-chemical characteristic of water that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable mostly to the presence of alkaline earths (principally calcium and magnesium), and is expressed as an equivalent concentration of calcium carbonate ($CaCO_3$).

Hydrology. The science of the behavior of water in the atmosphere, on the surface of the earth, and underground.

Impermeable. Having a texture that does not permit water to move through it perceptibly under the head difference ordinarily found in subsurface water.

Infiltration. The flow of a fluid into a substance through pores or small openings. The common use of the word is to denote the flow of water into, rather than through, soil material.

Lithology. The study of rocks on the basis of megascopic examination of samples.

Littoral. The shoreward region of a body of water.

Loam. Soil material composed of a mixture of clay, silt, sand, and organic matter.

Micrograms per liter (ug/L). A unit expressing the concentration of chemical constituents in solution as weight (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (mg/L). A unit expressing the concentration of chemical constituents in solution. Milligrams per liter represents the weight of solute per unit volume of water.

Muck. A mixture containing highly decomposed organic material in which the original plant parts are not recognizable. Muck contains more mineral matter and is usually darker than peat.

Percolation. Movement, under hydrostatic pressure, of water through the interstices of rock or soil; does not include movement through large openings such as caves.

Permeability. The capacity of rock or soil for transmitting a fluid. Degree of permeability depends not only on the volume of the openings and pores, but also on how the openings are interconnected.

pH. The negative logarithm of the hydrogen-ion activity, expressed as a number from 0 to 14. A pH of 7 is neutral, a pH of less than 7 is acidic, and a pH of greater than 7 is basic.

Plankton. Suspended or floating organisms that drift passively with water currents.

Porosity. The porosity of a rock or soil is its property of containing interstices or voids, and may be expressed quantitatively as the ratio of the volume of its interstices to its total volume.

Quaternary. The younger of the two geologic periods or systems in the Cenozoic Era (Erathem). It comprises all geologic time and deposits from the end of the Tertiary (about 2 million years ago) to the present.

Recurrence interval. The average number of years between hydrologic events for a calculated value.

Runoff. The quantity of water discharged through surface streams, expressed usually in units of volume such as gallons, cubic feet, or acre-feet.

Sediment. Solid material that originates mostly from disintegrated rocks, and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Sodium-adsorption ratio (SAR). An expression of the relative activity of sodium ions in exchange reactions with soil, and an index of sodium or alkali hazard to the soil.

Solute. Any substance that is dissolved, usually in water.

Specific capacity. The rate of discharge of water from a well, divided by the drawdown of water level within the well.

Specific conductance. A measure of the ability of a water to conduct an electrical current, expressed in micromhos per centimeter at 25°C.

Stage. The height of a water surface above any chosen reference plane.

Stage-discharge relation. The relation between gage height and the amount of water flowing in a channel.

Stream, gaining. A stream or reach of stream whose flow is being increased by the inflow of ground water.

Stream, losing. A stream or reach of stream that is losing water to the ground.

Streamflow. The discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a natural stream course.

Tertiary. The earlier of the two geologic periods comprised in the Cenozoic Era. From about 2 million to about 63 million years ago.

Thermal stratification. A temperature distribution characteristic of many deeper lakes in which the water is separated into three horizontal layers: a warm layer at the top, an intermediate layer in which temperature changes rapidly with depth, and a cold layer at the bottom.

Total coliform bacteria. A measurement that may be used as an alternative to a fecal-coliform measurement. The major limitation to this index is the uncertain correlation to the occurrence of pathogenic micro-organisms. Their concentrations are expressed as number of colonies per 100 milliliters of water sample.

Turbidity. The presence of particulate materials suspended in water that reduce the penetration of light.

Water table. The upper surface of a zone of saturation, except where that surface is formed by an impermeable body.

Water year. The 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months.

HYDROLOGY OF THE UPPER YAKIMA RIVER BASIN, WASHINGTON

By H. E. Pearson

INTRODUCTION

The upper Yakima River basin, composing about one-third of the drainage area of the Yakima River (fig. 1), encompasses a wide range of climatic zones and topographic features in central Washington State. The upper part of the 2,135-square-mile study area is on the moist, heavily forested, eastern slope of the Cascade Range, and the lower part is in the semiarid fringe of the Columbia Plateau. The central part of the study area is in the flat agricultural lowland of the Kittitas Valley.

The present (1980) economy of the study area is based principally on agriculture and livestock production and related food processing in the Kittitas Valley, with some timber harvesting and recreational activities (skiing, hunting, and fishing) in the mountains.

The agricultural development in the Kittitas Valley has relied almost entirely on water carried in irrigation canals and laterals from the Yakima River. The large livestock population also utilizes canal water, along with ground water. Municipal, industrial, and domestic supplies are obtained from ground water.

Ground water in the study area occurs principally in unconsolidated valley-fill deposits—sand, gravel, silt, and clay. These alluvial materials underlie the Kittitas Valley and flood plains of the major river valleys. Ground water also occurs in older, semiconsolidated sand-and-gravel units and in fracture zones in basalt layers.

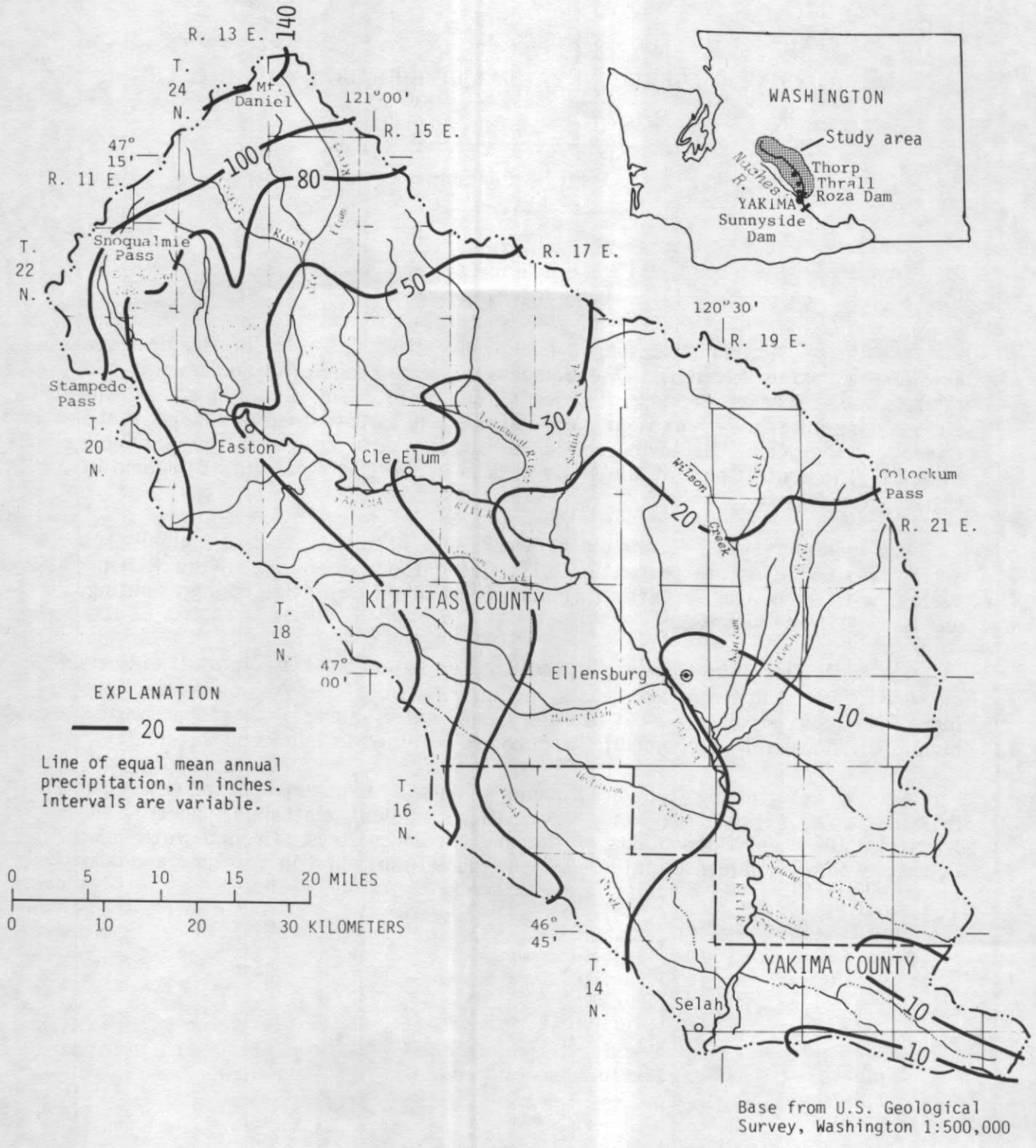


FIGURE 1.--Location of study area and mean annual precipitation, 1930-57.

Purpose and Scope

This report is one of a series published by the State of Washington Department of Ecology (DOE) to respond to the need for information on the water resources of various river basins of the State, designated by DOE as Water-Resources Inventory Areas (WRIA's). The reports are prepared in cooperation with the U.S. Geological Survey for use by Federal, State, County, and municipal agencies involved in the use and management of the State's water resources. The reports also serve to inform citizens and private firms of the local availability and quality of the area's surface and ground waters.

The information in this report (covering WRIA 39) represents a summary of significant data available on surface and ground water, with some interpretation of the data to provide a general picture of the hydrologic conditions in the study area. Surface-water data include records of snowfall, an inventory of glaciers in the basin, storage in major reservoirs, discharges of streams, and analyses of chemical, physical, and sanitary quality of the water. Ground-water data include records of wells, drillers' logs of materials penetrated, water levels in wells, and water-quality analyses. Also included are data on quantities of water used for irrigation, municipal, industrial, and domestic supplies.

Previous Studies

Several geologic and water-resource studies have included parts of the upper Yakima River basin, such as a geological reconnaissance in central Washington by Russell (1893), and geohydrologic studies by Smith (1901, 1903), Calkins (1905), Landes (1905), Waring (1913), and Van Winkle (1914).

Collection of water-level data for wells in the Kittitas Valley was started in 1946, and in the Wenas Creek valley in 1948. A study of the ground-water conditions and availability in the Wenas Creek valley was summarized in a report by Sceva, Watkins, and Schlax (1949).

Streamflow records covering the entire Yakima River basin were evaluated in a report by Kinnison (1952), and a supplemental report by Sceva (1953) presented analysis of the ground-water resources of the basin. Complete information from the two studies of the Yakima River basin was compiled in the report by Kinnison and Sceva (1963); this report has been the basic source of information on the hydrology of the entire Yakima River basin.

A study of the chemical quality of irrigation return flows in the Yakima River basin was made by Sylvester and Seabloom (1962), and results of the study of sediment-transport characteristics of streams in the basin are included in a report by Nelson (1974).

DESCRIPTION OF THE BASIN

Topography and Drainage

Altitudes within the 2,135-square-mile study area range from 7,986 feet at Mount Daniels to about 1,070 feet on the Yakima River at Selah Gap. The Yakima River and its upper tributaries head at glaciers and snowfields occupying cirques near the 5,000- to 7,000-foot crest of the Cascade Range, and then flow generally southeasterly to the Kittitas Valley. From there, the Yakima River follows a deeply incised, meandering course through the Yakima Canyon to the Wenas Valley, and then leaves the basin through Selah Gap. The principal tributaries of the Yakima River in the study area are the Cle Elum and Teanaway Rivers, and Swauk, Taneum, Naneum, Manastash, Umtanum, and Wenas Creeks. The Yakima Canyon cuts through major southeasterly trending anticlinal ridges—Manastash, Umtanum, and Yakima Ridges, the last being cut by the river where it leaves the basin. Several tributaries flow into the Yakima River along the intervening synclinal valleys, including Umtanum, Squaw, and Burbank Creeks, which are fed by springflow.

Three large natural lakes, artificially increased in storage capacity as reservoirs, are important hydrologic features of the basin. From west to east (upstream to downstream), the reservoirs are Keechelus Lake, which feeds the Yakima River, Kachess Lake on the Kachess River, and Cle Elum Lake on the Cle Elum River (pl. 1). Keechelus Lake is fed by several streams, the largest of which is Gold Creek. The reservoirs provide water for irrigation in the Kittitas Valley via gravity-canal diversions from the Yakima River.

Climate and Precipitation

The climate of the study area ranges from maritime along the crest of the Cascade Range to continental in its lower central and eastern parts. The mountainous western part of the basin receives most of the precipitation, principally as snow during November-March and as rain during the remainder of the year. Much of the snowfall in the mountains is retained in the snowpack through the winter, and some is retained for longer periods in the perennial snowfields and glaciers at higher elevations.

Precipitation varies considerably across the basin and throughout the year. Mean annual precipitation (fig. 1) ranges from about 140 inches in the higher mountains in the northwestern part of the basin to less than 10 inches in the lower southeastern part (U.S. Weather Bureau, 1965b).

Long-term mean monthly and annual precipitation at Ellensburg, Cle Elum Lake, and Stampede Pass are presented in table 1. About 75 percent of the precipitation occurs during October-March in both the semiarid and humid parts of the basin.

Chinook winds—warm air descending the eastern slope of the Cascade Range—occasionally cause rapid melting of the snowpack and resultant severe erosion of the land surface and flooding along lowland stream channels.

Mean monthly temperatures at Cle Elum, near the foothills of the Cascade Range, range from 26°F in January to 66°F in July; temperatures at Ellensburg in the Kittitas Valley range from 27°F in January to 72°F in July.

TABLE 1.--Mean monthly and annual precipitation at Ellensburg, Cle Elum Lake, and Stampede Pass during periods of record: 1904-60, 1909-76, 1945-76

Station	Years of record	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
Ellensburg[1]	57	1.39	0.95	0.60	0.43	0.57	0.63	0.24	0.20	0.50	0.56	1.41	1.39	8.87
Cle Elum Lake[2]	68	6.38	4.40	2.95	1.83	1.24	.90	.41	.50	1.34	3.68	5.89	6.62	36.14
Stampede Pass[2]	32	12.89	10.29	8.93	6.63	4.17	3.96	1.54	2.53	4.64	8.89	12.46	14.31	91.06

[1]U.S. Weather Bureau, 1965.
[2]U.S. Department of Commerce, 1976.

Geology and Soils

The basin lies within the Cascade Range and the Columbia Plateau physiographic provinces and, therefore, exhibits the diversity of rock types and soils characteristic of the two regions (pl. 1). Underlying the basin are consolidated igneous, sedimentary, and metamorphic rocks and unconsolidated materials, all reflecting a complex geologic past. The consolidated rock (bedrock) in the Cascade Range is basically devoid of water. However, the bedrock underlying the Columbia Plateau is basalt lava flows of the Columbia River Basalt Group, which contain highly productive aquifers (water-yielding rock materials) in most places where they occur in eastern Washington.

Overlying, and in places interbedded in, the upper parts of the basalt are unconsolidated to semiconsolidated sedimentary rocks of the Ellensburg Formation—clay, gravel, siltstone, and conglomerate. Unconsolidated deposits of sand, gravel, silt, and clay underlie the flood plains and channels of the major streams and also the broad Kittitas Valley.

Deformation of the basalt and the Ellensburg Formation has resulted in several structural features that are reflected in the landforms of the basin, particularly in the lower part of the basin. Warping of the earth's crust has formed the Ellensburg Basin and several northwest-to-southeast-trending anticlinal ridges. These include, from north to south, Manastash, Umtanum, and Yakima Ridges, Cleman Mountain, and Selah Butte. The lower parts of the Ellensburg Basin (Kittitas Valley) and valleys between the ridges were subsequently filled by unconsolidated materials.

Glaciation during the Pleistocene Epoch caused deep erosion in the mountains and deposition of the resulting rock material in the lower valleys of the study area. Cutting by alpine glaciers produced sharp peaks and ridges along the Cascade crest and deep, steep-walled cirques and valleys. The eroded material was then carried by the valley glaciers and deposited by the ice and meltwater streams in the valley bottoms.

The soils of the study area were formed by the physical and chemical weathering of rock materials, with greatly differing results. For example, the basalt does not weather rapidly enough under the semiarid climate of the southeastern area for the development of a deep soil profile. As a result, large areas in the eastern part of the basin consist of basalt outcrops with little or no soil cover, particularly on the ridges and upper slopes. In contrast, in the valley bottoms of the central-western part of the basin, the soil has developed principally from the unconsolidated, glacially deposited material. Types and characteristics of the soils in Kittitas County are described in detail in a report by Sibley and Krashevski (1957). Locations of mineral resources in the basin were presented on a statewide basis in a report by Moen (1978).

Vegetation

Vegetation in the upper Yakima River basin varies according to elevation and precipitation. The mountainous parts of the basin are thickly forested; the conifer growth gradually thins eastward at the lower elevations and extends to the more open areas. Sagebrush and grasses are the dominant natural cover over the semiarid lower ridges of the southeastern one-third of the study area.

More than 330,000 acres of the upper part of the study area are in the National Forest; Douglas fir is the dominant tree. Other trees in the forested area include white fir, western white pine, western larch, Englemann spruce, western red cedar, and lodgepole pine. Where the forest land has been logged off, younger trees and brush cover the areas not cleared for farming. In places, deciduous trees—cottonwood, willow, aspen, hawthorn, and dogwood—grow along the banks of streams.

Cultural Development

Agriculture

The first permanent white settlers were cattlemen who moved their herds into the basin from other areas in southeastern Washington during the 1860's. The cattle were driven northward to the mining fields in British Columbia and later through the Cascades over Snoqualmie Pass to market in Seattle.

In 1865, the Washington Territorial Legislature created Yakima County from the northwestern part of the existing Walla Walla County. The city of Yakima became the county seat. In 1883 Kittitas County was established, separated from the existing Yakima County. At that time, Kittitas County extended northward to the Wenatchee River, but the boundary was subsequently established farther south, mostly along the crest of the Wenatchee Mountains.

John Cleman—for whom Cleman Mountain was named—brought the first sheep into the Wenas Creek valley in 1865. About the same time, settlers in the Kittitas Valley found good range lands for their cattle. The completion of the Northern Pacific Railway in 1886 and the opening of the coal mines in Roslyn further stimulated agricultural activities. As farms were started along the lowlands, fields of wheat and hay were irrigated by diverting the water from creeks into small ditches.

The need for additional irrigation was soon recognized, and community-developed irrigation canals and ditches were constructed. The Cascade Canal was completed in 1904, and increased the total irrigated land to nearly 60,000 acres. The greatest increase of irrigated land came after the construction of the Kittitas Highline Canal in 1930. The 1969 Census of Agriculture indicated that 80,000 acres were irrigated in Kittitas County.

In 1969, the agricultural economy was based largely on the production of alfalfa (32,000 acres), grain (10,000 acres), and the raising of livestock. Dairying and several vegetable farms were also of some importance. Wheat was the principal and often only crop on the nonirrigated farms. The average size of a farm in Kittitas County in 1969 was 800 acres (U.S. Bureau of the Census, 1972). Near Selah, about 6,400 acres of apple and pear orchards were developed, and several fruit-packing warehouses enhanced the local economy. Logging and lumber manufacturing are important industries, centered mostly in and near the towns of Easton and Cle Elum in the western part of the basin.

Population

The population in the upper Yakima River basin has reflected the changing base of the area's economy over the years. The first white settlers entered the basin in the late 1860's initially as farmers and cattlemen, but the discovery of gold in the Swauk and Peshastin Creek valleys gave impetus to increasing population. The subsequent development of coal mines near Roslyn during 1883-86 and completion of the railroad across the mountains enhanced continued growth. The population of Kittitas County plus that of Selah—the part of the basin in Yakima County—was 18,800 in 1930 and 29,400 in 1977. Since the 1920's, the rate of population growth has been greatest in the urban areas, particularly in Ellensburg and Selah. The Washington Office of Financial Management (1977) estimated the 1977 population of the larger towns in the basin as follows: Ellensburg, 13,000; Selah, 3,800; Cle Elum, 1,725; and Roslyn, 1,015.

THE WATER BUDGET

The water budget is an accounting of the quantities of water passing through the various parts of the hydrologic cycle (fig. 2). In the upper Yakima River basin, precipitation from moisture-laden storms that develop over the Pacific Ocean provides the inflow in this budget; evapotranspiration and discharge by streams are the outflow. If the amounts of water could be measured accurately, the resulting values would show that the volume of water evaporated or otherwise discharged from the basin is equal to the total volume of precipitation over the basin, assuming negligible net gains or losses in storage in snowfields and glaciers and in the ground-water reservoir.

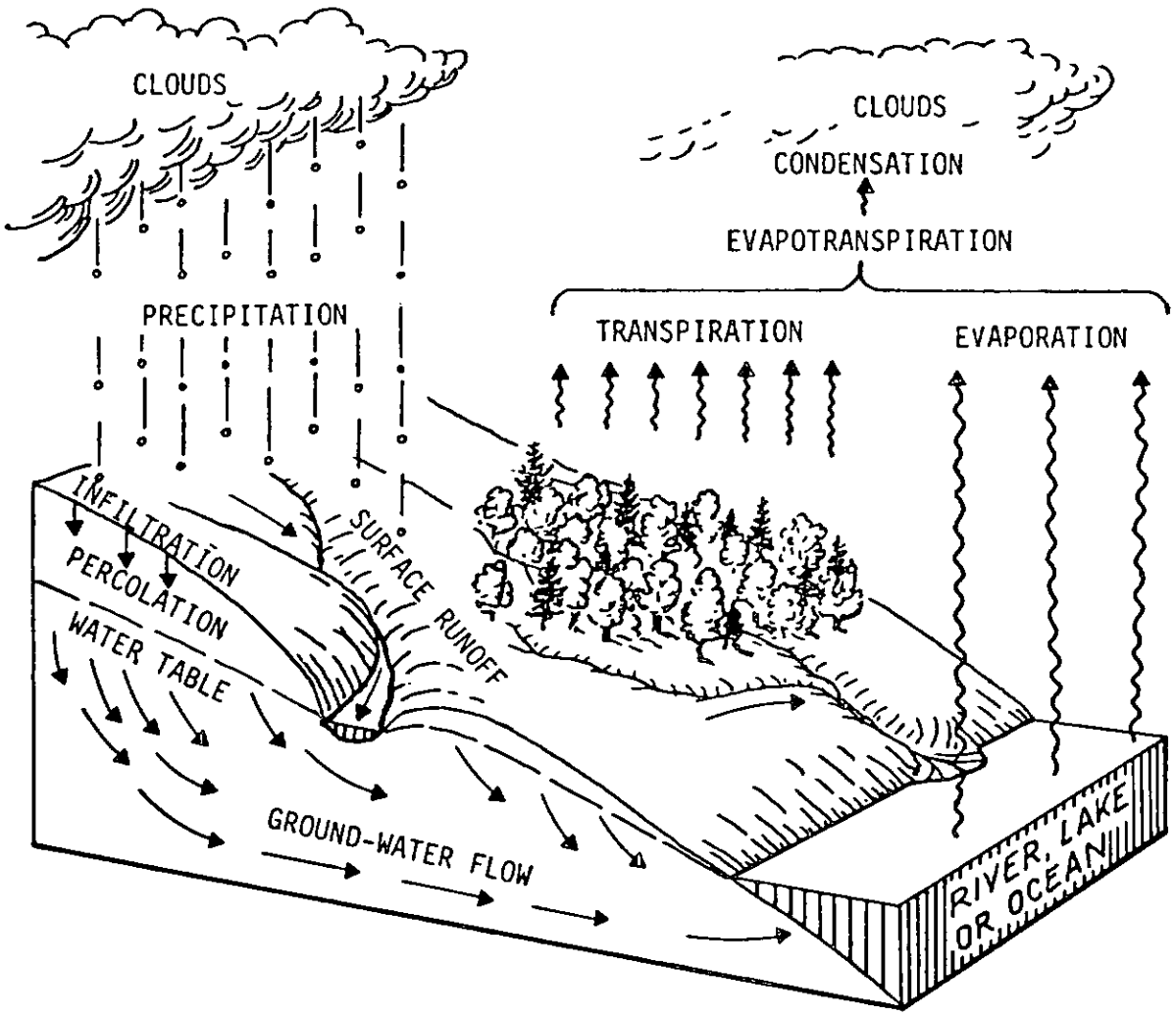
The average annual precipitation over the basin is calculated to be about 33 inches, or 3.75 million acre-feet, based on the average of the basinwide precipitation values (fig. 1) calculated by subareas.

Evapotranspiration is dependent on the availability of water, and, except in irrigated areas of the basin, cannot average more than the precipitation. During much of the growing season in nonirrigated parts of the basin, soil moisture is deficient to the point where little water is available for evapotranspiration. The annual evapotranspiration for several types of crops was calculated on a yearly basis by the U.S. Department of Agriculture (1973) as follows: alfalfa, 30.4 inches; grass pasture, 26.9 inches; grain, 23.5 inches; and orchard crops, 32.6 inches. The annual evapotranspiration from other land in the basin, according to maps prepared by the U.S. Weather Bureau and the U.S. Department of Agriculture (written commun., 1962), ranges from about 8 inches in the east to about 16 inches in the Cascade Range. Calculations based on the above information provide evapotranspiration rates of 28 inches/yr from 87,000 acres of irrigated croplands for the period 1964-69 (U.S. Bureau of the Census, 1972), and an average of 13 inches/yr from the 1.28 million acres of remaining basin land. Therefore, the annual evapotranspiration loss from the entire basin is about 1.6 million acre-feet, or about 42 percent of the average annual precipitation.

The quantity of water leaving the basin as streamflow is measured as the discharge of the Yakima River at Selah Gap. Available streamflow records show that the mean annual discharge of the river there is about 2,980 ft^3/s, or 2.16 million acre-feet per year (from estimate using U.S. Geological Survey, 1955, page 538).

Ground-water outflow from the basin cannot be calculated accurately, although doubtlessly some water is leaving the basin through the sand and gravel at an undetermined depth beneath the river channel at Selah Gap. However, the amount of subsurface discharge is considered insignificant compared with the outflow as stream discharge and evapotranspiration.

A summary of the water-budget values discussed above is shown in figure 2.



Yearly Water-Budget of the Basin

Inflow	Acre-feet	Outflow	Acre-feet
Precipitation	3,750,000	Evapotranspiration	1,590,000
Surface water	0	Surface water	2,160,000
Ground water	0	Ground water	(assumed negligible)

FIGURE 2.--Diagrammatic sketch of the hydrologic cycle and yearly water budget.

SURFACE WATER

Surface water includes water that occurs in glaciers, snowfields, the snowpack, lakes, and streams—all highly visible in various parts of the upper Yakima River basin.

Snow and Glaciers

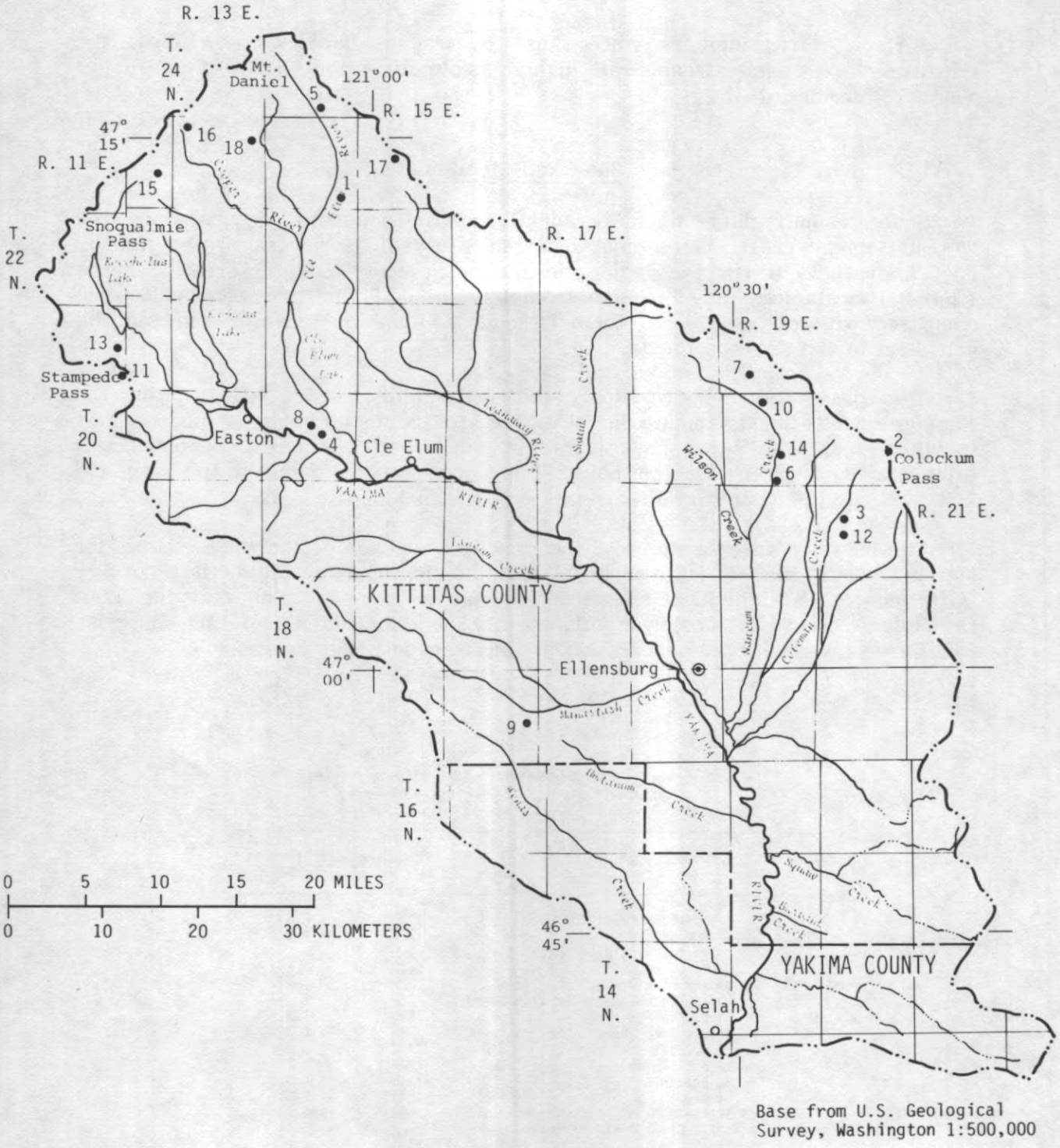
Several small glaciers and perennial snowfields occupy cirques along the Cascade Range crest. According to an inventory of glaciers in Washington by Post and others (1971), 14 glaciers in the basin cover a total area of about 1 mi^2. The glaciers range in size from 0.04 to 0.19 mi^2 and are small when compared with others in the North Cascades, Olympic Mountains, and on the volcanoes of the Cascade Range.

The winter and spring snowpack that contributes to streamflow during the summer—and to annual maintenance of ice storage in glaciers—is measured at snow courses. The first snow course in the upper Yakima River basin was established in 1939 at Cle Elum Lake. There are 12 snow courses in the basin and 2 just outside the basin (fig. 3).

The monthly water content of the snowpack at each of the snow courses for March 1 during 1958-72 is given in table 2. As shown in the table, the February water content at individual snow courses ranges from 2.2 inches at the Trail Creek snow course in the lower hills about 15 miles northeast of Ellensburg, to 34.2 inches a year at Stampede Pass near the Cascade Range crest.

TABLE 2.--Average February water content of snow courses, 1958-72
[From U. S. Dept. of Agriculture, 1976]

Map site number (fig. 3)	Snow course	Altitude (ft)	Average annual water content (inches)
1	Big Boulder Creek	3200	18.5
2	Colockum Pass (in Columbia River drainage)	5370	14.5
3	Cooke Creek	4123	6.1
4	Domery Flat (1 mile south of Cle Elum Lake)	2200	--
5	Fish Lake	3371	31.3
6	Grouse Camp	5385	15.3
7	High Creek	2930	5.2
8	Lake Cle Elum	2200	8.2
9	Manastash	3935	4.3
10	Naneum	3875	9.6
11	Stampede Pass (in Green River drainage)	3860	34.2
12	Trail Creek	3360	2.2
13	Tunnel Avenue	2450	20.1
14	Walters Flat	3360	6.9
15	Joe Lake	4624	--
16	Lemah Creek	3327	--
17	Van Epps Pass	5925	--
18	Waptus Lake	3024	--



Base from U.S. Geological Survey, Washington 1:500,000

FIGURE 3.--Locations of snow courses.

Lakes and Reservoirs

The deeply glaciated mountains in the northwestern part of the basin are the locale for numerous alpine lakes and three large reservoirs situated in valley bottoms. According to reports by Wolcott (1964) and Dion and others (1976), nearly 230 lakes or ponds are reported for the basin, most of these in the upper parts of the Cascade range. Physical, water-quality, and cultural data for 10 lakes in the drainage basin are given in table 16. Elevations, surface areas, and maximum depths for more than 200 lakes are listed in table 17.

Cle Elum, Kachess, and Keechelus Lakes are the largest in the basin. All three have been increased in storage capacity by dams, and they occupy the lower reaches of their respective mountain valleys.

The water levels of, and amount of storage in, the three reservoirs fluctuate throughout the year. The levels rise in the spring and early summer as a result of snowmelt runoff. After the spring or early summer peak is reached, the reservoir levels gradually decline during late summer and early fall because of releases of irrigation water to canals and downvalley farms, decreasing precipitation in the upstream basin, and increasing evaporation of the lake water. The cyclic pattern of water-level flucuations in Cle Elum and Kachess Lakes is shown in figure 4. The normal annual ranges of the fluctuations are about 90 feet in Cle Elum Lake and about 25 feet in Kachess Lake.

Many smaller reservoirs are situated throughout the study area. They are designed for stock-watering ponds, fish-rearing ponds, and other local uses. Rates and amounts of sedimentation in several reservoirs in the Wenas Creek and Rye Grass Creek valleys are presented in table 3.

TABLE 3.--Sediment deposition in reservoirs through 1975 (From U.S. Department of Agriculture, Soil Conservation Service, 1978)

Reservoir	Stream	Nearest town	Drainage area (ft^2)		Date of survey	Period between surveys (years)	Storage capacity (acre/ft)	Capacity weight (dry) (lb/ft^3)	Average annual sediment accumulation per square mile of net drainage area for period shown	
			Total	Net					Acre-feet	Tons
High Valley Ranch #1 Pd.	Wenas Creek	Yakima, WA	4.11	4.1	-- 1939 Oct 1951	-- 12	8.61 7.63	-- 70	-- 0.02	-- 30
High Valley Ranch #2 Pd.	--do--	Ellensburg, WA	.184	.184	-- 1940 Oct 1951	-- 11	.58 .51	-- 70	-- .04	-- 61
High Valley Ranch #3 Pd.	--do--	--do--	.312	.312	-- 1940 Oct 1951	-- 11	1.53 1.53	-- 70	-- .03	-- 46
Henry Clerf Pond	Rye Grass Creek	--do--	6.47	6.47	-- 1946 Oct 1951	-- 5	2.38 2.02	-- 70	-- .01	-- 15

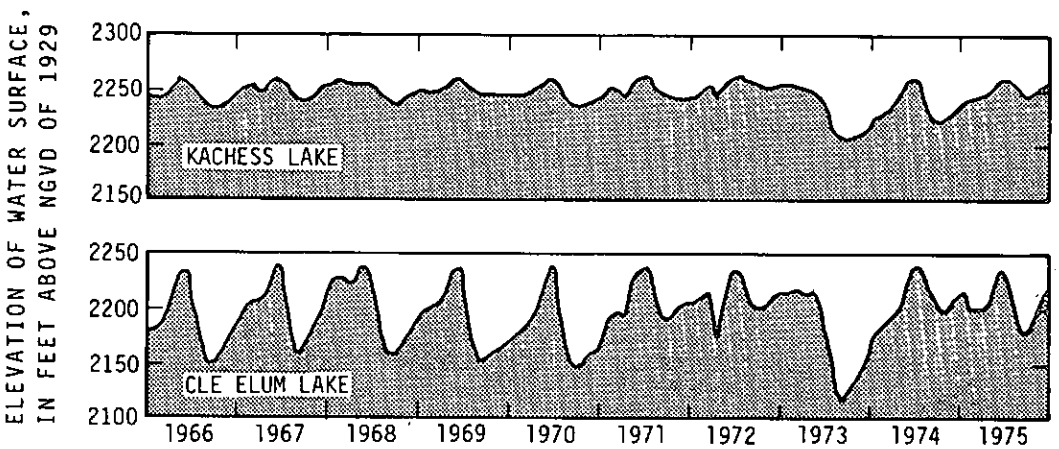


FIGURE 4.--Reservoir stage fluctuations of Kachess and Cle Elum Lakes, 1966-75.

Streamflow Characteristics

Data Available

Collection of streamflow data in the upper Yakima River basin began in 1897, when a gaging station was established on the Yakima River at Selah Gap, north of the town of Yakima. Several other gaging stations were established in the basin between 1900 and 1910. This early gaging-station network was intended primarily to provide data for the design of the early federally developed irrigation projects. As those irrigation projects were completed, many of the stations were discontinued and new stations were added later for various purposes throughout the basin. These data have been collected and published cooperatively by the U.S. Geological Survey, the U.S. Bureau of Reclamation, and the State of Washington.

Surface-water discharge data are available for the 17 streamflow gaging stations shown on plate 1. Table 4 lists periods of record for each station. Table 18 presents mean-monthly and mean-annual discharges for each station. In 1977 only 6 of the 17 stations were still being operated. Table 19 presents streamflow data for miscellaneous sites in the study area.

Streamflow varies daily, monthly, and yearly, but the mean annual discharges of most perennial streams follow the same patterns. This is shown in figure 5 for one gage on the Cle Elum River and three on the Yakima River.

TABLE 4.--Periods of streamflow data at gaging stations in the Upper Yakima River basin

Site number on plate 1	USGS station number	Station name	Drainage area (mi^2)	Water years ending September 30
1	12474500	Yakima River near Martin	54.7	---------- 1904-77
2	12475000	Calin Creek near Easton	92.3	------- 1909-14
3	12476000	Kachess River near Easton	63.6	---------- 1904-77
4	12477000	Yakima River at Easton	188	------ 1910-15 --------- 1941-54
5	12479000	Cle Elum River near Roslyn	203	---------- 1904-77
6	12475900	Yakima River at Cle Elum	495	---------- 1906-77
7	12480000	Teanaway River blw Forks near Cle Elum	172	------ 1968-73
8	12480500	Teanaway River near Cle Elum	200	------- 1909-14 -------- 1947-52
9	12481000	Swank Creek near Cle Elum	90.7	-- 1909-11
10	12482000	Taneum Creek near Thorp	74.3	- 1911-12
11	12483500	Manastash Creek nr Ellensburg	74.5	------ 1909-14
12	12483600	Wilson Creek near Ellensburg	15.3	-- 1957-59
13	12483800	Naneum Creek near Ellensburg	69.5	-- 1957-71-- --- 1973-77
14	12484300	Cooke Creek near Ellensburg	18.6	--- 1957-60; winter only
15	12484500	Yakima River at Umtanum	1,594	-------fragmentary------- ---------- 1931-80
16	12486000	Wenas Creek near Selah	192	- 1909
17	12487000	Yakima River at Selah Gap	2,135	---fragmentary---

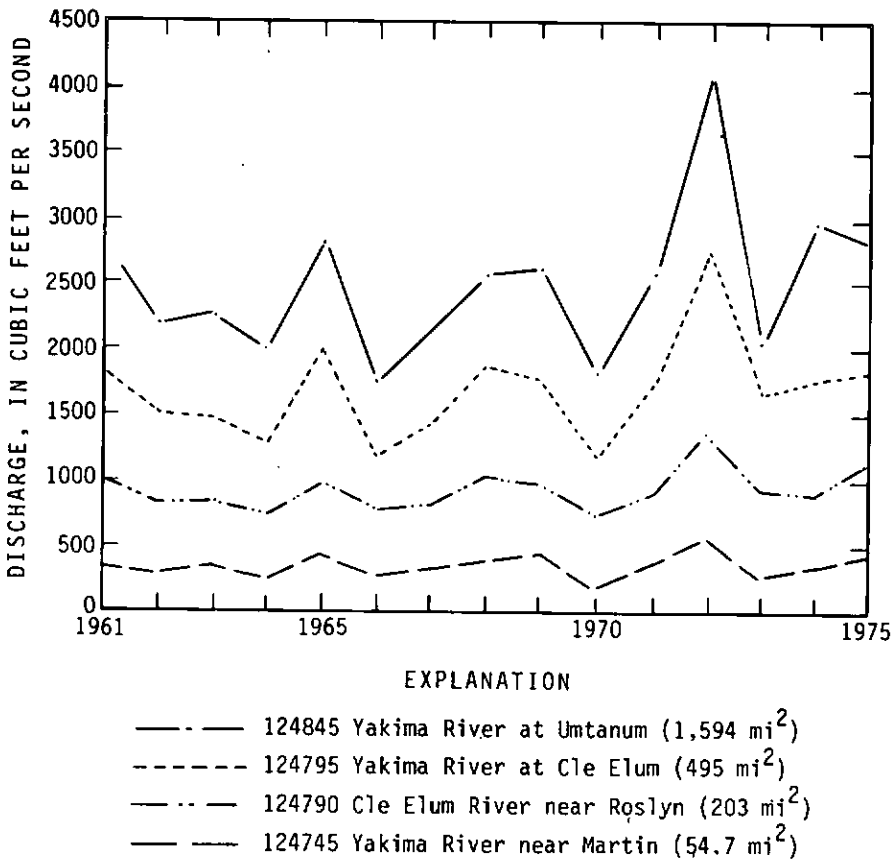


FIGURE 5.--Mean annual discharges at selected gaging stations, 1961-75 water years.

In the upper Yakima River basin the peak runoff of streams draining the eastern slope of the Cascade Range generally occurs in May as a result of spring snowmelt. The cause-and-effect relationship of precipitation and air temperature to the monthly discharges of an unregulated stream fed largely by the melting snowpack in the higher mountains is shown in figure 6. The discharge of the snowmelt-fed Teanaway River near Cle Elum declines during the period November-January, when lower air temperatures cause precipitation to occur as snow. Then, as the temperature steadily increases during February-July, the snowpack melts and provides an increasing stream discharge. By June much of the snow at the lower elevations has melted and rainfall has continually decreased, and the stream discharge declines rapidly during July-September. The maximum, minimum, and mean annual discharges at the six gaging stations operated until 1977 are listed in table 5.

Miscellaneous discharge measurements were obtained at 126 other sites on 72 streams in the basin. Drainage-area and discharge data, including some annual maximum discharges, at these sites are given in table 19. The data obtained from these sites are useful for limited comparisons with discharges at the continuously operated long-term stations.

TABLE 5.--Mean, maximum, and minimum discharge at selected sites

Site number on plate 1	USGS station	Name and period of record	Drainage area (mi^2)	Streamflow			
				Mean annual		Maximum daily (ft^3/s)	Minimum daily (ft^3/s)
				ft^3/s	acre-ft/yr		
1	12474500	Yakima River near Martin Oct. 1903 - Sept. 1977	54.7	338	244,900	7,370	[a]0
3	12476000	Kachess River near Easton Oct. 1903 - Sept. 1977	63.6	294	213,000	3,060	[a]0
5	12479000	Cle Elum River near Roslyn Oct. 1903 - Sept. 1977	203	933	676,000	18,700	[a]0
6	12479500	Yakima River at Cle Elum Aug. 1906 - Sept. 1977	945	2,040	1,478,000	25,600	34
13	12483900	Naneum Creek near Ellensburg Mar. 1957 - Sept. 1971 Sept. 1972 - Sept. 1977	69.5	56.2	40,720	968	3.8
15	12484500	Yakima River at Umtanum Aug. 1906 - Sept. 1977	1,594	2,572	1,962,000	41,000	138

[a]When gates in dam are closed.

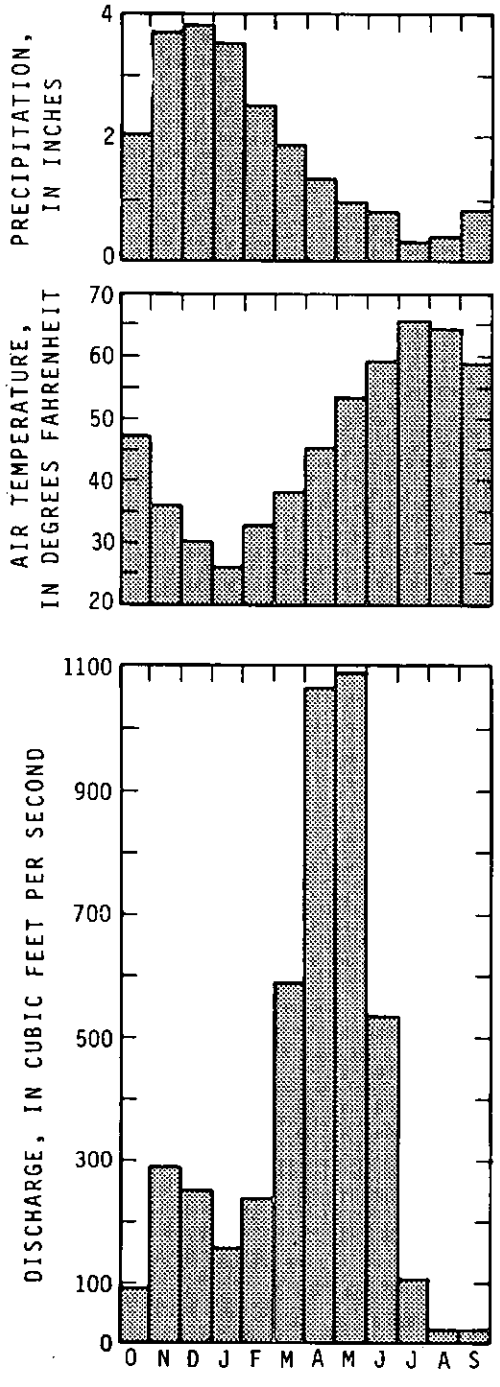


FIGURE 6.--Monthly mean discharge of the Teanaway River near Cle Elum and average monthly air temperature and precipitation at Cle Elum, 1907-76.

Floods

The three most severe floods recorded in the upper Yakima River basin, in order of magnitude, occurred in November 1906, December 1933, and May 1948. Peak discharges recorded at the Yakima River at Umtanum gaging station during these floods were, respectively--41,000 ft^3/s (recurrence interval of 100+ years); 32,200 ft^3/s (recurrence interval of 75+ years); and 27,800 ft^3/s (recurrence interval of 40 years). Such flooding in the winter can be severe when heavy rains and frozen ground combine for rapid runoff.

According to a report by the Pacific Northwest River Basins Commission (1977), the average annual flood damage totals about $455,000 in the Yakima River basin upstream from the Naches River. The report also stated that a 100-year flood would inundate more than 7,500 acres, including farm land, railroad tracks, and parts of South Cle Elum, Thorp, and Selah.

Potential flood magnitude and frequency of occurrence at various sites in the basin were determined through flood-frequency analysis based on previously collected flood data. These data, analyzed by computer using the Log-Pearson type III distribution program and following the guidelines of the Water Resources Council (1967), provide the flood magnitudes and frequencies at five gaging stations in the basin (table 6). The flood-frequency curve for Yakima River at Umtanum is plotted in figure 7.

The annual peak discharges during the periods of records at gaging stations and at partial-record stations are presented in table 20.

TABLE 6.--Flood-frequency data and peak of record at selected gaging stations

Site number on plate 1	USGS station number	Station name	Water years of record used in analysis	Flood discharge, in cubic feet per second, for indicated recurrence interval, in years					Peak discharge
				2-yr	10-yr	25-yr	50-yr	100-yr	Date: ft^3/s
6	12479500	Yakima River at Cle Elum	1907-29	9,510	16,800	20,700	23,700	26,800	11-14-06: 25,600
8	12480500	Teanaway River near Cle Elum	1947-52	3,130	4,320	4,860	5,240	5,610	3-20-10: 4,333
11	12483500	Manastash Creek near Ellensburg	1910-14	457	1,050	1,420	1,730	2,060	3-20-10: 1,360
13	12483900	Naneum Creek near Ellensburg	1957-75	427	768	952	1,090	1,240	6-09-64: 698
15	12484500	Yakima River at Umtanum	1907-75	8,860	17,200	22,300	26,500	31,200	11-15,16-06: 41,000

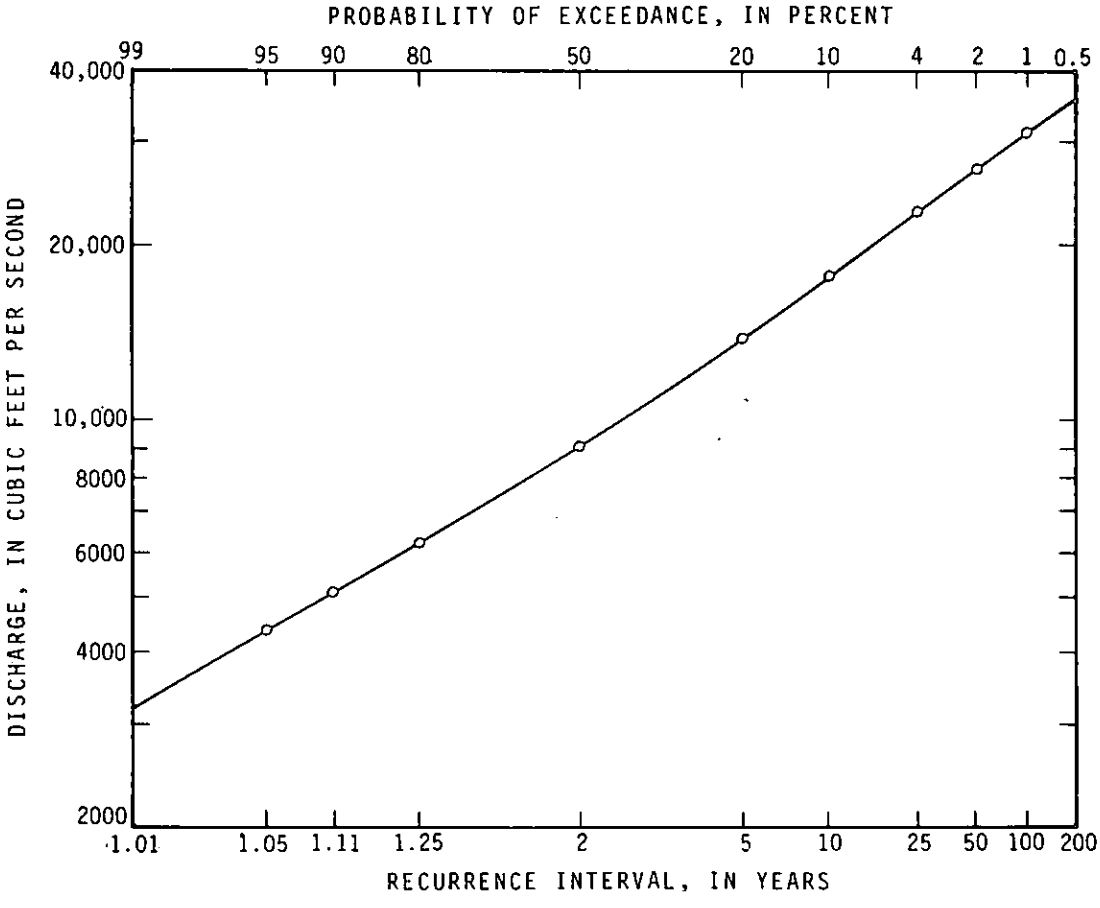


FIGURE 7.--Flood-frequency curve for Yakima River at Umtanum, 1907-75 water years.

Low Flows

The periods of low flows of streams in the upper Yakima River basin vary during the year, depending upon the altitude of each stream and on local climatic influences. For most streams, minimum discharges usually occur during the period July-October and coincide with the period of minimum precipitation. For high-altitude streams that originate at glaciers or perennial snowfields, minimum flows may occur during the winter when low temperatures reduce melting.

The natural low flows of the major streams have been modified by man's activities. Release from storage reservoirs for irrigation has a significant effect on low flows. Continued snowmelt and ground-water inflow increase the magnitude of low flows.

Low-flow-frequency curves show the frequency and duration of given minimum streamflows and are based on historic records from gaging stations. Low-flow-frequency data for selected gaging stations are presented in table 7. The data listed in this table for the Yakima River at Umtanum were used to develop the frequency curves shown in figure 8.

TABLE 7.--Low-flow-frequency data for selected gaging stations

Site number on plate 1	USGS station number	Name and period of record (analyzed by water years)	Number of consecutive days	Low-flow discharge (ft^3/s) at indicated recurrence interval, in years								
				1.01	1.11	1.25	2	5	10	20	50	100
6	12479500	Yakima River at Cle Elum	3	809	444	344	210	127	97.5	78.2	60.9	51.5
		Oct. 1907 - Sept. 1977	7	982	504	382	227	136	104	84.6	66.5	56.8
			30	1,330	709	540	317	184	138	180	82.3	68.4
			90	2,430	1,250	936	536	303	224	174	130	107
8	12480500	Teanaway River near Cle Elum	3	41.8	18.2	12.5	5.79	2.52	1.59	1.07	0.68	0.50
		Oct. 1909 - Sept. 1914 and	7	35.8	18.5	13.5	7.01	3.34	2.19	1.52	0.99	0.73
		Oct. 1947 - Sept. 1952	30	43.5	23.3	17.8	10.5	6.14	4.60	3.61	2.74	2.28
			90	159	75.9	57.3	35.0	22.8	18.6	16.0	13.6	12.3
			183	656	395	327	237	181	160	146	133	126
13	12483800	Naneum Creek nr Ellensburg	3	19.7	16.0	14.4	11.5	8.77	7.50	6.53	5.53	4.93
		Oct. 1957 - Sept. 1977	7	21.3	17.3	15.6	12.5	9.60	8.24	7.21	6.14	5.48
			30	22.6	19.3	17.8	14.8	11.8	10.3	9.13	7.88	7.10
			90	45.6	28.5	24.0	18.1	14.3	12.9	12.0	11.1	10.6
			183	57.2	28.9	33.4	25.3	19.6	17.2	15.6	14.0	13.0
15	12484500	Yakima River at Umtanum	3	1,460	790	639	458	359	326	306	288	279
		Oct. 1931 - Sept. 1977	7	1,630	847	677	478	372	338	317	299	290
			30	2,130	1,130	895	608	442	384	347	312	294
			90	3,730	1,880	1,450	905	593	484	413	349	313
			183	4,400	2,580	2,080	1,390	943	776	662	556	496
			365	4,450	3,420	3,050	2,430	1,930	1,700	1,530	1,360	1,260

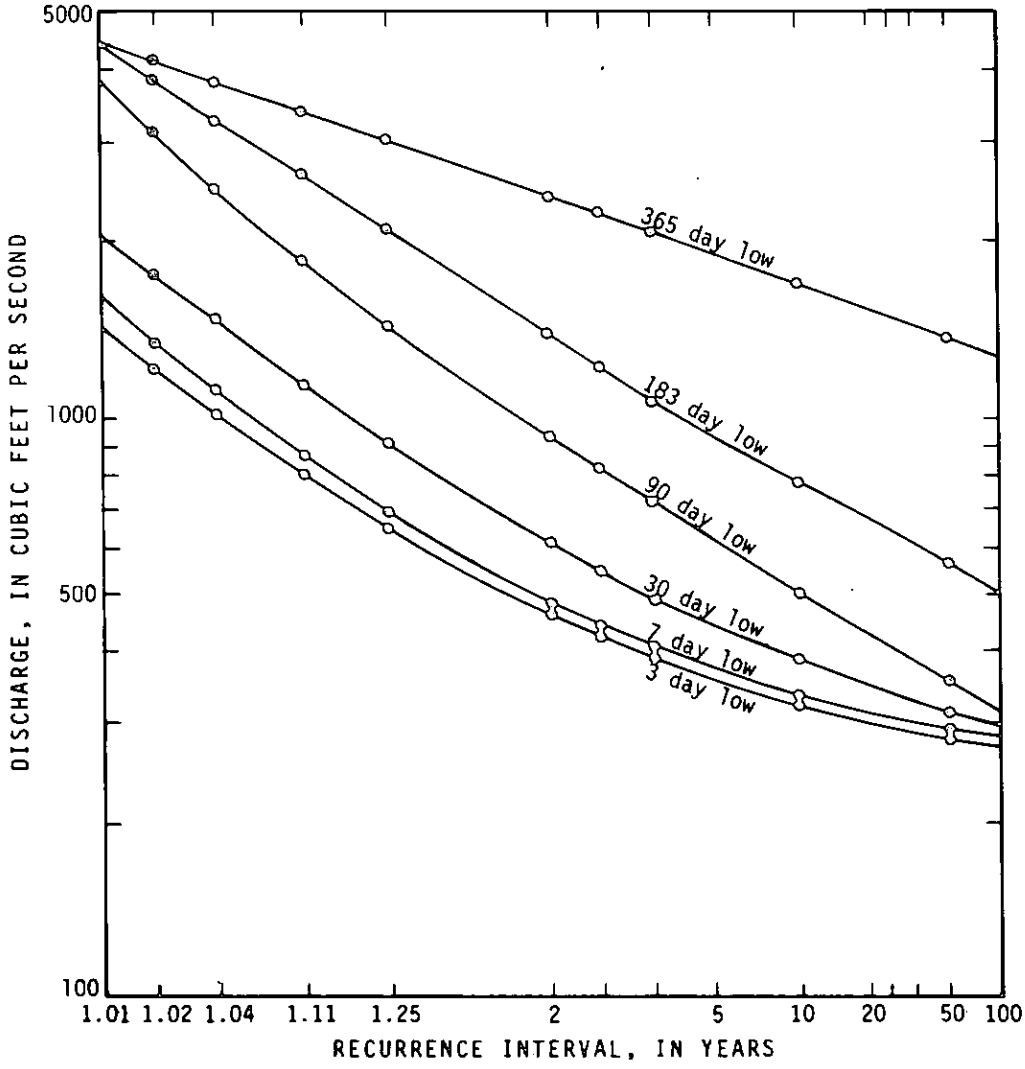


FIGURE 8.--Low-flow magnitudes and frequencies, Yakima River at Umtanum, 1933-77 water years.

Flow Duration

The degree of streamflow variability at a gaging station is shown graphically by a flow-duration curve, which depicts the percentage of time that any discharge was equaled or exceeded during the period of record. The lower end of the flow-duration curve represents the low flow of a stream. However, the flow-duration curve provides less low-flow information than a low-flow-frequency curve because it applies to the entire period of record rather than to an average year.

The flow-duration curve in figure 9 for Yakima River at Umtanum shows the percentage of time during the period of record that indicated daily discharges past the gaging station were equaled or exceeded. Flow-duration data for four stations in the basin are listed in table 8.

TABLE 8.--Daily-discharge durations at selected gaging stations

Site number on plate 1	USGS station number	Name and period of record (analyzed by water year)	Daily discharge (ft^3/s) at indicated percentage of time that discharge equaled or exceeded						
			95	90	75	70	50	25	10
6	12479500	Yakima River at Cle Elum Oct. 1907 - Sept. 1977	210	300	620	760	1,400	2,600	3,600
8	12480500	Teanaway River near Cle Elum Oct. 1909 - Sept 1914 and Oct. 1947 - Sept. 1952	8.40	17.0	56.0	74.0	160	500	1,100
13	12483800	Naneum Creek near Ellensburg Oct. 1957 - Sept. 1977	13.0	15.0	19.0	20.0	27.0	57.0	150
15	12484500	Yakima River at Umtanum Oct. 1931 - Sept. 1977	480	600	1,100	1,400	2,200	3,300	4,800

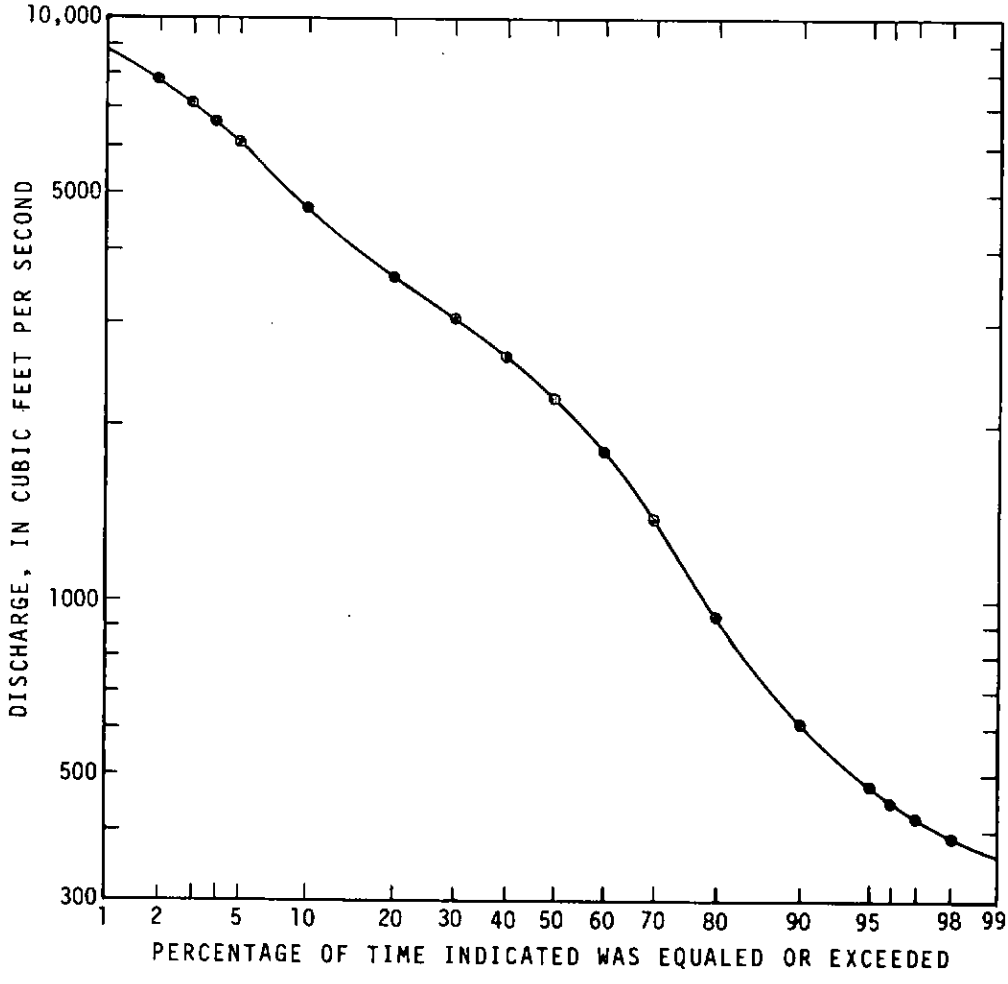


FIGURE 9.--Flow-duration curve for Yakima River at Umtanum, 1932-77 water years.

Water Quality

Sample Collection

Table 9 lists eight streamflow water-quality sites in the basin, their locations, and the water years that samples were collected. Concentrations of the major chemical constituents and physical properties of the water samples are given for these sites in table 21. The table lists results of more than 600 analyses that were made by the U.S. Geological Survey during the period May 1947 through September 1976. The standard Geological Survey methods for collecting and analyzing water samples are described in a publication by Brown and others (1970).

Analyses of lake-water quality were made by the Geological Survey as part of a statewide survey of the chemical, physical, and sanitary quality of lakes. Samples were collected at 10 lakes in the basin (table 16), mainly to determine nutrient concentrations, especially nitrogen and phosphorus.

TABLE 9.--Surface-water sites with water-quality data

Site number on plate 1	Station name (and USGS number)	Water year of sample collection
21	Yakima River above Cle Elum River near Cle Elum (12477600)	1972, 1975
22	Domerie Creek near Roslyn (12479100)	1968-72
23	Cle Elum River near Cle Elum (12479300)	1972, 1975
24	Yakima River at Cle Elum (12479500)	1947-48, 1953-56, 1959-60, 1962-70
25	Teanaway River near Cle Elum (12480600)	1962-66
26	Yakima River near Thorp (12482600)	1975
27	Wilson Creek at Thrall (12484490)	1966-70, 1973-75
28	Yakima River at Roza Dam (12484900)	1966-70

Chemical Quality

The surface-water quality in the upper Yakima River basin ranges from good to excellent, according to a general assessment by the Pacific Northwest River Basins Commission (1977) and CH_2M-Hill (1977). The chemical character of water sampled at streamflow water-quality sites in the basin (tables 9 and 21) indicates that it is suitable for municipal, industrial, and agricultural uses.

Surface water in streams in the upper reaches of the Yakima River basin is soft, with a maximum hardness (as $CaCO_3$) of 50 mg/L; whereas in the lower reaches of the basin, the water is moderately hard. According to the U.S. Environmental Protection Agency (EPA) (1977a), the classification of hardness is as follows:

Concentration, (mg/L CaCO3)	Hardness class
0-75	soft
75-150	moderately hard
150-300	hard
300 and up	very hard

The water-quality criteria established by the Washington State Department of Ecology to classify streams are listed in table 10, along with water-quality data collected at five gaging stations and the corresponding stream classifications at the gages. The water quality of the Yakima River is classified as excellent (Class A) from Sunnyside Dam (downstream from study area) to river mile 185.6 (Columbia Basin Inter-Agency Committee, 1964), immediately upstream from the Cle Elum River, and extraordinary (Class AA) upstream from river mile 185.

A study by the Pacific Northwest River Basins Commission (1977) found that some of the samples analyzed from streams in the upper Yakima River exceeded the limits set by the State water-quality standards: (1) in the Yakima River from Sunnyside Dam (below basin) to Wilson Creek, dissolved oxygen, temperature, pH, and total coliform values exceeded Class A standards; (2) Wilson Creek and tributaries exceeded Class A standards because of nonpoint sources of pollution; (3) in the Yakima River and tributaries from Wilson Creek to the Cle Elum River, water quality exceeded the Class A standards; and (4) in the Yakima River and

tributaries from the Cle Elum River to headwaters, temperature, dissolved oxygen, and total coliform values exceeded Class AA standards. The high values noted above probably result from the discharging of treated municipal and industrial wastes, along with return drainage from irrigated farmlands, to the Yakima River.

TABLE 10.--Chemical and physical maximum values from selected streams and selected water quality criteria (From Washington Department of Ecology, 1977)

Site number on plate 1	USGS station number	Station name	Date	Discharge (ft^3/s)	Fecal coliform (colonies /100 mL)	Dissolved oxygen (mg/L)	Temperature (°C)	Turbidity pH	Turbidity (JTU)
CLASS AA STREAMS (Extraordinary)					[a]50	[b]9.5	[a]16.0	6.5 to 8.5	[c]5
22	12479100	Domeire Creek nr Roslyn	7-22-68	--	--	--	7.8	7.8	--
23	12479300	Cle Elum River nr Cle Elum	8-07-72	2,840	--	8.4	19.6	7.1	1
			10-21-74	968	5	10.8	10.3	7.5	5
			8-18-75	2,410	28	10.6	10.8	7.1	8
CLASS A STREAMS (Excellent)					[a]100	[b]8.0	[a]18.0	6.5 to 8.5	[c]5
24	12479500	Yakima River at Cle Elum	7-24-62	3,740	--	9.4	18.3	7.3	--
			7-10-65	3,220	--	9.3	17.8	7.0	--
			9-11-68	1,850	--	9.7	16.5	7.3	--
27	12484490	Wilson Creek at Thrall	7-13-66	--	--	--	21.1	7.9	--
			11-15-22	160	--	7.7	8.0	8.1	1
			8-18-75	740	--	7.6	17.0	7.3	70
28	12484900	Yakima River at Roza Dam	8-11-68	--	--	10.6	19.3	7.9	--
			8-18-69	--	--	10.2	17.0	7.3	--
			8-17-70	--	--	10.7	16.8	7.7	--

[a]Not to exceed.
[b]Shall exceed.
[c]Shall not exceed 5 JTU over background turbidity or 10 percent if greater than 50 JTU.

Water Temperature

Temperature is an important water-quality characteristic. Many physical, chemical, and biological properties of water are a function of temperature. The average monthly temperature of surface water in the basin, except during freezing periods, is nearly 10°F lower than that of the average monthly air temperature (fig. 10).

Records of water temperatures for the streamflow water-quality sites listed in table 9 are given in table 21. Temperatures of selected lakes, which generally vary with depth or time of year or both, are given in table 15. Water temperatures, suspended-sediment concentrations, and stream discharges are given for 4 periodic sites (table 11) and 17 reconnaissance sites (table 12).

TABLE 11.--Suspended-sediment concentrations at four periodic sampling sites, 1969-71
(Sites are shown on plate 1)

Date	Time (24-hr)	Water temp (°C)	Discharge (ft^3/s)	Suspended-sediment concentrations (mg/L)
Site 6				
12479500. Yakima River at Cle Elum				
Lat 47°11'33", long 120°56'48"				
5-22-69	1520	12.0	3,200	8
7-23	1745	11.5	3,340	2
8-27	1355	15.0	2,830	2
10- 6	1430	12.0	1,200	4
11- 5	1020	6.5	148	1
12-15	1300	3.0	409	1
2- 5-70	1245	1.5	349	1
3-11	0900	2.0	343	2
4-16	0850	3.5	692	1
5-28	1015	7.0	582	5
8-26	1035	16.5	3,240	2
10-6	0920	9.5	805	1
2-17-71	1115	4.0	1,260	4
3-31	1130	3.5	1,100	4
5-11	1945	8.5	5,090	10
5-14	1130	6.0	1,860	16
6-22	0835	12.0	3,160	5
6-25	1015	10.5	--	6
Site 7				
12480000. Teanaway River below Forks, near Cle Elum.				
Lat 47°14'48", long 120°51'36"				
5-22-69	1445	13.5	1,320	16
7-24	1410	22.0	46	1
8-27	1610	17.0	13.9	1
10- 6	1525	11.0	59.8	1
11- 5	1305	6.0	69.7	1
12-15	1455	0	51.1	1
2- 4-70	1620	0	106	1
3-10	1525	3.5	178	6
4-15	5110	5.5	440	6
5-27	1310	9.5	1,090	10
8-26	1605	20.5	16.3	1
2-16-71	1705	1.5	460	18
4-26	1100	6.0	1,170	172
5-10	1750	9.5	1,760	38
5-14	1410	7.0	1,610	34
5-20	1200	6.5	727	12
6-14	1245	9.5	671	6
6-21	1810	15.5	706	2
6-25	0935	8.5	561	9
Site 13				
12483800. Naneum Creek near Ellensburg				
Lat 47°07'37", long 120°28'47"				
7-24-69	1240	15.5	35.6	4
8-27	1245	9.5	19.2	2
10- 5	1115	6.5	16.4	2
11- 5	1700	5.0	222.6	4
12-16	1000	0	14.0	1
2- 4-70	1255	.5	14.4	1
3-10	1235	.5	23.5	7
4-16	1615	5.5	37	3
5-27	1015	5.5	228	14
8-25	7120	16.0	17.4	2
2-17-71	1430	4.0	43	12
3-30	1650	4.5	31.5	24
5-10	1315	9.0	307	24
5-12	1055	6.5	354	45
6-23	1115	10.0	180	10
Site 15				
12484500. Yakima River at Umtanum				
Lat 46°51'46", long 120°28'44"				
7-24-69	0925	15.0	3,100	20
8-28	1700	16.5	3,090	10
10- 7	1110	10.5	1,660	7
11- 7	1145	8.0	474	5
12-16	1215	2.0	645	4
2- 6-70	1100	2.0	728	10
3-11	1300	6.0	1,180	12
4-17	1030	8.0	1,650	14
5-28	1700	13.0	2,280	58
8-26	1805	18.0	3,690	26
1- 6-71	0925	0	590	4
2-19	1140	3.5	2,280	10
4- 1	0920	4.5	1,900	12
5-12	7120	9.0	9,190	214
6-23	5120	15.0	5,850	41

TABLE 12.--Suspended-sediment concentrations at 17 reconnaissance-sampling sites, 1969-71
Sites are shown on plate 1 with symbol only

Date	Time (24-hr)	Water temperature (°C)	Discharge (ft^3/s)	Suspended sediment concentration (mg/L)
12474500. Yakima River near Martin Lat 47°19'17", long 121°20'06"				
7-23-69	1410	9.0	830	1
11- 4	1400	5.5	--	2
8-26-70	1300	15.0	678	1
5-11-71	1320	4.5	669	2
21474700. Mosquito Creek near Easton Lat 47°17'32", long 121°19'23"				
11- 4-69	1450	5.0	4.37	71
1247600. Kachess River near Easton Lat 47°15'41", long 121°12'08"				
8-28-69	1035	15.5	--	1
11- 4	2150	8.0	--	1
6-22-71	1535	12.0	536	4
Big Creek near West Nelson Siding Lat 47°11'53", long 121°05'17"				
5-14-71	1405	--	300	25
Little Creek Lat 47°12'15", long 121°06'40"				
5-14-71	1410	--	100	116
Cle Elum River Lat 47°21'20", long 121°06'20"				
6- 9-70	1530	6.5	--	2
6-25-71	1051	6.0	2,500	6
12479000. Cle Elum River near Roslyn Lat 47°14'41", long 121°04'00"				
8-28-69	1350	14.5	--	1
11- 5	0920	6.5	2.26	1
4-16-70	1325	4.5	440	1
5-11-71	0950	5.5	2,190	4
6-22	1835	13.5	2,780	3
Wilson Creek Near Thrall Lat 46°55'35", long 120°30'02"				
11- 6-69	1005	6.0	57.1	24
12-16	1115	3.5	50	39
2- 6-70	0900	3.5	75	54
3-11	1215	6.5	75	52
4-17	0810	5.5	125	54
5-19	0830	10.0	200	154
5-28	1415	15.0	250	104
8-26	1710	19.5	200	25
10-10	1220	--	--	40
11-23	1310	4.5	--	66
1- 5-71	1645	1.0	--	20
1-20	1300	2.0	400	369
2-17	1730	6.5	--	60
3-26	0815	4.0	200	56
3-30	1820	8.0	174	58
5-12	1400	15.0	503	132
6-23	1400	17.0	--	56
West Fork Teanaway River Lat 47°15'31", long 120°54'13"				
6-10-70	0830	6.0	--	2
6- 1-71	1130	8.0	100	4
Middle Fork Teanaway River Lat 47°05'32", long 120°53'49"				
6-10-70	0805	5.5	200	2
6- 1-71	1135	7.0	200	2
North Fork Teanaway River Lat 47°15'18", long 120°52'40"				
6-10-70	0845	6.0	500	4
6- 1-71	1145	8.5	--	8
Swauk Creek Lat 47°19'34", long 120°40'18"				
5-19-70	1010	6.0	30	36
4-26-71	1140	6.0	--	35
First Creek Lat 47°19'34", long 120°40'18"				
4-26-71	1115	8.5	10	36
Swauk Creek Lat 47°12'01", long 120°42'28				
5-19-70	0940	6.0	80	30
6-10	0910	6.0	30	13
4-26-71	1125	6.5	--	88
1248330. South Fork Manastash tributary near Ellensburg Lat 46°57'40", long 120°45'41"				
3-11-70	1145	1.0	3.00	2
Cherry Creek above Wilson Creek, near Thrall Lat 46°55'36", long 120°29'59"				
11- 6-69	1030	--	50	2,260
5-19-70	0845	10.5	80	162
Wenas Creek Lat 46°49'59", long 120°42'41"				
6- 9-70	1450	11.0	--	20

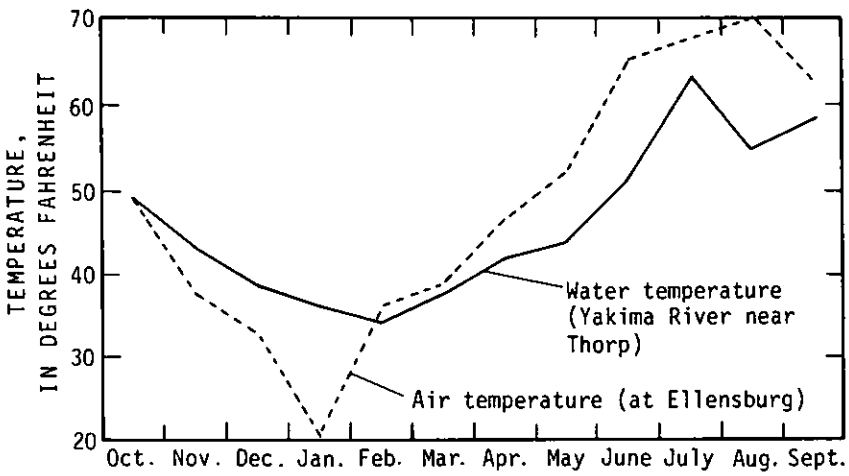


FIGURE 10.--Comparisons of monthly air temperature at Ellensburg and water temperature of Yakima River near Thorp, 1975 water year.

Suspended Sediment

On the basis of records collected during May 1969-June 1971, Nelson (1974) found that concentrations of suspended sediment in streams of the basin were usually less than 40 mg/L. The maximum concentration measured was 2,260 mg/L on November 6, 1969, at the Cherry Creek above Wilson Creek, near Thrall. A heavy rainstorm in the farmland area around Cherry Creek may account for the latter high concentration. The second highest concentration was only 369 mg/L, on January 20, 1971, at the Wilson Creek near Thrall. The average annual suspended-sediment yield of the basin upstream of the Yakima River at Umtanum gaging station was estimated by Nelson (1974) to be 85 tons per square mile.

The relations of suspended-sediment concentration to water discharge at four sites in the basin are shown in figure 11. The highest suspended-sediment concentration among the four sites is 90 mg/L at the Yakima River at Umtanum site, at a water discharge of 10,000 ft^3/s. However, for the range of discharges that occur at the Teanaway River below Forks, near Cle Elum and Naneum Creek near Ellensburg gaging stations, the relations indicate that higher suspended-sediment concentrations would be expected at these gages than at the Yakima River at Umtanum gage for a given discharge.

In the mountainous western part of the basin, most of the sediment transport occurs during April-June, the period of snowmelt runoff and corresponding annual high flows. In the semiarid southeastern part of the basin, little runoff occurs during most years, but sediment transport does occur when warm, heavy rains fall on extensive accumulations of snow. Fluvial sediment erosion, movement, and deposition are all natural processes, but man can reduce the magnitude of sediment discharge and sedimentation (deposition) by erosion-control activities.

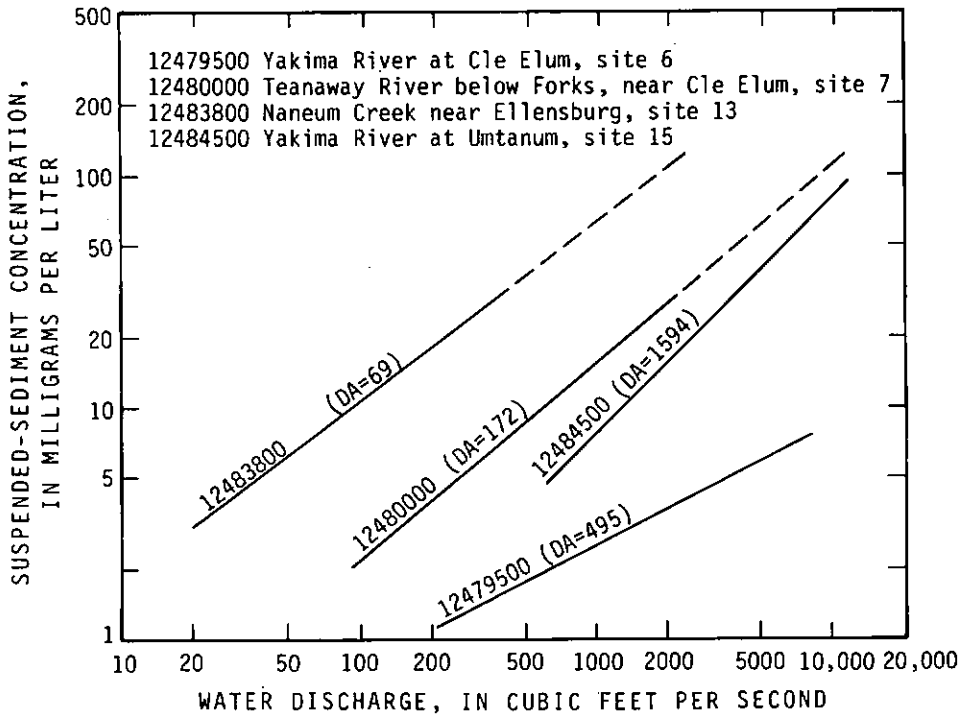


FIGURE 11.--Relation of suspended-sediment concentration to water discharge at four sites.

GROUND WATER

Data Available

A tabulation of the records of more than 650 wells, representing about one-third of all wells in the study area, is given in table 22. Most of the information is from well reports submitted to the State of Washington Department of Ecology (DOE) by drilling contractors. The drillers' logs of selected wells (table 23) list the earth materials penetrated during drilling.

Occurrence in Geologic Units

Ground water in the study area occurs in four distinct geologic units of differing age and hydrologic characteristics. The units are outlined in plate 1 and include, from youngest to oldest, (1) unconsolidated alluvial deposits; (2) unconsolidated to semiconsolidated sedimentary deposits of the Ellensburg Formation; (3) consolidated basalt and semiconsolidated sedimentary interbeds of the Columbia River Basalt Group; and (4) bedrock that includes a wide variety of consolidated igneous, sedimentary, and metamorphic rocks. Moderate to moderately large yields are obtained from wells tapping any one of the first three units, but wells tapping the bedrock would produce small yields because the only water available there is in fractures and jointing.

Alluvial Deposits

Stream alluvium and glacial and valley-train deposits of Quaternary Age partly fill all the large basins and most stream valleys in the study area. These deposits are composed chiefly of unconsolidated silt, sand, and gravel, and in places such as at well 20/15-35D1 they exceed 500 feet in thickness. The coarse-grained layers in these deposits probably have permeabilities greater than any other geologic unit in the basin and serve as an important aquifer in the area.

Yields of wells tapping the alluvial deposits range from 5 to 5,000 gal/min and average 50 gal/min. Most wells are shallow, 20 to 60 feet deep, and penetrate only a small part of the saturated thickness of the aquifer. The greatest known yield from a well in this unit is from a City of Ellensburg public-supply well (18/17-12R1) that can be pumped at a rate of 5,000 gal/min.

The alluvial and glacial deposits have a considerable ground-water storage capacity and are recharged by precipitation, by infiltration from streams during periods of high runoff, and by percolation of irrigation water. During the dry periods of late summer-early fall, ground water discharging from these deposits helps maintain streamflow. Much of the ground water moving through these deposits beneath valley floors discharges into the streams in reaches just upstream from valley constrictions such as at the Yakima Canyon near Thrall and further downstream at Selah Gap. It is not known how much ground water percolates downward from the alluvium to the Ellensburg Formation and the Columbia River Basalt Group.

Ellensburg Formation

The Ellensburg Formation, of late Miocene to early Pliocene Age (Smiley, 1963), is composed of 2,000 feet or more of sedimentary deposits that interfinger with the uppermost part of the Columbia River Basalt Group. Compaction and cementation of the original sediments have changed some of these deposits into their corresponding rock types—claystone, siltstone, sandstone, and conglomerate. Variations in permeability of the formation are due to differences in the degree of sorting and the amount or degree of cementation of the materials.

Because of variations in lithology, the yields of wells tapping the Ellensburg Formation differ widely throughout the basin. The water-bearing zones in the formation are primarily in the unconsolidated sand and gravel. Yields of large volumes of water from relatively shallow wells in the Wenas Creek valley were found by Sceva and others (1949). However, several test wells in the lower Wenas Creek valley that were drilled into clay deposits in the upper part of the formation failed to obtain water.

Properly constructed wells penetrating the Ellensburg Formation yield as much as 700 gal/min in the basin. Large-yield wells that tap this formation include 15/17-24Q1 at 700 gal/min, 17/18-1C1 at 700 gal/min, and 18/18-25D1 at 600 gal/min (table 22).

Columbia River Basalt Group

The Columbia River Basalt Group (Swanson and others, 1979) consists of a thick sequence of lava flows that underlie most of southeastern Washington and parts of northern Oregon and western Idaho. The basalt, with sparse sedimentary interbeds, is a principal water-bearing unit and is at the surface of or underlies more than 50 percent of the study area. The upper part of the Columbia River Basalt Group, named the Yakima Basalt, has a maximum thickness greater than 1,200 feet.

Water in basalt generally moves along the rubbly interflow zones that occur between successive lava flows, or in sedimentary interbeds that separate lava flows. Well records indicate that these interflow zones are commonly separated by the solid, massive centers of the flows. However, some water does percolate from one interflow zone to another where permeable joints or fractures extend through the lava flows. The thickness of a single basalt flow is generally less than 100 feet. The contribution of water to a well from a single interflow zone is unknown, but most wells penetrate several interflow zones that collectively contribute to the quantity pumped.

Yields of wells tapping the basalt in the basin generally range from a few to 3,000 gal/min. Most of the smaller yields are from the shallow domestic wells in the Selah and Wenas Creek valleys. Yields as little as 5 gal/min have been reported by drillers; this amount of water is normally sufficient only for domestic or stock supply. Some of the larger yields are from aquifers that are under artesian pressure, where water rises above the level at which it was encountered when the well was drilled. Such wells may flow at the land surface without pumping. Examples of flowing wells include 15/17-12N1 at 3,000 gal/min, 15/19-22L1 at 1,600 gal/min, and 18/20-23D1 at, 2,100 gal/min (table 22). Some older flowing wells in the basin are listed in a statewide report by Molenaar (1961).

Bedrock

The bedrock exposed in and underlying the western, mountainous part of the study area includes a variety of rock types, and its characteristics vary greatly from place to place. Locally, bedrock is capable of yielding water to wells, but yields are generally too low for it to be considered an important source of water.

The oldest extensively exposed rocks in the study area are metamorphic rocks—including schist, gneiss, and slate—that are probably pre-Upper Jurassic in age (Huntting and others, 1961). The porosity and permeability of these rocks are low. The igneous rocks include andesite, rhyolite, basalt and granodiorite. In the Teanaway area, a sequence of basaltic lava flows ranges in thickness from 300 to several thousand feet. This rock unit may have the greatest potential of the

bedrock for ground-water production, and may be similar in hydrologic characteristics to the basalt units in the Columbia River Basalt Group.

Also present in the study area are bedrock units consisting of consolidated sedimentary rocks of early Tertiary age, mostly sandstone, shale and coal. The porosity and permeability of these rocks are believed to be low.

In the bedrock, water occurs only in localized and random cracks or joints, and the chance of encountering it decreases with depth. Except in those cases where ground water is in such great demand that a very small supply justifies considerable expense and financial risk, the bedrock surface should be considered as the floor of the ground-water reservoir.

Water-Level Fluctuations

Water-level fluctuations, except those small changes caused by atmospheric pressure, are caused by changes in the rate of recharge to and discharge from the aquifer. Water levels in wells will rise or decline according to whether recharge is greater or less than discharge, and will fluctuate mostly in response to seasonal variations in precipitation and the pumping of wells. Single measurements of water levels in wells are included in table 22, and periodic measurements of water levels in five wells are given in table 24.

Hydrographs showing water-level fluctuations in two wells during a period of more than 20 years indicate that ground-water levels have remained fairly steady except for seasonal fluctuations (fig. 12). Measurements in well 15/18-32K3 (in the Wenas Creek Valley) indicate about a 5-foot decline in water level from 1954 to 1977. During 1969, measurements in this well twice showed a large decline with recovery. Either these measurements were incorrect, or the well was pumping and this was not noted. In well 18/18-25C1 (north of Ellensburg) the water level remained constant during the period 1954-72, except for annual variations. Figure 12 also shows a comparison of ground-water levels with precipitation at Ellensburg. Water levels in both wells are generally highest during the summer months, when precipitation is lowest.

Fluctuations of water levels in wells tapping water table (unconfined) aquifers indicate changes in the amount of water stored in the aquifers. Lowering of water levels in wells tapping artesian aquifers results from a decrease in pressure, and does not indicate dewatering of the aquifer in the area of ground-water discharge unless the water level drops below the confining bed. The wells with artesian heads are located in either the Ellensburg Formation or the Columbia River Basalt Group.

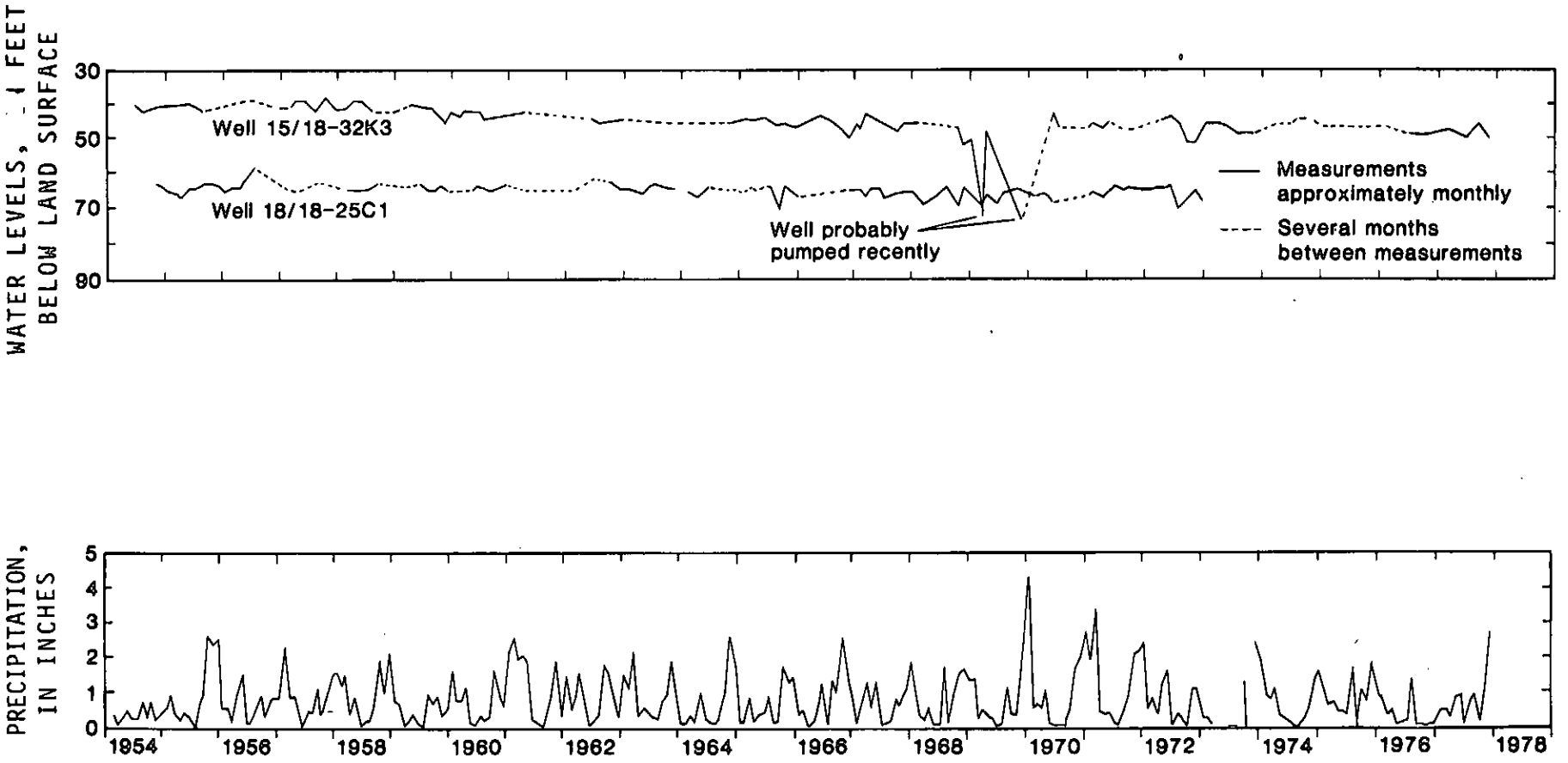


FIGURE 12.--Monthly water-level fluctuations in two wells, and monthly precipitation at Ellensburg, 1954-77.

Quality of Ground Water

Data Available

Forty-four water samples were collected from 22 springs and wells for chemical analyses by the U.S. Geological Survey from 1948 to 1971 (table 13). The chemical characteristics and temperature of the water samples from the springs and wells are listed in table 25. The sampled wells and springs represent mostly the public-supply systems, and are not evenly distributed over the basin; consequently, these data are not representative of ground-water quality throughout the basin.

TABLE 13.--Springs and wells sampled for water quality

Site number on plate 1	Well number or spring number	Owner	Use of water	Year of sample collection
31	14/18- 3N1s	H.E. Mulford	Stock	1948
32	14/18-12C1	John Knopp	Stock	1948
33	14/18-13R2	B. Barnheart	Domestic	1948
34	14/18-36N1	Town of Selah	Public supply	1970,71
35	14/19-19G1	H. B. Larson	Domestic	1961
36	14/19-28B1	U.S. Army-No. 1	Public supply	1951,53,54,55,56, 58,59,60,64,67
37	14/19-28F1	U.S. Army-No. 2	Public supply	1951,52,53,54,55, 62,66
38	14/19-28H1	U.S. Army-No. 3	Public supply	1952,54,55,64,68
39	15/18-33P1	R. H. Kershaw	Irrigation	1948
40	16/17-19E1	G. S. Green	Domestic	1948
41	16/17-32J1s	Malotte	Unused	1948
42	17/18-01C1	City of Ellensburg	Public supply	1957,59
43	17/19-11G1	Kittitas Ice Co.	Unused	1962
44	18/18-25D1	Kittitas County Airport	Public supply	1970,71
45	18/18/32D1	J. A. Shaw	Domestic	1962
46	19/16-28N1s	U.S. Forest Service	Public supply	1962
47	10/14-11A1	U.S. Forest Service	Public supply	1968
48	21/12-14M1	U.S. Forest Service	Public supply	1965
49	21/14-28J1	U.S. Forest Service	Public supply	1968
50	21/17-17R1	U.S. Forest Service	Public supply	1965
51	21/17-22P1	Mineral Springs Resort	Public supply	1962
52	22/13-32C1	U.S. Forest Service	Public supply	1965

Chemical Characteristics

The concentration or existence of certain constituents in water determines the suitability of the water for various uses. On the basis of chemical analyses of the 44 ground-water samples collected in the basin, the water can be classified generally as a calcium bicarbonate type, high in silica, that is acceptable for domestic and irrigation purposes. Because of the diversity of industrial water-quality requirements, the water chemistry should be evaluated on an individual basis when determining its suitability for a particular industry.

Dissolved solids.--The dissolved-solids concentration of the ground water sampled in the basin ranged from 32 to 544 mg/L. The EPA (1977b) recommends that dissolved solids should not exceed 500 mg/L for potable water. However, some evidence (EPA, 1977a, p. 206) indicates that water exceeding the 500 mg/L limit can be used without obvious ill effects. Commonly, dissolved-solids concentration can be estimated from the specific conductance of the water, because specific conductance represents the ability of water to conduct an electric current, which is dependent on the concentration of dissolved material in the water. Specific conductance ranged from 41 to 823 micromhos per centimeter at 25°C in the ground-water samples analyzed.

Hardness.--Water hardness is caused principally by dissolved calcium and magnesium, and is the property of water that causes soap to leave a scum on the water surface. Calcium and magnesium are dissolved from certain rocks, and commonly occur in the ground water of the basin. Hardness of the ground water samples ranged from 17 mg/L (soft) to 338 mg/L (very hard), but the hardness of most of the samples was below 150 mg/L. Some of the softest water occurred in public supplies at mountain recreation areas.

Silica.—Dissolved silica concentrations ranged from 11 to 66 mg/L and averaged 45 mg/L. This concentration, which is moderately high for ground water, reflects the influence of igneous rocks (basalt and granitics) that contain siliceous minerals. Silica is of little significance in the quality of water for most uses, except that its deposition in boilers and other hot-water containers can cause undesirable scale.

Iron.—Hydrated oxides of iron or manganese may cause staining of plumbing fixtures and laundry and may give an undesirable taste to the water. The highest dissolved-iron concentration in the samples analyzed was 2.0 mg/L, in well 14/19-28H1. It is recommended (EPA, 1977a, p. 78) that 0.3 mg/L soluble iron not be exceeded in public water-supply sources. Dissolved-iron concentrations appear to be widely variable throughout the study area.

Sodium-Adsorption Ratio (SAR).--The SAR indicates the effect that irrigation water may have on soil-drainage characteristics. Water with a high SAR value lowers the permeability of soils and eventually causes clogging, rendering the soil unsuitable for cultivation. A SAR of about 4 is the limit for crops that are sensitive to the effects of soil clogging (Federal Water Pollution Control Administration, 1968). SAR values for the ground-water samples analyzed are listed in table 25 and are generally 1.0 or less, indicating the ground water in the basin is suitable for irrigation.

Temperature.—Water temperatures in the sampled wells and springs ranged from 40° to 70°F. For wells with water depths of less than 100 feet, the highest temperature recorded was 50°F. Spring water temperatures ranged from 52° to 59°F.

WATER USE

The streams and lakes in the study area are used for recreation and to provide water for irrigation, municipal, and industrial supplies. Irrigation by surface water is by far the largest use of water in the study area. Irrigation used 526,800 acre-feet (98.8 percent of the water used in the study area) in 1975 (Dion and Lum, 1977). The largest use of ground water is for public supply, but this represents only about 1 percent of the total water use in the study area. The withdrawal of ground water for irrigation was not reported by Dion and Lum (1977), but it is estimated that about 15 percent of the wells in the study area are used primarily for irrigation. The relative importance of surface water and ground water as sources of supply for various uses during years of assessment is shown in table 14.

Dion and Lum (1977) reported that the quantity of water withdrawn for industrial and municipal use in 1975 for the study area was 6,260 acre-feet, or about 245 gallons per day per capita for a study area population of 22,800. The entire State use, according to the same report, is 259 gallons per day per capita. Average national water use for public supplies in 1975 was estimated to be 168 gallons per day per capita (Murray and Reeves, 1977). The Ellensburg Water Department was the largest ground water user in the study area in 1975, withdrawing 3,470 acre-feet or 1.13 billion gallons during the year.

Irrigation from streams and reservoirs is extensive in the upper Yakima River basin; 526,800 acre-feet was applied to 106,800 acres in the basin during 1975 (Dion and Lum, 1977). A supply of irrigation water is maintained in the Yakima River system for release during the dry summer season by storage in its three major reservoirs. The Cascade and Kittitas Irrigation Districts distribute water to more than 70,000 acres in the Kittitas Valley, or about 65 percent of the land irrigated in the study area. An inventory of acres irrigated and water diverted by the major irrigation districts in the study area is presented in table 15.

Annual withdrawal of ground water for irrigation use is small when compared with that obtained from surface-water sources. Ground-water is used chiefly for individual domestic supplies, whereas surface-water supplies are adequate to provide ample irrigation water in the study area.

Industrial use of water in the study area is also small when compared with irrigation use—only 761 acre-feet in 1975. Greatest use was seasonally, in food-processing plants in Ellensburg. The meat-packing, lumber-products, and sand and gravel or crushed rock industries also used study area water.

TABLE 14.--Annual water use in 1965, 1970, and 1975

Water use (in acre-feet)	Source total		
	1965	1970	1975
Irrigation:			
ground water	9,450	4,000	--
surface water	375,550	476,200	526,800
Total:	385,000	480,200	526,800
Municipal:			
(Supplied to industry)			
ground water	3,050	5,323	5,032
surface water	--	--	--
(Remaining municipal)			
ground water	3,050	5,323	5,032
surface water	482	503	466
Total	4,960	7,510	6,260
Annual Totals (rounded)	390,000	488,000	533,000

Year 1965 and 1970 adjusted from county usage to basin (study area) usage.
Data from Laird and Walters (1967), Parker (1971), and Dion and Lum (1977).

TABLE 15.--Inventory of water use by major irrigation districts in the basin[1] (study area)

Irrigation district and source of supply	Total area irrigated (acres)	Annual total of water diverted (acre-feet)	Estimated use of water, in percent			Adequacy of water supply
			Agricultural	Domestic outside	Domestic household	
Cascade Irrigation District, Ellensburg, pumped from Yakima River	12,710	[a]16,800	86	14	--	Adequate
Kittitas Reclamation District, Ellensburg, diverted from Yakima River	57,658	330,000	99	1	--	Adequate
Naches-Selah Irrigation District, Selah, diverted from Naches River	[b]7,000	[c]54,000	97	2	1	Barely adequate
Wenas Irrigation District, Yakima, diverted from Wenas Creek	2,014	[a]1,300	100	--	--	Adequate
TOTALS	79,382	402,100				

[1]Report covered the years 1972 and 1973 activities in the irrigation districts (URS/Hill, Ingram, Chase, and Company, 1974).

[a]Estimate based on storage rights.

[b]Estimated in basin (study area), total of 10,000 acres in the district.

[c]Source from outside basin (study area) (the Naches River).

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TABLES 16 THROUGH 25

TABLE 16.—Physical and chemical characteristics of 10 lakes
[From report by Dion and others (1976)]

EXPLANATION

Lake name. The lake name was taken from the U.S. Geological Survey topographic maps. Duplicate lake names are followed by location designations for uniqueness. Lakes that are not named on the topographic map and for which no local name is known are referred to as "unnamed," followed by a location designation. Only the proper name of the lake is given; in common usage the term "Lake" may either precede or follow the proper name. All adjectives (for example, Big, East, and Upper) follow the lake name. When a lake has two names, both are given, but priority is given to the topographic-map name. The lake names and respective data are listed alphabetically by counties.

Location. Latitude, longitude, township, range, and section location were determined from U.S. Geological Survey quadrangle maps. The location point is the lake outlet. For lakes without outlets, the southernmost shoreline point is used. The lakes are presented in the report according to the county in which the location point occurs.

Drainage basin.—The major drainage system in which the lake is located was determined. Some of the lakes are in closed basins that have no surface outlets.

Physical data.—Physical characteristics were determined from topographic and bathymetric (bottom-contour) maps of the lakes. If bathymetric maps were not available, the lakes were sounded and charted by boat using a continuous-recording fathometer. For lakes with no boat access, a helicopter equipped with a fathometer, pontoons, and a conventional outboard motor was used to chart the lake. By use of aerial photographs and lake depths, the bathymetric data were digitized and transferred to computer cards which served as input to a computerized program that calculated lake morphometric values (for example, lake volume, surface area, and length of shoreline).

Drainage area.—The surface-drainage area that contributes water to the lake is given in square miles (sq mi). These areas were delineated on U.S. Geological Survey topographic maps and measured by planimeter. The natural drainage area is often altered by the existence of canals, ditches, and diversions for irrigation, power supply, and other uses. In such cases the drainage area was not measured.

Surface altitude.—A single altitude in feet (ft) above mean sea level (msl), obtained from topographic maps, is given for each lake. If not specifically shown on the map, altitudes are estimated from the nearest contour line. The altitude of a reservoir is given as the level of the water surface at normal full reservoir capacity.

Surface area (A).—The surface area of the lake, in acres, was obtained from planimetry of the lake outline or from computerized calculations of digitized data.

Volume (V).—Lake volume, in acre-feet, was obtained either by computing and then summing the volumes of each stratum of water between successive contours on the bathymetric map or by calculating from digitized data. Because lake volume can vary between seasons and from year to year, the volume figures reported (as well as other morphometric data) are intended only to describe the general size of the lake.

TABLE 16.—Physical and chemical characteristics of 10 lakes—Continued

Mean depth ($\bar{Z}$).—The mean depth, in feet, for a specified lake stage, was obtained by dividing the volume of the lake by its area.

Maximum depth (Z_m).—The difference in elevation, in feet, between the bottom and the surface of the lake. The maximum depth obtained from field surveys may not necessarily be shown on the bathymetric maps.

Length of shoreline (L).—The distance around, or perimeter, in miles of the water surface touching the shore at a specified lake stage. The shoreline length depends on the fineness of detail of the shore outline on the bathymetric map.

Shoreline configuration (D_L).—A dimensionless ratio of the length of shoreline to the circumference of a circle having an area equal to that of the lake, given as

$$D_L = \frac{L}{2\sqrt{\pi A}}.$$

This quantity may be regarded as an index of the geological and littoral processes affecting the shape of the lake. Nearly circular lakes have values near unity, subcircular lakes have slightly greater D_L values and elongate lakes have the highest D_L values. High D_L values are commmon to lakes formed along old drainages or by the damming of streams to form a lake in the valley behind a dam.

High values for shoreline configuration suggest the presence of shallow water and protected bays—areas suitable for plant growth—and also indicate an increase in contact between land and water. Therefore, shoreline configuration is often an indirect indicator of plant growth capacity and enrichment potential from nearshore development and runoff.

Development of volume (D_V).—The development of volume is defined as the ratio of the mean depth ($\bar{Z}$) to the maximum depth (Z_m). Thus, lakes with a low D_V ratio are steep-sided with flat bottoms. Shallow lakes, which have large D_V values, tend to provide a greater opportunity of exposure of bottom sediments to overlying water and for circulation of bottom nutrients.

Bottom slope (Z_r).—The slope profile of a lake bottom, expressed as a percentage ratio of the maximum depth to the mean lake diameter (referred to by Hutchinson, 1957, p. 167), as relative depth) and given as

$$Z_r = \frac{Z_m \times 50\sqrt{\pi}}{\sqrt{A}}.$$

Bottom slope is a measure of the extent of shallow water and is important to the growth of rooted aquatic plants and potential for wind mixing of water with bottom sediments.

TABLE 16.—Physical and chemical characteristics of 10 lakes—Continued

Basin geology. The predominant geology of the lake's drainage basin was obtained from a geologic map of the State of Washington (Huntting and others, 1961). The drainage basin is indicated as being underlain by either (1) unconsolidated sedimentary deposits and (or) metasedimentary rocks, or (2) igneous rocks.

Inflow. Perennial or intermittent surface inflow is indicated, if known. Some lakes have no visible inflow, and water gain is from direct precipitation on the lake and (or) from ground-water seepage.

Outflow. The presence or absence of a surface-water outflow channel is indicated, if known. Some lakes have no surface-water outflow, and water loss is through evaporation, transpiration, and (or) ground-water seepage.

Cultural data. Data related to cultural development were obtained from topographic maps, aerial photographs, and shoreline reconnaissance by helicoper or boat.

Nearshore residential development.—The percentage of shoreline occupied by residential developemtn was determined from aerial photographs.

Number of nearshore homes.—A count of the number of nearshore homes adjoining the lakefront was made from field observations, topographic maps, or aerial photographs.

Land use.—The drainage basins of the lakes were partitioned into various generalized land-use categories. Values given reflect the percentages of the basin used primarily for forest or for residential urban, residential suburban, or agricultural development. The lake surface is also given as a percentage of the total drainage basin. A general description of the land-use categories is as follows:

a. Residential urban.—Predominant use is for single-family residences, where apartment complexes and commercial or industrial activities also may be present.

b. Residential suburban.—Predominant use is single-family residences.

c. Agricultural.—Pasture or cropland.

d. Forest or unproductive.—Public and private forest lands and tree farms. Land may include cleared or fallow unproductive land, meadows, wetlands, and seasonal recreational areas.

e. Lake surface.—Includes surface area of the lake and of upstream tributary lakes.

Public boat access to lake.—The presence of a public boat access is indicated. Most public boat access facilities are maintained by the State of Washington Department of Game. The location of the boat access (symbol ▲) is shown on the bathymetric map.

TABLE 16.—Physical and chemical characteristics of 10 lakes—Continued

Water-quality data. From helicopters fitted with pontoons or from boats, vertical profiles of temperature and DO (dissolved oxygen) concentration were measured in the deepest part of each lake. Multiple sites were sampled on lakes with areas greater than 1,000 acres and on irregular-shaped lakes. Secchi-disc visibility was also determined. Water samples were collected for color, nutrient, and specific-conductance analyses at depths 3.0 feet below the water surface and 3-5 feet above the lake bottom. Lakes less than 5 feet deep were sampled at about one-third and two-thirds the depth of the lake. For most lakes, estimates of the percentage of both lake area and lake shoreline covered by emersed and (or) floating rooted aquatic plants were made by a visual inspection of the lake during aerial reconnaissance. Samples for fecal-colifom bacteria were collected at selected nearshore sites, approximately 100 feet offshore at a depth of 1 foot below the water surface.

Information from most of the lakes was collected during the periods of July-September 1973 or May-September 1974. In 1974, six of the lakes were sampled four times by the U.S. Geological Survey. For those lakes, the data from the midsummer sample period are presented. All samples were collected and analyzed according to accepted standardized procedures (American Public Health Association and others, 1971; Brown and others, 1970; and Slack and others, 1973).

Nutrients.—A nutrient is any chemical element, ion, or compound that is required by an organism for the continuation of growth, reproduction, and other life processes. Many elements and compounds act as nutrients to supply the food for aquatic plants and algae. However, nitrogen and phosphorus usually are considered the limiting nutrients to plant growth and as such received the most emphasis in this study. Whatever nutrient is limiting aquatic plant growth, the concentrations of nitrogen and phosphorus are useful in evaluating the trophic conditions of a lake (Lee, 1970). The nutrient concentrations that were determined at top and bottom sampling depths included total nitrate, nitrite, ammonia and organic nitrogen, phosphorus, and orthophosphate.

Specific conductance.—Specific conductance is a measure of the water's ability to conduct an electric current and is expressed in micromhos per centimetre at 25°C (Celsius). Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids concentration in the water.

Water temperature.—Temperature, which varies in lakes with depth and time of year, is an important controlling factor for life processes and chemical-reaction rates, as well as many physical events that occur in th aquatic environment.

TABLE 16.—Physical and chemical characteristics of 10 lakes—Continued

For most lakes, the water temperatures listed for the upper, near-surface water were probably close to the maximum for the year when sampled. Temperature profiles in lakes during midsummer, when thermal stratification is marked, generally follow one of two common patterns. In shallow lakes, well exposed to the wind, temperatures will be found to be practically constant from top to bottom. This uniformity of temperature indicates that the waters are well mixed throughout. The other common pattern occurs in deeper lakes, where three characteristic thermal layers are present: (1) an upper zone (epilimnion) of generally warmer water in which temperature is more or less uniform throughout; (2) an intermediate zone (metalimnion) in which temperature decreases rapidly with depth; and (3) a lower zone (hypolimnion) of colder water in which temperature is again more or less uniform throughout.

The temperature of the deep-water layer (hypolimnion) during midsummer is of biological significance because (1) temperature stratification and water circulation affect the vertical distribution of nutrients, and (2) water temperatures affect the potential of cold-water fisheries resources.

Color.—Color is one control of light transmission through water. High color values often result from the decomposition of vegetation, giving the water a brown, tea-like color and reducing water clarity. Color value is determined by a comparison of the water with standardized colored-glass discs and is reported in platinum-cobalt (Pt-Co) units.

Secchi-disc visibility.—Secchi-disc visibility is the depth at which a black and white disc (8 inches in diameter) disappears from view when lowered into the water. Secchi-disc visibility is a measure of water transparency or clarity. Because changes in biological production can cause changes in the color and turbidity of a lake, Secchi-disc visibility often is used as a gross measure of the quantity of plankton in the water. Secchi-disc depths preceded by the symbol "$>$" indicate the disc was resting on the bottom of the lake and was still visible.

Dissolved oxygen.—The concentration of DO in a lake varies with time of year and depth of water and is a function of many factors, including the water temperature, atmospheric pressure, and salinity of the water. Oxygen concentration in water is continually being altered by life processes, such as photosynthesis and respiration, and by complex chemical reactions. Of special biological significance is the amount of DO in the hypolimnion during midsummer. The organisms in the lighted upper layers of water produce organic matter which eventually settles to the bottom where bacteria consume oxygen to degrade the organic materials, thereby reducing the DO concentration in the hypolimnion. The hypolimnetic-oxygen deficit frequently is related to the biomass or plant growth in the upper waters (Hutchinson, 1957). For good growth and general health of trout, salmon, and other species of cold-water biota, the DO concentrations should not be less than 6.0 mg/l (milligrams per litre) according to the Federal Water Pollution Control Administration (1968).

TABLE 16.—Physical and chemical characteristics of 10 lakes—Continued

Emersed plants.—These are large plants that can be seen without magnification. Examples of emersed plants include cattails and sedges in which the leaves or other structures extend above the water surface. In this report, rooted floating aquatic plants such as waterlilies and watershield are considered emersed. The rooted aquatic-plant growth was assessed according to the percentage of the lakeshore and water surface covered by emersed and (or) floating plants.

Remarks. This includes other useful lake information that was obtained during the reconnaissance. Such topics as the following might be included:

1. Descriptive information.
2. Qualifying statements.
3. Availability of additional information.
4. Unusual lake or drainage-basin characteristics.

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Unnamed (14N-19E-31) Lake Yakima County

Latitude 46°39'8" Longitude 120°30'4" T14N-R19E-31
Yakima River Basin

Physical data		Cultural data	
Drainage area	-- sq mi	Residential development	0 %
Altitude	1100. ft		
Lake area	19. acres	Number of nearshore homes	0
Lake volume	120. acre-ft		
Mean depth	7. ft	Land use in drainage basin	
Maximum depth	11. ft		
Shoreline length	0.85 mi	Not determined	
Shoreline configuration	1.4		
Development of volume	0.60		
Bottom slope	1.1 %		
Basin geology	Sed./meta.		
Inflow	Intermittent		
Outflow channel	Absent	Public boat access to lake	--

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1	
Date	5/15/74	
Time	1700	1705
Depth (ft)	2.	3.
Total nitrate (N)	0.01	0.01
Total nitrite (N)	0.00	0.00
Total ammonia (N)	0.04	0.05
Total organic nitrogen (N)	0.30	0.35
Total phosphorus (P)	0.045	0.057
Total orthophosphate (P)	0.004	0.021
Specific conductance (micromhos)	160	160
Water temperature (Deg C)	14.5	14.5
Color (platinum-cobalt units)	10	10
Secchi-disc visibility (ft)	4	
Dissolved oxygen	9.8	9.8

Lake shoreline covered by emersed plants	11- 25 %
Lake surface covered by emersed plants	1- 10 %

Date	5/15/74
Time	1530
Number of fecal coliform samples	2
Fecal coliform, minimum (col./100 mL)	< 1
Fecal coliform, maximum (col./100 mL)	8
Fecal coliform, mean (col./100 mL)	4

Remarks

The lake is on the Yakima River bottoms and receives seepage from the river. For this reason the drainage area and land use were not determined. The littoral bottom is gravel.

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Wenas Lake — Yakima County

Latitude 46°48'53" Longitude 120°40'17" T15N-R17E-2
Yakima River Basin

Physical data		Cultural data	
Drainage area	114. sq mi	Residential development	0 %
Altitude	1861. ft		
Lake area	65. acres	Number of nearshore homes	0
Lake volume	990. acre-ft		
Mean depth	15. ft	Land use in drainage basin	
Maximum depth	36. ft		
Shoreline length	1.6 mi	Residential urban	0 %
Shoreline configuration	1.4	Residential suburban	0 %
Development of volume	0.42	Agricultural	15 %
Bottom slope	1.9 %	Forest or unproductive	85 %
Basin geology	Sed./meta	Lake surface	<1 %
Inflow	Perennial		
Outflow channel	Present	Public boat access to lake	Yes

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1	
Date	5/15/74	
Time	1515	1520
Depth (ft)	3.	26.
Total nitrate (N)	0.02	0.03
Total nitrite (N)	0.01	0.01
Total ammonia (N)	0.07	0.06
Total organic nitrogen (N)	0.16	0.17
Total phosphorus (P)	0.076	0.081
Total orthophosphate (P)	0.058	0.058
Specific conductance (micromhos)	105	107
Water temperature (Deg C)	9.8	8.8
Color (platinum-cobalt units)	10	10
Secchi-disc visibility (ft)	4	
Dissolved oxygen	11.0	10.4

Lake shoreline covered by emersed plants	Little or none
Lake surface covered by emersed plants	None or <1 %

Date	5/15/74
Time	1600
Number of fecal coliform samples	3
Fecal coliform, minimum (col./100 mL)	8
Fecal coliform, maximum (col./100 mL)	18
Fecal coliform, mean (col./100 mL)	12

Remarks

An artificial reservoir created by a dam on Wenas Creek in 1946. The water is used for irrigation purposes. No aquatic macrophytes were observed. The DO concentration was high throughout the entire water column. The littoral bottom is silty gravel.

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Manastash Lake Kittitas County

Latitude 46°59'50" Longitude 120°56'24" T17N-R15E-3
Yakima River Basin

Physical data		Cultural data	
Drainage area	0.90 sq mi	Residential development	0 %
Altitude	5000. ft		
Lake area	23. acres	Number of nearshore homes	0
Lake volume	210. acre-ft		
Mean depth	9. ft	Land use in drainage basin	
Maximum depth	13. ft		
Shoreline length	0.83 mi	Residential urban	0 %
Shoreline configuration	1.2	Residential suburban	0 %
Development of volume	0.68	Agricultural	0 %
Bottom slope	1.1 %	Forest or unproductive	96 %
Basin geology	Igneous	Lake surface	4 %
Inflow	Intermittent		
Outflow channel	Absent	Public boat access to lake	--

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1	
Date	7/31/74	
Time	1310	1315
Depth (ft)	3.	10.
Total nitrate (N)	0.01	0.01
Total nitrite (N)	0.00	0.00
Total ammonia (N)	0.04	0.04
Total organic nitrogen (N)	0.17	0.37
Total phosphorus (P)	0.030	0.059
Total orthophosphate (P)	0.014	0.027
Specific conductance (micromhos)	55	55
Water temperature (Deg C)	18.7	17.2
Color (platinum-cobalt units)	5	15
Secchi-disc visibility (ft)	>12	
Dissolved oxygen	9.6	12.2
Lake shoreline covered by emersed plants		11- 25 %
Lake surface covered by emersed plants		1- 10 %
Date		7/31/74
Time		1320
Number of fecal coliform samples		3
Fecal coliform, minimum (col./100 mL)		<1
Fecal coliform, maximum (col./100 mL)		2
Fecal coliform, mean (col./100 mL)		1

Remarks

The water was turbid due to decomposing organic matter. Summer algal blooms are common in Manastash Lake. The DO concentration was high throughout the entire water column. The entire shoreline was littered with floating logs. A large part of the bottom was covered with submersed aquatic plants (coontail). The lake supported a large tadpole population. The altitude shown is approximate.

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Easton Lake — Kittitas County

Latitude 47°14'29" Longitude 121°11'11" T20N-R13E-11
Yakima River Basin

Physical data		Cultural data	
Drainage area	188. sq mi	Residential development	2 %
Altitude	2180. ft		
Lake area	240. acres	Number of nearshore homes	1
Lake volume	4000. acre-ft		
Mean depth	17. ft	Land use in drainage basin	
Maximum depth	16. ft		
Shoreline length	2.5 mi	Residential urban	1 %
Shoreline configuration	1.2	Residential suburban	0 %
Development of volume	1.00	Agricultural	0 %
Bottom slope	0.44 %	Forest or unproductive	93 %
Basin geology	Sed./meta.	Lake surface	6 %
Inflow	Perennial		
Outflow channel	Present	Public boat access to lake	Yes

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1		
Date	7/31/74		
Time	1050	1055	
Depth (ft)	3.	13.	
Total nitrate (N)	0.01	0.01	
Total nitrite (N)	0.00	0.00	
Total ammonia (N)	0.03	0.03	
Total organic nitrogen (N)	0.01	0.04	
Total phosphorus (P)	0.004	0.005	
Total orthophosphate (P)	0.001	0.001	
Specific conductance (micromhos)	40	40	
Water temperature (Deg C)	17.8	16.9	
Color (platinum-cobalt units)	0	0	
Secchi-disc visibility (ft)	16		
Dissolved oxygen	8.4	8.4	
Lake shoreline covered by emersed plants		1- 10 %	
Lake surface covered by emersed plants		None or <1 %	
Date		7/31/74	
Time		1100	
Number of fecal coliform samples		3	
Fecal coliform, minimum (col./100 mL)		<1	
Fecal coliform, maximum (col./100 mL)		3	
Fecal coliform, mean (col./100 mL)		1	

Remarks

An artificial storage pool built on the Yakima River in 1929 by the U.S. Bureau of Reclamation. The water is used for irrigation purposes. Numerous submerged stumps occurred at the north end of the lake. Floating logs occurred locally near the shoreline. The DO concentration was high throughout the entire water column.

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Cle Elum Lake — Kittitas County

Latitude 47°14'43" Longitude 121°04'23" T20N-R14E-10
Yakima River Basin

Physical data		Cultural data	
Drainage area	203. sq mi	Residential development	7 %
Altitude	2223. ft		
Lake area	4800. acres	Number of nearshore homes	35
Lake volume	520,000. acre-ft		
Mean depth	110. ft	Land use in drainage basin	
Maximum depth	260. ft		
Shoreline length	20. mi	Residential urban	0 %
Shoreline configuration	2.	Residential suburban	0 %
Development of volume	0.42	Agricultural	0 %
Bottom slope	1.6 %	Forest or unproductive	96 %
Basin geology	Sed./meta.	Lake surface	4 %
Inflow	Perennial		
Outflow channel	Present	Public boat access to lake	Yes

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1		2	
Date	7/30/74		7/30/74	
Time	1100	1105	1200	1205
Depth (ft)	3.	36.	3.	164.
Total nitrate (N)	0.00	0.00	0.00	0.03
Total nitrite (N)	0.00	0.00	0.00	0.00
Total ammonia (N)	0.04	0.04	0.04	0.06
Total organic nitrogen (N)	0.29	0.14	0.11	0.08
Total phosphorus (P)	0.004	0.004	0.003	0.003
Total orthophosphate (P)	0.000	0.001	0.001	0.001
Specific conductance (micromhos)	35	35	40	40
Water temperature (Deg C)	14.0	8.5	17.8	5.2
Color (platinum-cobalt units)	0	0	0	0
Secchi-disc visibility (ft)	28		31	
Dissolved oxygen	9.8	10.8	9.2	11.1

Lake shoreline covered by emersed plants	Little or none
Lake surface covered by emersed plants	None or <1 %

Date	7/30/74
Time	1100
Number of fecal coliform samples	4
Fecal coliform, minimum (col./100 mL)	<1
Fecal coliform, maximum (col./100 mL)	4
Fecal coliform, mean (col./100 mL)	1

Remarks

An artificial reservoir built on the Cle Elum River by the U.S. Bureau of Reclamation. The water is used for irrigation purposes. Recreational use of the lake is heavy. A staff gage has been maintained on the lake by the U.S. Geological Survey since 1906. Floating logs occurred at the southeast end of the Lake. No aquatic macrophytes were observed. The limnology of Cle Elum Lake was described by Goodwin and Westley (1967).

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Lost Lake — Kittitas County

Latitude 47°19'53" Longitude 121°24'36" T21N-R11E-4
Yakima River Basin

Physical data		Cultural data	
Drainage area	2.99 sq mi	Residential development	0 %
Altitude	3089. ft		
Lake area	170. acres	Number of nearshore homes	0
Lake volume	12000. acre-ft		
Mean depth	71. ft	Land use in drainage basin	
Maximum depth	170. ft		
Shoreline length	3.1 mi	Residential urban	0 %
Shoreline configuration	1.7	Residential suburban	0 %
Development of volume	0.43	Agricultural	0 %
Bottom slope	5.4 %	Forest or unproductive	89 %
Basin geology	Igneous	Lake surface	11 %
Inflow	Perennial		
Outflow channel	Absent	Public boat access to lake	--

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1	
Date	7/30/74	
Time	1110	1115
Depth (ft)	3.	144.
Total nitrate (N)	0.01	0.03
Total nitrite (N)	0.00	0.00
Total ammonia (N)	0.01	0.02
Total organic nitrogen (N)	0.02	0.01
Total phosphorus (P)	0.003	0.003
Total orthophosphate (P)	0.000	0.000
Specific conductance (micromhos)	20	20
Water temperature (Deg C)	17.5	4.3
Color (platinum-cobalt units)	0	0
Secchi-disc visibility (ft)	34	
Dissolved oxygen	8.2	10.2

Lake shoreline covered by emersed plants	Little or none
Lake surface covered by emersed plants	None or <1 %

Date	7/30/74
Time	1140
Number of fecal coliform samples	3
Fecal coliform, minimum (col./100 mL)	<1
Fecal coliform, maximum (col./100 mL)	<1
Fecal coliform, mean (col./100 mL)	<1

Remarks

Floating logs occurred at the west end of the lake. No aquatic plants were observed. The DO concentration was high throughout the entire water column. Numerous clear cuts occur near the lake.

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Keechelus Lake — Kittitas County

Latitude 47°19'20" Longitude 121°20'18" T21N-R11E-12
Yakima River Basin

Physical data		Cultural data	
Drainage area	54.7 sq mi	Residential development	0 %
Altitude	2517. ft		
Lake area	2600. acres	Number of nearshore homes	0
Lake volume	250,000. acre-ft		
Mean depth	96. ft	Land use in drainage basin	
Maximum depth	310. ft		
Shoreline length	14. mi	Residential urban	2 %
Shoreline configuration	2.0	Residential suburban	0 %
Development of volume	0.31	Agricultural	0 %
Bottom slope	2.6 %	Forest or unproductive	91 %
Basin geology	Igneous	Lake surface	7 %
Inflow	Perennial		
Outflow channel	Present	Public boat access to lake	Yes

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1		2	
Date	7/30/74		7/30/74	
Time	1245	1250	1400	1405
Depth (ft)	3.	49.	3.	164.
Total nitrate (N)	0.01	0.02	0.01	0.10
Total nitrite (N)	0.00	0.00	0.00	0.00
Total ammonia (N)	0.03	0.03	0.02	0.03
Total organic nitrogen (N)	0.06	0.04	0.04	0.01
Total phosphorus (P)	0.002	0.005	0.003	0.003
Total orthophosphate (P)	0.002	0.001	0.001	0.000
Specific conductance (micromhos)	30	30	30	40
Water temperature (Deg C)	17.3	8.3	18.4	4.6
Color (platinum-cobalt units)	0	0	0	0
Secchi-disc visibility (ft)	28		30	
Dissolved oxygen	8.3	9.8	8.0	9.7

Lake shoreline covered by emersed plants	Little or none
Lake surface covered by emersed plants	None or <1 %

Date	7/30/74
Time	1155
Number of fecal coliform samples	4
Fecal coliform, minimum (col./100 mL)	<1
Fecal coliform, maximum (col./100 mL)	<1
Fecal coliform, mean (col./100 mL)	<1

Remarks

An artificial reservoir built on the Yakima River by the U.S. Bureau of Reclamation. A staff gage has been maintained on the lake by the U.S. Geological Survey since 1906. The water is used for irrigation and for power generation. Road fill occupies the entire eastern shoreline. Floating logs occurred locally along the shoreline. Numerous submerged stumps occurred at the north end of the lake. No aquatic macrophytes were observed. The limnology of Keechelus Lake was described by Goodwin and Westley (1967).

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Kachess Lake — Kittitas County

Latitude 47°15'53" Longitude 121°12'17" T21N-R13E-34
Yakima River Basin

Physical data		Cultural data	
Drainage area	63.6 sq mi	Residential development	5 %
Altitude	2254. ft		
Lake area	4500. acres	Number of nearshore homes	27
Lake volume	550,000. acre-ft		
Mean depth	120. ft	Land use in drainage basin	
Maximum depth	410. ft		
Shoreline length	24. mi	Residential urban	0 %
Shoreline configuration	2.5	Residential suburban	0 %
Development of volume	0.30	Agricultural	0 %
Bottom slope	2.6 %	Forest or unproductive	89 %
Basin geology	Sed./meta.	Lake surface	11 %
Inflow	Perennial		
Outflow channel	Present	Public boat access to lake	Yes

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1		2	
Date	7/30/74		7/31/74	
Time	1400	1405	945	950
Depth (ft)	3.	164.	3.	164.
Total nitrate (N)	0.00	0.03	0.01	0.03
Total nitrite (N)	0.00	0.00	0.00	0.00
Total ammonia (N)	0.03	0.03	0.01	0.03
Total organic nitrogen (N)	0.21	0.07	0.00	0.00
Total phosphorus (P)	0.003	0.001	0.001	0.001
Total orthophosphate (P)	0.000	0.000	0.000	0.000
Specific conductance (micromhos)	40	40	40	40
Water temperature (Deg C)	17.0	4.2	18.2	4.6
Color (platinum-cobalt units)	0	0	0	0
Secchi-disc visibility (ft)	36		36	
Dissolved oxygen	9.4	11.3	8.4	11.1

Lake shoreline covered by emersed plants	Little or none
Lake surface covered by emersed plants	None or <1 %

Date	7/30/74
Time	1430
Number of fecal coliform samples	4
Fecal coliform, minimum (col./100 mL)	<1
Fecal coliform, maximum (col./100 mL)	<1
Fecal coliform, mean (col./100 mL)	<1

Remarks

An artificial reservoir built on the Kachess River by the U.S. Bureau of Reclamation. A staff gage has been maintained on the lake by the U.S. Geological Survey since 1905. The water is used for irrigation purposes. Recreational use of the lake is heavy. No aquatic macrophytes were observed. Submerged stumps occurred at the north end of the lake. The limnology of Kachess Lake was described by Goodwin and Westley (1967).

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Cooper Lake — Kittitas County

Latitude 47°25'16" Longitude 121°09'35" T22N-R13E-1
Yakima River Basin

Physical data		Cultural data	
Drainage area	27.9 sq mi	Residential development	3 %
Altitude	2788. ft		
Lake area	130. acres	Number of nearshore homes	2
Lake volume	2600. acre-ft		
Mean depth	21. ft	Land use in drainage basin	
Maximum depth	49. ft		
Shoreline length	3.1 mi	Residential urban	0 %
Shoreline configuration	2.0	Residential suburban	0 %
Development of volume	0.43	Agricultural	0 %
Bottom slope	1.8 %	Forest or unproductive	99 %
Basin geology	Sed./meta.	Lake surface	1 %
Inflow	Perennial		
Outflow channel	Present	Public boat access to lake	Yes

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1	
Date	8/01/74	
Time	1100	1105
Depth (ft)	3.	46.
Total nitrate (N)	0.02	0.04
Total nitrite (N)	0.00	0.00
Total ammonia (N)	0.02	0.02
Total organic nitrogen (N)	0.13	0.09
Total phosphorus (P)	0.005	0.004
Total orthophosphate (P)	0.001	0.001
Specific conductance (micromhos)	15	15
Water temperature (Deg C)	9.8	6.3
Color (platinum-cobalt units)	0	0
Secchi-disc visibility (ft)	30	
Dissolved oxygen	9.9	10.2
Lake shoreline covered by emersed plants	1- 10 %	
Lake surface covered by emersed plants	None or <1 %	
Date	8/01/74	
Time	1130	
Number of fecal coliform samples	3	
Fecal coliform, minimum (col./100 mL)	<1	
Fecal coliform, maximum (col./100 mL)	<1	
Fecal coliform, mean (col./100 mL)	<1	

Remarks

Floating logs occurred along the shoreline. The DO concentration was high throughout the entire water column. Numerous clear cuts occur near the lake.

TABLE 16.--Physical and chemical characteristics of 10 lakes--Continued

Tucouala Lake — Kittitas County

Latitude 47°30'31" Longitude 121°03'43" T23N-R14E-3
Yakima River Basin

Physical data		Cultural data	
Drainage area	15.8 sq mi	Residential development	0 %
Altitude	3325. ft		
Lake area	36. acres	Number of nearshore homes	0
Lake volume	65. acre-ft		
Mean depth	2. ft	Land use in drainage basin	
Maximum depth	8. ft		
Shoreline length	1.3 mi	Residential urban	0 %
Shoreline configuration	1.5	Residential suburban	0 %
Development of volume	0.62	Agricultural	0 %
Bottom slope	0.57 %	Forest or unproductive	98 %
Basin geology	Sed./meta.	Lake surface	2 %
Inflow	Perennial		
Outflow channel	Present	Public boat access to lake	--

Water-quality data (in mg/L unless otherwise indicated)

Sample site	1	
Date	8/01/74	
Time	940	945
Depth (ft)	3.	144.
Total nitrate (N)	0.01	0.01
Total nitrite (N)	0.00	0.03
Total ammonia (N)	0.02	0.00
Total organic nitrogen (N)	0.09	0.01
Total phosphorus (P)	0.004	0.003
Total orthophosphate (P)	0.002	0.000
Specific conductance (micromhos)	15	20
Water temperature (Deg C)	9.0	4.3
Color (platinum-cobalt units)	0	0
Secchi-disc visibility (ft)	>8	
Dissolved oxygen	9.7	9.6
Lake shoreline covered by emersed plants	11- 25 %	
Lake surface covered by emersed plants	None or 1- 10 %	
Date	8/01/74	
Time	1000	
Number of fecal coliform samples	3	
Fecal coliform, minimum (col./100 mL)	<1	
Fecal coliform, maximum (col./100 mL)	<1	
Fecal coliform, mean (col./100 mL)	<1	

Remarks

An enlargement of the Cle Elum River, originally formed by a rockslide. Most of the lake, except for the original river channel, is shallow and weedy. The bottom was covered with submersed aquatic plants. Numerous submerged loss occurred on the lake bottom.

TABLE 17.--Elevations, areas, and maximum depths of miscellaneous lakes
[From Wolcott (1964)]

Location	Name	Elevation above mean sea level (ft)	Area (acres)	Maximum depth (ft)
Yakima County				
13/18-1K	Unnamed lakes----------	1,080	4.9	--
14/18-36 (NW¼)	Willoughby Pond----------	1,110	1.0	--
36A/B	Unnamed lakes----------	1,100	3.0	--
36G	Unnamed lake----------	1,100	2.4	--
14/19-17E/M	Unnamed reservoir---------	1,150	1.9	--
19R	Unnamed lake----------	1,130	2.1	--
31	Unnamed lake ----------	--	--	--
31A/H	Unnamed ponds----------	1,110	4.6	--
31C	Unnamed lake----------	1,100	8.5	--
31F	--do----------	1,105	4.0	--
31G	Unnamed lakes ----------	1,105	1.8	--
31L/P	Unnamed lake ----------	1,100	22.3	--
31L/P	--do----------	1,100	9.8	--
31L/P	--do----------	1,100	1.3	--
31P	--do----------	1,100	1.0	--
14/21-32D	Pleasant Valley Reservoir (no longer exists, used for irrigation)			
15/16-21K/L	Mud Lake----------	2,500	4.0	15
15/17-2	Wenas Lake ----------			
Kittitas County				
17/14-12J	Unnamed lake----------	4,000	3.0	--
17/15-3A	Manastash Lake ----------			
5G	Unnamed lakes----------	5,100	1.0	--
5K/Q	Unnamed lake----------	4,900	1.0	--
5P	Milk Lake----------	4,700	3.0	19
8E	Divils Slide Lake---------	4,700	1.5	14
17/16-35G	Unnamed pond----------	3,100	1.0	--
35H	Unnamed lake----------	2,828	1.0	--
17/18-3B/G	Unnamed ponds----------	1,510	1.5	--
10G	--do----------	1,500	1.5	--
10M	--do----------	1,560	1.7	--
11M	--do----------	1,490	.9	--
13L	Tjossem Pond----------	1,460	8.7	3
13	Unnamed ponds----------	1,460	1.5	--
13Q/R	Unnamed lakes----------	1,455	9.2	10
14C	--do----------	1,480	3.2	--
15A	--do----------	1,490	2.8	--
24B	Unnamed pond----------	1,455	1.7	shallow
24H	Wilson Pond----------	1,450	1.6	--
24J/R	Kittitas Gravel Pits------	1,445	4.0	shallow
17/19-2D	Kittitas Pond----------	1,660	2.0	8
20N	Unnamed lake----------	1,460	1.4	--
30E/M	Unnamed pond----------	1,435	2.3	--
18/14-12L/M	Taneum Lake----------	5,266	3.1	--
18/15-27N	Lost Lake----------	4,820	9.8	20
30K	Shoestring Lake----------	5,650	1.1	shallow
2B	Indian Lake----------	1,750	4.4	10
2R	Unnamed lake	1,625	1.8	--
18/18-17G	Unnamed lake----------	1,650	1.4	--
18D/E	Unnamed lakes----------	1,600	2.8	--
18G/K	Unnamed lake----------	1,590	2.2	--

TABLE 17.--Elevations, areas, and maximum depths of miscellaneous lakes--Con.
[From Wolcott (1964)]

Location	Name	Elevation above mean sea level (ft)	Area (acres)	Maximum depth (ft)
Kittitas County--Continued				
18/18-19D/E	Unnamed lakes	1,580	4.6	--
20M	--do	1,570	1.0	--
20P	--do	1,565	1.0	--
24A	--do	1,800	1.3	--
24C	--do	1,780	2.0	--
29(SE¼)	--do	1,550	2.4	--
33(NW¼)	--do	1,545	4.6	--
33K/Q	Unnamed lakes	1,530	1.0	--
33L	Ellensburg Sportsmens Pond	1,540	.7	8
33R	Unnamed lake	1,525	1.0	--
34N	--do	1,525	1.0	--
18/19-18(S½)	Rogers Pond (private pond)			
19D	Unnamed lake	1,820	1.1	--
30N	--do	1,680	1.0	--
33P	Thelens Pond	1,650	1.5	15
33Q	Naneum Pond	1,655	1.5	10
19/15-26R	Unnamed lake	3,600	1.0	--
32G	Intermittent lake	3,460	3.0	shallow
19/16-2A	Cabin Lake	2,400	5.3	Do.
2G/K	Little Lake	2,350	3.1	--
4A/H	Teanaway Junction Pond	1,820	5.0	6
13G/H	Unnamed lake	2,490	2.9	--
23J	--do	2,240	1	6.5
19/17-11P	Unnamed reservoir	2,428	.9	--
19/18-20G	Reimer Pond	2,300	4.0	19
20/11-13C	Unnamed lake	3,980	1.0	shallow
20/13-11F	Easton Lake			
12M/N	Unnamed lake	2,150	4.6	--
12N/P	Easton Pond	2,150	12.7	15
33H	Unnamed lake	4,040	2.1	--
20/14-10A	Cle Elum Lake			
21H/S	Old Cle Elum Hatchery Pond	2,080	2.4	--
20/15-8M	Unnamed lake	2,760	1.0	--
27(SW¼)	Cle Elum Ponds	1,950	20.0	8
30Q	Bullfrog Pond	1,980	2.9	10
31A/H	Unnamed lake	1,980	4.0	--
32E	--do	1,980	2.0	--
33J	--do	1,930	4.8	--
33K	--do	1,930	2.4	--
36C	Unnamed ponds	1,880	2.6	shallow
20/16-4Q	Unnamed lake	2,330	1.9	--
29Q	--do	1,900	1.5	--
35J/R	Big Lake	2,380	4.2	shallow
20/17-13K	Unnamed lake	3,600	.9	--
15P	--do	2,500	1.2	--
32P	--do	2,240	1.4	--
20/18-19G	Unnamed lake	3,980	1.0	--
21/11-4	Lost Lake			
5K	Twilight Lake	3,575	2.4	--
10F	Fireweek Lake	4,055	2.4	--
12	Keechelus			
16D	Unnamed lake	3,350	1.0	--
17F	--do	4,140	1.0	--
20H	Stirrup Lake	3,550	9.1	20
23G	Unnamed lake	3,642	1.4	--

TABLE 17.--Elevations, areas, and maximum depths of miscellaneous lakes--Con.
[From Wolcott (1964)]

Location	Name	Elevation above mean sea level (ft)	Area (acres)	Maximum depth (ft)
Kittitas County--Continued				
21/12-14K	Swamp Lake	2,420	45.0	15
14L/P	Unnamed lakes	2,380	2.6	--
15(NW¼)	--do	2,450	60.0	shallow
23F	Unnamed lake	2,400	1.1	--
23L	--do	2,400	2.9	shallow
36G	Unnamed lakes	2,280	4.0	--
21/13-25F	Unnamed lakes	4,160	1.5	--
28D/E	Unnamed lake	2,300	4.4	--
28L	--do	2,300	2.5	--
28M	--do	2,300	1.0	--
31P	--do	2,250	5.0	shallow
34	Kachess Lake			
21/14-5M	Unnamed lake	2,450	10.2	Do.
21/16-12D/E	--do	3,870	10.2	--
12H/J	--do	4,410	2.6	--
18G	Camp Lake	2,730	5.2	--
21/17-7E	Unnamed lake	4,580	1.3	--
22/11-1J/R	Rampart Lakes	5,100	13.8	30
3A	Kendall Peak Lakes	4,380	2.1	--
5R	Beaver Lake	3,450	.6	--
12H/J	Beaver Puss Lakes	5,300	2.0	--
12K/L	Gold Lake	4,780	2.8	20
13A	Lillian Lake	4,800	17.1	60
13A	Laura Lake	4410	3.6	shallow
13J	Porcupine Lake	4,620	.5	Do.
15B	Mardee Lake	2,561	11.0	15
16M	Hyak Lake	3,500	1.7	shallow
17A	West Pond	3,830	.5	--
20B	Frog Lake	3,550	.7	--
26J	Resort Creek Pond	3,400	2.3	--
22/11-1J/R				
29L	Twin Lakes - lower	3,090	4.2	8
29M	Twin Lakes - upper	3,110	1.6	15
31J/K	Unnamed lake	4,040	1.4	--
32F	Cottonwood lake - upper	4,040	1.4	--
32K	Cottonwood Lake	3,900	8.3	--
32N/P	Mirror Lake	4,195	29.0	"deep"
22/12-3B	Lila Lake	5,180	2.6	30
10C/F	Rachel Lake	4,660	27.3	--
10K	Box Canyon Lake	4,500	1.6	--
12A	Hibox Lake	4,620	2.7	--
22D	Twin Lakes	4,650	1.8	10
22N	Margaret Lake	4,790	4.1	30
22N	Snake Lake	4,820	.5	shallow
22P	Unnamed lake	4,460	.7	--
22P/Q	Stonesthrow Lake	4,410	1.7	--
27A	Swan Lake	4,040	7.4	20
27F/G	Rock Rabbit Lakes, lower	4,150	1.3	--
27G/K	Rock Rabit Lakes, upper	4,180	3.4	--
35Q	Baker Lake	4,420	4.9	--
22/13-1	Cooper Lake			
24B	Little Joe Lake	4,690	4.9	--
27K	Thorp Lake	4,670	10.4	--
34E	Portage Lake	4,620	1.7	--
22/15-17G	Unnamed lake	5,260	1.0	--
23/11-23Q	Ridge Lake	5,220	2.3	12
25C	Alaska Lake	4,230	35.3	70
35N	Kendall Peak Lakes, middle	4,460	3.8	--
35N/P	Kendall Peak Lakes, upper	4,740	6.6	--

TABLE 17.--Elevations, areas, and maximum depths of miscellaneous lakes--Con.
[From Wolcott (1964)]

Location	Name	Elevation above mean sea level (ft)	Area (acres)	Maximum depth (ft)
Kittitas County--Continued				
23/12-13J	Lemah Lake	3,900	0.5	shallow
14K/L	Chikamin Lake	5,785	18.3	--
14Q	Unnamed lake	5,700	1.7	--
22B	--do	5,100	.2	--
22M	Joe Lake	4,624	29.7	--
23J	Glacier Lake	4,750	21.2	30+
24R	Spectacle Lake	4,239	80.9	"deep"
25M	Unnamed lake	4,830	3.2	--
25N	Parks Lakes, lower	4,510	9.8	--
26R	Parks Lakes, upper	4,700	10.8	--
34(S½)	Unnamed lakes	5,500	2.1	--
34A/B	Unnamed lake	4,260	1.3	--
23/13-6H	Summit Chief Lake	6,500	6.5	--
8(NE¼)	Unnamed lakes	5,500	2.7	--
8(NW¼)	--do	5,550	1.6	--
9M	Escondido Lake	4,630	3.6	14
12N	Waptus Lake	2,980	246.0	"deep"
20A/B	Pete Lake	2,980	37.1	"deep"
20E/M	Unnamed lake	3,180	2.6	--
20N	--do	3,180	3.8	--
24L/P	Unnamed lakes	5,040	1.0	--
26A/H	Unnamed lake	4,990	1.6	--
32M	Three Queens Lake	5,390	1.5	shallow
33Q/R	Unnamed lake	3,000	1.5	--
36F	Diamond Lake	4,950	5.1	30+
36F	Unnamed lake	4,890	1.0	--
23/14-3	Tucquala Lake			
3N/P	Unnamed lake	4,500	3.5	--
8R	--do	4,650	2.7	--
10E/M	Moonshine Lake	5,460	2.1	8
20H	Goat Lake	4,880	4.8	shallow
22E/F	Michael Lake	5,100	17.7	--
22Q	Unnamed lake	6,180	1.3	10
27C/F	--do	5,500	1.4	--
27F/L	Opal Lake	5,990	1.1	12
28G/H	Terence Lake	5,550	14.3	35
23/15-22L	Ann lake	6,156	3.0	shallow
33B/G	Gallagher Head Lake	5,595	1.5	25
24/13-21G	Rowena Lake	4,850	33.6	35+
21P/Q	Rebecca Lake	4,750	12.8	50
23P	Venus Lake	5,600	56.6	--
24(SW¼)	Circle Lake	6,100	48.7	100+
25N	Vicente Lake	5,700	11.5	20+
26(W½)	Spade Lake	5,050	122.3	100+
26N	Unnamed lake	5,200	2.0	20
27L/P	Shovel Lake	4,000	27.2	35+
27R	Unnamed lake	5,000	1.0	shallow
31H	--do	6,500	1.5	--
32A/B	Ivanhoe Lake	4,700	20.6	"deep"
32N	Unnamed lake	5,500	1.0	--
36M	Deadhead Lake	5,300	11.4	--
24/14-8B/C	Tuck Lake	5,250	16.4	40
8F	Tucks Pot	5,200	1.5	--
9(NW¼)	Robin Lakes	6,150	45.0	"deep"
9Q	Unnamed lake	6,600	1.0	--
16B	--do	6,600	1.5	--
19E	--do	5,500	1.0	--
19F	Peggys Pond	5,600	5.0	--
19R	Unnamed lake	5,300	2.0	--
20C	Hyas Lake	3,550	124.0	--
29Q	Squaw Lake	4,850	12.4	20
30(NW¼)	Deep Lake	4,450	52.9	--
30P	Deer Lakes	4,600	5.0	--
32B/C	Unnamed lake	5,500	1.0	--
33E	Squitch Lake	4,700	3.0	shallow

1 Data from Dion and others, 1976, see table 15.

TABLE 18.--Monthly and annual mean stream discharges

STATION 12474500 YAKIMA RIVER NEAR MARTIN, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1904	*	*	*	*	155.00	159.00	498.00	730.00	785.00	339.00	100.00	60.30	*
1905	68.90	227.00	339.00	143.00	124.00	521.00	419.00	603.00	534.00	169.00	79.70	80.90	277.00
1906	430.00	191.00	173.00	250.00	255.00	200.00	581.00	682.00	416.00	177.00	67.30	68.20	291.00
1907	*	*	*	*	*	*	*	885.00	548.00	168.00	172.00	130.00	*
1908	146.00	153.00	348.00	265.00	147.00	319.00	466.00	695.00	884.00	463.00	260.00	190.00	362.00
1909	88.70	117.00	46.50	209.00	162.00	146.00	305.00	664.00	942.00	308.00	228.00	204.00	285.00
1910	121.00	1007.0	375 00	179.00	167.00	553.00	623.00	871.00	408.00	138.00	144.00	178.00	397.00
1911	419.00	511.00	290.00	130.00	103.00	153.00	250.00	539.00	636.00	293.00	199.00	20.00	300.00
1912	3.00	827.00	105.00	298.00	253.00	122.00	256.00	917.00	614.00	173.00	248.00	151.00	332.00
1913	127.00	276.00	48.70	209.00	254.00	236.00	287.00	773.00	1048.0	470.00	86.10	37.80	321.00
1914	388.00	204.00	165.00	334.00	144.00	395.00	509.00	1011.0	527.00	202.00	106.00	104.00	342.00
1915	294.00	549.00	172.00	116.00	86.50	551.00	667.00	200.00	73.30	80.80	52.90	49.20	241.00
1916	136.00	605.00	281.00	196.00	207.00	447.00	338.00	856.00	1085.0	1089.0	176.00	4.03	452.00
1917	3.35	272.00	456.00	112.00	1.00	135.00	196.00	515.00	820.00	912.00	174.00	190.00	318.00
1918	0.23	741.00	799.00	1267.0	8.07	4.58	158.00	153.00	606.00	214.00	1446.0	237.00	474.00
1919	123.00	490.00	e36.00	124.00	212.00	27.70	14.90	451.00	35e.00	231.00	433.00	804.00	325.00
1920	530.00	142.00	4.00	7.97	20.40	22.30	25.00	29.40	273.00	1479.0	1039.0	822.00	369.00
1921	240.00	2.00	2.00	3.97	2.29	483.00	109.00	379.00	617.00	777.00	1219.0	486.00	364.00
1922	213.00	3.00	3.13	3.00	3.00	3.00	154.00	308.00	639.00	926.00	1478.0	271.00	337.00
1923	20.10	0.00	0.00	5.97	18.40	20.70	30.10	113.00	666.00	446.00	1630.0	876.00	321.00
1924	29.90	15.80	22.50	25.40	36.00	32.70	38.60	193.00	360.00	733.00	1377.0	583.00	291.00
1925	68.70	13.90	20.20	24.70	29.10	31.80	35.00	551.00	440.00	900.00	1069.0	529.00	312.00
1926	90.60	17.00	32.80	22.30	2.00	2.26	3.00	342.00	883.00	957.00	584.00	101.00	255.00
1927	45.80	27.10	31.70	35.90	38.00	42.70	52.00	73.50	620.00	570.00	826.00	795.00	264.00
1928	363.00	23.40	640.00	289.00	210.00	47.60	52.90	231.00	343.00	906.00	1465.0	249.00	405.00
1929	21.60	14.00	16.00	21.80	28.40	14.90	3.00	3.77	49.90	1044.0	907.00	668.00	235.00
1930	124.00	13.00	5.00	5.64	7.29	11.10	13.40	15.50	55.90	933.00	860.00	536.00	217.00
1931	57.80	1.00	1.00	1.00	1.00	1.00	25.80	80.40	473.00	1002.0	1002.0	266.00	245.00
1932	36.60	1.00	1.00	1.00	1.07	1.16	2.17	561.00	898.00	646.00	1589.0	787.00	379.00
1933	37.10	1.10	1.00	2.19	55.90	142.00	183.00	486.00	1016.0	671.00	986.00	683.00	357.00
1934	98.70	410.00	1110.0	323.00	581.00	4.00	534.00	467.00	454.00	449.00	1092.0	127.00	513.00
1935	1.32	2.00	188.00	481.00	522.00	51.00	211.00	240.00	354.00	649.00	760.00	661.00	346.00
1936	241.00	3.13	22.00	6.00	6.21	7.00	7.00	630.00	831.00	920.00	798.00	348.00	320.00
1937	2.00	114.00	11.50	10.00	10.00	11.50	13.30	203.00	636.00	845.00	679.00	287.00	237.00
1938	100.00	6.73	14.90	301.00	201.00	26.50	186.00	670.00	479.00	594.00	610.00	355.00	297.00
1939	19.60	7.13	8.26	9.90	8.86	118.00	604.00	601.00	490.00	754.00	572.00	539.00	312.00
1940	273.00	6.63	3.06	3.00	3.03	3.74	149.00	666.00	614.00	771.00	670.00	382.00	297.00
1941	156.00	10.30	10.20	10.00	10.00	11.00	45.80	401.00	431.00	720.00	458.00	237.00	210.00
1942	192.00	1.00	1.00	1.00	1.00	1.00	27.30	264.00	360.00	626.00	704.00	458.00	222.00
1943	192.00	1.00	1.00	1.00	1.00	1.00	27.30	264.00	360.00	626.00	704.00	458.00	222.00
1944	333.00	4.53	5.71	7.00	7.07	8.32	9.47	14.10	474.00	537.00	855.00	609.00	240.00
1945	124.00	3.07	4.29	6.61	9.00	10.00	123.00	381.00	776.00	792.00	792.00	635.00	306.00
1946	206.00	0.60	0.85	3.11	6.53	7.61	73.80	500.00	960.00	620.00	624.00	549.00	297.00
1947	8.39	271.00	472.00	84.70	8.06	122.00	692.00	751.00	513.00	828.00	772.00	473.00	419.00
1948	165.00	72.90	232.00	3.78	91.80	91.60	61.20	468.00	1209.0	513.00	574.00	897.00	364.00
1949	375.00	52.20	400.00	175.00	63.70	155.00	519.00	380.00	655.00	79.30	11.10	395.00	272.00
1950	549.00	e34.00	780.00	287.00	302.00	453.00	434.00	335.00	172.00	890.00	414.00	700.00	502.00
1951	569.00	442.00	381.00	630.00	476.00	335.00	12.10	77.10	537.00	435.00	677.00	758.00	444.00
1952	337.00	12.30	77.10	99.40	115.00	50.80	114.00	321.00	372.00	716.00	523.00	491.00	270.00
1953	274.00	6.45	5.14	7.82	174.00	126.00	481.00	209.00	501.00	630.00	635.00	473.00	294.00
1954	373.00	10.50	95.50	775.00	280.00	104.00	307.00	224.00	460.00	855.00	701.00	922.00	427.00
1955	573.00	3.22	4.66	5.39	6.92	7.56	225.00	315.00	594.00	324.00	897.00	722.00	350.00
1956	262.00	269.00	e56.00	375.00	161.00	340.00	200.00	230.00	729.00	969.00	1002.0	284.00	460.00

TABLE 18.--Continued

STATION 12474500 YAKIMA RIVER NEAR MARTIN, WASH.--Continued

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1957	110.00	188.00	387.00	194.00	10.30	8.30	75.10	918.00	658.00	1002.0	842.00	432.00	406.00
1958	17.90	5.69	6.23	8.04	10.80	13.00	19.60	358.00	544.00	832.00	896.00	443.00	265.00
1959	2.91	5.57	8.62	153.00	650.00	273.00	66.70	712.00	678.00	609.00	801.00	519.00	372.00
1 60	342.00	497.00	891.00	528.00	13.70	7.06	9.15	520.00	507.00	739.00	974.00	629.00	475.00
1961	164.00	35.70	20.00	24.00	274.00	487.00	215.00	373.00	733.00	586.00	779.00	469.00	347.00
1962	133.00	7.25	82.60	483.00	185.00	9.79	46.00	281.00	423.00	563.00	896.00	668.00	316.00
1963	131.00	6.41	271.00	227.00	37.30	39.00	40.60	418.00	387.00	888.00	1059.0	545.00	341.00
1964	34.70	10.80	15.10	20.50	23.70	50.80	275.00	220.00	324.00	745.00	618.00	620.00	247.00
1965	449.00	151.00	373.00	410.00	379.00	531.00	44.70	199.00	488.00	358.00	831.00	887.00	426.00
1966	296.00	4.22	4.66	5.36	6.28	6.75	11.10	532.00	346.00	372.00	897.00	750.00	271.00
1967	314.00	2.81	4.98	9.14	257.00	58.20	472.00	170.00	522.00	441.00	722.00	833.00	316.00
1968	207.00	48.50	248.00	280.00	179.00	487.00	368.00	446.00	489.00	707.00	772.00	251.00	376.00
1969	2.30	52.50	267.00	253.00	249.00	61.60	381.00	253.00	803.00	825.00	1115.0	737.00	417.00
1970	43.00	0.56	0.58	0.50	0.54	0.83	2.28	9.74	510.00	614.00	649.00	574.00	201.00
1971	335.00	50.20	60.10	43.70	40.60	177.00	664.00	382.00	743.00	564.00	485.00	822.00	369.00
1972	406.00	3.91	2.53	10.50	387.00	1195.0	755.00	730.00	880.00	755.00	1000.0	837.00	581.00
1973	179.00	65.40	60.10	58.80	50.60	12.50	90.30	580.00	623.00	561.00	927.00	313.00	296.00
1974	2.03	0.55	0.86	0.52	0.62	1.35	434.00	826.00	818.00	714.00	729.00	494.00	337.00
1975	470.00	78.70	22.50	286.00	765.00	168.00	146.00	411.00	504.00	901.00	884.00	313.00	411.00
1976	138.00	17.10	894.00	761.00	138.00	85.70	731.00	323.00	750.00	929.00	1397.0	397.00	550.00
1977	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	897.00	1483.0	86.40	209.00
1978	1.13	3.97	9.42	3.65	3.75	231.00	552.00	500.00	567.00	663.00	799.00	494.00	321.00

* INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12475000 CABIN CREEK NEAR EASTON, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1909	*	*	*	*	*	*	*	*	272.00	47.10	12.60	8.77	*
1910	20.10	190.00	132.00	39.50	21.30	622.00	414.00	343.00	64.80	15.30	8.65	5.70	157.00
1911	41.90	261.00	66.40	84.90	34.00	44.50	64.90	207.00	169.00	46.40	10.50	31.00	88.40

* INDICATES A NO-VALUE MONTH

STATION 12476000 KACHESS RIVER NEAR EASTON, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1904	*	*	*	*	153.00	227.00	473.00	578.00	745.00	305.00	113.00	147.00	*
1905	138.00	141.00	376.00	179.00	98.80	427.00	320.00	324.00	451.00	147.00	146.00	203.00	247.00
1906	257.00	192.00	161.00	173.00	263.00	206.00	434.00	401.00	325.00	211.00	131.00	92.80	237.00
1907	168.00	695.00	337.00	202.00	303.00	229.00	301.00	780.00	368.00	143.00	123.00	170.00	318.00
1908	111.00	114.00	226.00	185.00	92.50	366.00	432.00	486.00	713.00	393.00	193.00	167.00	290.00
1909	69.50	119.00	140.00	134.00	116.00	121.00	232.00	526.00	612.00	192.00	230.00	145.00	220.00
1910	86.90	674.00	618.00	192.00	206.00	497.00	614.00	855.00	294.00	80.00	248.00	30.70	367.00
1911	193.00	467.00	277.00	194.00	122.00	125.00	284.00	516.00	432.00	219.00	211.00	467.00	292.00
1912	0.00	201.00	620.00	340.00	530.00	399.00	428.00	239.00	562.00	203.00	465.00	186.00	347.00
1913	123.00	199.00	587.00	409.00	277.00	216.00	197.00	483.00	369.00	88.70	119.00	286.00	280.00
1914	790.00	212.00	219.00	155.00	150.00	6.19	184.00	334.00	275.00	400.00	795.00	559.00	342.00
1915	224.00	202.00	154.00	18.00	0.00	1.19	17.40	3.19	404.00	840.00	257.00	88.20	186.00
1916	30.90	0.00	0.00	0.00	0.00	37.90	204.00	20.50	306.00	466.00	491.00	768.00	193.00
1917	455.00	139.00	0.00	0.00	0.00	0.00	0.00	256.00	999.00	516.00	993.00	750.00	344.00
1918	465.00	61.30	0.32	633.00	0.00	0.00	107.00	541.00	500.00	834.00	257.00	1045.0	373.00
1919	244.00	0.00	0.00	0.00	216.00	337.00	360.00	471.00	24.90	408.00	1465.0	125.00	307.00
1920	43.50	217.00	137.00	0.00	0.00	0.00	0.00	0.00	38.10	279.00	1281.0	902.00	242.00
1921	21.90	58.70	0.00	0.00	34.00	606.00	0.00	456.00	576.00	0.00	1173.0	1105.0	337.00
1922	65.20	1.00	1.00	2.00	2.00	2.00	3.00	447.00	341.00	1321.0	1021.0	1059.0	358.00
1923	217.00	1.00	1.00	2.00	2.00	2.00	3.00	3.00	3.00	727.00	982.00	937.00	242.00
1924	17.20	1.00	1.00	2.00	2.00	3.00	3.00	4.00	683.00	1635.0	872.00	619.00	322.0
1925	24.90	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	180.00	1181.0	1099.0	209.0
1926	7.55	1.20	1.00	1.00	1.00	2.55	5.00	4.16	840.00	1517.0	908.00	246.00	297.0
1927	1.00	1.00	1.00	1.00	1.00	1.00	6.53	6.48	1.77	335.00	810.00	765.00	162.0
1928	286.00	0.00	540.00	488.00	204.00	137.00	109.00	109.00	173.00	769.00	911.00	292.00	338.00
1929	1.48	0.00	0.00	0.00	0.00	2.74	83.30	11.90	244.00	876.00	451.00	39.40	144.00
1930	288.00	1.00	1.00	1.00	1.89	2.97	3.67	265.00	633.00	1524.0	757.00	505.00	335.00
1931	130.00	1.00	1.00	1.00	1.00	1.00	1.57	0.19	298.00	1211.0	792.00	416.00	240.00
1932	29.70	2.13	0.00	0.00	0.28	2.10	5.57	3.23	89.10	833.00	727.00	717.00	202.00
1933	328.00	2.47	8.74	482.00	266.00	258.00	286.00	504.00	169.00	427.00	1008.0	1183.0	411.00
1934	614.00	2.97	372.00	664.00	188.00	183.00	931.00	142.00	307.00	528.00	427.00	962.00	444.00
1935	204.00	2.30	10.60	340.00	514.00	69.00	104.00	608.00	652.00	957.00	502.00	170.00	344.00
1936	70.20	14.40	0.71	1.32	1.07	39.70	479.00	984.00	754.00	740.00	63.80	344.00	292.00
1937	313.00	0.07	0.00	0.00	2.04	1.42	3.43	1.61	503.00	907.00	594.00	315.00	222.00
1938	132.00	4.63	2.74	2.42	1.00	2.16	4.80	226.00	417.00	604.00	585.00	738.00	232.00
1939	276.00	2.57	4.32	3.68	2.14	217.00	175.00	3.26	266.00	969.00	1050.0	365.00	281.00
1940	144.00	2.03	1.43	1.00	1.93	3.00	1.67	68.50	437.00	712.00	644.00	590.00	218.00

TABLE 18.--Continued

STATION 12476000 KACHESS RIVER NEAR EASTON, WASH.--Continued

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1941	52.50	0.67	0.94	1.00	1.00	1.26	41.00	403.00	320.00	883.00	369.00	127.00	186.00
1942	141.00	6.60	0.84	0.65	1.00	1.13	1.17	0.42	72.40	802.00	1055.0	571.00	224.00
1943	155.00	0.47	0.97	0.71	1.32	2.42	5.37	2.06	222.00	470.00	533.00	458.00	155.00
1944	103.00	0.00	0.23	1.00	1.10	2.23	164.00	574.00	368.00	779.00	1263.0	592.00	323.00
1945	76.10	0.50	1.81	2.84	1.46	1.19	2.70	1.06	178.00	808.00	373.00	101.00	131.00
1946	8.04	3.29	3.21	2.99	2.05	3.63	270.00	1034.0	545.00	538.00	835.00	496.00	314.00
1947	318.00	83.60	54.10	3.59	3.96	91.50	396.00	509.00	445.00	449.00	557.00	613.00	295.00
1948	85.60	297.00	246.00	3.00	2.55	2.87	86.40	664.00	884.00	885.00	652.00	23.90	321.00
1949	156.00	4.03	224.00	184.00	84.90	215.00	216.00	742.00	674.00	990.00	1075.0	411.00	418.00
1950	113.00	4.97	4.42	2.93	2.01	216.00	530.00	248.00	584.00	682.00	1046.0	704.00	346.00
1951	23.70	4.35	437.00	341.00	422.00	301.00	84.60	348.00	590.00	1222.0	677.00	0.30	373.00
1952	0.31	1.04	1.26	0.76	1.25	1.73	6.06	284.00	646.00	897.00	942.00	540.00	278.00
1953	48.60	1.01	0.55	4.00	3.74	2.33	3.01	2.55	486.00	596.00	781.00	623.00	214.00
1954	61.70	4.21	6.39	451.00	196.00	100.00	330.00	176.00	702.00	754.00	927.00	264.00	332.00
1955	80.80	79.40	80.30	25.90	80.30	80.20	358.00	139.00	790.00	649.00	841.00	581.00	316.00
1956	13.10	239.00	625.00	455.00	221.00	343.00	151.00	264.00	702.00	682.00	* 627.00	604.00	416.00
1957	220.00	2.24	356.00	219.00	4.83	5.66	19.50	849.00	537.00	734.00	806.00	735.00	378.00
1958	218.00	15.00	2.95	3.08	5.02	3.23	4.05	102.00	411.00	556.00	644.00	648.00	219.00
1959	88.10	5.53	4.70	172.00	757.00	12.10	130.00	369.00	591.00	780.00	615.00	325.00	318.00
1960	58.90	398.00	989.00	405.00	5.94	6.59	55.50	592.00	415.00	887.00	612.00	361.00	402.00
1961	160.00	4.04	2.66	9.32	381.00	514.00	224.00	341.00	579.00	773.00	767.00	463.00	352.00
1962	138.00	3.25	5.87	7.16	185.00	65.60	67.70	304.00	406.00	765.00	855.00	468.00	274.00
1963	93.40	10.90	11.30	9.25	10.00	11.70	116.00	406.00	683.00	835.00	773.00	332.00	276.00
1964	162.00	3.91	2.70	2.93	3.24	4.50	8.60	110.00	481.00	717.00	814.00	546.00	239.00
1965	214.00	3.06	108.00	303.00	445.00	325.00	58.00	352.00	439.00	819.00	1039.0	59.00	348.00
1966	4.27	2.98	0.72	1.04	1.10	2.58	115.00	238.00	497.00	708.00	781.00	219.00	216.00
1967	208.00	4.56	5.40	7.05	119.00	91.70	537.00	158.00	155.00	751.00	787.00	216.00	255.00
1968	221.00	52.90	111.00	274.00	175.00	501.00	392.00	311.00	427.00	607.00	317.00	543.00	328.00
1969	298.00	10.20	7.28	16.40	289.00	186.00	286.00	237.00	700.00	625.00	284.00	192.00	260.00
1970	220.00	179.00	242.00	34.40	94.20	23.60	117.00	316.00	379.00	665.00	858.00	428.00	298.00
1971	60.20	0.53	0.63	4.18	19.60	344.00	647.00	183.00	639.00	481.00	823.00	235.00	288.00
1972	247.00	486.00	366.00	191.00	134.00	188.00	1283.0	351.00	645.00	333.00	230.00	205.00	387.00
1973	583.00	181.00	332.00	440.00	56.10	135.00	417.00	685.00	399.00	1260.0	793.00	285.00	469.00
1974	0.96	1.28	3.29	5.60	3.51	3.11	5.77	4.46	704.00	847.00	1663.0	862.00	344.00
1975	10.90	2.36	4.49	4.11	2.72	3.05	5.66	586.00	266.00	416.00	465.00	764.00	212.00
1976	279.00	3.36	727.00	477.00	313.00	92.80	183.00	734.00	332.00	392.00	232.00	819.00	383.00
1977	433.00	46.00	39.20	5.47	5.22	6.25	31.00	478.00	662.00	392.00	343.00	1306.0	313.00
1978	2.37	6.20	7.10	2.19	2.00	3.16	56.90	463.00	546.00	498.00	432.00	344.00	198.00

* INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12477000 YAKIMA RIVER AT EASTON, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1910	*	*	*	*	*	1739.0	2028.0	2485.0	913.00	294.00	436.00	250.00	*
1911	753.00	1284.0	646.00	500.00	268.00	396.00	828.00	1328.0	1135.0	568.00	522.00	583.00	736.00
1912	50.70	1173.0	1045.0	800.00	344.00	536.00	1029.0	1901.0	1610.0	519.00	879.00	402.00	898.00
1913	309.00	687.00	727.00	751.00	783.00	653.00	886.00	1850.0	1810.0	722.00	290.00	348.00	818.00
1914	1211.0	540.00	478.00	607.00	388.00	636.00	959.00	1609.0	909.00	599.00	920.00	703.00	800.00
1915	484.00	871.00	354.00	160.00	108.00	670.00	1058.0	309.00	536.00	968.00	316.00	97.30	496.00
1941	*	*	*	101.00	99.10	148.00	239.00	170.00	98.20	600.00	51.80	79.90	*
1942	277.00	214.00	272.00	85.30	95.90	123.00	254.00	79.50	69.00	540.00	965.00	326.00	277.00
1943	108.00	188.00	307.00	224.00	103.00	170.00	881.00	882.00	1386.0	359.00	591.00	583.00	482.00
1944	299.00	67.60	259.00	81.30	133.00	194.00	360.00	214.00	121.00	358.00	1419.0	640.00	347.00
1945	52.00	103.00	91.50	501.00	309.00	120.00	200.00	337.00	300.00	666.00	183.00	126.00	249.00
1946	111.00	210.00	204.00	235.00	102.00	230.00	855.00	2006.0	1333.0	317.00	428.00	564.00	551.00
1947	243.00	425.00	1218.0	410.00	335.00	608.00	1295.0	878.00	347.00	303.00	591.00	635.00	609.00
1948	355.00	926.00	823.00	184.00	271.00	341.00	540.00	1973.0	2226.0	463.00	371.00	213.00	729.00
1949	512.00	238.00	801.00	482.00	316.00	652.00	1426.0	1787.0	1089.0	117.00	240.00	159.00	654.00
1950	634.00	1126.0	1247.0	529.00	497.00	1072.0	1428.0	1004.0	1229.0	887.00	480.00	635.00	898.00
1951	596.00	1084.0	1413.0	1360.0	1550.0	922.00	492.00	713.00	502.00	790.00	283.00	90.50	813.00
1952	219.00	204.00	229.00	176.00	238.00	190.00	297.00	425.00	238.00	663.00	442.00	172.00	296.00
1953	132.00	23.50	39.30	421.00	688.00	325.00	620.00	225.00	664.00	246.00	403.00	247.00	333.00
1954	335.00	113.00	699.00	1451.0	732.00	403.00	825.00	394.00	980.00	851.00	620.00	529.00	661.00
1955	409.00	236.00	205.00	*	*	*	*	*	*	*	*	*	*

* INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12479000 CLE ELUM RIVER NEAR ROSYLN, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1904	893.00	743.00	1023.0	567.00	367.00	367.00	1971.0	2629.0	2676.0	1509.0	517.00	250.00	1127.00
1905	234.00	391.00	527.00	269.00	211.00	1155.0	1013.0	1450.0	1841.0	733.00	438.00	314.00	717.00
1906	887.00	453.00	352.00	401.00	644.00	494.00	1804.0	2023.0	1228.0	675.00	318.00	289.00	797.00
1907	932.00	2650.0	522.00	426.00	726.00	509.00	1068.0	3213.0	1877.0	766.00	349.00	292.00	1102.00
1908	170.00	228.00	489.00	351.00	216.00	605.00	1426.0	2242.0	2809.0	1746.0	544.00	339.00	931.00
1909	203.00	335.00	282.00	248.00	224.00	321.00	938.00	2001.0	2744.0	1018.0	569.00	270.00	764.00
1910	267.00	2159.0	1226.0	553.00	436.00	1219.0	2058.0	2700.0	1412.0	735.00	610.00	206.00	1134.00
1911	753.00	1440.0	702.00	238.00	157.00	385.00	1103.0	1640.0	2130.0	851.00	484.00	127.00	836.00
1912	417.00	671.00	467.00	471.00	469.00	304.00	1093.0	2849.0	2213.0	737.00	454.00	453.00	883.00
1913	166.00	339.00	173.00	380.00	470.00	613.00	925.00	2576.0	3332.0	1477.0	665.00	483.00	972.00
1914	435.00	309.00	581.00	575.00	245.00	501.00	1631.0	2481.0	1613.0	884.00	499.00	222.00	839.00
1915	317.00	936.00	443.00	204.00	130.00	491.00	1859.0	989.00	743.00	446.00	252.00	155.00	585.00
1916	249.00	356.00	345.00	380.00	375.00	954.00	1453.0	2765.0	3864.0	2469.0	990.00	573.00	1232.00
1917	184.00	143.00	140.00	187.00	307.00	203.00	603.00	2842.0	3393.0	2335.0	938.00	221.00	962.00
1918	242.00	85.10	2712.0	1858.0	484.00	394.00	1416.0	2076.0	2539.0	866.00	580.00	365.00	1141.00
1919	275.00	438.00	1192.0	760.00	411.00	339.00	1409.0	2443.0	2155.0	1302.0	648.00	297.00	976.00
1920	147.00	443.00	635.00	880.00	534.00	483.00	681.00	1554.0	1220.0	801.00	474.00	501.00	697.00
1921	1164.0	443.00	451.00	334.00	971.00	880.00	1160.0	2845.0	2998.0	1082.0	553.00	154.00	1128.00
1922	484.00	514.00	1725.0	401.00	54.20	92.40	565.00	2139.0	2409.0	846.00	283.00	231.00	817.00
1923	148.00	172.00	252.00	980.00	282.00	348.00	1709.0	2648.0	2084.0	1109.0	520.00	255.00	879.00
1924	219.00	137.00	421.00	390.00	1405.0	511.00	899.00	2913.0	1220.0	529.00	471.00	194.00	774.00
1925	235.00	263.00	1155.0	405.00	684.00	519.00	1786.0	3244.0	1860.0	928.00	419.00	114.00	970.00
1926	158.00	224.00	684.00	542.00	385.00	949.00	1674.0	1226.0	780.00	350.00	171.00	104.00	605.00
1927	467.00	523.00	773.00	326.00	233.00	253.00	1003.0	2311.0	3331.0	1115.0	611.00	330.00	941.00
1928	678.00	1445.0	992.00	1078.0	324.00	745.00	1027.0	3374.0	1696.0	693.00	228.00	391.00	1059.00
1929	501.00	177.00	78.10	173.00	47.90	387.00	711.00	2380.0	1907.0	701.00	486.00	179.00	648.00
1930	12.80	12.00	16.00	110.00	621.00	701.00	1900.0	1417.0	1009.0	566.00	406.00	135.00	573.00
1931	103.00	86.70	159.00	280.00	570.00	692.00	1065.0	2388.0	1244.0	626.00	201.00	169.00	632.00
1932	310.00	621.00	246.00	525.00	965.00	1724.0	1533.0	2727.0	2644.0	1142.0	503.00	254.00	1098.00
1933	237.00	134.00	1618.0	1714.0	408.00	299.00	855.00	1711.0	2432.0	2684.0	621.00	209.00	1084.00
1934	150.00	296.00	2327.0	1850.0	1313.0	153.00	2581.0	2526.0	1640.0	1879.0	1137.0	697.00	1380.00
1935	203.00	10.10	5.35	335.00	1000.0	283.00	599.00	1700.0	2457.0	1086.0	1427.0	1689.0	896.00
1936	835.00	9.47	20.20	23.00	28.00	33.00	37.30	3382.0	2480.0	1318.0	1707.0	1247.0	931.00
1937	465.00	17.70	0.00	21.90	26.40	28.00	29.50	668.00	3142.0	1296.0	1730.0	1017.0	705.00
1938	202.00	17.20	31.10	34.00	36.40	127.00	1269.0	2138.0	2214.0	1802.0	1981.0	968.00	906.00
1939	41.10	10.30	34.60	37.40	40.00	41.00	392.00	2148.0	1497.0	1755.0	1847.0	1265.0	765.00
1940	284.00	2.00	2.00	26.30	37.30	39.10	259.00	2071.0	1757.0	2151.0	2107.0	1317.0	845.00
1941	159.00	16.90	21.20	29.90	31.00	31.70	133.00	1128.0	1044.0	1405.0	2221.0	1085.0	614.00
1942	15.50	22.00	27.30	28.00	29.30	26.60	80.90	802.00	1047.0	1914.0	1559.0	1552.0	596.00
1943	404.00	22.90	25.00	27.40	28.80	30.30	33.00	1003.0	2784.0	1815.0	1908.0	1073.0	767.00
1944	58.00	35.50	36.60	37.70	36.00	35.40	225.00	1480.0	1747.0	2302.0	1444.0	1148.0	718.00
1945	353.00	29.60	31.00	32.80	33.60	35.10	179.00	857.00	1739.0	2483.0	2822.0	1708.0	869.00
1946	522.00	36.30	22.80	28.40	27.20	29.30	30.30	1605.0	1896.0	1791.0	2384.0	577.00	753.00
1947	246.00	252.00	392.00	118.00	264.00	293.00	1315.0	2775.0	1905.0	2383.0	2230.0	1136.0	1116.00
1948	171.00	111.00	959.00	36.00	36.00	38.40	33.50	1841.0	3833.0	2366.0	2113.0	1128.0	1059.00
1949	32.60	33.80	1072.0	619.00	153.00	656.00	282.00	843.00	2592.0	1887.0	2184.0	2399.0	1067.00
1950	2083.0	350.00	0.19	17.90	26.10	31.30	3.63	2030.0	2525.0	2427.0	1970.0	2165.0	1144.00
1951	972.00	800.00	616.00	835.00	948.00	924.00	373.00	1422.0	2339.0	1876.0	2476.0	1639.0	1271.00
1952	263.00	12.60	98.40	149.00	174.00	139.00	75.00	909.00	1902.0	1984.0	2426.0	1955.0	843.00
1953	535.00	45.80	54.90	53.60	44.00	46.10	303.00	63.80	1973.0	2208.0	2252.0	1644.0	777.00
1954	396.00	42.00	69.10	414.00	620.00	629.00	649.00	1023.0	2204.0	2666.0	2160.0	1714.0	1052.00
1955	739.00	109.00	156.00	164.00	82.00	206.00	777.00	647.00	2895.0	2201.0	2356.0	1749.0	1015.00
1956	317.00	459.00	1187.0	908.00	707.00	1352.0	938.00	1185.0	3109.0	1848.0	2247.0	1651.0	1327.00

TABLE 18.--Continued

STATION 12479000 CLE ELUM RIVER NEAR ROSYLN, WASH.--Continued

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1957	513.00	81.30	502.00	448.00	123.00	99.90	485.00	3064.0	1988.0	2539.0	2301.0	1870.0	1177.00
1958	257.00	15.40	21.50	21.00	19.30	10.60	40.90	380.00	1686.0	2637.0	2684.0	1633.0	789.00
1959	442.00	6.19	2.31	32.80	39.50	23.10	271.00	2514.0	2470.0	2241.0	2658.0	1760.0	1045.00
1960	178.00	310.00	2048.0	1288.0	29.60	27.10	276.00	1676.0	1796.0	2386.0	2134.0	1831.0	1172.00
1961	392.00	64.90	49.30	19.90	5.66	6.31	277.00	2839.0	2173.0	2310.0	2445.0	1819.0	1041.00
1962	317.00	26.20	27.10	32.20	35.50	36.00	48.00	1001.0	2113.0	2713.0	2543.0	1523.0	874.00
1963	205.00	27.40	32.00	37.50	40.00	45.20	49.40	1356.0	2097.0	2853.0	2225.0	1139.0	848.00
1964	255.00	0.30	35.00	44.80	50.30	603.00	721.00	476.00	505.00	2840.0	2265.0	1355.0	768.00
1965	165.00	37.20	131.00	463.00	161.00	761.00	806.00	1775.0	1971.0	2582.0	1624.0	1780.0	1027.00
1966	671.00	1.00	1.12	1.25	51.10	51.00	267.00	572.00	1628.0	2681.0	2283.0	1380.0	805.00
1967	77.50	27.70	31.50	5.10	22.30	48.70	606.00	611.00	2100.0	2571.0	2548.0	1610.0	859.00
1968	65.60	9.82	28.00	219.00	823.00	1095.0	711.00	1107.0	2421.0	2871.0	1983.0	1390.0	1060.00
1969	343.00	47.60	25.90	55.80	92.70	220.00	375.00	1760.0	2623.0	2525.0	2515.0	1301.0	997.00
1970	225.00	6.50	20.80	10.80	1.60	2.09	550.00	395.00	1015.0	2847.0	2668.0	1575.0	783.00
1971	165.00	9.62	34.30	36.90	45.00	50.90	1024.0	1071.0	2226.0	2069.0	2770.0	1425.0	915.00
1972	477.00	4.90	130.00	669.00	497.00	1698.0	3737.0	1241.0	2497.0	1951.0	2329.0	1600.0	1401.00
1973	394.00	56.80	202.00	741.00	225.00	12.40	1150.0	1287.0	2364.0	2218.0	2344.0	703.00	982.00
1974	7.53	0.00	0.00	0.00	17.20	34.70	760.00	1449.0	2784.0	2548.0	1778.0	1647.0	922.00
1975	890.00	181.00	53.50	545.00	1660.0	372.00	371.00	1523.0	2087.0	2275.0	2386.0	1477.0	1149.00
1976	485.00	25.30	1300.0	1251.0	316.00	436.00	1157.0	1585.0	1486.0	2032.0	1477.0	1404.0	1084.00
1977	692.00	2.45	1.19	6.03	14.70	11.70	917.00	1854.0	2589.0	3182.0	1892.0	564.00	1024.00
1978	1.74	0.00	0.00	25.00	51.50	66.40	208.00	824.00	2852.0	2823.0	3298.0	1694.0	1128.00

* INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12479500 YAKIMA RIVER AT CLE ELUM, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1907	1418.0	*	*	1061.0	1925.0	1308.0	2434.0	6565.0	3347.0	1168.0	644.00	593.00	*
1908	445.00	519.00	1218.0	858.00	565.00	2177.0	3457.0	4765.0	5237.0	3054.0	1082.0	783.00	2020.00
1909	441.00	712.00	650.00	755.00	608.00	890.00	2084.0	3921.0	5085.0	1782.0	1120.0	672.00	1501.00
1910	495.00	4736.0	3142.0	1263.0	1077.0	3816.0	4955.0	5604.0	2521.0	1084.0	1052.0	514.00	2526.00
1911	1670.0	3000.0	1533.0	910.00	564.00	1007.0	2278.0	3559.0	3873.0	1532.0	1005.0	667.00	1803.00
1912	488.00	2407.0	1561.0	1482.0	1683.0	1051.0	2499.0	5182.0	4034.0	1321.0	1274.0	889.00	1936.00
1913	513.00	1032.0	1040.0	1302.0	1500.0	1535.0	2418.0	5505.0	6273.0	2809.0	1047.0	915.00	2161.00
1914	1851.0	976.00	1209.0	1452.0	834.00	1673.0	3362.0	4753.0	2773.0	1613.0	1485.0	985.00	1921.00
1915	914.00	2087.0	955.00	434.00	294.00	1341.0	3159.0	1431.0	1305.0	1431.0	628.00	286.00	1190.00
1916	494.00	1120.0	856.00	715.00	663.00	2575.0	3612.0	5142.0	6539.0	4552.0	1833.0	1453.0	2465.00
1917	746.00	667.00	817.00	590.00	742.00	554.00	1396.0	4927.0	6660.0	4316.0	2152.0	1259.0	2075.00
1918	763.00	903.00	5010.0	5168.0	1045.0	735.00	2374.0	3467.0	4106.0	2018.0	2318.0	1657.0	2478.00
1919	734.00	1096.0	2486.0	1434.0	1181.0	1126.0	2937.0	4544.0	3146.0	2188.0	2676.0	1347.0	2086.00
1920	768.00	1267.0	1093.0	1535.0	945.00	854.00	1223.0	2220.0	1936.0	2602.0	2810.0	2011.0	1612.00
1921	1724.0	758.00	776.00	1575.0	1683.0	2998.0	2220.0	4939.0	5237.0	2248.0	3022.0	1909.0	2433.00
1922	957.00	807.00	3081.0	612.00	195.00	240.00	1260.0	3966.0	4122.0	3168.0	2794.0	1686.0	1920.00
1923	466.00	318.00	437.00	1826.0	520.00	753.00	2894.0	3920.0	3344.0	2498.0	2854.0	1928.0	1820.00
1924	374.00	341.00	640.00	839.00	2209.0	1055.0	1646.0	4387.0	2655.0	3113.0	2789.0	1471.0	1811.00
1925	443.00	450.00	1775.0	759.00	1325.0	1200.0	2921.0	4785.0	2652.0	2204.0	2765.0	1818.0	1929.00
1926	349.00	354.00	1213.0	920.00	825.00	1680.0	2328.0	1892.0	2674.0	2945.0	1747.0	541.00	1461.00
1927	710.00	841.00	1300.0	660.00	496.00	685.00	1892.0	3604.0	4792.0	2178.0	2305.0	1949.0	1788.00
1928	1683.0	2370.0	3091.0	2637.0	998.00	1662.0	1941.0	4909.0	2630.0	2546.0	2666.0	983.00	2354.00
1929	616.00	341.00	230.00	231.00	204.00	779.00	1304.0	3615.0	2789.0	2885.0	2052.0	972.00	1348.00
1930	422.00	94.20	157.00	323.00	1053.0	1382.0	3129.0	2220.0	1776.0	2923.0	1911.0	690.00	1342.00
1931	338.00	233.00	239.00	404.00	840.00	1137.0	1897.0	3495.0	1863.0	2246.0	1557.0	706.00	1251.00
1932	453.00	811.00	390.00	848.00	1198.0	2665.0	2715.0	4325.0	3785.0	2246.0	2498.0	1479.0	1952.00
1933	605.00	1166.0	2180.0	2939.0	1002.0	1039.0	1966.0	3895.0	4497.0	3460.0	2269.0	1899.0	2252.00
1934	1283.0	1335.0	5932.0	4501.0	3130.0	1618.0	4912.0	3114.0	1791.0	2099.0	2123.0	1421.0	2799.00
1935	582.00	648.00	772.00	2179.0	2797.0	981.00	1553.0	3165.0	3483.0	2030.0	2277.0	2052.0	1868.00
1936	967.00	185.00	166.00	259.00	324.00	619.00	1929.0	6488.0	4336.0	2191.0	1975.0	1460.0	1747.00
1937	628.00	192.00	212.00	178.00	237.00	425.00	752.00	1563.0	4654.0	2347.0	2355.0	1198.0	1231.00
1938	357.00	564.00	593.00	799.00	472.00	588.00	2279.0	3720.0	3024.0	2084.0	2390.0	1611.0	1545.00
1939	252.00	337.00	491.00	711.00	360.00	853.00	1771.0	2761.0	1847.0	2585.0	2612.0	1762.0	1370.00
1940	673.00	198.00	401.00	192.00	366.00	548.00	979.00	2809.0	2005.0	2599.0	2616.0	1375.0	1274.00
1941	321.00	176.00	324.00	178.00	188.00	322.00	598.00	1469.0	1254.0	2070.0	2274.0	1240.0	874.00
1942	373.00	323.00	438.00	236.00	227.00	275.00	716.00	1099.0	1237.0	2497.0	2447.0	1918.0	992.00
1943	544.00	319.00	473.00	471.00	306.00	487.00	1553.0	2006.0	4005.0	2359.0	2529.0	1689.0	1399.00
1944	440.00	191.00	388.00	202.00	262.00	378.00	768.00	1858.0	1971.0	2695.0	2662.0	1771.0	1136.00
1945	470.00	198.00	255.00	629.00	492.00	327.00	760.00	1636.0	2206.0	2983.0	3021.0	1836.0	1244.00
1946	795.00	372.00	319.00	407.00	213.00	489.00	1279.0	4207.0	3442.0	2119.0	2910.0	1287.0	1496.00
1947	565.00	752.00	2030.0	710.00	841.00	1256.0	2928.0	3802.0	2159.0	2654.0	2967.0	1801.0	1872.00
1948	581.00	1157.0	1947.0	342.00	417.00	521.00	515.00	4130.0	7105.0	2887.0	2579.0	1606.0	2009.00
1949	673.00	369.00	2024.0	1403.0	620.00	1567.0	2414.0	3333.0	3992.0	2225.0	2595.0	2768.0	2006.00
1950	2814.0	1568.0	1401.0	700.00	758.00	1266.0	1928.0	3801.0	4141.0	3533.0	2650.0	2828.0	2292.00
1951	1615.0	2070.0	2267.0	2298.0	2688.0	2084.0	1459.0	2601.0	2991.0	2651.0	3103.0	1961.0	2315.00
1952	653.00	300.00	413.00	393.00	571.00	571.00	895.00	1751.0	2398.0	2742.0	2949.0	2306.0	1331.00
1953	825.00	108.00	132.00	614.00	1069.0	578.00	1309.0	712.00	2874.0	2602.0	2760.0	1959.0	1294.00
1954	891.00	120.00	1036.0	2063.0	1484.0	1272.0	1957.0	2064.0	3406.0	3729.0	2914.0	2328.0	1943.00
1955	1334.0	472.00	493.00	449.00	654.00	595.00	1750.0	1519.0	4577.0	3140.0	3063.0	2431.0	1709.00
1956	895.00	1895.0	3059.0	2053.0	1279.0	2305.0	2603.0	3269.0	4224.0	2664.0	2691.0	1696.0	2439.00
1957	876.00	542.00	2574.0	1305.0	379.00	469.00	1556.0	5237.0	2492.0	3180.0	3122.0	2387.0	2027.00
1958	518.00	165.00	345.00	326.00	652.00	477.00	804.00	1105.0	1987.0	2983.0	3181.0	2112.0	1225.00
1959	832.00	1128.0	1093.0	1349.0	1981.0	894.00	1296.0	3647.0	3415.0	2703.0	3095.0	2131.0	1967.00

TABLE 18.--Continued

STATION 12479500 YAKIMA RIVER AT CLE ELUM, WASH.--Continued

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1960	1262.0	2531.0	4883.0	2599.0	405.00	549.00	1125.0	2906.0	2299.0	3015.0	2831.0	2167.0	2226.00
1961	652.00	460.00	283.00	415.00	1532.0	1746.0	1683.0	4228.0	3206.0	2695.0	3013.0	2060.0	1833.00
1962	657.00	231.00	511.00	1358.0	1114.0	395.00	1293.0	1763.0	2494.0	3118.0	3445.0	2019.0	1537.00
1963	439.00	570.00	904.00	783.00	895.00	597.00	831.00	2242.0	2522.0	3850.0	3283.0	1317.0	1527.00
1964	429.00	248.00	263.00	361.00	350.00	1091.0	1526.0	1268.0	1930.0	3858.0	2900.0	1899.0	1348.00
1965	755.00	429.00	1184.0	2012.0	2102.0	2412.0	1867.0	2505.0	2492.0	3023.0	2725.0	2023.0	1963.00
1966	643.00	131.00	152.00	157.00	180.00	345.00	1085.0	1446.0	1976.0	3008.0	3121.0	1821.0	1130.00
1967	626.00	230.00	658.00	800.00	1192.0	633.00	1813.0	1408.0	2882.0	3074.0	3270.0	1949.0	1545.00
1968	621.00	533.00	1243.0	1626.0	2245.0	2909.0	1694.0	1627.0	2895.0	3454.0	2422.0	1728.0	1917.00
1969	793.00	632.00	830.00	769.00	786.00	863.00	2015.0	3172.0	3857.0	3076.0	3096.0	1673.0	1803.00
1970	561.00	309.00	407.00	222.00	375.00	485.00	1163.0	1062.0	1613.0	3097.0	3199.0	1798.0	1197.00
1971	551.00	224.00	237.00	812.00	1155.0	958.00	2989.0	2830.0	3888.0	2644.0	3271.0	2014.0	1798.00
1972	1139.0	862.00	905.00	1404.0	1831.0	4791.0	6880.0	3866.0	4810.0	2399.0	2681.0	2006.0	2794.00
1973	1213.0	590.00	1220.0	1730.0	631.00	522.00	1702.0	2148.0	2515.0	3154.0	3156.0	1242.0	1670.00
1974	82.50	139.00	299.00	843.00	551.00	515.00	2072.0	3081.0	4957.0	3435.0	3135.0	2080.0	1770.00
1975	1199.0	411.00	554.00	1605.0	2820.0	1000.0	985.00	3570.0	3103.0	2732.0	2906.0	1897.0	1894.00
1976	939.00	766.00	5015.0	3363.0	1426.0	1097.0	2999.0	3527.0	2279.0	2529.0	2210.0	1730.0	2332.00
1977	891.00	206.00	259.00	501.00	303.00	273.00	1247.0	2031.0	2782.0	3039.0	1623.0	1418.00
1978	157.00	703.00	2102.0	367.00	370.00	859.00	1447.0	1899.0	3570.0	3170.0	3869.0	2150.0	1730.00

* INDICATES A NO-VALUE MONTH

STATION 12480000 TEANAWAY RIVER BELOW FORKS NEAR CLE ELUM, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1911	--	--	--	--	--	--	--	--	373	72.1	22.5	42.9	--
1912	28.4	356	208	325	273	307	989	979	491	--	--	--	--
1968	155.00	254.00	502.00	631.00	680.00	568.00	231.00	520.00	291.00	63.60	34.00	51.20	335.00
1969	94.20	232.00	126.00	256.00	110.00	359.00	1009.0	1240.0	412.00	51.30	20.20	22.20	333.00
1970	51.50	47.50	40.60	53.90	123.00	312.00	485.00	1012.0	532.00	74.30	23.00	17.20	231.00
1971	22.60	85.70	86.50	350.00	603.00	178.00	742.00	1563.0	597.00	224.00	45.60	25.30	383.00
1972	50.00	109.00	88.30	223.00	530.00	1307.0	1029.0	2030.0	1099.0	323.00	90.10	64.10	579.00
1973	55.30	104.00	366.00	266.00	101.00	245.00	399.00	423.00	169.00	*	*	*	*

* INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12480500 TEANAWAY RIVER NEAR CLE ELUM, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1909	*	*	*	*	*	*	546.00	857.00	547.00	96.60	8.33	8.29	*
1910	40.10	865.00	306.30	150.00	120.00	1474.0	1350.0	974.00	329.00	62.40	8.25	7.81	475.00
1911	141.00	439.00	239.00	179.00	112.00	598.00	955.00	697.00	420.00	46.20	13.00	31.90	323.00
1912	25.60	*	*	*	*	*	*	903.00	347.00	63.50	14.40	25.70	*
1913	31.00	104.00	89.60	68.40	328.00	386.00	1153.0	1267.0	748.00	168.00	22.40	21.90	364.00
1914	63.00	108.00	79.30	204.00	114.00	657.00	980.00	725.00	276.00	52.60	4.45	13.50	274.00
1947	69.40	90.00	535.00	279.00	446.00	763.00	829.00	698.00	210.00	34.50	7.85	20.00	331.00
1948	189.00	313.00	205.00	142.00	134.00	245.00	746.00	1617.0	1000.0	119.00	36.50	28.20	398.00
1949	56.50	106.00	131.00	93.70	156.00	530.00	1686.0	1722.0	526.00	93.80	20.50	22.20	429.00
1950	71.60	354.00	291.00	126.00	121.00	451.00	945.00	1628.0	1213.0	275.00	35.20	15.30	461.00
1951	112.00	360.00	514.00	274.00	703.00	434.00	1313.0	1223.0	501.00	108.00	14.80	21.00	462.00
1952	129.00	167.00	154.00	67.90	147.00	327.00	1002.0	733.00	237.00	67.60	6.26	6.53	253.00

* INDICATES A NO-VALUE MONTH

STATION 12481000 SHAUK CREEK NEAR CLE ELUM, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1909	*	*	*	*	*	*	76.30	48.60	17.30	6.94	1.99	1.34	*
1910	6.73	68.00	67.10	*	*	564.00	278.00	89.40	18.10	2.25	0.90	1.81	*
1911	11.70	43.80	24.70	26.90	19.70	98.50	117.00	81.10	37.20	5.58	3.08	3.99	39.50

* INDICATES A NO-VALUE MONTH

STATION 12482000 TANEUM CREEK NEAR THORP

DISCHARGE - cfs

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1909	*	*	*	*	*	*	54.6	95.5	101	24.9	7.61	6.87	*
1910	14.3	84.6	55.6	25.0	22.0	245	297	167	50.8	14.5	6.8	8.9	82.9
1911	18.0	*	*	*	*	*	*	*	*	*	*	*	*

*INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12483500 MANASTASH CREEK NEAR ELLENSBURG, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1909	*	*	*	*	*	*	64.90	94.10	94.30	27.10	14.00	13.20	*
1910	10.20	43.30	38.30	43.10	30.20	298.00	254.00	234.00	79.80	27.50	15.30	13.80	91.50
1911	14.20	21.00	17.20	17.20	10.80	52.10	74.70	101.00	114.00	32.90	14.40	14.70	40.40
1912	11.30	18.80	18.30	25.30	21.30	31.60	131.00	245.00	107.00	34.10	18.20	11.40	56.20
1913	11.10	14.70	11.30	15.20	28.80	34.50	129.00	204.00	210.00	54.80	19.60	12.80	62.10
1914	15.10	15.50	12.60	23.00	26.20	94.70	160.00	173.00	73.10	27.50	13.30	11.90	54.00

* INDICATES A NO-VALUE MONTH

STATION 12483600 WILSON CREEK NEAR ELLENSBURG

DISCHARGE - cfs

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1957	*	*	*	*	*	*	20.7	66.6	*	*	*	*	*
1958	*	1.48	2.69	2.69	7.91	8.35	13.7	70.5	*	*	*	*	*
1959	*	4.50	10.9	11.3	6.36	8.65	31.3	45.8	*	*	*	*	*
1960	*	8.10	6.04	3.87	2.86	9.26	25.7	42.8	*	*	*	*	*

*INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12483800 NANEUM CREEK NEAR ELLENSBURG, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1957	*	*	*	*	*	*	95.90	297.00	88.60	35.80	24.00	17.10	*
1958	19.30	16.00	17.70	19.20	37.10	38.80	76.30	311.00	91.70	32.90	20.30	15.40	58.30
1959	17.10	33.00	38.10	44.80	36.70	39.30	131.00	215.00	174.00	54.70	26.90	23.00	69.60
1960	24.30	42.00	42.00	23.90	23.50	50.10	126.00	213.00	161.00	45.90	25.80	19.00	66.50
1961	15.70	21.30	18.10	17.60	34.20	55.10	119.00	246.00	211.00	49.70	25.20	19.50	69.40
1962	19.20	15.80	15.30	18.80	25.20	21.20	126.00	143.00	137.00	47.80	24.50	17.90	50.90
1963	20.30	39.50	38.80	23.40	67.90	42.10	75.20	188.00	91.70	38.80	23.80	16.90	55.40
1964	13.20	15.90	16.30	16.30	14.60	16.20	43.20	102.00	205.00	52.40	29.00	21.60	45.30
1965	16.20	16.20	23.00	24.20	32.50	39.30	108.00	168.00	131.00	40.30	22.80	17.60	53.30
1966	15.70	16.00	13.60	13.60	15.00	28.90	58.30	124.00	75.00	34.80	18.00	13.10	35.60
1967	13.40	16.30	28.60	22.60	31.80	25.10	41.00	187.00	189.00	53.10	24.00	17.90	54.10
1968	20.50	19.90	18.80	35.00	68.20	92.30	63.00	152.00	82.40	33.10	23.00	17.60	52.10
1969	16.20	20.80	14.60	21.80	16.90	30.90	115.00	268.00	133.00	41.70	21.90	17.60	60.10
1970	16.90	18.20	14.70	14.70	20.20	31.50	49.60	143.00	148.00	36.00	20.60	14.70	44.10
1971	15.20	19.50	16.10	21.20	43.80	27.30	64.80	308.00	187.00	64.90	29.90	23.80	68.60
1973	22.80	22.90	33.10	24.80	19.30	24.10	50.20	81.60	44.60	22.20	12.30	10.90	30.80
1974	13.50	21.40	22.40	56.70	36.70	46.20	150.00	256.00	351.00	120.00	49.70	25.80	95.80
1975	20.50	22.10	22.30	31.70	22.00	28.40	53.20	205.00	213.00	61.80	34.50	24.20	61.70
1976	24.40	28.10	87.10	53.60	49.30	38.70	97.20	277.00	150.00	72.10	36.20	23.00	73.30
1977	18.80	16.80	17.40	14.20	18.20	15.20	25.50	27.50	21.50	12.50	7.59	8.96	17.00
1978	9.06	11.00	69.20	23.90	28.70	94.50	143.00	230.00	173.00	54.10	28.00	25.20	74.30

* INDICATES A NO-VALUE MONTH

STATION 12484300 COOKE CREEK NEAR ELLENSBURG

DISCHARGE - cfs

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1958	*	2.37	2.39	2.24	10.0	7.24	27.8	48.6	*	*	*	*	*
1959	*	3.54	3.83	7.75	5.36	11.1	51.8	31.6	*	*	*	*	*
1960	*	3.86	2.94	2.63	3.48	17.3	39.1	50.3	*	*	*	*	*

*INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12484500 YAKIMA RIVER AT UMTANUM, WASH.

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1909	510.00	864.00	813.00	886.00	942.00	1351.0	2840.0	5060.0	5421.0	1641.0	900.00	547.00	1815.00
1910	583.00	6464.0	3977.0	1497.0	1316.0	7840.0	7419.0	6797.0	2694.0	992.00	917.00	503.00	3424.00
1911	1590.0	3335.0	1995.0	1169.0	669.00	1563.0	2716.0	3809.0	4074.0	1435.0	837.00	818.00	2004.00
1912	622.00	2687.0	1919.0	1863.0	2459.0	1515.0	3909.0	6776.0	4176.0	1325.0	1157.0	958.00	2442.00
1913	596.00	1391.0	1327.0	1649.0	2174.0	2246.0	4159.0	6985.0	7132.0	2501.0	975.00	866.00	2663.00
1914	1712.0	1203.0	1436.0	1640.0	1212.0	2921.0	4585.0	5166.0	2876.0	1587.0	1439.0	1151.0	2250.00
1915	1082.0	2505.0	1418.0	678.00	605.00	2181.0	4322.0	1635.0	1150.0	1230.0	483.00	209.00	1459.00
1916	436.00	1340.0	*	*	*	*	6983.0	7846.0	8442.0	5477.0	1732.0	1455.0	*
1917	815.00	*	*	*	*	*	2433.0	7288.0	7973.0	4628.0	2029.0	1362.0	*
1918	805.00	*	*	*	*	*	3911.0	4493.0	4677.0	1883.0	2093.0	1492.0	*
1919	883.00	1327.0	*	*	*	*	4693.0	5390.0	3367.0	1924.0	2227.0	1300.0	*
1920	*	*	*	*	*	1238.0	1540.0	2578.0	1930.0	2339.0	2513.0	2064.0	*
1921	2094.0	*	*	*	*	*	3966.0	6938.0	6345.0	2277.0	2941.0	1886.0	*
1922	1074.0	*	*	*	*	*	2503.0	5290.0	4496.0	2887.0	2552.0	1567.0	*
1923	601.00	*	*	*	*	*	5337.0	5372.0	3791.0	2304.0	2916.0	1958.0	*
1924	574.00	*	*	*	*	*	2403.0	5420.0	2478.0	2639.0	2397.0	1320.0	*
1925	510.00	*	*	*	*	*	4715.0	6165.0	2766.0	1827.0	2537.0	1831.0	*
1926	434.00	*	*	*	*	*	2947.0	1926.0	2396.0	2598.0	1556.0	440.00	*
1927	780.00	*	*	*	*	*	3484.0	4885.0	5386.0	2039.0	2121.0	1945.0	*
1928	1988.0	*	*	*	*	*	3057.0	5766.0	2668.0	2307.0	2434.0	983.00	*
1929	724.00	*	*	*	*	*	1675.0	4063.0	2896.0	2465.0	1803.0	789.00	*
1930	502.00	*	*	*	*	*	3877.0	2359.0	1742.0	2693.0	1828.0	1014.0	*
1931	531.00	*	*	*	*	1532.0	2361.0	3564.0	1929.0	2042.0	1561.0	839.00	*
1932	583.00	1044.0	563.00	1268.0	1871.0	4681.0	4532.0	5514.0	4263.0	2169.0	2398.0	1483.0	2531.00
1933	847.00	1891.0	2733.0	3455.0	1313.0	1689.0	3883.0	5236.0	5717.0	3833.0	2331.0	2033.0	2921.00
1934	1645.0	2017.0	9214.0	7166.0	4724.0	3933.0	6938.0	3761.0	1918.0	2120.0	2164.0	1587.0	3935.00
1935	979.00	1450.0	1365.0	3594.0	4039.0	1874.0	3027.0	4806.0	4361.0	2091.0	2299.0	2154.0	2658.00
1936	1276.0	438.00	333.00	494.00	846.00	1753.0	5024.0	8099.0	5329.0	2278.0	2092.0	1726.0	2476.00
1937	980.00	380.00	465.00	436.00	479.00	1344.0	2179.0	2994.0	6192.0	2547.0	2639.0	1513.0	1849.00
1938	678.00	1096.0	1278.0	1533.0	933.00	2138.0	4967.0	5436.0	3713.0	2166.0	2607.0	1958.0	2381.00
1939	649.00	636.00	860.00	1249.0	708.00	1888.0	2848.0	3553.0	2159.0	2659.0	2758.0	1950.0	1836.00
1940	976.00	411.00	802.00	486.00	883.00	1587.0	2038.0	3572.0	2241.0	2777.0	2760.0	2239.0	1736.00
1941	701.00	495.00	777.00	466.00	771.00	1389.0	1738.0	1810.0	1556.0	2075.0	2573.0	1612.0	1335.00
1942	729.00	778.00	1032.0	570.00	730.00	923.00	2028.0	1927.0	1703.0	2706.0	2560.0	2120.0	1488.00
1943	907.00	793.00	1178.0	1176.0	970.00	1547.0	4481.0	3391.0	5122.0	2637.0	2769.0	2012.0	2250.00
1944	860.00	463.00	674.00	362.00	463.00	798.00	1440.0	2308.0	2326.0	2736.0	2815.0	2143.0	1453.00
1945	837.00	447.00	524.00	1160.0	1194.0	763.00	1713.0	2935.0	2728.0	3139.0	3336.0	2217.0	1754.00
1946	1075.0	696.00	695.00	871.00	640.00	1602.0	3369.0	6562.0	4553.0	2584.0	3200.0	1758.0	2311.00
1947	1013.0	1050.0	3085.0	1337.0	1598.0	2691.0	4321.0	4998.0	2936.0	2926.0	3188.0	2255.0	2648.00
1948	1256.0	1309.0	2484.0	760.00	901.00	1115.0	2307.0	7221.0	9077.0	3283.0	3114.0	1964.0	2943.00
1949	1111.0	771.00	2420.0	1687.0	1027.0	3534.0	5569.0	6227.0	5005.0	2454.0	2935.0	3128.0	2993.00
1950	3197.0	2193.0	1904.0	923.00	1096.0	2762.0	3792.0	6355.0	6546.0	3594.0	2832.0	3235.0	3211.00
1951	2148.0	2761.0	3651.0	3025.0	4613.0	3373.0	4323.0	5293.0	4182.0	3022.0	3226.0	2405.0	3494.00
1952	1245.0	732.00	870.00	703.00	1033.0	1421.0	2416.0	2929.0	2996.0	2896.0	3253.0	2598.0	1930.00
1953	1212.0	352.00	331.00	1454.0	2367.0	1373.0	2592.0	2779.0	3996.0	2986.0	3204.0	2360.0	2079.00
1954	1294.0	523.00	1641.0	2666.0	2512.0	2216.0	3398.0	4546.0	4851.0	4280.0	3291.0	2953.0	2942.00
1955	1364.0	970.00	903.00	745.00	1091.0	972.00	2713.0	3468.0	6476.0	3690.0	3351.0	2659.0	2411.00
1956	1439.0	2671.0	4025.0	2779.0	1823.0	4465.0	7398.0	7058.0	6694.0	3102.0	3368.0	2413.0	3938.00
1957	1429.0	1001.0	3566.0	1601.0	775.00	1506.0	3260.0	7255.0	3124.0	3384.0	3501.0	2698.0	2777.00
1958	1042.0	475.00	716.00	709.00	1770.0	1460.0	2389.0	3033.0	2634.0	3133.0	3438.0	2539.0	1946.00
1959	1249.0	2012.0	2245.0	2689.0	2951.0	2142.0	3221.0	5433.0	4644.0	2909.0	3346.0	2797.0	2969.00
1960	1373.0	3596.0	5326.0	3050.0	1050.0	1803.0	2985.0	4484.0	3197.0	3159.0	3229.0	2688.0	3039.00
1961	1179.0	933.00	646.00	926.00	2844.0	3416.0	3671.0	6467.0	4668.0	3035.0	3436.0	2534.0	2811.00

TABLE 18.--Continued

STATION 12494500 YAKIMA RIVER AT UMTANUM, WASH.--Continued

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1962	1138.0	578.00	780.00	2298.0	2034.0	1032.0	3022.0	2806.0	3391.0	3464.0	3915.0	2447.0	2243.00
1963	1129.0	1388.0	1732.0	1397.0	2263.0	1456.0	1985.0	3211.0	3052.0	4173.0	3760.0	1922.0	2296.00
1964	911.00	567.00	568.00	679.00	783.00	1633.0	2617.0	2835.0	3835.0	4184.0	3306.0	2375.0	2028.00
1965	1498.0	705.00	1593.0	2845.0	3869.0	3655.0	3802.0	3976.0	3554.0	3233.0	3158.0	2652.0	2872.00
1966	1471.0	477.00	473.00	415.00	504.00	1317.0	2675.0	2291.0	2578.0	3424.0	3282.0	2355.0	1780.00
1967	1102.0	589.00	1358.0	1398.0	1991.0	1151.0	2409.0	3104.0	4149.0	3173.0	3387.0	2376.0	2182.00
1968	1248.0	1028.0	2026.0	2695.0	3720.0	4254.0	2126.0	2548.0	3304.0	3589.0	2912.0	2304.0	2645.00
1969	1321.0	1142.0	1248.0	1363.0	1165.0	2391.0	4265.0	5280.0	4780.0	3338.0	3344.0	2240.0	2664.00
1970	1044.0	571.00	691.00	579.00	1225.0	1412.0	1982.0	2775.0	2666.0	3317.0	3496.0	2441.0	1354.00
1971	1038.0	589.00	570.00	1806.0	2583.0	1611.0	4294.0	5438.0	5211.0	2900.0	3335.0	2470.0	2649.00
1972	1569.0	1229.0	1215.0	2076.0	3358.0	8355.0	8831.0	7894.0	7032.0	3077.0	3147.0	2699.0	4204.00
1973	1671.0	931.00	1787.0	2329.0	1039.0	1017.0	2072.0	2841.0	3046.0	3273.0	3365.0	1531.0	2086.00
1974	412.00	641.00	970.00	2734.0	1863.0	1756.0	4638.0	5572.0	7341.0	4265.0	3559.0	2717.0	3040.00
1975	1749.0	796.00	1070.0	2433.0	3506.0	2169.0	2481.0	5873.0	4673.0	3231.0	3498.0	2403.0	2820.00
1976	1492.0	1313.0	6900.0	4981.0	2537.0	1888.0	4924.0	5750.0	3479.0	3323.0	3135.0	2503.0	3529.00
1977	1501.0	513.00	522.00	677.00	573.00	541.00	1724.0	2451.0	2935.0	3800.0	3351.0	2129.0	1735.00
1978	464.00	1117.0	4341.0	1148.0	1527.0	2912.0	3252.0	3228.0	4368.0	3595.0	4221.0	2779.0	2755.00
1979	1204.0	676.00	792.00	337.00	822.00	1560.0	1549.0	2114.0	2297.0	3348.0	1521.0	1059.0	1445.00
1980	623.00	543.00	2593.0	901.00	1071.0	2637.0	4470.0	3171.0	2433.0	3235.0	3735.0	2698.0	2347.00
1981	1333.0	1220.0	3007.0	1854.0	2756.0	1537.0	1537.0	2489.0	3018.0	4224.0	4215.0	1923.0	2433.00

* INDICATES A NO-VALUE MONTH

TABLE 18.--Continued

STATION 12486000 WENAS CREEK NEAR SELAH

DISCHARGE - cfs

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1909	*	*	*	*	*	*	18.5	12.0	11.5	3.20	4.45	7.73	*
1910	4.22	12.5	23.7	*	*	*	*	*	*	*	*	*	*

*INDICATES A NO-VALUE MONTH

STATION 12487000 YAKIMA R AT SELAH GAP NR N YAKIMA WASH

DISCHARGE-(CFS)

MONTHLY MEAN (ALL DAYS)

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	ANNUAL MEAN
1897	*	*	*	*	*	*	*	9029.0	4021.0	2057.0	735.00	503.00	*
1898	682.00	3979.0	2702.0	*	*	*	*	*	*	*	*	*	*
1904	*	*	*	*	*	*	*	6926.0	5705.0	2431.0	663.00	376.00	*
1905	608.00	955.00	*	*	*	*	*	*	*	*	*	*	*
1911	*	*	*	*	*	*	*	*	*	1403.0	748.00	755.00	*
1912	571.00	*	*	*	*	*	*	*	*	1289.0	1104.0	991.00	*

* INDICATES A NO-VALUE MONTH

TABLE 19.--Data from miscellaneous discharge sites

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Mosquito Creek	Yakima River	Lat 47°17'32", long 121°19'23", in SE¼ sec. 22, T.21N., R.12E., Kittitas County, at Forest Service Road, 2 miles southeast of Keechelus Dam and 8 miles northwest of Easton.	1.07	6- 5-59	25.4
				6- 2-69	a103
				5-11-69	a61
				11- 4-69	4.35
				4- 5-70	a125
				5-27-70	19.6
				5-31-71	a50
				6-27-71	33.9
				5-14-72	a71
				5-31-72	49.3
				5-14-73	a70
				5-17-73	18.2
				1-15-74	a166
				5- 8-74	29.3
				6- 1-75	a81
				7-29-75	0.72
				12- 2-75	a128
				2-14-77	7.9
				5-24-77	4.6
				8- 9-77	.16
Coal Creek	Keechelus Lake	Lat 47°23'37", long 121°23'20", in NW¼SE¼, sec. 15, T.22N., R.11E., Kittitas County, Wenatchee National Forest, at Interstate 90 crossing at mouth, at Hyak.		9-12-70	2.56
				8- 7-73	1.62
Gold Creek	--Do.--	Lat 47°24'23", long 121°22'25", in NE¼SW¼ sec. 11, T.22N., R.11E., Kittitas County, Wenatchee National Forest, 0.8 mi upstream from mouth, 1.2 mi. northwest of Hyak.	10.8	9-12-74	40.0
				10-24-74	12.1
				4-15-75	46.4
				6- 4-75	361
				7-30-75	67.3
					18.3
Gold Creek	--Do.--	Lat 47°23'28", long 121°22'52", in NE¼SE¼ sec. 15, T.22N., R.11E., Kittitas County, Wenatchee National Forest, between Interstate 90 bridges 0.5 mi east of Hyak.	14.0	8-21-06	25.0
				9- 8-10	11.4
				11-23-59	a5,000
				10- 2-67	12.0
				9-17-70	13.1
				8- 7-73	22.4
--Do.--	--Do.--	NE¼ sec. 11, T.22N., R.11E., below Coal Creek ½ mile southeast of Hyak.	19.9	9- 8-10	.62
Rocky Run	--Do.--	SW¼ sec. 23, T.22N., R.11 E., at road crossing just above mouth.	2.17	8-21-06	2.5
				9- 8-10	1.90
Mill Creek	--Do.--	NW¼ sec. 27, T.22N., R.11E., at crossing of Milwaukee Railroad tracks.	1.76	9- 8-10	.62
Wolfe Creek	--Do.--	NW¼ sec. 26, T.22N., R.11E., at road crossing ½ mile south of Rocky Run.	.82	8-21-06	6.0
				9- 8-10	.35
Cold Creek	--Do.--	NW¼ sec. 27, T.22N., R.11E., at crossing of Milaukee Railroad.	4.02	9- 8-10	1.56
Keechelus Lake tributary	--Do.--	SE¼ sec. 35, T.22N., R.11E.		8-21-06	.5
				9- 8-10	.2
Keechelus Lake tributary No. 2	--Do.--	SE¼ sec. 35, T.22N., R.11E.		8-21-06	1.8
				9- 8-10	.55
Resort Creek	--Do.--	NE¼ sec. 1, T.21N., R.11E.	2.57	8-21-06	1.8
				9- 8-10	.55
Roaring Creek	--Do.--	NW¼ sec. 11, T.12N., R.11E., above mining company's dam.	5.32	8-21-06	36
				9- 8-10	26.4

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Keechelus Lake tributary No. 3	Keechelus Lake	NE¼ sec. 12, T.21N., near mouth		9- 8-10	.20
Price Creek	--Do.--	SW¼ sec. 10, T.21N., R.12E., near mouth.		8-21-06	.8
				9- 8-10	.2
Meadow Creek	--Do.--	Lat 47°18'45", long 121°21'07", in NE¼NW¼ sec. 13, T.21N., R.11E., Kittitas County, Wenatchee National Forest, at road crossing 2.7 mi northwest of Martin.	7.88	8-21-06	3.6
				9- 8-10	3.18
				9-17-70	3.69
				8- 7-73	3.80
				9-12-74	6.73
				10-24-74	3.41
				12- 4-74	16.6
				4-15-75	24.4
				6- 4-75	217
				7-30-75	10.7
				9-23-75	5.81
Keechelus Lake Spillage	Yakima River	SE¼ sec. 10, T.21N., R.12E., at bridge just below spillway.	--	6- 4-48	674
Yakima River	Columbia River	SW¼SW¼ sec. 10, T.21N., R.12E., at gaging station "near Martin," (operated Oct. 1903 to 1960).	54.7		
Cabin Creek	Yakima River	Lat 47°14'36", long 121°13'39", in NW¼SE¼ sec. 9, T.20N., R.13E., Kittitas County, at county road and railroad crossing, 2.2 mi west of Easton.	29.3	9-21-04	6.9
				5-29-07	404
				8- 8-07	12
				10-29-07	2.5
				5-12-09	196
				10- 3-11	15.8
				12- 6-11	93.7
				5-25-12	277
				7-16-12	28.0
				11-12-12	44.2
				1-23-13	32.0
				4-11-13	92.6
				5-21-13	268
				7-23-13	49.3
				8- 6-13	29.8
				9- 3-13	15.5
				9-30-13	8.73
				1-14-14	83.2
				4-14-14	274
				5-19-14	236
				6-16-14	125
				7-28-14	13.2
				8-18-14	6.80
				10- 1-14	9.89
				9-15-58	15.9
				9-11-67	8.67
				9-17-70	8.25
				8- 7-73	8.25
				2-15-77	78.3
				5-24-77	88.7
				8- 9-77	8.18
--Do.--	--Do.--	NE¼NW¼ sec. 9, T.20N., R.13E., at mouth.	31.9	7-25-10	16.8
Yakima River	Columbia River	NW¼NE¼ sec. 9, T.20N., R.13E., 75 ft below Cabin Creek.	114	8-18-10	43.8
Box Canyon tributary	Little Kachess Lake	Lat 47°22'57", long 121°15'42", near center of sec. 19, T.22N., R.13E., Kittitas County, at Forest Service road 2.5 miles north of Kachess Guard Station, and 11 miles northwest of Easton.	0.36	5-11-69	a16
				6- 5-69	4.15
				5-27-70	a12
				7- 7-70	10.23
				5-31-71	a19
				6-22-71	2.78
				6-10-72	a33
				5-14-73	a26
				1-15-74	a36
				6- 1-75	a28
				12- 2-75	a51
				2-14-77	2.92
				5-24-77	1.0
				7-12-77	.10
				8- 9-77	.01

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Box Canyon Creek	Little Kachess Lake	NE¼ sec. 30, T.22N., R.13E., at trail 1 mi above mouth.	12.3	8-23-06 9- 9-10	14.0 5.4
Gale Creek	Kachess Lake	W½ sec. 32, T.11N., R.13E., at road crossing near mouth.	5.89	8-23-06 9- 8-10	.8 1.3
Kachess River	Easton Reservoir	NE¼ sec. 3, T.20N., R.13E., at gaging station "near Easton," (operated Oct. 1903 to present).	63.6	8-16-1893	211
--Do.--	Yakima River	NW¼ sec. 11, T.20N., R.13E., 100 ft above mouth.	--	9-15-10	2.08
Silver Creek	--Do.--	SE¼ sec. 35, T.21N., R.13E., at mouth of canyon.	5.14	4-23-06	3.4
Kittitas Canal	Yakima River (diverts from right bank)	SE¼ sec. 11, T.20N., R.13E., at gaging station "at Easton," (operated 1930 to 1960).	--		
Yakima River	Columbia River	SE¼ sec. 11, T.10N., R.13E., at gaging station "at Easton," (operated June to Oct. 1904, Mar. 1910 to Sept. 1915, Jan. 1941 to Dec. 1954).	188	5-12-04 3-16-06 5-28-07 10- 7-15 12-12-40 1-11-55	1,420 585 2,760 151 217 116
Tucker Creek	Yakima River	NW¼ sec. 24, T.20N., R.13E., at entrance to canyon near mouth, 1¼ miles southeast of Easton.	2.82	9-15-10	.4
Big Creek	--Do.--	Lat 47°12'44", long 121°06'09", in SE¼NW¼ sec. 21, T.20N., R.14E., Kittitas County at Interstate 90, 3.5 mi. southeast of Easton.	27.4	5- 2-09 6- 4-09 7-23-09 10- 4-09 11-18-09 7-26-10 8-30-10 9-15-10 10- 3-11 9-11-67 9-17-70 8- 7-73 12- 3-75 12- 5-75 2-15-77 5-25-77 8-10-77	127 246 18.3 12.5 61.7 19.1 11.0 9.5 12.7 3.05 3.37 3.09 936 571 23.1 37.6 .46
Little Creek	--Do.--	N½ sec. 27, T.20N., R.14E., below diversions.	11.9	7-26-10	0
Yakima River	Columbia River	NW¼ sec. 36, T.20N., R.14E., at ford below Nelson.	248	8-19-10 8-19-10 8-31-10 9-16-10	335 328 514 297
Fortune Creek	Cle Elum River	SE¼ sec. 14, T.23N., R.14E., at road crossing near mouth.	10.1	6-16-07	65
Cle Elum River	Cle Elum Lake	SE¼ sec. 23, T.23N., R.14E., 4½ miles northeast of Salmon La Sac Guard Station.	38.1	6-16-07 10-13-11	250 30.6
Camp Creek	Cle Elum River	SE¼ sec. 26, T.23N., R.124E, at road crossing near mouth.	1.61	6-16-07	15
Cle Elum River	--Do.--	Lat 47°15'12", long 121°05'09", in SE¼SE¼ sec. 4, T.22N., R.14E., Kittitas County, Wenatchee National Forest, 150 ft upstream from Waptus River and Paris Creek, 1.5 miles north of Salmon La Sac Guard Station.	51.5	9-16-70 8- 8-73	35.1 93.3

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Wapatus River	Cle Elum River	Lat 47°25'11", long 121°05'11", in SE¼SE¼ sec. 4, T.22N., R.14E., Kittitas County, Wenatchee National Forest, 150 ft upstream from mouth, 1.5 mi north of Salmon La Sac Guard Station.	53.8	9-10-10 9-11-67 9-16-70 8- 8-73	50.5 66.2 43.5 133.
Paris Creek	--Do.--	Lat 47°24'55", long 121°04'49", in NW¼NW¼ sec. 10, T.22N., R.14E., Kittitas County, Wenatchee National Forest, 0.4 mile upstream from mouth, 1.2 miles northeast of Salmon La Sac Guard Station.	3.90	9-16-70 8- 8-73 5-25-77 8-10-77	1.71 1.75 15.6 2.58
Cle Elum River	Cle Elum Lake	SW¼ sec. 9, T.22N., R.14E., at Big Salmon La Sac.	110	9-10-10	95.6
--Do.--	--Do.--	Lat 47°24'10", long 120°05'46", in NE¼NW¼ sec. 16, T.22N., R.14E., Kittitas County, at Salmon La Sac, 1.5 mi (2.4 km) below Wapatus River, 4.0 mi above Cle Elum Lake.	--	5-22-77 8-10-77	551 191
Cooper River	--Do.--	SW¼ sec. 9, T.22N., R.14E., about 1 mile above mouth near La Sac.	34.9	9-10-10 7- 8-11 10-13-11	40 227 36.5
Cle Elum River	Yakima River	NW¼ sec. 28, T.22N., R.14E., 2 miles above Cle Elum Lake.	156	9-22-04 8-2-06 9-10-10	206 189 136
--Do.--	--Do.--	NW¼ sec. 11, T.20N., R.14E., at gaging station "near Roslyn," (operated 1903 to 1960).	203		
Cooper River	Cle Elum River	SW¼ sec. 9, T.22N., R.14E., about 1 mile above mouth near La Sac.	34.9	9-10-10 7- 8-11 10-13-11	40 227 36.5
Cle Elum River	Yakima River	NW¼ sec. 28, T.22N., R.14E., 2 miles above Cle Elum Lake.	156	9-22-04 8-24-06 9-10-10	206 189 136
--Do.--	--Do.--	NW¼ sec. 11, T.20N., R.14E1, at gaging station "near Roslyn," (operated 1903 to 1960).	203		
--Do.--	--Do.--	Lat 47°11'05", long 121°00'11", in SW¼NW¼ sec. 32, T.20N., R.15E., Kittitas County, at Interstate 90 bridge, 0.8 mile above mouth, 3.2 miles west of Cle Elum.		10-27-71 12-15-71 1- 1-72 4-10-72 5-31-72 7-17-72 9- 6-72	264 14.0 722 4,480 172 2,790 2,280
Yakima River	Columbia River	Sec. 27., T.20N., R.15E., at gaging station "at Cle Elum," (operated Aug. 1006 to present).	495	9-21-04	442
Crystal Creek	Yakima River	Sec. 27, T.20N., R.15E., at mouth at Cle Elum.	7.71	3-27-07 5- 1-07 5-30-07	10 9.1 2
Thornton Creek		Lat 47°09'22", long 120°51'34", in SE¼NE¼ sec. 8, T.19N., R.16E., Kittitas County, at county road 0.8 miles upstream from mouth and 4.5 miles southeast of Cle Elum.	.66	1-31-71 2-29-72 12-21-72 4-12-74 3- 7-75 4-16-75 12- 2-75	a22 a16 a5 a2 (est.) a5 (est.) 1.43 0.9(est.)
North Fork Teanaway River	Teanaway River	SW¼SE¼ sec. 20, T.21N., R.16E., at county road bridge ¼ mile below Middle Creek and 7 miles northeast of Cle Elum.	82.4	11-23-59	a3,180

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
West Fork Teanaway River	Teanaway River	Lat 47°15'28", long 120°53'52", in NW¼NW¼ sec. 5, T.20N., R.16E., Kittitas County, at county road crossing, 4.6 miles northeast of Cle Elum.	39.3	9-16-70 8- 8-73 2-17-77 5-25-77 8-10-77	2.12 1.86 42.1 51.1 2.38
Stafford Creek	North Fork Teanaway River	Lat 47°20'52", long 120°50'49", in SW¼SW¼ sec. 33, T.22N., R.16E., Kittitas County, Wenatchee National Forest, at county road northeast of Cle Elum.	22.2	9-16-70 8- 9-73 5-24-77 8-10-77	5.16 5.77 27.5 4.19
Jungle Creek	North Fork Teanaway River	Lat 47o20'20", long 120o51'24", in SW¼SE¼ sec. 5, T.21N., R.16E., Kittitas County Wenatchee National Forest, at road crossing 10.2 miles northeast of Cle Elum.	6.17	9-16-70 8- 9-73 2-16-77 5-24-77 8-10-77	0.14 0.04 4.60 1.57 .02
Dickey Creek	--Do.--	Lat 47°17'17", long 120°51'20", in NW¼NE¼ sec. 28, T.21N., R.16E., Kittitas County, at mouth, 7.4 miles northeast of Cle Elum.	3.56	9-16-70 8- 9-73 2-16-77 5-25-77 8-10-77	.10 0 0 .70 0
North Fork Teanaway River	Teanaway River	Lat 47°15'17", long 120°52'38", in SE¼NE¼ sec. 5, T.20N., R.16E., Kittitas County, at county road crossing, 013 miles upstream from mouth, 5.0 miles northeast of Cle Elum.	94.8	9-16-70 8- 9-73 2-17-77 5-25-77 8-10-77	7.83 11.6 69.3 96.7 12.6
Middle Fork Teanaway River	--Do.--	NW¼ sec. 21, T.21N., R.1E., near Wenatchee National Forest boundary.	--	9-12-67	3.71
Teanaway River	Yakima River	SE¼ sec. 5, T.20N., R.15E., 0.1 mile below Story Creek and 5 miles northeast of Cle Elum.	--	10- 2-67	16.0
Teanaway River	--Do.--	NW¼ sec. 9, T.20N., R.16E., at gaging station "below Forks near Cle Elum" (operated Oct. 1946 to Sept. 1952).	172	9-15-58 1-15-74 5-11-75 12- 4-75 2-17-77	20.7 a3,900 a3,800 a5,420 145
--Do.--	--Do.--	Lat 47°11'44", long 120°47'04", in NE¼SW¼ sec. 25, T.20N., R.17E., at gaging station "near Cle Elum." (operated Oct. 1946 to Sept. 1952).	200	10-23-52 9-15-58 9-16-70 8- 7-73 5-25-77 8-11-77	2.63 8.25 7.14 3.99 165 3.68
--Do.--	--Do.--	NE¼NE¼ sec. 4, T.19N., R.16E., at gaging station "near Cle Elum," (operated Apr. 1909 to Sept. 1914).	206	11-17-14	159
Swauk Creek	--Do.--	Lat 4°18'59", long 120°41'26", in NW¼NE¼ sec. 15, T.21N., R.17E., Kittitas County, Wenatchee National Forest, 0.1 mi. 4.5 miles northwest of Liberty.		8- 8-73 2-17-77 5- 9-77 5-24-77 8-11-77	.39 3.88 6.11 5.26 1.0

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Swauk Creek	Yakima River	Lat 47°12'25", long 120°42'04" in SW¼SE¼ sec. 22, T.20N., R.17E., Kittitas county, at U.S. Highway 97 crossing, 3.7 miles south of Liberty.		9-17-70	1.69
Hovey Creek	Swauk Creek	Lat 47°19'05", long 120°41'32" in S½ sec. 10, T.21N., R.17E., at U.S. Highway 97, 2½ miles south of Blewett Pass and 14½ miles northeast of Cle Elum.	2.65	5-20-55	30
				5-20-56	67.9
				5- 1-57	32.2
				2-25-58	27.0
				4- 1-59	25.6
				11-22-59	33
				5-18-61	7.72
				6-14-61	2.72
				1961	a30
				4- 7-62	a41
				11-20-62	a38
				6- 8-64	a26
				5-17-65	a38
				5- 5-66	a8
				5-21-67	a17
				6- 5-67	3.30
				3- 3-68	a35
				5- 3-68	3.41
				4-23-69	25.5
				5-30-69	a33
				4-15-70	4.05
				5-22-70	a14
				5-27-70	5.29
				9-17-70	0.05
				5-10-71	24.1
				5-31-71	a40
				5-14-72	a55
				12-21-72	a20
				1-16-74	a46
				6- 5-74	10.2
				2-17-77	.53
				5- 9-77	.79
				5-24-77	.79
				8-11-77	0
Swauk Creek	Yakima River	SE¼ sec. 5, T.19N., R.17E., at gaging station "near Cle Elum," (operated Apr. 1909 to Sept. 1914).	90.7	9-12-67	0.92
Taneum Creek	--Do.--	SE¼ sec. 35, T.19N., R.16E., about 6.6 miles west of Thorp.		9-11-67	8.47
--Do.--	--Do.--	Lat 47°06'42", long 120°51'23", in SW¼NW¼ sec. 28, T.19N., R.16E., Kittitas County, 0.2 mile north of Taneum Forest Camp, 0.3 mile upstream from Shadow Creek, at county road crossing, 9.3 miles northwest of Thorp.	56.0	9-17-70	5.38
--Do.--	--Do.--	Sec. 1, T.18N., R.16E., at gaging station "near Thorp," (operated Apr. 1909 to Oct. 1910).	74.3	11-16-10	18.5
				4- 3-11	80.9
				4-26-11	155
				6- 2-11	235
				8- 4-11	9.14
				11-17-11	14.6
				7-18-12	20.1
				11-15-12	13.0
				1-15-13	13.3
				3-14-13	40.5
				5-23-13	388
				6-17-13	145
				8- 8-13	31.6
				9-10-13	29.3
				9-25-13	28.4
				1-12-13	32.3
				4-17-14	203
				5-22-13	172
				6- 9-14	71.4
				8-11-14	8.56
				8-24-14	5.43
				10-13-14	12.7
				9-12-58	6.53
--Do.--	--Do.--	NW¼ sec. 5, T.18N., R.17E., at road bridge 3 miles northwest of Thorp.	75.3	3- -06	22

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Yakima River	Columbia River	Lat 47°06'04", long 120°42'04", in NE¼NW¼ sec. 34, T.19N., R.17E., Kittitas County, at county road bridge 0.7 mile downstream from Taneum Creek, 2.7 miles northeast of Thorp.	948	9-23-04	515
				8-20-10	1,080
				9- 1-10	716
				9-17-10	396
				10-28-71	813
				12-13-71	998
				1-31-72	1,640
				4-10-72	8,790
				6- 1-72	5,540
				7-17-72	3,850
				9- 6-72	2,570
				8-29-74	3,130
				10-23-74	1,160
				12-18-74	861
				4-16-75	2,220
				7-29-75	3,200
				9-22-75	1,840
--Do.--	--Do.--	NE¼SW¼ sec. 33, T.18N., R.18E., at road bridge 1 miles west of Ellensburg.	1,037	8-20-10	893
				9-10-10	567
				9-17-10	309
South Fork Manastash Creek	Manastash Creek	NE¼NW¼ sec. 14., T.17N., R.16E., at road crossing.	40.9	9- 3-57	9.87
South Fork Manastash Creek	--Do.--	NE¼SW¼ sec. 13, T.17N., R.16E., about 2½ miles above confluence with North Fork and 12 miles southwest of Ellensburg.	--	9-12-67	13.2
				2-17-77	11.1
				8-11-77	5.79
South Fork Manastash Creek tributary	South Fork Manastash Creek	Lat 46°57'40", long 120°45'04", near center sec. 18, T.17N., R.17E., at county road, 10.5 miles west of Ellensburg.	2.12	5-19-55	26.6
				4-11-56	34.7
				5-10-57	100
				4-20-58	27.5
				1959	14
				3-26-60	32
				4- 4-61	a34
				4- 7-62	a36
				2- 3-63	a53
				4- 6-64	a5
				1-30-65	a28
				3-29-66	a34
				1-29-67	a18
				1-15-68	a48
				3-17-69	a32
				4-25-69	0.48
				3-11-70	3.01
				5-12-70	a20
				1-31-71	a46
				3-31-71	5.15
				12-21-72	a15
				1-15-74	a102
Manastash Creek	Yakima River	Lat 47°58'00", long 120°42'11", in SE¼NW¼ sec. 15, T.17N., R.16E., Kittitas County, at county road crossing, Wheeler Canyon road (Hanson road), 7.2 miles west of Ellensburg.	74.5	10-13-14	13.8
				9-12-58	9.64
				9-15-70	8.77
--Do.--	--Do.--	Lat 46°58'02", long 120°41'02", in NW¼NW¼ sec. 14, T.17N., R.17E., about 500 ft above road crossing and about 1 mile above entrance to Manastash Canyon and 6.5 mi. southwest of Ellensburg.	--	9-12-67	13.2
				2-18-77	5.05
				5-25-77	27.2
				8-11-77	5.46
Yakima River	Columbia River	SW¼NE¼ sec. 10, T.17N., R.18E., at bridge 1 mile southwest of Ellensburg.	1,177	5-31-45	6,200

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Wilson Creek	Yakima River	Lat 47°07'18", long 120°28'52", in NW¼ sec. 20, T.19N., R.19E., at gaging station "near Ellensburg." (Operated Mar. 1957 to 1960. Operated by USBR June to Oct. 1924).	15.3	10-18-11	1.5
				7- 2-24	3.86
				7-29-24	1.63
				8-22-24	1.24
				9-10-24	.96
				9-27-24	1.38
				9-12-67	1.71
				8-29-72	0.44
--Do.--	--Do.--	Lat 47°07'15", long 120°28'40", in SE¼SE¼ sec. 20, T.19N., R.19E., Kittitas County, about 350 ft upstream from Naneum Creek, 9.2 miles northeast of Ellensburg.	--	8-29-72	1.47
				9-27-72	1.80
				10-31-72	1.61
				4-16-73	4.10
				5-15-73	19.2
				6-11-73	2.19
				2-17-77	1.80
				5-25-77	4.19
				8-11-77	.43
Naneum Creek	Wilson Creek	Above city intake.	--	10-18-11	25
				7-19-12	40
				9- 2-12	28.3
--Do.--	--Do.--	Lat 47°07'37", long 120°28'47", in SE¼NE¼ sec. 20, T.19N., R.19E., at gaging station "near Ellensburg." (Operated Mar. 1957 to 1960. Operated by USBR June to Oct. 1924). Kittitas County, 10 ft upstream from intake at Ellensburg water supply system and 9 miles north of Ellensburg.	69.5	10-18-11	19.7
				7-19-12	34.4
				9- 2-12	22.9
				7- 2-24	28.2
				7-29-24	14.9
				8-22-24	10.1
				9-11-24	7.50
				9-27-24	7.60
				5-30-72	a860
--Do.--	--Do.--	Lat 47°07'16", long 120°28'38", in SE¼SE¼ sec. 20, T.19N., R.19E., Kittitas County, about 400 ft upstream from Wilson Creek, 9.3 miles northeast of Ellensburg.	--	8-29-72	29.4
				9-27-72	26.2
				10-31-72	19.9
				4-16-73	57.7
				5-15-73	75.9
				6-11-73	45.2
--Do.--	--Do.--	Lat 47°06'49", long 120°28'32", in SE¼NE¼ sec. 29, T.19N., R.19E., Kittitas County, about 300 ft below combine, 8.8 miles northeast of Ellensburg.	--	8-30-72	9.30
				9-26-72	7.11
				10-31-72	4.39
				4-17-73	15.7
				5-15-73	29.3
				6-11-73	9.41
--Do.--	--Do.--	Lat 47°06'27", long 120°28'36", in NE¼SE¼ sec. 29, T.19N., R.19E., Kittitas County, about 20 ft below Blattner and Thomas ditch, 8.4 miles northeast of Ellensburg.	--	9-26-72	5.51
--Do.--	--Do.--	Lat 47°06'46", long 120°28'23", in SW¼NW¼ sec. 28, T.19N., R.19E., Kittitas County, about 500 ft above Adams ditch, 8.8 miles northeast of Ellensburg.	--	8-30-72	22.3
				9-26-72	24.4
				10-31-72	19.9
				4-17-73	42.5
				5-15-73	59.0
				6-11-73	35.9
--Do.--	--Do.--	Lat 47°06'36", long 120°28'31", in NE¼SE¼ sec. 29, T.19N., R.19E., Kittitas County, about 550 ft below split of Naneum Creek, 8.6 miles northeast of Ellensburg.	--	8-30-72	14.2
				9-26-72	13.5
				10-31-72	10.4
				4-17-73	27.6
				5-16-73	43.9
				6-12-73	22.0
--Do.--	--Do.--	Lat 47°06'16", long 120°28'32", in SE¼SE¼ sec. 29, T.19N., R.19E., Kittitas County, about 100 ft upstream from left bank confluence, 400 ft upstream from Ferrell Road, and 8.2 miles northeast of Ellensburg.	--	9-26-72	22.1

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Naneum Creek	Wilson Creek	Lat 47°06'36", long 120°28'25", in NW¼SW¼ sec. 28, T.19N., R.19E., Kittitas County, about 150 ft above Nason ditch, 8.6 miles northeast of Ellensburg.	--	9-26-72 10-31-72 4-17-73 5-16-73 6-12-73	4.67 4.18 11.2 15.0 6.64
--Do.--	--Do.--	Lat 47°06'33", long 120°28'25", in NW¼SW¼ sec. 28, T.19N., R.19E., Kittitas, County, about 8 ft below Nason ditch, 8.6 miles northeast of Ellensburg.	--	8-30-72	3.12
--Do.--	--Do.--	Lat 47°06'02", long 120°28'28", in NW¼NW¼ sec. 33, T.19N., R.19E., Kittitas County, about 100 ft upstream from Wilson ditch, 8.0 miles northeast of Ellensburg.	--	9-27-72 10-31-72 4-17-73 5-16-73 6-12-73	3.65 2.79 7.70 21.0 7.54
--Do.--	--Do.--	Lat 47°05'56", long 120°28'26", in SW¼NW¼ sec. 33, T.19N., R.19E., Kittitas County, about 30 ft upstream from Lewis ditch, 7.9 miles northeast of Ellensburg.	--	8-30-72	4.74
--Do.--	--Do.--	Lat 47°06'02", long 120°28'30", in NW¼NW¼ sec. 33, T.19N., R.19E., Kittitas County, about 500 ft downstream from concrete diversion structure at Wilson-Naneum split 7.9 miles northeast at Ellensburg.	--	8-30-72 9-27-72 10-31-72 4-17-73 5-16-73 6-12-73	5.90 5.58 2.60 2.88 17.0 6.18
Wilson Creek	Yakima River	Lat 47°06'06", long 120°28'33", in NE¼NE¼ sec. 32, T.19N., R.19E., Kittitas County, about 200 ft downstream from concrete structure at Wilson-Naneum split, 8.0 miles northeast of Ellensburg.	--	8-30-72 9-27-72 10-31-72 4-17-73 5-16-73 6-12-73	12.4 12.2 10.9 22.7 42.0 12.5
--Do.--	--Do.--	Lat 47°05'39", long 120°28'53", in NW¼SE¼ sec. 32, T.19N., R.19E., Kittitas County, about 300 ft below Thomas ditch, 7.4 miles northeast of Ellensburg.	--	8-30-72 9-27-72 10-31-72 4-17-73 5-16-73 6-12-73	4.09 4.10 7.00 19.6 13.3 6.10
Dry Creek	Wilson Creek	Lat 47°05'33", long 120°28'57", in NW¼SE¼ sec. 32, T.19N., R.19E., Kittitas County, at Thomas Road, about 400 ft below split in Dry and Whiskey Creeks, 7.3 miles northeast of Ellensburg.	--	8-30-72 9-27-72 10-31-72 4-17-73 5-16-73 6-12-73	1.19 .94 2.43 3.73 9.80 2.54
Whiskey Creek	--Do.--	Lat 47°05'34", long 120°29'00", in NW¼SE¼ sec. 32, T.19N., R.19E., Kittitas County, at Thomas Road, about 400 ft below split in Dry and Whiskey Creeks, 7.3 miles northeast of Ellensburg.	--	8-30-72 9-27-72 10-31-72 4-17-73 5-16-73 6-12-73	6.47 6.10 2.02 5.18 26.5 6.11
Caribou Creek	Cherry Creek	Sec. 17., T.18N., R.20E., at mouth of canyuon 4 miles northeast of Kittitas.	15.7	10-16-11	.23
Cooke Creek	Caribou Creek	SE¼NW¼ sec. 31, T.19N., R.20E., at gaging station "near Ellensburg," (operated Nov. 1957 to 1960).	18.6		
Caribou Creek	Cherry Creek	NW¼NW¼ sec. 6, T.17N., R20E., 1¼ miles northeast of Kittitas.	--	10-16-11 9-12-57	.2 13.2

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Warm Springs Creek	Caribou Creek	NE¼NE¼ sec. 5, T.17N., R.20E., 150 ft below source, 1¼ miles northeast of Kittitas.	--	0- 3-57 9-12-57	4.53 5.53
Warm Springs Creek and two branches of Parke Creek	--Do.--	NE¼NE¼ sec. 5, T.17N., R.20E., 1¼ miles northeast of Kittitas.	--	9- 3-57 9-12-57	11.5 14.6
Warm Springs Creek wasteway	--Do.--	NE¼NE¼ sec. 6, T.17N., R.20E., 200 ft below mouth of Parke Creek, 1¼ miles northeast of Kittitas.	--	9- 3-57 9-12-57	11.5 12.3
Parke Creek	Cherry Creek	NW¼SW¼ sec. 34, T.18N., R.20E., at Highline Canal 0.1 mile east of Parke Creek road, ½ mile north of U.S. Highway 10, and 5 miles northeast of Kittitas.	--	3-23-56	a186
Johnson Creek tributary	Johnson Canyon	Lat 46°58'41", long 120°14'24", in NE¼SE¼ sec. 7., T17N., R.21E., at crest-gage, 8.5 miles east of Kittitas.	.65	3-23-56 3-18-57 1961 2- 7-63 1-30-65 3-29-66 1-15-68 3-17-68 3-17-69 2-16-70 1-16-71 2-28-72 1-17-73 1-15-74 3-18-75	42.8 42.3 a1.1 a23 a6.8 a0.1 a1.1 a5.6 5.29 a4.0 a2.8 a4.3 a2.4 a19. a14.
--Do.--	--Do.--	NW¼NW¼ sec. 22, T.17N., R.20E., at Highline Canal, 0.6 mile upstream from mouth of Johnson Canyon Road and 5 miles southeast of Kittitas.	--	3-23-56	a17.4
Badger Creek tributary	Badger Creek	NE¼ sec. 24, T.16N., R.20E., ½ mile upstream from mouth and 11 miles southwest of Kittitas.	--	3-23-56	a98.1
Badger Creek tributary No. 2		NE¼NE¼ sec. 15, T.16N., R.20E., at pump ditch 9 miles southwest of Kittitas.	1.46	3-23-56	a34.5
Cherry Creek (also called Sow Creek)	Wilson Creek	NE¼NE¼ sec. 31, T.17N., R.19E., just above mouth.	213	10-16-11	7.54
Wilson Creek	Yakima River	Lat 46°55'35", long 120°30'01", in SE¼SE¼ sec. 30, T.17N., R19E., Kittitas County at road crossing on Thrall road, 0.5 mi southwest of Thrall and 200 ft above Cherry.	169	9- 2-10 9-18-10 8-26-11 9-12-11 10-16-11 3-20-75 4-14-75 6- 3-75 9-24-75	131 94 109 165 137 89.3 92.3 309 147

TABLE 19.--Data from miscellaneous discharge sites--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Wilson Creek	Yakima River	Lat 46°55'01", long 120°30'25", in NE¼SW¼ sec. 3, T.17N., R.19E., Kittitas County, 200 ft above mouth, 0.7 mile downstream from Cherry Creek, 0.85 mile south of Thrall.	382	8- 8-14	121
				8-28-14	144
				10-15-14	215
				2-12-15	155
				3- 5-15	397
				3-16-15	288
				10-10-70	409
				11-23-70	156
				2-17-71	219
				3-30-71	174
				5-12-71	503
				10-31-72	162
				12-27-72	235
				2-21-73	132
				4-18-73	173
				6-14-73	348
				7-30-73	280
				9-28-73	272
				8-30-74	371
				10-24-74	178
				12-18-74	145
				2-12-75	174
				7-28-75	264
				2-18-77	76.5
				5-26-77	328
				8-11-77	253
Yakima River	Columbia River	SW¼ sec. 31, T.17N., R.19E., ½ mile below Thrall.	1,586	8-21-10	918
				9- 2-10	582
				9-18-10	354
--Do.--	--Do.--	SW¼NW¼ sec. 20, T.16N., R.19E., at gaging station "at Umtanum," (operated Aug. 1906 to 1960).	1,594		
McPherson Canyon Creek	Yakima River	Lat 46°50'03", long 120°27'12", near center sec. 33, T.16N., R.19E., at U.S. Highway 978, 0.5 mile northeast of Wymer.	5.48	8-10-52	304
				3-23-56	88.0
				3-18-57	70.4
				4-20-58	52.7
				1959	53
				2-10-61	a161
				2- 6-63	8.73
				2 -7-63	a74
				1966	a 2
				6-20-67	1.34
				6-20-67	a85
				8-26-68	a7
				3-17-69	a76
				3-18-69	0.68
				3- 7-70	a37
				3-11-70	1.59
				1-16-71	a26
				5-21-72	a81
				1-17-73	a28
				1-15-74	a96
				3-18-75	a27
Roza Creek	--Do.--	SW¼ sec. 7, T.15N., R.19E., 2½ miles northwest of Roza and 10 miles north of Selah.	6.89	8-10-52	a23,600
--Do.--	--Do.--	SE¼ sec. 17, T.15N., R.19E., about a mile above mouth, ½ mile west of Roza and 9 miles north of Selah.	13.6	8-10-52	a25,200
Roza Canal	--Do.--	SE¼ sec. 29, T.12N., R.20E., at gaging station, "near Moxee City."	--		
Selah-Moxee Canal	--Do.--	SE¼ sec. 8, T.14N., R.19E., at gaging station "near Selah," operated Oct. 1903 to Oct. 1904, July 1909 to Oct. 1911).	--	7- 5-05	54.0
				8-11-05	68.0
				9- 9-05	60.7
				9-30-05	61.8
				10-12-05	20.0
Selah Creek tributary	Selah Creek	Lat 46°40'34", long 120°23'20", in NE¼ sec. 25, T.14N., R.19E., at crest-stage gage, 7 miles northeast of Yakima.	.68	3-23-56	1.8
				3-18-57	2.4
				2- 3-63	a31
				1-15-68	a3.0
				3-17-69	a39
				1-22-70	a14
				1-16-71	a101
				2-28-72	a12
				1-17-73	a11
				1-15-74	a30

TABLE 19.--Data from miscellaneous discharge sites--continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Selah Creek	Yakima River	Lat 46°41'58", long 120°25'52", in NW¼SE¼ sec. 15., T.14N., R.19E., Yakima County, Yakima Firing Center Military Reservation, 0.3 mile above Unnamed right bank tributary, 2.3 miles above mouth, and 7.2 miles northeast of Yakima.	--	1-16-71	a3,090
Yakima River	Columbia River	NE¼SE¼ sec. 18, T14N., R.18E., at Cascade Lumber Company bridge at dam at Pomona and 1/4 mile above Wenas Creek.	1,903	8-22-10	882
				9- 3-10	661
				9-19-10	440
Wenas Creek	Yakima River	Sec. 24, T.16N., R.16E., at Wenas		5- 5-10	48.5
--Do.--	--Do.--	Lat 46°49'59", long 120°42'40", in NE¼SW¼ sec. 33, T.16N., R.17E., Yakima county, at road crossing, 1.8 mi above Wenas Lake, 8 mi north of Naches	--	9-13-67	1.84
				8-31-73	1.26
				2-18-77	5.28
				5-25-77	5.41
				8-12-77	.80
--Do.--	--Do.--	E½ sec. 3, T.15N., R.17E., 1/4 mile above reservoir.	106	1-21-42	6.49
				4- 6-42	171
				5-11-42	26.4
				6-28-42	9.34
--Do.--	--Do.--	SW¼ sec. 2, T.15N., R.17E., below reservoir 6 miles southeast of Wenas.	114	1-21-42	5.65
				4- 6-42	177
				5-11-42	26.9
				6-28-42	11.2
Cottonwood Creek	Wenas Creek	N½ sec. 35., T15N., R.18E., 6 miles north of Selah.	11.1	8-10-52	a12,800
Wenas Creek	Yakima River	Lat 46°30'02", long 120°31'10" in NE¼NW¼ sec. 13, T.14N., R.18E., Yakima County, 4 mi north of Selah at Wenas Road crossing.	186	6-20-75	14.1
				3-10-76	282
				6-28-76	1.53
				9-21-76	2.09
--Do.--	--Do.--	NW¼ sec. 18, T.14N., R19E., at gaging station "near Selah," (operated Apr. to Dec. 1909).	92	3-30-09	74
				5- 5-09	6.6
				4- 9-10	38.6
				8- 9-10	2.5
				9-13-10	2.4
				10-18-10	4.5
				11-15-10	6.2
				5-27-11	8.0
				1-21-42	11.3
				4- 6-42	111
				5-11-42	3.57
				6-28-42	3.47
				8-10-52	a8,510
				9-12-58	2.46
Taylor Canal	Yakima River (diverts from left bank)	NE¼ sec. 19, T.14N., R.19E., at intake at Pomona.	--	4- 6-10	10.4
				4-30-10	14.3
				5-25-10	27.9
				6-21-10	13.5
				7-19-10	13.3
				8-22-10	25.5
				9- 3-10	16.0
				9-13-10	10.4
				9-19-10	1.5
				5- 2-11	28.9
				5-27-11	20.5
				7-18-11	28.1
				8-24-11	19.7
				9-18-11	9.71
				10- 7-11	6.77

TABLE 19.--Data from miscellaneous discharge sites--continued

Stream	Tributary to	Location	Drainage area (mi^2)	Date	Discharge (ft^3/s)
Taylor Canal	Yakima River (diverts from left bank)	SE¼ sec. 19, T.14N., R.19E, at gaging station "near Selah,".	--	8- 9-04	9.2
				9-19-04	12.9
				7- 5-05	15.0
				8-18-05	14.6
				9- 9-05	18.7
				10-12-05	1.8
				6-16-09	22.9
Yakima River	Columbia River	NW¼ sec. 12, T.13N., R.18E., at old abandoned bridge at gaging station "at Selah Gap near Yakima," (operated 1897 to 1912, fragmentary).	2,135	5-19-97	13,900
				5-26-97	7,420
				6-10-97	4,860
				6-18-97	3,180
				7- 3-97	3,640
				7-10-97	2,300
				7-17-97	1,750
				7-29-97	1,020
				8-13-97	810
				7-21-1903	5,050
				9-16-03	1,660
				5- 5-04	6,740
				7-13-04	2,610
				7-25-04	1,360
				7-30-04	1,120
				8-17-04	556
				9- 1-04	444
				8-22-10	945
				9- 3-10	599
				9-19-10	430
				6-21-11	2,740
				7-14-11	1,280
				8-24-11	698
				8-30-11	678
				9-19-11	934
				9-26-11	781
				10-10-11	750
				10-20-11	595
				11- 2-11	395
				7- 1-12	2,920
				8- 5-12	1,470
				9-12-12	876
				10- 1-12	460

[a]Annual maximum discharge.

TABLE 20.--Annual peak discharges at selected sites

STATION 12474500 YAKIMA RIVER NEAR MARTIN, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1904	05/23/04	1040.00
1905	05/31/05	1000.00
1906	05/01/06	1010.00
1907	11/15/06	6500.00
1908	06/11/08	1780.00
1909	06/02/09	1950.00
1910	11/23/09	4670.00
1911	11/21/10	2590.00
1912	11/19/11	4910.00
1913	06/02/13	1720.00
1914	05/15/14	1660.00
1915	03/26/15	7370.00
1916	05/05/16	1650.00
1917	09/13/17	1860.00
1918	08/09/18	1840.00
1919	09/05/19	1400.00
1920	07/19/20	2370.00
1921	08/01/21	1790.00
1922	08/06/22	1840.00
1923	05/14/23	4680.00
1924	08/31/24	1730.00
1925	05/16/25	1630.00
1926	08/05/26	1220.00
1927	08/31/27	1420.00
1928	08/09/28	1890.00
1929	08/13/29	1980.00
1930	07/19/30	1590.00
1931	07/20/31	1190.00
1932	07/28/32	1610.00
1933	06/15/33	1890.00
1934	12/14/33	1500.00
1935	01/27/35	1230.00
1936	05/27/36	1630.00
1937	06/21/37	1320.00
1938	05/24/38	1260.00
1939	07/09/39	1390.00
1940	05/11/40	1030.00
1941	07/11/41	1720.00
1942	08/08/42	747.00
1943	06/09/43	1270.00
1944	08/12/44	1020.00
1945	05/31/45	1390.00
1946	06/15/46	1680.00
1947	04/20/47	1490.00
1948	05/29/48	4150.00
1949	06/06/49	1030.00
1950	06/30/50	1930.00
1951	08/19/51	1220.00
1952	07/18/52	789.00
1953	06/13/53	1170.00
1954	07/01/54	1280.00
1955	06/23/55	1300.00
1956	08/12/56	1240.00
1957	05/09/57	1360.00
1958	07/27/58	998.00
1959	06/05/59	1320.00
1960	05/20/60	1310.00
1961	06/02/61	1640.00
1962	07/31/62	988.00
1963	08/03/63	1120.00
1964	07/08/64	1120.00
1965	08/25/65	1560.00
1966	09/05/66	1020.00
1967	06/20/67	937.00
1968	08/24/68	961.00
1969	09/02/69	1480.00
1970	06/06/70	991.00
1971	04/14/71	1130.00
1972	04/12/72	2150.00
1973	08/29/73	1100.00
1974	06/21/74	2040.00
1975	07/09/75	1520.00
1976	07/20/76	1750.00
1977	08/12/77	1750.00
1978	07/31/78	2200.00

TABLE 20.--Continued

STATION 12474700 MOSQUITO CR NR EASTON, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1968	06/02/68	103.00
1969	05/11/69	61.00
1970	04/05/70	125.00
1971	05/13/71	50.00
1972	05/14/72	71.00
1973	05/14/73	70.00
1974	01/15/74	166.00
1975	06/01/75	81.00
1976	12/02/75	128.00
1977	04/24/77	46.00

STATION 12475300 BOX CANYON CR TRIBUTARY NR EASTON, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1969	05/11/69	16.00
1970	05/22/70	12.00
1971	05/13/71	19.00
1972	06/10/72	33.00
1973	05/14/73	26.00
1974	01/15/74	36.00
1975	06/01/75	28.00
1976	12/02/75	51.00
1977	/ /77	15.00

TABLE 20.--Continued

STATION 12476000 KACHESS RIVER NEAR EASTON, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)	WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1904	06/06/04	1020.00	1950	06/22/50	1280.00
1905	06/01/05	932.00	1951	07/18/51	1320.00
1906	05/03/06	735.00	1952	06/16/52	1560.00
1907	11/16/06	1760.00	1953	07/20/53	1170.00
1908	06/12/08	1230.00	1954	08/02/54	1220.00
1909	06/04/09	1020.00	1955	06/12/55	1570.00
1910	12/01/09	1580.00	1956	06/08/56	1050.00
1911	11/23/10	1120.00	1957	05/11/57	1390.00
1912	08/01/12	1040.00	1958	08/24/58	714.00
1913	06/03/13	992.00	1959	07/18/59	1360.00
1914	10/06/13	1040.00	1960	12/22/59	1290.00
1915	07/02/15	985.00	1961	07/15/61	985.00
1916	08/03/16	1080.00	1962	07/31/62	955.00
1917	09/06/17	1460.00	1963	07/29/63	1070.00
1918	09/06/18	1290.00	1964	06/16/64	1180.00
1919	08/02/19	1770.00	1965	08/04/65	1660.00
1920	08/27/20	2240.00	1966	08/10/66	880.00
1921	08/24/21	1840.00	1967	08/20/67	915.00
1922	07/20/22	1610.00	1968	03/04/68	920.00
1923	07/22/23	1920.00	1969	06/21/69	2030.00
1924	06/30/24	1720.00	1970	07/27/70	936.00
1925	09/12/25	1660.00	1971	04/20/71	1110.00
1926	07/18/26	1600.00	1972	04/10/72	3060.00
1927	09/09/27	958.00	1973	07/27/73	1680.00
1928	01/13/28	1310.00	1974	08/24/74	1760.00
1929	08/09/29	1130.00	1975	05/20/75	1280.00
1930	07/16/30	1940.00	1976	12/17/75	1360.00
1931	07/16/31	1400.00	1977	09/14/77	2010.00
1932	07/26/32	1380.00	1978	07/31/78	1730.00
1933	08/14/33	1590.00			
1934	12/24/33	1590.00			
1935	01/25/35	1540.00			
1936	05/25/36	1090.00			
1937	07/21/37	1380.00			
1938	06/06/38	1530.00			
1939	07/30/39	1570.00			
1940	07/06/40	795.00			
1941	07/11/41	1960.00			
1942	08/20/42	1300.00			
1943	06/27/43	748.00			
1944	08/08/44	1360.00			
1945	07/15/45	950.00			
1946	05/27/46	1240.00			
1947	05/02/47	890.00			
1948	05/28/48	2530.00			
1949	10/26/48	1660.00			

TABLE 20.--Continued

STATION 12477000 YAKIMA RIVER AT EASTON, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1910	04/26/10	4360.00
1911	11/23/10	3220.00
1912	11/19/11	5900.00
1913	06/02/13	3480.00
1914	05/16/14	2570.00
1915	03/26/15	7280.00
1941	07/11/41	2900.00
1942	11/24/41	1920.00
1943	06/18/43	2410.00
1944	06/29/44	8400.00
1945	01/13/45	2010.00
1946	06/03/46	2660.00
1947	12/14/46	3250.00
1948	05/28/48	9050.00
1949	06/06/49	2910.00
1950	11/27/49	3130.00
1951	12/24/50	2750.00
1952	05/27/52	1200.00
1953	02/01/53	2580.00
1954	06/23/54	2020.00

TABLE 20.--Continued

STATION 12479000 CLE ELUM RIVER NEAR ROSYLN, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)	WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1904	05/24/04	4520.00	1950	06/23/50	4290.00
1905	06/02/05	2990.00	1951	05/25/51	3800.00
1906	04/23/06	3320.00	1952	06/05/52	3180.00
1907	11/15/06	18700.00	1953	06/13/53	3760.00
1908	06/11/08	5380.00	1954	07/01/54	3940.00
1909	06/03/09	5380.00	1955	06/12/55	6620.00
1910	11/24/09	9940.00	1956	06/23/56	3630.00
1911	11/22/10	4650.00	1957	05/09/57	5000.00
1912	05/21/12	4950.00	1958	07/17/58	3040.00
1913	06/03/13	6200.00	1959	06/22/59	3570.00
1914	05/16/14	4050.00	1960	06/16/60	2850.00
1915	04/03/15	4220.00	1961	06/20/61	5080.00
1916	06/18/16	6650.00	1962	06/18/62	3060.00
1917	05/29/17	5680.00	1963	05/20/63	3990.00
1918	12/29/17	14800.00	1964	08/01/64	3920.00
1919	05/28/19	5230.00	1965	06/12/65	3550.00
1920	01/19/20	2700.00	1966	07/21/66	3330.00
1921	06/05/21	5060.00	1967	06/19/67	4760.00
1922	12/13/21	13300.00	1968	06/03/68	6680.00
1923	05/10/23	5030.00	1969	06/06/69	4540.00
1924	02/13/24	6780.00	1970	07/16/70	3410.00
1925	05/17/25	5370.00	1971	07/20/71	7650.00
1926	04/17/26	2910.00	1972	06/21/72	5100.00
1927	06/08/27	6000.00	1973	08/03/73	3040.00
1928	05/22/28	5790.00	1974	06/24/74	7960.00
1929	05/24/29	4180.00	1975	07/11/75	4680.00
1930	04/23/30	3010.00	1976	07/08/76	3060.00
1931	05/02/31	4510.00	1977	06/26/77	3830.00
1932	02/28/32	6480.00	1978	06/06/78	4750.00
1933	12/19/32	3260.00			
1934	04/26/34	3610.00			
1935	06/08/35	3730.00			
1936	05/16/36	4970.00			
1937	06/03/37	4170.00			
1938	04/18/38	5690.00			
1939	05/16/39	4220.00			
1940	05/11/40	4100.00			
1941	07/31/41	2530.00			
1942	07/12/42	2200.00			
1943	05/27/43	5500.00			
1944	06/30/44	2470.00			
1945	05/31/45	4250.00			
1946	05/27/46	3970.00			
1947	05/09/47	4450.00			
1948	05/28/48	11000.00			
1949	06/07/49	4690.00			

TABLE 20.--Continued

STATION 12479500 YAKIMA RIVER AT CLE ELUM, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)	WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1907	11/14/06	25600.00	1953	06/14/53	6010.00
1908	06/11/08	9480.00	1954	07/02/54	5720.00
1909	06/03/09	9720.00	1955	06/12/55	10000.00
1910	11/24/09	17300.00	1956	06/11/56	5740.00
1911	11/22/10	10000.00	1957	05/09/57	8280.00
1912	11/19/11	9410.00	1958	07/26/58	3460.00
1913	06/03/13	11300.00	1959	05/15/59	4980.00
1914	05/17/14	6850.00	1960	11/23/59	14000.00
1915	03/27/15	7360.00	1961	05/21/61	6020.00
1916	06/18/16	10800.00	1962	08/05/62	3910.00
1917	05/30/17	10100.00	1963	05/21/63	5690.00
1918	12/30/17	19900.00	1964	07/09/64	5630.00
1919	05/28/19	8690.00	1965	01/29/65	5940.00
1920	01/19/20	4870.00	1966	07/30/66	3620.00
1921	05/25/21	8820.00	1967	06/21/67	5180.00
1922	12/13/21	19500.00	1968	03/06/68	5310.00
1923	01/08/23	7330.00	1969	06/05/69	6830.00
1924	02/13/24	8570.00	1970	06/22/70	3770.00
1925	05/17/25	8590.00	1971	06/12/71	6050.00
1926	04/17/26	3840.00	1972	06/22/72	8220.00
1927	06/08/27	7490.00	1973	07/31/73	3630.00
1928	01/13/28	10600.00	1974	06/22/74	9820.00
1929	05/24/29	5530.00	1975	05/23/75	7510.00
1930	04/23/30	4490.00	1976	12/03/75	9460.00
1931	05/02/31	6820.00	1977	07/02/77	4180.00
1932	02/28/32	9420.00	1978	12/02/77	17600.00
1933	06/16/33	5690.00			
1934	12/22/33	14000.00			
1935	01/26/35	7160.00			
1936	05/15/36	8380.00			
1937	06/22/37	7160.00			
1938	04/18/38	8760.00			
1939	05/17/39	5200.00			
1940	05/11/40	5560.00			
1941	07/12/41	3200.00			
1942	07/27/42	2740.00			
1943	05/27/43	6360.00			
1944	06/30/44	5570.00			
1945	05/31/45	5640.00			
1946	05/26/46	7010.00			
1947	05/09/47	6130.00			
1948	05/29/48	16700.00			
1949	06/07/49	8100.00			
1950	06/30/50	6800.00			
1951	05/25/51	4880.00			
1952	06/06/52	3520.00			

TABLE 20.--Continued

STATION 12479600 THORNTON CR NR CLE ELUM, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1971	01/31/71	22.00
1972	02/29/72	16.00
1973	12/21/72	5.00
1974	04/12/74	2.00
1975	03/03/75	5.00
1976	12/02/75	0.90
1977	01/19/77	20.00

STATION 12480000 TEANAWAY RIVER BELOW FORKS NEAR CLE ELUM, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1968	01/21/68	3150.00
1969	05/10/69	2610.00
1970	05/17/70	1930.00
1971	01/30/71	3090.00
1972	05/14/72	3350.00
1973	12/21/72	2090.00
1974	01/15/74	3900.00
1975	05/11/75	3800.00
1976	12/04/75	5420.00

STATION 12480500 TEANAWAY RIVER NEAR CLE ELUM, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1910	03/20/10	4330.00
1911	11/21/10	2620.00
1913	04/12/13	1930.00
1914	04/15/14	1460.00
1947	12/11/46	3170.00
1948	05/28/48	4170.00
1949	05/14/49	3160.00
1950	05/13/50	3820.00
1951	02/11/51	2880.00
1952	04/26/52	2030.00

TABLE 20.--Continued

STATION 12480700 HOVEY CREEK NEAR CLE ELUM, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1955	05/20/55	30.00
1956	05/20/56	68.00
1957	05/01/57	32.00
1958	02/25/58	27.00
1959	04/01/59	26.00
1960	11/22/59	33.00
1961	/ /61	30.00
1962	04/07/62	41.00
1963	11/20/62	38.00
1964	06/08/64	26.00
1965	05/17/65	38.00
1966	05/05/66	8.00
1967	05/21/67	17.00
1968	03/03/68	35.00
1969	05/30/69	33.00
1970	04/22/70	14.00
1971	04/03/71	40.00
1972	05/14/72	55.00
1973	12/21/72	20.00
1974	01/16/74	46.00

TABLE 20.--Continued

STATION 12483300 SOUTH FK MANASTASH CR TRIB NR ELLENSBURG, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1955	05/19/55	27.00
1956	04/11/56	35.00
1957	05/10/57	100.00
1958	04/20/58	28.00
1959	/ /59	14.00
1960	03/26/60	32.00
1961	04/04/61	34.00
1962	04/07/62	36.00
1963	02/03/63	53.00
1964	04/06/64	5.00
1965	01/30/65	28.00
1966	03/29/66	34.00
1967	01/29/67	18.00
1968	01/15/68	48.00
1969	03/17/69	32.00
1970	05/12/70	20.00
1971	01/31/71	46.00
1972	02/29/72	59.00
1973	12/21/72	15.00
1974	01/15/74	102.00

TABLE 20.--Continued

STATION 12483500 MANASTASH CREEK NEAR ELLENSBURG, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1910	03/20/10	1360.00
1911	06/02/11	264.00
1912	05/20/12	430.00
1913	06/02/13	430.00
1914	05/15/14	300.00

STATION 12483800 NANEUM CREEK NEAR ELLENSBURG, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1957	05/18/57	700.00
1958	05/20/58	553.00
1959	05/15/59	293.00
1960	05/12/60	666.00
1961	06/04/61	425.00
1962	05/27/62	280.00
1963	11/20/62	481.00
1964	06/09/64	968.00
1965	05/29/65	235.00
1966	05/07/66	180.00
1967	05/22/67	396.00
1968	05/20/68	280.00
1969	05/12/69	449.00
1970	06/04/70	273.00
1971	05/13/71	470.00
1972	05/20/72	860.00
1974	06/16/74	548.00
1975	06/03/75	419.00
1976	05/10/76	464.00
1977	04/26/77	47.00
1978	12/02/77	343.00

TABLE 20.--Continued

STATION 12484200 JOHNSON CANYON TRIBUTARY NEAR KITTITAS, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1956	03/23/56	42.80
1957	03/18/57	42.30
1958	/ /58	0.00
1959	/ /59	0.00
1960	/ /60	0.00
1961	/ /61	1.10
1962	/ /62	0.00
1963	02/07/63	23.00
1964	/ /64	0.00
1965	01/30/65	6.80
1966	03/29/66	0.00
1967	/ /67	0.00
1968	01/15/68	1.10
1969	03/17/69	5.60
1970	02/16/70	4.00
1971	01/16/71	2.80
1972	02/28/72	4.30
1973	01/17/73	2.40
1974	01/15/74	19.00
1975	03/18/75	14.00

TABLE 20.--Continued

STATION 12484500 YAKIMA RIVER AT UMTANUM, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1907	11/15/06	41000.00
1908	04/21/08	9960.00
1909	06/04/09	11000.00
1910	11/25/09	22900.00
1911	11/23/10	11100.00
1912	11/20/11	13000.00
1913	06/03/13	13100.00
1914	05/16/14	7740.00
1915	04/04/15	9350.00
1916	05/05/16	14000.00
1917	05/30/17	13100.00
1919	05/28/19	9960.00
1921	05/17/21	11700.00
1923	05/10/23	9480.00
1925	05/17/25	10000.00
1926	04/17/26	4960.00
1927	05/17/27	8770.00
1929	05/24/29	6150.00
1930	04/01/30	5380.00
1931	05/03/31	6940.00
1932	02/28/32	12200.00
1933	04/29/33	8450.00
1934	12/23/33	32200.00
1935	01/26/35	13700.00
1936	05/15/36	10200.00
1937	06/22/37	10200.00
1938	04/19/38	13000.00
1939	05/17/39	5900.00
1940	05/12/40	6770.00
1941	04/02/41	3100.00
1942	07/17/42	3450.00
1943	05/27/43	8330.00
1944	06/30/44	4620.00
1945	06/01/45	6690.00
1946	05/27/46	9930.00
1947	12/14/46	8920.00
1948	05/29/48	27800.00
1949	05/12/49	8900.00
1950	05/13/50	9680.00
1951	02/12/51	12000.00
1952	06/06/52	4220.00
1953	06/14/53	7430.00
1954	05/19/54	6900.00
1955	06/13/55	12300.00
1956	04/22/56	11900.00
1957	05/10/57	12000.00

TABLE 20.--Continued

STATION 12484600 MCPHERSON CANYON AT WYMER, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)	WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1952	08/10/52	304.00	1958	04/21/58	4890.00
1955	/ /55	0.00	1959	05/16/59	7460.00
1956	03/23/56	88.00	1960	11/23/59	19100.00
1957	03/18/57	70.00	1961	05/21/61	8600.00
1958	04/20/58	53.00	1962	04/07/62	8120.00
1959	/ /59	53.00	1963	11/20/62	6770.00
1960	/ /60	1.00	1964	07/10/64	5770.00
1961	02/10/61	161.00	1965	01/31/65	11700.00
1962	/ /62	0.00	1966	07/03/66	4430.00
1963	02/07/63	74.00	1967	06/21/67	6440.00
1964	/ /64	0.00	1968	02/24/68	8600.00
1965	01/30/65	62.00	1969	05/25/69	7990.00
1966	/ /66	2.00	1970	06/22/70	4200.00
1967	06/20/67	85.00	1971	05/03/71	9110.00
1968	03/26/68	7.00	1972	03/13/72	11700.00
1969	03/17/69	76.00	1973	12/27/72	5050.00
1970	03/07/70	37.00	1974	06/23/74	10900.00
1971	01/16/71	26.00	1975	05/15/75	8440.00
1972	05/21/72	81.00	1976	12/03/75	16600.00
1973	01/17/73	28.00	1977	07/13/77	4130.00
1974	01/15/74	96.00	1978	12/03/77	21500.00
1975	03/18/75	27.00	1979	07/10/79	3910.00
1976	/ /76	0.00	1980	04/29/80	8120.00
1977	/ /77	0.00	1981	12/26/80	16800.00

TABLE 20.--Continued

STATION 12485700 SELAH CREEK TRIBUTARY NEAR YAKIMA, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1955	/ /55	0.00
1956	03/23/56	1.80
1957	03/18/57	2.40
1958	/ /58	0.00
1959	/ /59	0.00
1960	/ /60	0.00
1961	02/10/61	22.00
1962	/ /62	0.00
1963	02/03/63	31.00
1964	/ /64	0.00
1965	/ /65	0.00
1966	/ /66	0.00
1967	/ /67	0.00
1968	01/15/68	3.00
1969	03/17/69	39.00
1970	01/22/70	14.00
1971	01/16/71	101.00
1972	02/28/72	12.00
1973	01/17/73	11.00
1974	01/15/74	30.00

STATION 12485900 PINE CANYON NEAR NACHES, WASH.

WATER YEAR	DATE	PEAK DISCHARGE (CFS)
1961	/ /61	52.00
1962	/ /62	4.00
1963	02/03/63	137.00
1964	04/06/64	4.00
1965	01/30/65	24.00
1966	03/29/66	8.00
1967	01/29/67	11.00
1968	02/23/68	4.00
1969	03/23/69	25.00
1970	03/14/70	7.00
1971	01/16/71	12.00
1972	02/28/72	13.00
1973	01/13/73	7.30
1974	01/15/74	39.00
1975	03/18/75	8.50
1976	02/16/76	6.00

TABLE 21.--Chemical characteristics and temperatures of selected streams

12477600 - Yakima River abv Cle Elum River nr Cle Elum, WA

Water Quality Data

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
OCT , 1971										
11...	1120	470	37	7.6	12.6	7	1	10.3	200	--
18...	1115	220	46	7.5	9.6	4	2	10.2	230	--
NOV										
08...	1040	490	54	7.3	5.6	11	1	12.0	100	--
15...	0950	480	53	7.0	6.4	13	4	11.1	100	--
DEC										
13...	1010	530	53	7.0	2.3	8	1	12.3	70	--
27...	0940	300	54	7.1	1.5	11	1	12.4	60	--
JAN , 1972										
24...	1030	620	57	7.1	1.4	20	1	12.9	--	--
FEB										
07...	1000	600	50	7.3	2.7	1	1	12.8	30	--
21...	1040	1200	53	7.3	2.2	14	2	12.3	20	--
MAR										
13...	1040	2800	46	6.8	3.7	16	6	13.0	70	--
27...	1045	2550	41	7.0	3.0	18	3	12.9	350	--
APR										
10...	1045	2300	50	7.4	4.3	8	1	12.4	20	--
24...	1015	2350	45	7.0	5.2	9	2	11.6	34	--
MAY										
08...	1040	2150	45	7.0	5.5	14	5	11.4	270	--
22...	1000	2500	47	7.1	6.9	20	17	11.4	170	--
JUN										
12...	1045	450	56	7.3	8.0	10	3	10.2	150	--
26...	1105	1900	45	7.2	9.7	21	1	10.6	200	--
JUL										
10...	1050	440	64	7.0	12.7	7	2	9.8	325	--
24...	1145	380	61	7.2	14.2	11	1	9.6	150	--
AUG										
07...	1115	220	81	7.1	16.6	11	1	8.7	110	--
21...	1050	420	54	7.2	--	8	1	9.6	140	--
SEP										
11...	1045	360	57	7.3	10.2	8	1	9.3	200	--
25...	1145	430	50	7.4	10.5	8	1	10.3	240	--
OCT , 1974										
07...	1130	270	69	7.0	9.9	11	1	11.1	340	2
21...	1005	392	59	7.0	8.5	13	6	10.7	600	10
NOV										
04...	1035	213	64	7.1	6.6	9	3	11.2	150	<1
18...	1050	206	65	7.6	5.3	9	2	11.5	460	<1

TABLE 21.--Continued

12477600 - YAKIMA RIVER ABV CLE ELUM RIVER NR CLE ELUM,WASH--Continued

WATER QUALITY DATA

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)
OCT , 1971									
11...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--
NOV									
08...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
DEC									
13...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
JAN , 1972									
24...	--	--	--	--	--	--	--	--	--
FEB									
07...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
MAR									
13...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
APR									
10...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
MAY									
08...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
JUN									
12...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
JUL									
10...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
AUG									
07...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
SEP									
11...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
OCT , 1974									
07...	18	0	6.9	.3	4.0	.4	1.8	28	23
21...	23	0	7.7	.8	2.3	.2	.7	27	22
NOV									
04...	36	3	12	1.5	3.1	.2	.4	40	33
18...	30	4	10	1.3	2.6	.2	.8	32	26

TABLE 21.--Continued

12477600 - YAKIMA RIVER ABV CLE ELUM RIVER NR CLE ELUM,WASH--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT , 1971									
11...	--	--	.01	.00	--	.05	.13	.01	.00
18...	--	--	.02	.00	--	.03	.12	.03	.01
NOV									
08...	--	--	.13	.01	--	.01	.07	.02	.01
15...	--	--	.27	.02	--	.07	.22	.02	.01
DEC									
13...	--	--	.08	.00	--	.02	.12	.01	.00
27...	--	--	.07	.00	--	.00	.06	.00	.00
JAN , 1972									
24...	--	--	.37	)0	--	.03	.09	.01	.00
FEB									
07...	--	--	.04	.00	--	.01	.02	.00	.00
21...	--	--	.13	.00	--	.01	.03	.01	.01
MAR									
13...	--	--	.17	.01	--	.09	.27	.03	.01
27...	--	--	.21	.00	--	.02	.12	.05	.00
APR									
10...	--	--	.03	.00	--	.00	.01	.01	.00
24...	--	--	.02	.01	--	.08	.15	.04	.00
MAY									
08...	--	--	.06	.00	--	.03	.07	.01	.00
22...	--	--	.04	.00	--	.08	.24	.04	.00
JUN									
12...	--	--	.01	.01	--	.03	.36	.01	.00
26...	--	--	.02	.00	--	.06	.30	.01	.00
JUL									
10...	--	--	.10	.00	--	.10	.47	.03	.00
24...	--	--	.13	.01	--	.18	.71	.02	.01
AUG									
07...	--	--	.06	.01	--	.20	2.3	.02	.00
21...	--	--	.02	.01	--	.01	.02	.01	.01
SEP									
11...	--	--	.05	.00	--	.01	.15	.01	.01
25...	--	--	.08	.00	--	.01	.05	.03	.01
OCT , 1974									
07...	1.4	2.2	--	--	.03	.02	--	.01	.00
21...	2.8	2.2	--	--	.02	.03	--	.01	.00
NOV									
04...	2.1	2.2	--	--	.09	.03	--	.06	.01
18...	2.5	2.5	--	--	.00	.01	--	.01	.00

TABLE 21.--Continued

12477600 - YAKIMA RIVER ABV CLE ELUM RIVER NR CLE ELUM,WASH --Continued

WATER QUALITY DATA

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)
DEC , 1974								
02...	1040	185	65	7.1	4.6	8	4	12.1
16...	1135	385	72	6.7	4.2	14	3	12.6
JAN , 1975								
06...	1120	363	81	7.0	1.8	10	2	12.7
20...	1050	386	63	7.2	3.2	33	30	12.9
FEB								
03...	1105	1360	60	7.2	1.8	9	4	13.4
10...	1045	1340	56	6.8	.9	13	2	13.2
MAR								
03...	1055	804	71	7.5	3.5	14	3	13.2
17...	1035	612	89	7.2	1.7	9	2	12.3
APR								
07...	1025	564	80	7.4	5.3	10	5	12.8
21...	1025	712	81	7.2	5.4	11	3	12.4
MAY								
05...	0955	780	67	7.5	6.0	11	6	11.5
19...	1105	2700	56	7.3	6.4	13	8	11.5
JUN								
02...	1025	2800	48	7.3	9.1	33	20	10.9
16...	1015	640	53	7.4	9.9	13	4	11.4
JUL								
14...	1100	150	76	7.4	14.1	13	2	10.2
21...	1010	300	70	7.5	14.1	8	6	10.7
AUG								
04...	1015	390	58	7.3	15.0	17	3	10.0
18...	1205	1060	56	7.2	13.9	15	10	9.4
SEP								
08...	1045	460	67	7.0	16.4	13	4	10.0
22...	1100	370	58	7.3	13.3	8	3	9.9

TABLE 21.--Continued

12477600 - YAKIMA RIVER ABV CLE ELUM RIVER NR CLE ELUM,WASH--Continued

WATER QUALITY DATA

DATE	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)
DEC , 1974									
02...	--	<1	28	5	9.3	1.2	2.8	.2	.7
16...	320	1	26	1	9.6	.6	3.1	.3	1.3
JAN , 1975									
06...	40	1	30	0	8.9	1.8	2.8	.2	1.2
20...	180	6	21	1	7.1	.9	2.5	.2	1.0
FEB									
03...	20	<1	23	7	6.9	1.4	2.5	.2	.5
10...	8	<1	20	3	6.9	.6	2.4	.2	.7
MAR									
03...	16	<1	34	28	11	1.6	3.0	.2	1.2
17...	16	<2	26	1	8.1	1.4	3.0	.3	.9
APR									
07...	44	1	27	0	8.2	1.6	4.5	.4	.5
21...	4	<1	30	3	9.2	1.8	4.9	.4	.8
MAY									
05...	110	<1	36	11	12	1.5	2.7	.2	.5
19...	550	2	21	4	6.6	1.2	2.3	.2	.5
JUN									
02...	320	6	20	3	5.7	1.4	2.0	.2	.3
16...	130	<2	34	7	10	2.2	3.3	.2	.5
JUL									
14...	740	2	30	0	8.2	2.2	3.0	.2	.7
21...	60	<2	25	3	8.6	.8	2.4	.2	1.8
AUG									
04...	540	12	23	0	7.7	1.0	2.2	.2	.9
18...	>3000	160	21	2	6.9	1.0	2.6	.2	.4
SEP									
08...	100	4	21	0	6.3	1.3	2.4	.2	.5
22...	280	2	28	1	8.6	1.6	2.4	.2	.3

TABLE 21.--Continued

12477600 - YAKIMA RIVER ABV CLE ELUM RIVER NR CLE ELUM, WASH--Continued

WATER QUALITY DATA

DATE	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
DEC , 1974								
02...	28	23	2.2	2.7	.03	.08	.01	.01
16...	31	25	2.0	2.8	.11	.07	.02	.00
JAN , 1975								
06...	36	30	3.1	4.0	.07	.03	.01	.00
20...	25	21	2.4	4.1	.17	.28	.08	.01
FEB								
03...	20	16	2.8	5.8	.07	.04	.01	.00
10...	20	16	2.3	3.5	.06	.05	.01	.01
MAR								
03...	8	7	1.8	4.0	.04	.03	.01	.00
17...	30	25	9.7	4.8	.04	.07	.01	.00
APR								
07...	34	28	1.4	4.4	.02	.02	.01	.00
21...	34	28	2.7	4.2	.04	.08	.02	.00
MAY								
05...	31	25	1.0	3.2	.02	.04	.01	.00
19...	21	17	2.4	1.7	.03	.04	.02	.00
JUN								
02...	21	17	1.2	1.3	.18	.06	.03	.01
16...	33	27	1.2	1.3	.14	.03	.02	.01
JUL								
14...	37	30	3.0	4.1	.70	.08	.02	.01
21...	27	22	1.8	1.3	.02	.17	.03	.01
AUG								
04...	30	25	2.1	2.2	.03	.04	.01	.00
18...	24	20	2.1	2.6	.03	.04	.03	.00
SEP								
08...	27	22	2.4	2.4	.02	.02	.01	.00
22...	33	27	3.8	3.4	.01	.02	.01	.00

TABLE 21.--Continued

12479100 - DOMERIE CREEK NEAR ROSLYN

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
APR , 1968										
22...	1100	67	7.7	--	5	29	0	9.5	1.3	2.3
MAY										
20...	1100	70	7.5	--	5	30	0	9.8	1.3	2.2
JUN										
24...	--	74	7.5	--	5	33	0	11	1.4	2.4
JUL										
22...	1005	75	7.8	7.8	5	33	0	11	1.4	2.4
AUG										
19...	1205	76	7.6	--	5	33	0	11	1.4	2.6
SEP										
23...	1100	78	7.6	6.7	5	36	0	12	1.4	2.7
JUL , 1969										
24...	0900	76	7.8	--	0	34	0	11	1.4	2.5
AUG										
20...	1000	77	7.6	--	0	34	0	11	1.4	2.7
NOV										
24...	0800	80	7.4	--	0	33	0	11	1.4	2.6
MAR , 1971										
22...	--	68	7.9	--	--	32	0	11	1.1	2.6
JUN										
21...	1145	70	7.7	4.0	--	29	0	9.6	1.1	2.2
OCT										
04...	1130	79	7.6	5.6	5	33	0	11	1.3	2.7

TABLE 21.--Continued

12479100 - DOMERIE CREEK NEAR ROSLYN--Continued

WATER QUALITY DATA

DATE	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)
APR , 1968										
22...	.2	.0	41	34	.6	.5	.1	13	47	.00
MAY										
20...	.2	.1	42	34	.2	.2	.1	12	47	.00
JUN										
24...	.2	.1	43	35	1.4	.4	.1	13	51	.00
JUL										
22...	.2	.1	46	38	.4	.5	.1	12	51	.00
AUG										
19...	.2	.1	46	38	.2	.4	.0	12	50	.00
SEP										
23...	.2	.1	49	40	2.2	.3	.1	13	56	.00
JUL , 1969										
24...	.2	.2	45	37	.4	.5	.0	13	51	.00
AUG										
20...	.2	.2	45	37	.4	.5	.0	13	51	.02
NOV										
24...	.2	.2	47	39	1.8	.8	.0	12	53	.02
MAR , 1971										
22...	.2	.0	47	39	1.5	1.0	.2	14	55	--
JUN										
21...	.2	.2	46	38	.0	.6	.0	14	50	.00
OCT										
04...	.2	.4	48	39	2.3	1.2	.0	14	57	--

TABLE 21.--Continued

12479100 - DOMERIE CREEK NEAR ROSLYN--Continued

WATER QUALITY DATA

DATE	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
APR . 1968										
22...	--	--	--	--	--	--	<10	10	20	--
MAY										
20...	--	--	--	--	--	--	<10	40	10	--
JUN										
24...	--	--	--	--	--	--	<10	10	<5	20
JUL										
22...	--	--	--	--	--	--	--	--	--	--
AUG										
19...	--	--	--	--	--	--	--	--	--	--
SEP										
23...	--	--	--	--	--	--	--	--	--	--
JUL . 1969										
24...	--	--	--	--	--	--	--	--	--	--
AUG										
20...	--	--	--	--	--	--	--	--	--	--
NOV										
24...	--	--	--	--	--	--	--	--	--	--
MAR . 1971										
22...	--	.00	--	--	--	--	--	--	--	--
JUN										
21...	.00	.00	.02	.10	.02	.01	--	--	--	--
OCT										
04...	--	.00	--	--	--	--	--	--	--	--

TABLE 21.--Continued

12479300 - CLE ELUM RIVER NR CLE ELUM, WASH.

WATER QUALITY DATA

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
OCT , 1971										
11...	1245	650	39	7.4	13.3	5	1	10.3	100	--
18...	1135	340	47	7.4	10.5	7	1	10.5	180	--
NOV										
08...	1105	5.0	109	7.4	5.7	9	1	11.8	100	--
15...	1010	5.0	113	7.4	5.8	4	2	11.3	90	--
DEC										
13...	1045	5.0	136	7.6	1.0	10	2	12.8	40	--
27...	1000	305	57	7.3	2.7	5	1	12.2	85	--
JAN , 1972										
24...	1050	630	58	7.4	2.2	7	1	13.3	--	--
FEB										
07...	1025	820	51	7.4	3.2	9	1	13.3	20	--
21...	1105	660	68	7.6	2.6	15	1	13.1	36	--
MAR										
13...	1105	2400	56	7.1	3.9	13	3	12.7	23	--
27...	1120	4400	49	7.3	3.2	12	1	12.6	250	--
APR										
10...	1115	4480	48	7.4	5.4	7	1	12.3	20	--
24...	1030	4000	50	7.2	5.0	8	1	11.6	>20	--
MAY										
08...	1100	2300	57	7.3	6.1	6	1	11.6	<20	--
22...	1015	2000	65	7.3	8.4	8	1	11.6	20	--
JUN										
12...	1110	1250	74	7.7	10.2	8	1	10.3	48	--
26...	1125	3600	48	7.4	11.4	10	1	9.8	100	--
JUL										
10...	1125	1220	58	6.9	14.9	8	3	9.3	<400	--
24...	1215	1610	48	7.4	17.2	6	1	8.6	80	--
AUG										
07...	1145	2840	47	7.1	19.6	7	1	8.4	440	--
21...	1115	--	--	--	--	--	--	--	--	--
SEP										
11...	1110	2000	44	7.1	10.3	11	2	10.5	40	--
25...	1210	1380	48	7.4	10.5	8	3	11.0	70	--
OCT , 1974										
07...	1145	1200	54	7.3	9.8	12	2	11.2	80	<2
21...	1020	968	49	7.5	10.3	7	5	10.8	>70	5
NOV										
04...	1045	456	53	7.2	8.4	8	3	10.9	60	1
18...	1105	2.6	100	7.4	5.7	5	2	11.6	120	<1

TABLE 21.--Continued

12479300 - CLE ELUM RIVER NR CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)
OCT , 1971									
11...	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--
NOV									
08...	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--
DEC									
13...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
JAN , 1972									
24...	--	--	--	--	--	--	--	--	--
FEB									
07...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
MAR									
13...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
APR									
10...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
MAY									
08...	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--
JUN									
12...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
JUL									
10...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
AUG									
07...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
SEP									
11...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
OCT , 1974									
07...	17	0	4.7	1.2	1.8	.2	.7	27	22
21...	20	0	4.9	2.0	1.1	.1	.3	26	21
NOV									
04...	20	0	4.4	2.2	1.8	.2	.3	27	22
18...	48	0	11	5.0	5.6	.4	.7	58	48

TABLE 21.--Continued

12479300 - CLE ELUM RIVER NR CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
OCT , 1971									
11...	--	--	.09	.00	--	.03	.14	.02	.00
18...	--	--	.02	.00	--	.05	.11	.02	.01
NOV									
08...	--	--	.11	.00	--	.01	.06	.01	.00
15...	--	--	.32	.00	--	.05	.13	.02	.01
DEC									
13...	--	--	.11	.00	--	.02	.13	.01	.00
27...	--	--	.12	.00	--	.00	.09	.00	.00
JAN , 1972									
24...	--	--	.37	.00	--	.02	.09	.01	.00
FEB									
07...	--	--	.03	.00	--	.01	.06	.00	.00
21...	--	--	.03	.00	--	.03	.04	.00	.00
MAR									
13...	--	--	.13	.01	--	.06	.32	.07	.00
27...	--	--	.07	.00	--	.00	.03	.03	.00
APR									
10...	--	--	.05	.01	--	.00	.00	.00	.00
24...	--	--	.02	.01	--	.01	.02	.01	.00
MAY									
08...	--	--	.06	.00	--	.01	.04	.00	.00
22...	--	--	.03	.00	--	.01	.18	--	.02
JUN									
12...	--	--	.01	.00	--	.03	.97	.00	.00
26...	--	--	.05	.00	--	.09	.37	.01	.00
JUL									
10...	--	--	.07	.00	--	.07	.38	.01	.00
24...	--	--	.14	.00	--	.13	.29	.01	.00
AUG									
07...	--	--	.05	.01	--	.23	1.4	.02	.00
21...	--	--	.03	.00	--	.13	.53	.02	.01
SEP									
11...	--	--	.03	.00	--	.09	.60	.01	.00
25...	--	--	.18	.01	--	.19	.68	.03	.01
OCT , 1974									
07...	1.5	1.0	--	--	.08	.19	--	.01	.00
21...	.8	.7	--	--	.01	.02	--	.04	.02
NOV									
04...	1.3	.9	--	--	.13	.03	--	.01	.00
18...	2.0	1.7	--	--	.01	.04	--	.00	.00

TABLE 21.--Continued

12479300 - CLE ELUM RIVER NR CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)
DEC , 1974								
02...	1050	58	82	7.3	5.2	10	5	11.8
16...	1140	51	84	6.8	5.4	8	3	12.2
JAN , 1975								
06...	1130	384	64	7.3	3.5	9	2	12.5
20...	1105	402	75	7.3	3.9	13	6	13.2
FEB								
03...	1130	1470	54	7.3	2.6	5	3	14.0
10...	1105	2180	55	7.0	2.0	8	2	13.2
MAR								
03...	1120	376	65	7.8	3.0	11	2	13.3
17...	1100	372	65	7.5	2.8	6	3	12.8
APR								
07...	1045	364	73	7.3	4.0	9	3	13.0
21...	1045	368	75	7.3	5.4	10	3	12.6
MAY								
05...	1015	380	67	7.8	6.5	6	3	11.8
19...	1110	1960	58	7.5	7.2	8	6	11.4
JUN								
02...	1045	1370	55	7.6	10.2	8	3	11.4
16...	1035	2260	52	7.5	12.4	13	3	10.9
JUL								
14...	1115	2750	51	7.8	16.1	17	2	9.7
21...	1030	2940	48	7.6	16.5	8	6	10.3
AUG								
04...	1030	2920	42	7.4	10.5	8	2	11.2
18...	1225	2410	50	7.1	10.8	15	8	10.6
SEP								
08...	1105	1440	18	7.1	13.5	8	4	10.8
22...	1120	1530	41	7.5	15.2	4	1	9.7

TABLE 21.--Continued

12479300 - CLE ELUM RIVER NR CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)
DEC , 1974									
02...	70	<1	33	0	7.2	3.7	3.5	.3	.5
16...	60	1	32	0	6.6	3.7	4.0	.3	.4
JAN , 1975									
06...	40	1	26	0	5.8	2.7	1.7	.1	1.0
20...	240	4	29	0	7.4	2.6	3.8	.3	.7
FEB									
03...	22	<1	27	6	7.5	2.0	1.4	.1	.3
10...	6	<1	27	0	7.2	2.2	1.1	.1	.6
MAR									
03...	40	9	22	0	5.0	2.3	1.9	.2	.4
17...	40	<1	23	0	5.4	2.3	2.8	.3	.7
APR									
07...	38	<1	22	0	5.6	2.0	2.7	.3	.4
21...	54	<1	28	0	6.5	2.8	3.6	.3	.2
MAY									
05...	52	<1	31	0	6.6	3.6	3.3	.3	.4
19...	350	2	28	4	7.1	2.5	1.6	.1	.4
JUN									
02...	45	<2	27	2	7.2	2.1	1.4	.1	.2
16...	75	2	25	0	6.4	2.2	1.3	.1	.2
JUL									
14...	290	8	22	3	5.1	2.2	1.4	.1	.4
21...	200	14	38	12	12	1.9	1.1	.1	.4
AUG									
04...	70	2	20	11	5.2	1.8	.8	.1	.3
18...	310	28	19	1	4.1	2.2	1.7	.2	.2
SEP									
08...	40	<2	17	0	6.1	.4	1.4	.1	.2
22...	10	<2	19	1	4.0	2.2	.9	.1	.2

TABLE 21.--Continued

12479300 - CLE ELUM RIVER NR CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
DEC , 1974								
02...	43	35	1.3	1.1	.03	.16	.03	.02
16...	54	44	1.3	1.1	.05	.10	.01	.00
JAN , 1975								
06...	31	25	1.5	1.0	.03	.09	.01	.00
20...	40	33	1.8	.7	.03	.03	.01	.01
FEB								
03...	26	21	1.8	2.6	.03	.02	.02	.00
10...	33	27	1.2	.8	.10	.04	.10	.00
MAR								
03...	35	29	1.7	1.3	.03	.01	.00	.00
17...	33	27	1.9	1.7	.03	.05	.00	.00
APR								
07...	35	29	1.0	1.1	.03	.02	.01	.01
21...	39	32	1.5	1.0	.04	.01	.01	.00
MAY								
05...	40	33	1.0	.2	.02	.03	.00	.00
19...	29	24	1.3	1.1	.06	.02	.01	.00
JUN								
02...	30	25	1.1	.8	.14	.02	.01	.00
16...	34	28	1.0	.6	.03	.02	.01	.00
JUL								
14...	23	19	1.6	.8	.15	.08	.01	.01
21...	32	26	.9	.1	.47	.02	.02	.00
AUG								
04...	11	9	2.0	1.0	.02	.05	.01	.00
18...	22	18	1.7	.9	.03	.14	.02	.01
SEP								
08...	20	16	.9	.8	.03	.02	.00	.00
22...	22	18	.9	1.0	.01	.01	.00	.00

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.

WATER QUALITY DATA

DATE	DIS-CHARGE (CFS)	INSTAN-TANEOUS DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	COLOR (PLAT-INUM-COBALT UNITS)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO
MAY , 1947											
28...	--	4500	51	--	--	29	0	8.4	1.9	--	--
OCT											
23...	--	562	72	--	--	32	0	8.4	2.7	--	--
DEC , 1952											
30-31	166	--	80	7.4	5	33	0	7.8	3.4	2.8	.2
JAN											
01-10	166	--	80	7.4	5	33	0	7.8	3.4	2.8	.2
JAN , 1953											
11-31	826	--	62	7.4	5	26	0	6.8	2.1	3.0	.3
FEB											
01-28	1070	--	58	7.4	4	24	0	6.4	2.0	2.5	.2
MAR											
01-10	517	--	64	7.2	5	29	0	7.8	2.3	2.2	.2
11-20	531	--	68	7.0	5	29	0	7.8	2.3	3.1	.3
21-31	677	--	62	7.0	5	28	0	7.6	2.3	2.2	.2
APR											
01-10	1300	--	52	7.2	5	24	0	6.2	2.0	3.1	.3
11-20	1550	--	52	6.9	7	22	0	5.3	2.2	2.3	.2
21-30	1080	--	59	6.9	9	25	0	6.4	2.2	2.8	.2
MAY											
01-10	864	--	66	7.0	9	27	0	7.1	2.3	2.8	.2
11-20	608	--	65	7.1	5	28	0	7.3	2.3	2.8	.2
21-31	668	--	64	7.1	9	28	0	7.0	2.5	2.8	.2
JUN											
01-10	2240	--	57	6.9	5	25	0	6.6	2.1	2.2	.2
11-20	4280	--	51	6.8	5	21	0	5.8	1.7	2.7	.3
21-30	2100	--	53	6.7	5	24	0	6.0	2.1	2.7	.2
JUL											
01-10	2560	--	52	6.8	5	24	0	6.0	2.2	1.5	.1
11-20	2400	--	51	6.9	5	24	0	5.8	2.2	1.5	.1
21-31	2820	--	51	6.8	8	26	1	6.0	2.6	1.3	.1
AUG											
01-10	2850	--	49	6.9	7	27	4	6.3	2.7	1.3	.1
11-20	2860	--	50	6.9	10	26	3	6.1	2.7	1.3	.1
21-31	2580	--	50	6.7	10	26	5	6.6	2.7	1.3	.1
SEP											
01-10	2000	--	48	6.9	6	25	2	5.7	2.6	1.3	.1
11-20	2010	--	50	6.9	7	25	2	6.0	2.4	1.5	.1
21-30	1860	--	49	6.7	7	24	1	5.8	2.4	1.5	.1
OCT											
01-10	1210	--	52	7.1	1	22	0	5.2	2.1	2.5	.2

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L)	TOTAL IRON (FE) (UG/L)
MAY , 1947											
28...	--	35	--	1.2	1.1	--	9.7	--	.00	--	--
OCT											
23...	--	48	--	2.8	1.8	--	12	--	.30	--	--
DEC , 1952											
30-31	.5	46	38	2.0	1.4	.3	9.9	51	.40	--	20
JAN											
01-10	.5	46	38	2.0	1.4	.3	9.9	51	.40	--	20
JAN , 1953											
11-31	.5	34	28	2.0	1.2	.2	9.7	42	.70	10	50
FEB											
01-28	.5	32	26	2.0	1.2	.2	9.9	40	.70	10	40
MAR											
01-10	.6	36	30	3.3	1.2	.1	9.5	45	.60	--	20
11-20	.5	40	33	2.2	1.2	.1	9.2	46	.40	40	20
21-31	.7	36	30	2.1	1.2	.1	8.9	43	.40	--	20
APR											
01-10	.7	34	28	1.7	1.0	.1	7.8	39	.40	--	20
11-20	.4	28	23	2.0	1.0	.2	7.8	35	.40	10	20
21-30	.5	33	27	1.8	1.0	.2	9.6	41	.40	--	30
MAY											
01-10	.4	37	30	2.1	1.2	.2	11	45	.40	--	30
11-20	.4	37	30	2.0	1.1	.2	11	45	.40	30	30
21-31	.4	38	31	1.7	1.9	.2	10	45	.40	--	30
JUN											
01-10	.7	33	27	2.4	1.0	.1	8.3	40	.40	--	20
11-20	.7	28	23	3.1	1.2	.1	7.2	36	.50	60	20
21-30	.7	30	25	4.0	.8	.1	7.2	38	.40	--	90
JUL											
01-10	.7	30	25	2.7	.9	.1	6.7	36	.40	--	20
11-20	.4	29	24	1.8	1.1	.1	7.1	34	.30	40	20
21-31	.2	30	25	2.2	1.4	.2	7.0	36	.50	--	50
AUG											
01-10	.2	28	23	1.9	1.5	.2	7.2	35	.60	--	30
11-20	.2	28	23	1.9	1.5	.2	6.9	35	.70	20	30
21-31	.2	28	23	1.8	1.7	.2	6.8	35	.50	--	20
SEP											
01-10	.2	28	23	1.6	1.1	.2	7.3	34	.30	--	20
11-20	.3	28	23	2.2	1.1	.1	6.9	34	.80	20	20
21-30	.2	28	23	2.1	.9	.1	7.3	34	.70	--	20
OCT											
01-10	.5	29	24	1.4	1.2	.1	6.0	33	1.0	--	110

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	COLOR (PLAT-INUM-COBALT UNITS)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)
OCT , 1953											
11-20	905	53	7.2	1	21	0	4.8	2.1	2.3	.2	.5
21-31	591	59	7.1	2	24	0	6.4	1.9	2.8	.2	.7
NOV											
01-10	164	78	7.4	2	32	0	8.7	2.4	3.5	.3	.7
11-21	156	83	7.3	1	35	0	9.1	3.0	3.6	.3	1.2
22-30	229	71	7.2	2	30	0	9.1	1.8	3.5	.3	.8
DEC											
01-10	723	62	7.7	0	23	0	6.9	1.5	2.9	.3	.6
11-20	1350	58	7.7	0	22	0	6.7	1.3	2.9	.3	.8
21-31	1180	60	7.2	1	23	0	6.7	1.5	2.9	.3	.8
JAN , 1954											
01-10	1740	54	6.9	3	19	0	6.0	.9	2.6	.3	.8
11-20	2250	50	6.9	3	19	0	5.6	1.2	2.2	.2	.8
21-31	2180	49	7.1	2	18	0	5.4	1.2	2.3	.2	.8
FEB											
01-14	1750	52	7.4	--	19	0	6.4	.8	2.3	.2	.7
15-28	1220	62	7.1	1	25	0	8.5	1.0	2.8	.2	.9
MAR											
01-10	1240	64	7.4	1	25	0	6.6	2.0	2.7	.2	.9
11-20	1470	61	7.5	2	26	0	6.4	2.5	2.6	.2	.8
21-31	1120	64	7.4	2	26	0	6.2	2.5	3.0	.3	.8
APR											
01-10	1150	70	7.3	0	25	0	6.7	1.9	3.1	.3	.9
11-20	2050	68	7.2	0	23	0	6.4	1.6	2.8	.3	.8
21-30	2370	62	7.1	0	23	0	6.0	2.0	2.4	.2	.9
MAY											
01-10	2040	61	7.8	5	23	0	6.0	2.0	2.3	.2	.9
11-20	2010	60	7.4	0	22	0	6.0	1.6	2.6	.2	1.0
21-31	2140	61	7.6	5	23	0	6.2	1.8	2.2	.2	.8
JUN											
01-10	2600	56	7.2	2	22	0	6.0	1.7	1.7	.2	--
11-20	3250	51	7.1	2	21	0	5.6	1.7	1.5	.1	--
11-20	--	--	--	--	--	--	--	--	--	--	--
21-30	4380	49	7.1	0	20	0	5.6	1.5	1.5	.1	--
JUL											
01-10	4940	48	7.0	--	19	0	5.2	1.4	1.8	.2	.6
11-20	3680	48	6.9	--	19	0	5.0	1.6	1.7	.2	.5
21-31	2670	48	6.9	--	19	0	5.0	1.6	1.7	.2	.5
AUG											
01-10	2870	48	6.8	--	19	0	5.0	1.5	1.8	.2	.4

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	DISSOLVED BORON (B) (UG/L)	TOTAL IRON (FE) (UG/L)
OCT , 1953										
11-20	28	23	1.6	1.0	.1	5.6	32	.80	60	40
21-31	33	27	1.5	1.8	.2	6.0	38	.70	--	40
NOV										
01-10	44	36	1.6	2.0	.1	11	52	.50	--	<10
11-21	45	37	1.6	2.2	.1	11	54	.60	40	30
22-30	39	32	1.7	2.2	.1	10	48	.60	--	40
DEC										
01-10	34	28	1.7	1.2	.2	10	42	.70	--	<10
11-20	32	26	1.6	1.0	.2	10	40	.80	10	<10
21-31	32	26	1.6	1.0	.2	10	40	.90	--	<10
JAN , 1954										
01-10	28	23	1.7	1.8	.2	7.6	35	1.0	--	<10
11-20	25	21	1.6	1.8	.2	6.8	33	1.0	70	<10
21-31	25	21	1.6	1.2	.3	6.5	32	1.0	--	<10
FEB										
01-14	27	22	1.2	2.0	.1	7.5	34	.50	40	20
15-28	34	28	1.9	1.2	.2	8.4	42	1.1	--	<10
MAR										
01-10	36	30	1.5	1.2	.1	7.4	40	.10	--	<10
11-20	35	29	1.6	1.2	.1	7.8	40	.00	--	<10
21-31	36	30	1.2	1.2	.1	7.8	41	.80	--	<10
APR										
01-10	35	29	2.0	1.0	.1	7.8	41	.80	--	<10
11-20	33	27	1.8	1.0	.1	8.0	39	.80	220	<10
21-30	30	25	1.8	1.0	.2	7.2	36	.80	--	<10
MAY										
01-10	33	27	1.5	.8	.2	8.4	38	.70	--	30
11-20	30	25	1.5	1.0	.2	9.3	38	.80	50	90
21-31	33	27	1.7	1.0	.1	7.3	37	.80	--	40
JUN										
01-10	31	25	1.4	1.2	.1	9.1	36	.50	--	110
11-20	28	23	1.4	1.2	.1	8.6	34	.50	--	150
11-20	--	--	--	--	--	--	--	--	--	150
21-30	27	22	1.4	1.0	.1	7.9	32	.50	--	170
JUL										
01-10	27	22	1.3	1.0	.1	7.1	32	.70	--	<10
11-20	28	23	1.2	.8	.1	7.1	32	.60	90	<10
21-31	27	22	1.1	.8	.1	6.5	31	.60	--	10
AUG										
01-10	28	23	.9	.8	.1	7.1	31	.60	--	<10

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	COLOR (PLAT-INUM-COBALT UNITS)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)
AUG , 1954											
11-20	3180	47	6.8	--	19	0	5.0	1.5	1.7	.2	.6
21-31	2710	47	6.8	--	19	0	4.8	1.6	1.7	.2	.4
SEP											
01-10	2060	50	7.7	0	19	0	4.8	1.6	1.9	.2	.8
11-20	2380	47	7.6	0	19	0	5.6	1.3	1.8	.2	.8
21-30	2550	45	7.4	0	17	0	5.0	1.2	1.7	.2	.7
OCT											
01-10	1890	47	7.0	--	19	0	5.2	1.4	1.7	.2	--
11-20	908	53	7.1	--	21	0	5.6	1.6	2.1	.2	--
21-31	1330	49	7.3	--	19	0	5.4	1.4	2.1	.2	--
NOV											
01-10	536	60	7.3	--	26	0	6.6	2.2	2.5	.2	--
11-20	284	66	7.2	--	28	0	7.9	1.9	2.7	.2	--
21-30	598	63	7.2	--	24	0	7.5	1.3	2.7	.2	--
DEC											
01-10	702	57	7.4	--	23	0	6.7	1.5	2.3	.2	--
11-31	393	64	7.3	--	26	0	7.1	1.9	2.5	.2	--
JAN , 1955											
01-10	468	64	6.6	--	26	0	7.1	1.9	2.2	.2	--
11-20	396	64	7.1	--	26	0	6.9	2.2	2.1	.2	--
21-31	479	65	7.2	--	25	0	6.9	1.8	2.8	.2	--
FEB											
01-10	826	62	7.0	--	24	0	6.9	1.7	2.5	.2	--
11-20	746	65	7.1	--	25	0	6.9	1.8	2.6	.2	--
21-28	359	68	7.1	--	27	0	7.5	2.0	2.9	.2	--
MAR											
01-10	348	74	6.8	--	28	0	7.9	1.9	2.9	.2	--
11-20	405	70	6.9	--	27	0	7.5	2.0	2.7	.2	--
21-31	992	61	6.9	--	24	0	6.7	1.8	2.4	.2	--
APR											
01-10	1370	62	6.9	--	24	0	6.6	1.8	2.4	.2	--
11-20	1640	59	6.8	--	23	0	6.4	1.6	2.3	.2	--
21-30	2240	52	6.8	--	21	0	5.8	1.5	2.1	.2	--
MAY											
01-10	2010	55	6.7	--	22	0	6.4	1.4	2.3	.2	--
11-20	1340	64	6.8	--	24	0	7.3	1.5	2.9	.3	--
21-31	1230	63	7.0	--	24	0	6.9	1.7	2.9	.3	--
JUN											
01-10	2470	58	6.9	--	22	0	6.2	1.5	2.5	.2	--
11-20	6600	52	6.6	--	20	0	6.0	1.2	1.8	.2	--

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH. --Continued

WATER QUALITY DATA

DATE	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	DISSOLVED BORON (B) (UG/L)	TOTAL IRON (FE) (UG/L)
AUG , 1954										
11-20	27	22	1.0	1.0	.1	6.5	31	.60	50	<10
21-31	27	22	1.1	.8	.1	6.5	30	.70	--	<10
SEP										
01-10	27	22	1.2	1.0	.1	11	36	.40	--	<10
11-20	26	21	1.2	1.0	.1	8.7	33	.30	20	<10
21-30	26	21	1.1	.8	.1	8.2	32	.30	--	<10
OCT										
01-10	26	21	1.1	1.0	--	--	--	.40	--	--
11-20	30	25	1.2	.5	--	--	--	.40	50	--
21-31	28	23	1.2	.5	--	--	--	.30	--	--
NOV										
01-10	36	30	1.4	.5	--	--	--	.50	--	--
11-20	38	31	1.4	1.0	--	--	--	.40	10	--
21-30	34	28	1.6	1.0	--	--	--	.40	--	--
DEC										
01-10	32	26	1.5	1.2	--	--	--	.30	--	--
11-31	36	30	1.4	.8	--	--	--	.40	50	--
JAN , 1955										
01-10	35	29	1.9	.8	--	--	--	.30	--	--
11-20	35	29	1.2	1.2	--	--	--	.30	40	--
21-31	36	30	1.6	1.8	--	--	--	.30	--	--
FEB										
01-10	33	27	1.4	1.0	--	--	--	.60	--	--
11-20	34	28	1.6	1.0	--	--	--	.50	10	--
21-28	41	34	1.5	1.5	--	--	--	.40	--	--
MAR										
01-10	40	33	1.6	1.2	--	--	--	.40	--	--
11-20	38	31	1.5	1.5	--	--	--	.40	60	--
21-31	33	27	1.6	1.0	--	--	--	.50	--	--
APR										
01-10	34	28	1.5	1.0	--	--	--	.50	--	--
11-20	33	27	1.4	1.0	--	--	--	.40	20	--
21-30	28	23	1.4	1.0	--	--	--	.50	--	--
MAY										
01-10	31	25	1.4	1.0	--	--	--	.70	--	--
11-20	36	30	1.6	1.0	--	--	--	.60	40	--
21-31	35	29	1.4	1.0	--	--	--	.90	--	--
JUN										
01-10	32	26	1.2	1.0	--	--	--	1.2	--	--
11-20	28	23	1.0	.8	--	--	--	1.0	40	--

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	COLOR (PLAT-INUM-COBALT UNITS)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)
JUN , 1955											
21-30	4660	52	6.5	--	20	0	5.8	1.3	1.6	.2	--
JUL											
01-10	3730	50	6.7	--	19	0	5.2	1.5	1.7	.2	--
11-20	2960	50	6.6	--	20	0	5.2	1.8	1.7	.2	--
21-31	2770	50	6.6	--	20	0	5.2	1.6	1.6	.2	--
AUG											
01-10	2840	48	6.7	--	19	0	4.6	1.9	1.6	.2	--
11-20	3060	46	6.8	--	18	0	4.6	1.6	1.5	.2	--
21-31	3270	46	7.2	--	19	0	4.6	1.9	1.5	.1	--
SEP											
01-10	2930	47	6.7	--	19	0	4.8	1.6	1.7	.2	--
11-20	2420	48	6.8	--	20	0	5.0	1.8	1.8	.2	--
21-30	1950	48	7.1	--	20	0	5.0	1.8	1.7	.2	--
OCT											
01-10	1250	52	6.8	0	21	0	4.8	2.1	2.2	.2	.8
11-20	769	56	6.7	--	--	--	--	--	2.5	--	--
21-31	691	64	7.0	--	--	--	--	--	2.8	--	--
NOV											
01-10	1280	57	7.0	--	--	--	--	--	2.6	--	--
11-20	1700	53	6.9	--	--	--	--	--	2.2	--	--
21-30	2710	49	6.7	--	--	--	--	--	1.7	--	--
DEC											
01-10	3070	47	6.7	--	--	--	--	--	1.3	--	--
11-20	3180	48	6.7	--	--	--	--	--	1.7	--	--
21-31	2940	50	6.8	--	--	--	--	--	1.8	--	--
JAN , 1956											
01-10	3600	47	6.5	5	19	0	5.2	1.4	1.3	.1	.5
11-20	1570	51	6.8	--	--	--	--	--	2.0	--	--
21-31	1090	54	6.8	--	--	--	--	--	2.0	--	--
FEB											
01-10	1040	55	6.8	--	--	--	--	--	2.2	--	--
11-20	1370	54	6.8	--	--	--	--	--	2.1	--	--
21-29	1440	54	6.9	--	--	--	--	--	2.0	--	--
MAR											
01-10	1680	52	6.8	--	--	--	--	--	2.1	--	--
11-20	2590	51	6.7	--	--	--	--	--	2.0	--	--
21-31	2610	55	6.6	--	--	--	--	--	2.2	--	--
APR											
01-11	3040	56	6.6	5	22	0	5.8	1.9	2.1	.2	.5
12-20	2440	66	6.8	--	--	--	--	--	2.8	--	--

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	DISSOLVED BORON (B) (UG/L)	TOTAL IRON (FE) (UG/L)
JUN , 1955										
21-30	28	23	.9	.8	--	--	--	1.0	--	--
JUL										
01-10	27	22	1.1	1.0	--	--	--	.50	--	--
11-20	27	22	1.0	1.0	--	--	--	.40	10	--
21-31	28	23	.9	1.0	--	--	--	.80	--	--
AUG										
01-10	26	21	1.0	.8	--	--	--	.80	--	--
11-20	25	21	.9	.8	--	--	--	.40	<10	--
21-31	24	20	.5	.8	--	--	--	.50	--	--
SEP										
01-10	26	21	1.4	.5	--	--	--	.70	--	--
11-20	26	21	1.4	.5	--	--	--	.60	20	--
21-30	27	22	1.2	.5	--	--	--	.60	--	--
OCT										
01-10	28	23	1.4	.8	.1	6.8	33	.80	10	<10
11-20	30	25	--	--	--	--	--	--	--	--
21-31	36	30	--	--	--	--	--	--	--	--
NOV										
01-10	31	25	--	--	--	--	--	--	--	--
11-20	28	23	--	--	--	--	--	--	--	--
21-30	26	21	--	--	--	--	--	--	--	--
DEC										
01-10	25	21	--	--	--	--	--	--	--	--
11-20	26	21	--	--	--	--	--	--	--	--
21-31	27	22	--	--	--	--	--	--	--	--
JAN , 1956										
01-10	24	20	1.4	.8	.1	5.3	28	.30	20	<10
11-20	28	23	--	--	--	--	--	--	--	--
21-31	29	24	--	--	--	--	--	--	--	--
FEB										
01-10	30	25	--	--	--	--	--	--	--	--
11-20	30	25	--	--	--	--	--	--	--	--
21-29	29	24	--	--	--	--	--	--	--	--
MAR										
01-10	29	24	--	--	--	--	--	--	--	--
11-20	28	23	--	--	--	--	--	--	--	--
21-31	30	25	--	--	--	--	--	--	--	--
APR										
01-11	31	25	1.7	1.5	.1	7.9	37	.40	60	<10
12-20	36	30	--	--	--	--	--	--	--	--

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED, CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO
APR , 1956												
21-30	--	2860	60	6.7	--	--	--	--	--	--	2.5	--
MAY												
01-10	--	3080	57	6.7	--	--	--	--	--	--	2.1	--
11-20	--	3300	52	6.7	--	--	--	--	--	--	2.1	--
21-31	--	3410	51	6.8	--	--	--	--	--	--	2.0	--
JUN												
01-10	--	4910	49	6.3	--	--	--	--	--	--	1.4	--
11-20	--	5570	46	6.3	--	--	--	--	--	--	1.3	--
21-30	--	3990	48	6.3	--	--	--	--	--	--	1.4	--
JUL												
01-10	--	2430	48	6.5	--	0	20	0	5.2	1.6	1.4	.1
11-20	--	2720	46	6.2	--	--	--	--	--	--	1.3	--
21-31	--	2820	44	6.2	--	--	--	--	--	--	1.3	--
AUG												
01-07	--	2940	44	6.2	--	--	--	--	--	--	1.3	--
08-09	--	2980	43	6.1	--	--	--	--	--	--	1.3	--
10-11	--	2940	44	6.2	--	--	--	--	--	--	1.3	--
12-17	--	2980	43	6.1	--	--	--	--	--	--	1.3	--
18...	--	2940	44	6.2	--	--	--	--	--	--	1.3	--
19-20	--	2980	43	6.1	--	--	--	--	--	--	1.3	--
21-31	--	2760	43	6.1	--	--	--	--	--	--	1.3	--
SEP												
01-10	--	2180	43	6.4	--	--	--	--	--	--	1.4	--
11-20	--	1820	45	6.3	--	--	--	--	--	--	1.3	--
21-30	--	1680	46	6.5	--	--	--	--	--	--	1.4	--
JUL , 1959												
29...	1645	3180	46	7.0	12.2	5	20	0	5.5	1.5	1.0	.1
AUG												
25...	1515	2940	44	7.2	14.4	0	19	0	5.0	1.7	.8	.1
OCT												
02...	1530	1600	47	6.8	12.8	5	20	0	6.0	1.1	1.5	.1
NOV												
05...	1520	1490	50	7.4	7.2	5	20	0	6.0	1.1	1.7	.2
DEC												
03...	1230	4790	45	7.3	5.6	5	19	0	5.0	1.5	1.0	.1
29...	1220	5090	45	7.1	3.9	5	18	0	5.5	1.1	1.0	.1
JAN , 1960												
25...	1520	1150	51	7.2	3.3	5	22	0	6.0	1.7	1.1	.1
FEB												
24...	1155	339	80	7.9	2.8	5	34	0	9.5	2.5	2.4	.2

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED BORON (B) (UG/L)	TOTAL IRON (FE) (UG/L)
APR , 1956												
21-30	--	33	27	--	--	--	--	--	--	--	--	--
MAY												
01-10	--	32	26	--	--	--	--	--	--	--	--	--
11-20	--	29	24	--	--	--	--	--	--	--	--	--
21-31	--	28	23	--	--	--	--	--	--	--	--	--
JUN												
01-10	--	27	22	--	.8	--	--	--	--	--	--	--
11-20	--	26	21	--	.8	--	--	--	--	--	--	--
21-30	--	27	22	--	.5	--	--	--	--	--	--	--
JUL												
01-10	.5	28	23	1.3	.8	.1	8.2	33	.30	--	10	20
11-20	--	26	21	--	.5	--	--	--	--	--	--	--
21-31	--	24	20	--	.5	--	--	--	--	--	--	--
AUG												
01-07	--	24	20	--	.5	--	--	--	--	--	--	--
08-09	--	24	20	--	.5	--	--	--	--	--	--	--
10-11	--	24	20	--	.5	--	--	--	--	--	--	--
12-17	--	24	20	--	.5	--	--	--	--	--	--	--
18...	--	24	20	--	.5	--	--	--	--	--	--	--
19-20	--	24	20	--	.5	--	--	--	--	--	--	--
21-31	--	23	19	--	.2	--	--	--	--	--	--	--
SEP												
01-10	--	26	21	--	.2	--	--	--	--	--	--	--
11-20	--	26	21	--	.5	--	--	--	--	--	--	--
21-30	--	27	22	--	.2	--	--	--	--	--	--	--
JUL , 1959												
28...	.2	27	22	1.1	.8	.1	6.8	30	.10	.01	--	70
AUG												
25...	.4	26	21	1.1	.5	.1	6.3	29	.10	.00	--	50
OCT												
02...	.3	26	21	.9	.5	.1	7.8	31	.10	.00	--	160
NOV												
06...	.1	27	22	.9	.8	.0	7.9	32	.00	.00	--	70
DEC												
03...	.1	25	21	1.2	.0	.2	6.9	28	.20	.00	--	230
29...	.4	25	21	1.0	.2	.0	6.2	28	.10	.00	--	170
JAN , 1960												
26...	.3	29	24	1.2	.5	.0	9.7	35	.10	.00	--	30
FEB												
24...	.1	44	36	2.4	1.0	.1	10	50	1.1	.00	--	50

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	DIS-SOLVED OXYGEN (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)
MAR , 1960										
29...	1130	1080	72	7.3	7.8	5	--	28	0	8.0
APR										
22...	1715	1150	60	7.4	5.6	5	--	25	0	6.0
MAY										
31...	1040	3320	48	7.5	9.4	5	--	21	0	5.0
JUN										
28...	0855	2380	50	7.7	14.4	5	--	23	0	6.0
JUL										
21...	1130	3290	47	7.1	13.3	0	--	21	0	4.5
NOV , 1961										
20...	1204	206	73	7.4	2.8	5	12.1	30	0	8.0
FEB , 1962										
19...	1225	885	62	7.2	4.4	5	12.5	24	0	7.0
MAY										
21...	1030	1770	52	7.2	8.9	5	12.2	22	0	6.0
AUG										
24...	1700	3740	44	7.3	18.3	5	9.4	19	0	5.0
DEC										
18...	1855	969	56	7.2	5.0	5	11.4	23	0	7.5
MAR , 1963										
29...	1630	660	66	7.3	6.1	5	11.3	27	0	8.0
JUN										
27...	1900	3020	46	7.4	13.9	5	10.4	25	1	5.0
SEP										
23...	1100	1160	52	7.4	15.6	0	9.7	25	0	5.5
DEC										
07...	1030	282	82	7.3	3.9	5	13.5	36	0	9.0
FEB , 1964										
07...	1050	308	69	7.2	3.9	0	13.4	29	0	7.5
APR										
13...	1535	1930	58	7.2	7.2	0	11.7	25	0	6.5
JUL										
27...	1150	4060	45	7.4	17.2	0	9.4	21	0	4.5
SEP										
22...	1545	1720	44	7.2	15.0	0	9.7	20	0	4.5
NOV										
21...	0810	340	57	7.4	5.0	0	12.0	23	0	6.5
JAN , 1965										
09...	0830	1820	46	7.3	1.1	0	12.3	19	0	5.0
MAR										
06...	0645	2700	49	7.5	2.2	0	12.0	21	0	5.6

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)
MAR , 1960										
29...	1.9	3.3	.3	.1	41	34	2.2	1.0	.0	11
APR										
22...	2.4	2.0	.2	.2	34	28	1.2	.0	.1	8.2
MAY										
31...	2.1	1.2	.1	.1	29	24	.6	.5	.0	7.1
JUN										
28...	1.9	1.2	.1	.2	29	24	.8	.2	.0	6.5
JUL										
21...	2.4	1.1	.1	.1	27	22	2.0	.0	.0	6.3
NOV , 1961										
20...	2.4	2.6	.2	.2	41	34	1.2	.8	.1	11
FEB , 1962										
19...	1.7	2.8	.2	.3	34	28	2.0	.8	.0	9.2
MAY										
21...	1.8	1.5	.1	.2	30	25	.6	.2	.0	6.9
AUG										
24...	1.5	1.2	.1	.2	26	21	1.6	.2	.0	5.7
DEC										
18...	1.1	2.1	.2	.3	30	25	2.8	.8	.1	9.0
MAR , 1963										
29...	1.7	3.0	.3	.1	39	32	2.0	.5	.1	10
JUN										
27...	3.0	1.0	.1	.2	29	24	1.6	.5	.0	6.2
SEP										
23...	2.7	1.4	.1	.1	32	26	.8	.5	.1	7.0
DEC										
07...	3.2	3.0	.2	.3	47	39	2.8	1.5	.1	11
FEB , 1964										
07...	2.6	2.9	.2	.3	40	33	1.6	1.0	.0	9.5
APR										
13...	2.2	2.1	.2	.7	34	28	1.6	1.0	.1	8.1
JUL										
27...	2.3	1.4	.1	.1	27	22	.0	.2	.0	5.5
SEP										
22...	2.2	1.3	.1	.4	27	22	.6	.2	.0	5.7
NOV										
21...	1.7	2.3	.2	.2	34	28	1.6	.8	.1	7.8
JAN , 1965										
09...	1.6	1.7	.2	.4	26	21	1.6	.5	.1	5.8
MAR										
06...	1.8	2.2	.2	.8	28	23	1.4	.5	.0	6.5

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
MAR , 1960										
29...	48	.10	.00	--	--	--	--	--	130	--
APR										
22...	37	.00	.00	--	--	--	--	--	60	--
MAY										
31...	31	.10	.01	--	--	--	--	--	60	--
JUN										
28...	31	.00	.00	--	--	--	--	--	50	--
JUL										
21...	30	.10	.00	--	--	--	--	--	40	--
NOV , 1961										
20...	47	.10	.00	<5	<10	<10	<10	40	<10	50
FEB , 1962										
19...	41	.00	.00	--	--	--	--	--	50	--
MAY										
21...	32	.10	.00	<5	10	10	10	150	--	50
AUG										
24...	28	.00	.00	--	--	--	--	--	--	--
DEC										
18...	39	.30	.00	<5	<10	<10	<10	10	90	100
MAR , 1963										
29...	45	.10	.01	--	--	--	--	--	20	--
JUN										
27...	32	.20	.00	<5	<10	<10	<10	60	70	50
SEP										
23...	34	.00	.00	--	--	--	--	--	20	--
DEC										
07...	54	.20	.00	--	--	--	--	--	130	--
FEB , 1964										
07...	45	.10	.00	--	--	--	--	--	30	--
APR										
13...	39	.20	.00	<5	10	<10	<10	90	80	50
JUL										
27...	27	.10	.00	--	--	--	--	--	70	--
SEP										
22...	28	.20	.00	<5	<10	<10	<10	10	30	50
NOV										
21...	38	.00	.00	--	--	--	--	--	30	--
JAN , 1965										
09...	30	.10	.00	<5	<10	<10	<10	10	40	<50
MAR										
06...	33	.10	.00	--	--	--	--	--	130	--

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	DIS-SOLVED OXYGEN (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)
MAY , 1965											
08...	1438	3010	52	7.6	11.1	0	10.5	--	23	0	5.6
JUL											
10...	1620	3220	47	7.0	17.8	5	9.3	--	22	0	4.8
SEP											
11...	0650	2050	46	7.1	13.9	0	9.1	--	21	0	4.8
DEC											
04...	0915	166	84	7.6	5.6	0	10.7	--	36	0	9.2
MAR , 1966											
21...	1615	304	80	7.4	6.7	5	11.6	--	32	0	8.4
JUN											
14...	1225	1800	54	7.2	13.9	5	12.5	--	22	0	4.9
SEP											
17...	0950	1650	50	7.0	15.0	0	9.3	--	24	0	5.5
OCT											
25...	--	294	72	7.7	10.5	5	11.6	--	29	0	9.0
JAN , 1967											
24...	1655	602	71	7.6	3.3	0	--	--	29	0	8.3
MAR											
29...	1205	883	63	7.5	5.6	5	12.2	--	26	0	7.2
JUN											
14...	1230	1750	53	7.8	14.9	0	13.9	--	23	0	5.5
JAN , 1968											
10...	1015	892	53	7.4	1.2	10	12.3	--	25	0	6.3
MAR											
19...	1830	2720	50	7.3	5.5	5	12.2	--	21	0	5.2
JUN											
10...	--	2600	50	7.5	12.8	5	9.9	140	22	0	5.0
SEP											
11...	--	1850	48	7.3	16.5	0	9.7	28	22	0	4.9
DEC											
09...	1230	1140	52	7.2	2.5	5	10.5	270	22	0	6.2
MAR , 1969											
12...	1610	450	62	7.6	5.9	0	12.4	1	26	0	7.0
JUN											
23...	1330	2600	45	7.3	15.5	0	9.3	88	20	0	4.7
SEP											
20...	1045	1770	49	7.3	14.0	0	9.1	80	22	0	4.9
DEC											
15...	1150	409	62	7.9	3.8	0	12.6	160	26	0	7.3
MAR , 1970											
16...	1120	580	77	7.5	4.3	0	12.3	144	31	0	8.6

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)
MAY , 1965											
08...	2.2	1.5	.1	.1	32	26	1.2	.2	.1	6.1	33
JUL											
10...	2.3	1.4	.1	.3	28	23	1.4	.2	.0	5.7	30
SEP											
11...	2.2	1.2	.1	.4	28	23	1.4	.5	.0	5.4	30
DEC											
04...	3.3	3.0	.2	.4	48	39	2.2	1.2	.1	9.5	53
MAR , 1966											
21...	2.8	3.5	.3	.4	46	38	2.0	1.0	.1	8.7	50
JUN											
14...	2.4	1.5	.1	.2	32	26	.0	.5	.1	6.1	31
SEP											
17...	2.6	1.4	.1	.1	31	25	1.2	.0	.0	6.0	32
OCT											
25...	1.6	2.6	.2	.3	42	34	.0	1.8	.1	14	50
JAN , 1967											
24...	2.1	3.3	.3	.8	42	34	1.0	.5	.1	11	48
MAR											
29...	1.8	3.1	.3	.5	35	29	1.8	.0	.1	8.5	40
JUN											
14...	2.3	1.6	.1	.6	32	26	.6	.2	.0	6.3	33
JAN , 1968											
10...	1.5	2.0	.2	.2	31	25	1.4	.8	.0	7.8	35
MAR											
19...	1.9	1.5	.1	.2	29	24	.8	.5	.0	5.7	30
JUN											
10...	2.3	1.3	.1	.2	28	23	.4	.4	.1	5.8	29
SEP											
11...	2.3	1.2	.1	.2	29	24	1.0	.3	.1	5.5	30
DEC											
09...	1.5	2.3	.2	.2	31	25	1.4	.4	.0	8.2	35
MAR , 1969											
12...	1.9	2.5	.2	.2	36	30	1.6	.5	.0	7.2	39
JUN											
23...	1.9	1.3	.1	.2	26	21	.2	.4	.0	5.8	27
SEP											
20...	2.4	1.0	.1	.2	29	24	.0	.4	.0	6.1	29
DEC											
15...	1.8	2.1	.2	.3	36	30	.4	.6	.1	7.3	38
MAR , 1970											
16...	2.3	4.0	.3	.4	44	36	2.0	1.0	.1	9.5	50

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	TOTAL NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
MAY , 1965										
08...	.10	.04	<5	10	<10	<10	20	80	--	<50
JUL										
10...	.20	.00	--	--	--	--	--	90	--	--
SEP										
11...	.10	.01	--	--	--	--	--	50	--	--
DEC										
04...	.10	--	--	--	--	--	--	--	--	--
MAR , 1966										
21...	.20	--	<5	<10	<10	<10	10	--	--	<50
JUN										
14...	.00	--	--	--	--	--	--	--	--	--
SEP										
17...	.10	--	<5	10	10	10	<5	--	--	<10
OCT										
25...	.20	--	--	--	--	--	--	--	--	--
JAN , 1967										
24...	.20	--	<5	10	--	10	20	--	--	10
MAR										
29...	.10	--	--	--	--	--	--	--	--	--
JUN										
14...	.00	--	<5	10	--	<10	<5	--	--	<10
JAN , 1968										
10...	.00	--	<5	--	<10	--	10	--	10	10
MAR										
19...	.10	--	--	--	--	--	--	--	--	--
JUN										
10...	.00	--	<5	--	<10	--	<5	--	10	<10
SEP										
11...	.20	--	--	--	--	--	--	--	--	--
DEC										
09...	.00	--	--	0	0	--	0	--	--	10
MAR , 1969										
12...	.00	--	--	--	--	--	--	--	--	--
JUN										
23...	.00	--	--	--	0	--	0	--	--	0
SEP										
20...	.10	--	--	--	--	--	--	--	--	--
DEC										
15...	.20	--	--	--	0	--	0	--	--	0
MAR , 1970										
16...	.20	--	--	--	--	--	--	--	--	--

TABLE 21.--Continued

12479500 - YAKIMA RIVER AT CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-CHARGE (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	DIS-SOLVED OXYGEN (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)
JUN 15...	814	59	7.3	11.1	5	10.1	490	24	0	6.5	2.0
SEP 15...	1820	51	7.5	16.4	0	10.3	570	23	0	5.0	2.6

DATE	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)
JUN 15...	2.1	.2	.3	34	28	1.2	.6	.1	7.7	38	.20
SEP 15...	1.4	.1	.2	30	25	.0	.6	.0	6.0	31	.10

TABLE 21.--Continued

12480600 - TEANAWAY R NR CLE ELUM, WASH

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)
NOV , 1961										
20...	1140	119	7.4	.6	5	13.3	57	0	13	6.0
FEB , 1962										
19...	1210	110	7.5	4.4	15	10.8	51	0	13	4.4
MAY										
21...	1020	88	7.5	7.2	5	15.1	42	0	10	4.2
AUG										
24...	1740	152	7.5	21.1	10	9.6	71	0	16	7.5
DEC										
18...	1920	109	7.8	3.9	5	12.4	52	0	13	4.7
MAR , 1963										
29...	1615	111	7.5	6.7	10	12.5	52	0	13	4.8
JUN										
27...	1945	138	8.6	15.0	5	9.6	70	4	16	7.3
SEP										
23...	1115	190	7.7	--	5	10.2	94	0	21	10
DEC										
07...	1015	122	7.7	1.1	0	14.2	58	0	14	5.7
FEB , 1964										
07...	1030	128	7.7	1.1	0	13.9	61	0	14	6.3
APR										
13...	1500	106	7.4	8.3	5	11.1	50	0	12	4.9
JUL										
27...	1100	130	7.6	17.8	0	9.9	62	0	13	7.1
SEP										
22...	1515	161	7.8	17.8	5	9.2	79	0	18	8.3
NOV										
21...	0835	131	7.7	2.8	0	12.8	63	0	14	6.9
JAN , 1965										
09...	0745	116	7.7	.6	0	13.2	56	0	13	5.7
MAR										
06...	0615	113	8.2	1.1	10	--	53	0	13	5.0
MAY										
08...	1405	98	7.6	11.7	0	10.0	47	0	12	4.2
JUL										
10...	1650	120	7.7	20.0	5	9.0	58	0	12	7.0
SEP										
11...	0625	172	7.5	12.3	0	8.5	84	0	18	9.5
DEC										
04...	0855	124	7.6	3.9	5	11.4	59	0	13	6.5
MAR , 1966										
21...	1645	139	7.2	5.0	5	10.4	64	0	14	7.0

TABLE 21.--Continued

12480600 - TEANAWAY R NR CLE ELUM, WASH --Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)
NOV , 1961										
20...	2.1	.1	.3	72	59	2.6	.5	.0	13	73
FEB , 1962										
19...	3.0	.2	.5	66	54	1.8	1.0	.1	13	69
MAY										
21...	1.6	.1	.2	54	44	1.2	.0	.0	11	55
AUG										
24...	3.9	.2	.7	95	78	1.6	.8	.1	17	94
DEC										
18...	2.3	.1	.4	66	54	2.4	.8	.1	12	68
MAR , 1963										
29...	3.0	.2	.5	68	56	2.2	.8	.1	14	72
JUN										
27...	2.6	.1	.4	81	66	2.2	.5	.1	14	83
SEP										
23...	4.2	.2	.6	118	97	2.2	1.2	.0	18	115
DEC										
07...	2.3	.1	.2	74	61	2.6	.8	.1	12	74
FEB , 1964										
07...	2.9	.2	.4	75	62	4.0	1.2	.0	12	78
APR										
13...	2.8	.2	.7	64	52	1.6	.8	.1	13	68
JUL										
27...	2.9	.2	.3	78	64	1.6	1.2	.1	14	79
SEP										
22...	3.4	.2	.7	100	82	2.0	.5	.1	16	98
NOV										
21...	2.7	.1	.2	82	67	2.0	1.2	.1	12	79
JAN , 1965										
09...	2.3	.1	1.0	71	58	2.4	1.0	.1	12	73
MAR										
06...	3.3	.2	.5	69	57	2.0	.5	.1	13	72
MAY										
08...	2.1	.1	.2	60	49	.6	1.5	.0	11	61
JUL										
10...	2.6	.1	.2	74	61	1.4	.2	.1	13	73
SEP										
11...	4.0	.2	.9	106	87	2.2	1.0	.1	17	105
DEC										
04...	2.5	.1	.5	74	61	2.4	1.2	.1	12	75
MAR , 1966										
21...	3.6	.2	.5	78	64	2.8	1.8	.1	11	80

TABLE 21.--Continued

12480600 - TEANAWAY R NR CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	TOTAL NITRATE (NO3) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV , 1961									
20...	.00	.00	<5	10	<10	<10	50	130	50
FEB , 1962									
19...	.40	.02	--	--	--	--	--	--	--
MAY									
21...	.00	.00	<5	10	10	<10	210	80	50
AUG									
24...	.10	.01	--	--	--	--	--	90	--
DEC									
18...	.40	.02	<5	<10	10	<10	10	--	100
MAR , 1963									
29...	.10	.00	--	--	--	--	--	--	--
JUN									
27...	.50	.01	<5	20	<10	<10	110	--	100
SEP									
23...	.60	.01	--	--	--	--	--	80	--
DEC									
07...	.20	.00	--	--	--	--	--	60	--
FEB , 1964									
07...	.10	.00	--	--	--	--	--	100	--
APR									
13...	.20	.01	<5	10	<10	<10	140	--	50
JUL									
27...	1.0	.00	--	--	--	--	--	50	--
SEP									
22...	.20	.01	<5	<10	<10	<10	10	30	50
NOV									
21...	.00	.00	--	--	--	--	--	60	--
JAN , 1965									
09...	.20	.01	<5	<10	<10	<10	10	70	<50
MAR									
06...	.30	.01	--	--	--	--	--	380	--
MAY									
08...	.20	.00	<5	10	<10	<10	20	60	<50
JUL									
10...	.20	.00	--	--	--	--	--	120	--
SEP									
11...	.20	.01	--	--	--	--	--	--	--
DEC									
04...	.00	--	--	--	--	--	--	--	--
MAR , 1966									
21...	1.2	--	<5	<10	10	<10	40	--	<50

TABLE 21.--Continued

12480600 - TEANAWAY R NR CLE ELUM, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
JUN , 1966									
14...	1305	96	7.5	15.0	5	11.6	45	0	9.9
SEP									
17...	0855	192	7.3	13.9	0	9.4	100	0	22

DATE	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)
JUN , 1966									
14...	5.0	1.8	.1	.3	59	48	.6	.0	.1
SEP									
17...	11	4.1	.2	.6	126	103	2.2	1.5	.1

DATE	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED BORON (B) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	HEXAVALENT CHROMIUM (CR6) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
JUN , 1966									
14...	11	58	.00	--	--	--	--	--	--
SEP									
17...	18	122	.20	<5	20	<10	<10	10	<10

TABLE 21.--Continued

12482600 - YAKIMA RIVER NR THORP, WASH.

WATER QUALITY DATA

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)
OCT , 1974										
07...	1245	1780	58	7.6	9.6	10	3	11.6	400	<2
21...	1115	1520	66	7.3	9.3	8	2	11.1	170	4
NOV										
04...	1125	690	65	7.1	6.4	8	2	11.8	120	<2
18...	1155	225	93	7.6	5.9	8	1	12.2	160	1
DEC										
02...	1125	328	91	7.5	3.8	9	3	12.7	220	1
16...	1220	555	97	7.2	4.2	12	2	13.1	320	8
JAN , 1975										
06...	1215	920	83	7.5	2.2	8	1	13.6	25	5
20...	1140	4200	83	7.4	3.0	45	80	12.8	>480	30
FEB										
03...	1210	3550	66	7.3	1.9	8	2	12.9	50	3
10...	1205	4150	62	6.9	1.4	11	3	13.4	24	<1
MAR										
03...	1205	2440	98	7.7	3.5	42	10	13.6	120	20
17...	1145	1680	97	7.7	3.0	14	3	13.5	<10	<1
APR										
07...	1145	1480	98	7.4	4.9	16	3	14.7	42	<1
21...	1130	2880	100	7.5	6.6	31	7	13.1	50	2
MAY										
05...	1055	2750	92	7.9	6.4	18	9	12.4	520	5
19...	1145	6600	70	7.6	6.8	13	10	11.5	500	4
JUN										
02...	1130	6600	62	7.6	10.0	25	20	11.3	750	12
16...	1120	4300	61	7.6	11.6	13	4	11.0	340	2
JUL										
14...	1200	3350	57	7.8	17.0	13	1	9.7	240	8
21...	1125	3300	55	7.7	17.8	8	5	9.6	200	<2
AUG										
04...	1125	3550	48	7.4	13.0	8	3	11.7	210	4
18...	1320	3750	53	7.0	12.7	17	9	10.2	--	--
SEP										
08...	1205	2080	57	7.2	15.1	13	4	10.2	<50	<2
22...	1200	1850	51	7.5	14.2	4	10	10.0	140	<2

TABLE 21.--Continued

12482600 - YAKIMA RIVER NR THORP, WASH.--Continued

WATER QUALITY DATA

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)
OCT , 1974										
07...	22	0	5.2	2.1	1.5	.1	.2	30	25	1.3
21...	25	0	7.5	1.4	1.6	.1	.4	30	25	1.2
NOV										
04...	30	0	7.3	2.8	2.2	.2	.1	36	30	1.3
18...	43	2	11	3.8	3.0	.2	.5	50	41	1.6
DEC										
02...	37	0	10	3.0	3.3	.2	.3	51	42	1.4
16...	38	0	10	3.1	3.4	.2	.4	49	40	2.5
JAN , 1975										
06...	35	0	8.4	3.3	2.5	.2	1.1	42	34	1.4
20...	32	0	9.0	2.3	3.0	.2	.7	40	33	1.8
FEB										
03...	26	2	6.3	2.4	2.4	.2	.5	29	24	2.2
10...	23	0	6.0	1.9	1.9	.2	.4	29	24	2.0
MAR										
03...	40	0	9.7	3.8	3.1	.2	.3	49	40	.8
17...	52	12	14	4.1	2.8	.2	.2	48	39	--
APR										
07...	41	1	9.7	4.0	3.2	.2	.4	48	39	1.3
21...	43	0	12	3.2	3.7	.2	.4	54	44	2.2
MAY										
05...	41	0	11	3.2	3.1	.2	.5	54	44	1.4
19...	30	0	7.6	2.6	2.2	.2	.4	38	31	1.4
JUN										
02...	28	0	7.3	2.3	1.8	.1	.4	34	28	1.3
16...	18	0	1.9	3.1	1.6	.2	.2	41	34	1.6
JUL										
14...	30	4	10	1.3	1.5	.1	.3	32	26	1.2
21...	21	0	5.0	2.1	1.4	.1	.2	27	22	.9
AUG										
04...	19	6	4.5	1.9	1.1	.1	.2	16	13	1.2
18...	21	0	4.8	2.2	1.6	.2	.2	26	21	1.4
SEP										
08...	21	1	4.7	2.2	1.6	.2	.2	24	20	1.3
22...	22	0	5.0	2.4	1.4	.1	.2	33	27	1.4

TABLE 21.--Continued

12482600 - YAKIMA RIVER NR THORP, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT , 1974										
07...	1.4	.05	.05	.02	.00	0	0	6	.0	0
21...	1.0	.02	.04	.01	.00	0	1	11	.0	0
NOV										
04...	1.0	.02	.07	.02	.00	0	1	2	.0	10
18...	1.9	.02	.03	.00	.00	0	1	7	.0	20
DEC										
02...	1.8	.01	.02	.00	.00	<10	0	10	.1	0
16...	2.2	.10	.05	.01	.00	<10	1	18	<.1	10
JAN , 1975										
06...	2.5	.14	.03	.00	.00	0	1	8	.0	10
20...	2.6	.08	.14	.08	.01	0	2	20	.0	10
FEB										
03...	3.9	.05	.04	.01	.00	10	2	20	.0	20
10...	2.8	.26	.04	.01	.00	0	1	13	.0	7
MAR										
03...	1.6	.13	.08	.04	.01	0	1	11	.0	20
17...	--	.11	.06	.01	.00	0	18	400	.0	50
APR										
07...	2.0	.01	.03	.01	.00	0	0	7	.0	20
21...	1.7	.02	.05	.02	.00	0	1	18	.0	6
MAY										
05...	1.6	.02	.04	.02	.00	0	0	6	.2	4
19...	1.1	.17	.03	.03	.00	10	1	17	.0	0
JUN										
02...	1.5	.03	.05	.05	.01	0	1	34	.1	70
16...	.9	.03	.07	.02	.02	0	0	9	.0	30
JUL										
14...	1.0	.05	.14	.01	.00	0	3	13	.0	20
21...	.3	.01	.03	.01	.01	0	0	22	.0	0
AUG										
04...	.8	.08	.04	.01	.00	0	3	10	.0	10
18...	1.6	.01	.06	.02	.00	0	2	1	.0	10
SEP										
08...	1.1	1.2	.16	.00	.00	10	0	10	.0	10
22...	1.0	.01	.02	.00	.00	10	1	3	.0	10

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)
OCT , 1965								
09...	253	7.5	12.8	5	102	0	23	11
NOV								
13...	402	7.8	8.9	5	158	0	34	18
DEC								
04...	400	7.7	6.7	5	157	0	34	17
JAN , 1966								
08...	395	7.3	4.4	5	152	0	34	16
FEB								
19...	397	7.3	3.9	10	153	0	34	17
MAR								
21...	347	7.3	7.8	10	141	0	31	15
APR								
13...	216	7.4	8.3	5	86	0	20	8.7
MAY								
11...	246	7.4	16.1	10	92	0	19	11
JUN								
14...	250	7.7	17.8	10	98	0	23	10
JUL								
13...	236	7.9	21.1	5	94	0	22	9.6
AUG								
17...	319	7.5	15.6	5	130	0	29	14
SEP								
16...	246	7.3	16.7	10	101	0	24	10
OCT								
26...	395	7.5	10.6	5	158	0	35	17
NOV								
18...	411	7.4	6.7	5	158	0	35	17
DEC								
29...	358	7.6	--	5	140	0	30	16
JAN , 1967								
25...	367	7.4	5.0	5	139	0	31	15
FEB								
24...	339	7.6	6.7	5	130	0	29	14
MAR								
29...	356	8.0	10.6	5	139	0	29	16
APR								
19...	198	7.3	8.9	10	78	0	18	8.0
MAY								
25...	271	7.3	8.3	5	102	0	21	12
JUN								
14...	267	7.7	21.1	10	109	0	25	11

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)
OCT , 1965									
09...	13	.6	3.2	146	120	6.8	3.2	.3	27
NOV									
13...	25	.9	4.8	222	182	14	8.0	.5	43
DEC									
04...	25	.9	4.6	222	182	14	9.2	.4	43
JAN , 1966									
08...	25	.9	4.5	222	182	15	8.5	.5	43
FEB									
19...	24	.8	6.7	213	175	13	11	.4	39
MAR									
21...	21	.8	4.0	200	164	12	7.0	.3	35
APR									
13...	11	.5	1.8	118	97	6.4	3.8	.2	31
MAY									
11...	13	.6	3.4	138	113	8.8	4.0	.2	28
JUN									
14...	14	.6	3.5	146	120	7.6	3.2	.3	25
JUL									
13...	13	.6	3.3	136	112	7.0	3.5	.3	24
AUG									
17...	18	.7	4.4	192	158	8.8	5.0	.3	31
SEP									
16...	12	.5	3.5	142	117	6.4	3.5	.2	26
OCT									
26...	25	.9	4.9	228	187	12	11	.4	42
NOV									
18...	25	.9	4.9	230	189	13	9.0	.4	42
DEC									
29...	21	.8	3.6	196	161	11	8.0	.3	38
JAN , 1967									
25...	22	.8	4.0	196	161	13	9.0	.3	44
FEB									
24...	20	.8	4.0	182	149	11	6.0	.4	40
MAR									
29...	22	.8	4.0	195	160	12	9.0	.3	40
APR									
19...	9.8	.5	3.4	106	87	7.6	3.0	.2	23
MAY									
25...	13	.6	3.5	150	123	7.8	3.0	.3	29
JUN									
14...	14	.6	3.8	156	128	7.6	4.5	.2	30

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	HEXA-VALENT CHRO-MIUM (CR6) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT , 1965								
09...	161	.34	--	--	--	--	--	--
NOV								
13...	261	.88	--	--	--	--	--	--
DEC								
04...	260	.79	--	--	--	--	--	--
JAN , 1966								
08...	259	.81	--	--	--	--	--	--
FEB								
19...	256	1.4	--	--	--	--	--	--
MAR								
21...	228	.84	<10	20	10	10	60	<50
APR								
13...	143	.36	--	--	--	--	--	--
MAY								
11...	156	.20	--	--	--	--	--	--
JUN								
14...	160	.41	--	--	--	--	--	--
JUL								
13...	151	.27	--	--	--	--	--	--
AUG								
17...	207	.41	--	--	--	--	--	--
SEP								
16...	158	.52	<10	<10	10	10	40	<10
OCT								
26...	263	.77	--	--	--	--	--	--
NOV								
18...	263	.79	--	--	--	--	--	--
DEC								
29...	227	.59	--	--	--	--	--	--
JAN , 1967								
25...	239	.90	--	--	--	--	--	--
FEB								
24...	217	.61	<10	20	0	0	40	20
MAR								
29...	231	.66	--	--	--	--	--	--
APR								
19...	128	.70	--	--	--	--	--	--
MAY								
25...	165	.29	--	--	--	--	--	--
JUN								
14...	175	.38	--	--	--	--	--	--

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
JUL , 1967									
20...	345	7.9	19.4	15	--	--	135	0	30
AUG									
17...	316	7.6	19.4	20	--	--	127	0	30
SEP									
20...	287	7.6	16.7	10	--	--	115	0	26
OCT									
18...	371	8.1	10.7	10	11.8	--	154	0	35
NOV									
16...	390	7.4	9.2	5	7.5	--	144	0	31
JAN , 1968									
10...	359	8.0	3.8	10	11.5	--	139	0	31
FEB									
06...	300	7.8	5.6	5	11.4	--	121	0	27
MAR									
20...	256	7.4	5.2	5	12.7	--	96	0	22
APR									
24...	212	7.3	7.0	20	12.8	2700	82	0	19
MAY									
13...	253	7.5	9.4	20	11.6	22000	103	0	23
JUN									
11...	289	7.9	12.5	20	9.6	910	115	0	26
JUL									
09...	334	7.7	17.5	20	9.2	7700	139	0	31
AUG									
11...	312	7.7	20.1	20	9.5	45000	130	0	29
SEP									
16...	231	7.5	11.8	10	9.5	15000	86	0	20
OCT									
23...	381	7.8	11.0	10	10.4	9600	150	0	33
NOV									
13...	360	8.4	6.5	5	9.8	6100	140	0	33
DEC									
09...	240	7.3	5.2	5	8.2	16000	100	0	23
JAN , 1969									
21...	344	7.6	2.8	10	10.0	75000	134	0	29
FEB									
19...	378	7.4	1.8	10	11.3	94000	144	0	31
MAR									
12...	292	7.6	6.5	5	11.2	7100	125	0	27
APR									
14...	199	7.8	13.0	10	10.0	4600	80	0	18

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
JUL , 1967									
20...	15	19	.7	5.3	198	162	10	4.8	.3
AUG									
17...	13	17	.7	4.8	189	155	8.0	4.2	.2
SEP									
20...	12	16	.7	4.4	166	136	8.8	4.0	.3
OCT									
18...	16	24	.8	4.5	225	184	11	6.4	.4
NOV									
16...	16	27	1.0	5.7	227	186	12	7.8	.4
JAN , 1968									
10...	15	22	.8	4.0	197	162	13	8.3	.3
FEB									
06...	13	17	.7	3.6	171	140	10	6.1	.3
MAR									
20...	10	14	.6	2.8	140	115	7.2	4.8	.2
APR									
24...	8.4	12	.6	3.5	110	90	10	3.4	.2
MAY									
13...	11	13	.6	3.8	144	118	8.6	3.5	.3
JUN									
11...	12	16	.7	4.0	161	132	9.6	3.7	.3
JUL									
09...	15	20	.7	4.6	192	157	11	4.9	.4
AUG									
11...	14	18	.7	4.6	190	156	9.0	4.1	.3
SEP									
16...	8.7	13	.6	2.9	120	98	5.8	7.0	.2
OCT									
23...	17	23	.8	4.3	218	179	12	7.1	.4
NOV									
13...	15	22	.8	4.7	194	172	11	5.0	.4
DEC									
09...	11	11	.5	3.4	140	115	5.0	3.8	.2
JAN , 1969									
21...	15	21	.8	3.7	188	154	12	7.3	.2
FEB									
19...	16	23	.8	5.5	198	162	14	9.3	.4
MAR									
12...	14	12	.5	3.7	163	134	7.0	6.7	.1
APR									
14...	8.4	10	.5	2.7	110	90	6.8	4.2	.2

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
JUL , 1967									
20...	37	220	.32	--	--	--	--	--	--
AUG									
17...	36	208	.36	<10	0	<10	<10	--	<10
SEP									
20...	32	186	.25	--	--	--	--	--	--
OCT									
18...	44	256	.77	--	--	--	--	--	--
NOV									
16...	44	258	.41	--	--	--	--	--	--
JAN , 1968									
10...	40	232	.34	--	--	--	--	--	--
FEB									
06...	35	199	.54	<10	<10	10	10	<10	10
MAR									
20...	33	164	.27	--	--	--	--	--	--
APR									
24...	22	136	.72	--	--	--	--	--	--
MAY									
13...	24	160	.38	--	--	--	--	--	--
JUN									
11...	27	178	.09	--	--	--	--	--	--
JUL									
09...	34	218	.59	--	--	--	--	--	--
AUG									
11...	33	208	.47	<10	--	<10	10	<10	<10
SEP									
16...	24	142	.25	--	--	--	--	--	--
OCT									
23...	43	247	.50	--	--	--	--	--	--
NOV									
13...	41	236	.50	--	--	--	--	--	--
DEC									
09...	34	160	.36	--	--	--	--	--	--
JAN , 1969									
21...	40	224	.70	--	--	--	--	--	--
FEB									
19...	40	242	1.1	--	--	--	--	--	--
MAR									
12...	32	186	.75	--	--	--	--	--	--
APR									
14...	32	137	.18	--	--	--	--	--	--

TABLE 21.--Continued

124d4+90 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)
MAY , 1969											
19...	--	--	248	7.4	14.0	10	--	9.1	15000	103	0
JUN											
23...	--	--	264	7.5	16.9	10	--	9.1	14000	105	0
JUL											
22...	--	--	331	7.6	15.1	10	--	7.7	8400	133	0
AUG											
18...	--	--	281	7.8	18.5	10	--	10.1	30000	11	0
SEP											
22...	--	--	247	7.7	16.0	5	--	9.0	90000	93	0
OCT											
20...	--	--	391	7.9	12.1	0	--	10.4	5000	151	0
NOV											
17...	--	--	446	8.3	6.6	5	--	12.6	1800	155	0
DEC											
15...	--	--	403	8.6	5.1	5	--	11.2	4400	158	0
JAN , 1970											
19...	--	--	376	7.7	4.9	5	--	11.2	2550	146	0
FEB											
16...	--	--	80	7.7	3.8	0	--	11.0	19400	36	0
MAR											
16...	--	--	330	7.8	9.7	10	--	12.0	11400	128	0
APR											
13...	--	--	299	7.7	11.1	10	--	11.8	2800	115	0
MAY											
18...	--	--	224	7.6	13.4	30	--	10.3	5600	90	0
JUN											
15...	--	--	253	7.5	16.8	20	--	9.4	11400	99	0
JUL											
27...	--	--	320	7.7	18.2	30	--	9.5	6200	124	0
AUG											
18...	--	--	281	7.9	17.9	20	--	11.1	4800	110	0
SEP											
15...	--	--	249	7.7	14.3	10	--	11.2	6800	96	0
OCT , 1972											
11...	1620	276	250	8.0	11.0	16	1	10.5	3500	--	--
24...	1605	--	365	8.5	11.1	25	1	11.9	900	--	--
NOV											
15...	1030	160	330	8.1	8.0	23	1	7.7	<8000	--	--
29...	1550	--	140	7.3	7.0	2	3	10.2	2000	--	--
DEC											
13...	1030	90	350	7.9	.0	23	20	9.8	3500	--	--

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)
MAY , 1969											
19...	23	11	11	.5	4.5	139	114	8.9	4.1	.2	28
JUN											
23...	24	11	14	.6	4.1	147	121	11	3.8	.3	28
JUL											
22...	30	14	18	.7	4.5	191	157	11	4.6	.2	34
AUG											
18...	26	12	15	.6	3.8	161	132	10	3.6	.3	30
SEP											
22...	19	11	13	.6	3.7	143	117	5.8	3.9	.2	27
OCT											
20...	34	16	25	.9	4.7	222	182	12	7.3	.3	42
NOV											
17...	34	17	23	.8	4.6	205	181	14	7.7	.3	46
DEC											
15...	35	17	25	.9	5.0	206	182	15	9.4	.3	44
JAN , 1970											
19...	32	16	22	.8	4.1	203	166	14	7.9	.4	41
FEB											
16...	9.8	2.8	1.7	.1	.3	48	39	.0	.2	.1	8.9
MAR											
16...	28	14	17	.7	4.5	177	145	12	6.7	.2	37
APR											
13...	26	12	16	.7	4.3	158	130	11	6.5	.3	33
MAY											
18...	21	9.0	11	.5	3.7	126	103	6.8	3.3	.2	26
JUN											
15...	23	10	13	.6	3.9	143	117	6.6	3.5	.2	28
JUL											
27...	28	13	17	.7	4.7	181	148	9.6	4.8	.3	31
AUG											
18...	26	11	15	.6	3.8	160	131	8.0	3.9	.3	28
SEP											
15...	22	10	14	.6	3.3	139	114	10	3.6	.1	25
OCT , 1972											
11...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
NOV											
15...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
DEC											
13...	--	--	--	--	--	--	--	--	--	--	--

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	DISSOLVED COPPER (CU) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
MAY , 1969										
19...	162	.70	--	--	--	--	--	--	--	--
JUN										
23...	182	.61	--	--	--	--	--	--	--	--
JUL										
22...	213	.56	--	--	--	--	--	--	--	--
AUG										
18...	182	.45	--	--	--	--	--	<10	<10	<10
SEP										
22...	155	.34	--	--	--	--	--	--	--	--
OCT										
20...	253	.70	--	--	--	--	--	--	--	--
NOV										
17...	259	.86	--	--	--	--	--	--	--	--
DEC										
15...	261	.79	--	--	--	--	--	--	--	--
JAN , 1970										
19...	242	.93	--	--	--	--	--	--	--	--
FEB										
16...	48	.02	--	--	--	--	--	<10	<10	<10
MAR										
16...	210	.86	--	--	--	--	--	--	--	--
APR										
13...	191	.79	--	--	--	--	--	--	--	--
MAY										
18...	145	.52	--	--	--	--	--	--	--	--
JUN										
15...	161	.54	--	--	--	--	--	--	--	--
JUL										
27...	200	.59	--	--	--	--	--	--	--	--
AUG										
18...	177	.41	--	--	--	--	--	--	--	--
SEP										
15...	158	.43	--	--	--	--	--	--	--	--
OCT , 1972										
11...	--	.52	.02	.27	.58	.60	.13	--	--	--
24...	--	.78	.03	.22	.51	.30	.30	--	--	--
NOV										
15...	--	.92	.02	.50	.75	.33	.28	--	--	--
29...	--	.94	.01	.53	.76	.26	.19	--	--	--
DEC										
13...	--	1.1	.02	.80	1.0	.30	.20	--	--	--

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)
DEC , 1972								
26...	1105	--	350	7.6	5.2	42	10	--
JAN , 1973								
09...	1135	--	425	7.7	1.1	22	7	11.8
23...	1030	115	400	7.9	3.5	27	6	11.0
FEB								
13...	1120	--	420	8.1	5.4	22	6	13.4
27...	1135	150	390	8.1	7.5	29	6	12.9
MAR								
06...	1115	155	380	8.2	7.7	23	4	12.1
20...	1100	134	400	8.4	8.7	10	4	14.1
APR								
10...	1330	110	390	8.6	16.5	29	5	14.5
24...	1300	90	275	7.8	14.2	52	15	9.7
MAY								
08...	1115	333	300	7.8	10.4	69	30	11.1
30...	1245	290	300	8.0	16.4	13	20	10.5
JUN								
05...	1145	95	350	8.1	15.7	58	11	11.4
19...	1130	365	102	7.7	14.9	11	1	10.8
JUL								
10...	1130	240	350	8.3	18.0	55	6	10.4
24...	1120	402	350	8.1	15.9	52	5	10.3
AUG								
14...	1110	300	350	8.1	18.1	33	4	--
28...	1230	320	350	8.1	15.9	40	5	10.5
SEP								
11...	1030	270	380	8.1	16.6	42	3	9.6
25...	1115	290	350	8.0	12.8	24	4	10.4
OCT , 1974								
07...	1345	370	250	8.0	10.5	32	6	11.9
21...	1225	188	410	8.2	10.5	22	5	12.7
NOV								
04...	1210	164	400	7.8	7.5	22	3	11.5
18...	1230	148	400	8.1	8.4	19	5	12.0
DEC								
02...	1150	140	390	7.4	6.4	16	7	11.6
16...	1250	141	400	8.0	6.7	20	8	11.5
JAN , 1975								
06...	1255	115	400	8.1	4.9	19	7	12.4
20...	1215	245	330	8.3	3.6	60	30	12.6

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
DEC , 1972								
26...	<8000	--	.85	.02	.31	.71	.23	.18
JAN , 1973								
09...	4000	--	1.1	.01	.52	.98	.34	.19
23...	5000	--	.31	.02	.53	.93	.29	.16
FEB								
13...	1100	--	.87	.01	.53	.77	.36	.19
27...	800	--	.77	.01	.48	1.4	.24	.21
MAR								
06...	600	--	.67	.01	.36	1.1	.24	.15
20...	100	--	.74	.02	.32	.63	.44	.12
APR								
10...	800	--	.76	.02	.23	.60	.32	.20
24...	3000	--	1.1	.03	.54	.94	.75	.28
MAY								
08...	7000	--	.72	.03	.41	1.4	.44	.44
30...	16000	--	.69	.01	.13	.51	.30	.20
JUN								
05...	8000	--	.62	.02	.13	.69	.27	.23
19...	1500	--	.66	.02	.24	.37	.36	.17
JUL								
10...	1100	--	.71	.02	.16	.21	.36	.18
24...	45000	--	.79	.03	.08	.53	.23	.22
AUG								
14...	10000	--	.67	.02	.09	.51	.24	.19
28...	11000	--	.68	.01	.19	.57	.21	.16
SEP								
11...	470	--	.77	.02	.11	.48	.24	.18
25...	2000	--	.63	.02	.21	.58	.20	.12
OCT , 1974								
07...	24000	360	.48	.01	.11	.49	.12	.09
21...	4200	180	.84	.01	.04	.30	.12	.11
NOV								
04...	3000	120	.96	.01	.06	.32	.13	.11
18...	5700	120	.97	.04	.08	.32	.14	.11
DEC								
02...	5300	540	1.0	.01	.09	.39	.14	.10
16...	2000	150	1.0	.01	.07	.41	.14	.10
JAN , 1975								
06...	2000	120	.98	.01	.11	.38	.14	.09
20...	>11000	520	.80	.01	.22	.84	.30	.10

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)
FEB , 1975								
03...	1310	166	340	7.2	3.9	16	7	12.4
10...	1300	168	370	6.9	3.5	17	7	13.3
MAR								
03...	1300	340	280	7.9	5.2	90	34	12.3
17...	1245	157	320	8.1	6.4	20	9	11.4
APR								
07...	1225	145	350	7.6	8.4	20	5	13.6
21...	1220	264	210	7.3	8.6	60	25	11.6
MAY								
05...	1200	355	210	8.0	9.5	55	25	11.2
19...	1225	625	200	7.9	9.4	50	20	11.0
JUN								
02...	1255	580	230	8.2	15.7	80	15	10.2
16...	1220	378	280	8.3	14.7	75	15	11.5
JUL								
14...	1225	310	310	8.3	18.7	70	22	9.9
21...	1230	300	320	8.4	19.0	60	15	10.9
AUG								
04...	1210	330	270	8.2	18.5	60	15	10.1
18...	1420	740	300	7.3	17.0	180	70	7.6
SEP								
08...	1255	425	210	7.4	17.0	38	8	10.8
22...	1245	520	200	8.0	15.1	29	10	10.6

TABLE 21.--Continued

12484490 - WILSON CREEK AT THRALL, WASH.--Continued

WATER QUALITY DATA

DATE	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL AMMONIA NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)
FEB , 1975								
03...	2000	250	.83	.01	.09	.45	.12	.08
10...	60	40	.87	.01	.08	.42	.12	.08
MAR								
03...	1300	--	.79	.02	.23	1.0	.33	.11
17...	2200	230	.77	.01	.10	.39	.11	.06
APR								
07...	1200	4	.65	.01	.04	.46	.10	.07
21...	>3600	490	.42	.01	.17	.74	.23	.06
MAY								
05...	>38000	510	.43	.01	.24	.63	.34	.19
19...	34000	400	.78	.01	.10	.57	.26	.13
JUN								
02...	44000	3100	1.4	.01	.19	.87	.29	.11
16...	40000	1000	.59	.01	.10	.56	.26	.02
JUL								
14...	30000	2000	.77	.01	.11	.66	.20	.15
21...	14000	380	.63	.01	.09	.53	.19	.15
AUG								
04...	12000	1000	.67	.01	.08	.61	.24	.15
18...	>40000	11000	1.1	.04	.36	.68	.68	.29
SEP								
08...	10000	<200	.43	.01	.08	.34	.14	.06
22...	2000	560	.34	.01	.05	.41	.14	.08

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO
OCT , 1965									
01-14	109	7.5	5	46	0	10	5.0	4.5	.3
15-23	159	7.7	5	64	0	15	6.6	7.3	.4
19...	111	7.6	--	46	0	--	--	4.5	.3
22...	104	7.6	--	43	0	--	--	4.4	.3
24-31	212	7.8	5	88	0	19	9.8	11	.5
NOV									
01-15	212	7.8	5	88	0	19	9.8	11	.5
16-30	199	7.9	5	81	0	18	8.7	11	.5
DEC									
01-10	199	7.9	5	81	0	18	8.7	11	.5
11-31	195	7.8	5	82	0	23	5.9	9.8	.5
JAN , 1966									
01-26	193	7.8	5	79	0	25	4.0	9.3	.5
27-31	194	8.0	0	78	0	18	8.1	9.5	.5
FEB									
01-14	194	8.0	0	78	0	18	8.1	9.5	.5
15-28	208	7.8	5	84	0	18	9.6	10	.5
MAR									
01-09	208	7.8	5	84	0	18	9.6	10	.5
10-24	177	7.7	5	74	0	17	7.5	7.8	.4
25-29	158	7.7	5	64	0	15	6.6	7.0	.4
30-31	108	7.5	--	45	0	11	4.3	4.2	.3
APR									
01-15	108	7.5	--	45	0	11	4.3	4.2	.3
16-29	115	7.5	--	48	0	12	4.3	4.5	.3
30-30	114	7.7	5	46	0	12	4.0	4.2	.3
MAY									
01-13	114	7.7	5	46	0	12	4.0	4.2	.3
14-27	113	7.5	5	46	0	11	4.4	4.3	.3
28-31	134	7.5	5	55	0	12	6.0	5.4	.3
JUN									
01-07	134	7.5	5	55	0	12	6.0	5.4	.3
08-30	108	7.4	5	44	0	9.6	4.9	4.0	.3
JUL									
01-04	108	7.4	5	44	0	9.6	4.9	4.0	.3
05-26	87	7.3	5	36	0	8.0	3.9	3.1	.2
27-31	84	7.4	5	34	0	7.8	3.6	3.1	.2
AUG									
01-15	84	7.4	5	34	0	7.8	3.6	3.1	.2
16-31	93	7.5	0	38	0	8.8	3.9	3.7	.3

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)
OCT , 1965									
01-14	1.1	64	52	2.6	1.2	.1	--	--	.11
15-23	1.7	92	75	4.2	2.2	.1	20	103	.11
19...	--	63	52	--	--	--	--	--	--
22...	--	59	48	--	--	--	--	--	--
24-31	2.3	126	103	6.2	3.5	.2	23	138	.23
NOV									
01-15	2.3	126	103	6.2	3.5	.2	23	138	.23
16-30	1.9	114	94	5.6	3.5	.1	22	128	.25
DEC									
01-10	1.9	114	94	5.6	3.5	.1	22	128	.25
11-31	1.6	110	90	5.8	3.0	.2	22	127	.34
JAN , 1966									
01-26	1.6	108	89	5.8	3.8	.1	22	126	.34
27-31	2.0	107	88	6.0	4.0	.3	21	123	.32
FEB									
01-14	2.0	107	88	6.0	4.0	.3	21	123	.32
15-28	2.5	114	94	6.0	4.2	.2	21	130	.45
MAR									
01-09	2.5	114	94	6.0	4.2	.2	21	130	.45
10-24	2.2	97	80	5.4	3.2	.2	21	114	.50
25-29	1.6	87	71	4.8	2.2	.2	21	103	.38
30-31	.9	61	50	2.6	1.0	.2	16	71	.18
APR									
01-15	.9	61	50	2.6	1.0	.2	16	71	.18
16-29	1.0	65	53	3.0	1.2	.2	14	73	.11
30-30	1.0	64	52	3.0	1.5	.1	13	71	.18
MAY									
01-13	1.0	64	52	3.0	1.5	.1	13	71	.18
14-27	1.2	64	52	2.8	1.5	.1	12	70	.16
28-31	1.5	76	62	3.2	1.5	.2	14	82	.20
JUN									
01-07	1.5	76	62	3.2	1.5	.2	14	82	.20
08-30	1.0	62	51	2.4	1.5	.1	12	67	.16
JUL									
01-04	1.0	62	51	2.4	1.5	.1	12	67	.16
05-26	.7	50	41	2.0	1.0	.1	10	54	.11
27-31	.6	48	39	2.0	1.0	.1	11	53	.11
AUG									
01-15	.6	48	39	2.0	1.0	.1	11	53	.11
16-31	.8	53	43	2.2	1.0	.1	12	59	.14

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH. --Continued

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	COLOR (PLATINUM-COBALT UNITS)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	SODIUM ADSORPTION RATIO
SEP , 1966									
01-14	108	7.4	0	47	0	11	4.7	4.5	.3
01-14	--	--	--	--	--	--	--	--	--
15-30	122	7.6	5	54	0	13	5.3	5.0	.3
OCT									
01-21	134	7.5	0	57	0	14	5.4	6.2	.4
22-31	200	7.8	5	84	0	20	8.4	9.9	.5
NOV									
01-15	200	7.8	5	84	0	20	8.4	9.9	.5
16-26	208	7.5	5	82	0	18	8.9	11	.5
27-30	159	7.5	5	65	0	15	6.7	7.6	.4
DEC									
01-14	159	7.5	5	65	0	15	6.7	7.6	.4
15-26	124	7.3	0	50	0	12	4.9	5.3	.3
27-31	141	7.4	0	56	0	13	5.7	6.1	.4
JAN									
01-01	141	7.4	0	56	0	13	5.7	6.1	.4
JAN , 1967									
02-14	139	7.9	5	58	0	14	5.6	6.0	.3
15-22	115	7.8	0	48	0	12	4.4	5.0	.3
23-31	135	7.9	5	54	0	13	5.3	5.7	.3
FEB									
01-04	135	7.9	5	54	0	13	5.3	5.7	.3
05-28	110	7.7	5	48	0	12	4.2	4.6	.3
MAR									
01-03	110	7.7	5	48	0	12	4.2	4.6	.3
04-24	140	7.8	5	58	0	14	5.6	5.8	.3
25-31	120	7.5	0	51	0	13	4.5	5.1	.3
APR									
01-22	94	7.6	5	39	0	9.9	3.5	3.7	.3
23-30	108	7.7	5	47	0	10	5.2	4.1	.3
MAY									
01-12	108	7.7	5	47	0	10	5.2	4.1	.3
13-31	108	7.7	5	46	0	12	3.9	4.1	.3
JUN									
01-04	108	7.7	5	46	0	12	3.9	4.1	.3
05-30	95	7.8	5	42	0	9.5	4.4	3.5	.2
JUL									
01-03	95	7.8	5	42	0	9.5	4.4	3.5	.2
04-31	87	7.7	5	36	0	8.5	3.6	3.1	.2
AUG									
01-31	86	7.7	5	36	0	8.5	3.5	3.3	.2

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)
SEP , 1966									
01-14	.9	62	51	2.2	2.0	.1	13	70	.16
01-14	--	--	--	--	--	--	--	--	.16
15-30	1.0	71	58	3.0	2.0	.1	15	80	.16
OCT									
01-21	1.4	76	62	3.6	2.0	.1	17	88	.14
22-31	2.0	116	95	5.4	4.0	.2	21	129	.18
NOV									
01-15	2.0	116	95	5.4	4.0	.2	21	129	.18
16-26	2.2	116	95	5.6	5.0	.2	22	131	.32
27-30	1.5	90	74	4.4	3.0	.1	18	102	.29
DEC									
01-14	1.5	90	74	4.4	3.0	.1	18	102	.29
15-26	.9	70	57	3.4	2.0	.1	17	81	.20
27-31	1.0	78	64	3.8	2.0	.1	17	88	.25
JAN									
01-01	1.0	78	64	3.8	2.0	.1	17	88	.25
JAN , 1967									
02-14	1.8	78	64	4.0	3.0	.1	18	92	.23
15-22	1.2	66	54	3.2	3.0	.1	16	78	.14
23-31	1.6	76	62	3.6	1.0	.1	18	87	.18
FEB									
01-04	1.6	76	62	3.6	1.0	.1	18	87	.18
05-28	1.4	64	52	3.2	2.0	.1	15	75	.14
MAR									
01-03	1.4	64	52	3.2	2.0	.1	15	75	.14
04-24	1.6	82	67	3.6	2.0	.1	16	90	.14
25-31	1.3	68	56	3.2	2.0	.1	16	79	.11
APR									
01-22	1.3	52	43	2.8	2.0	.1	12	62	.14
23-30	1.0	64	52	3.0	1.0	.1	15	72	.14
MAY									
01-12	1.0	64	52	3.0	1.0	.1	15	72	.14
13-31	1.0	63	52	3.2	1.2	.1	13	70	.16
JUN									
01-04	1.0	63	52	3.2	1.2	.1	13	70	.16
05-30	.9	56	46	2.2	1.0	.1	12	61	.07
JUL									
01-03	.9	56	46	2.2	1.0	.1	12	61	.07
04-31	.9	51	42	.8	.8	.0	11	54	.07
AUG									
01-31	.9	51	42	1.0	.8	.0	12	55	.07

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
SEP , 1967											
01-30	105	7.7	--	5	--	--	44	0	10	4.5	4.2
OCT											
01-23	148	--	--	5	--	--	60	0	14	6.1	7.1
24-31	145	7.7	--	5	--	--	60	0	14	6.0	6.5
NOV											
01-01	145	7.7	--	5	--	--	60	0	14	6.0	6.5
02-19	142	7.8	--	5	--	--	59	0	14	5.7	6.4
20-30	135	7.8	--	5	--	--	55	0	14	4.9	6.2
DEC											
01-10	135	7.8	--	5	--	--	55	0	14	4.9	6.2
11-24	119	7.7	--	10	--	--	50	0	12	4.7	5.3
25-31	83	7.6	--	10	--	--	35	0	8.9	3.1	3.4
JAN											
01-06	83	7.6	--	10	--	--	35	0	8.9	3.1	3.4
JAN , 1968											
07-20	111	7.7	--	5	--	--	46	0	11	4.4	4.8
21-31	91	7.7	--	5	--	--	38	0	9.4	3.4	3.5
FEB											
01-02	91	7.7	--	5	--	--	38	0	9.4	3.4	3.5
03-19	99	7.6	--	5	--	--	41	0	9.8	4.0	4.1
20-29	93	7.6	--	10	--	--	40	0	10	3.5	3.9
MAR											
01-24	81	7.6	--	5	--	--	34	0	8.4	3.0	3.3
20...	79	7.4	5.8	5	12.6	--	33	0	8.1	3.0	2.9
25-31	99	7.7	--	5	--	--	42	0	10	4.0	3.9
APR											
01-05	99	7.7	--	5	--	--	42	0	10	4.0	3.9
06-11	107	7.6	--	10	--	--	45	0	11	4.2	4.6
12-30	88	7.6	--	5	--	--	38	0	9.1	3.6	3.4
24...	83	7.3	8.2	5	11.3	2300	36	0	8.6	3.4	3.1
MAY											
01...	88	7.6	10.6	5	--	--	38	0	9.1	3.6	3.4
02-21	102	7.4	--	5	--	--	43	0	9.9	4.5	3.9
13...	105	7.3	10.0	5	11.2	920	47	0	11	4.8	4.0
22-30	133	7.6	--	5	--	--	57	0	13	6.0	5.5
31-31	110	7.7	--	5	--	--	48	0	11	5.0	4.5
JUN											
01-03	110	7.7	--	5	--	--	48	0	11	5.0	4.5
04-08	91	7.5	--	5	--	--	38	0	8.5	4.1	3.3
09-20	101	7.8	--	5	--	--	41	0	9.1	4.5	3.7
11...	97	7.6	14.5	5	9.2	1500	41	0	9.1	4.4	3.6

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)
SEP , 1967										
01-30	.3	1.1	61	50	1.6	1.3	.1	13	66	.09
OCT										
01-23	.4	1.7	86	71	3.4	1.3	.1	19	96	.23
24-31	.4	1.4	84	69	3.6	1.6	.2	19	95	.23
NOV										
01-01	.4	1.4	84	69	3.6	1.6	.2	19	95	.23
02-19	.4	1.3	83	68	3.4	1.6	.1	18	92	.23
20-30	.4	1.2	79	65	3.4	1.8	.1	17	88	.20
DEC										
01-10	.4	1.2	79	65	3.4	1.8	.1	17	88	.20
11-24	.3	1.0	66	54	3.2	2.1	.3	14	76	.18
25-31	.3	.7	47	39	2.2	1.4	.2	12	55	.05
JAN										
01-06	.3	.7	47	39	2.2	1.4	.2	12	55	.05
JAN , 1968										
07-20	.3	1.0	61	50	3.2	1.9	.2	14	71	.14
21-31	.2	.7	51	42	2.2	1.1	.0	12	58	.09
FEB										
01-02	.2	.7	51	42	2.2	1.1	.0	12	58	.09
03-19	.3	.8	57	47	2.4	1.8	.1	13	64	.09
20-29	.3	.8	53	43	1.0	1.5	.1	13	61	.18
MAR										
01-24	.2	.6	46	38	1.2	1.3	.1	11	52	.07
20...	.2	.5	46	38	1.8	.5	.1	11	51	.05
25-31	.3	.7	58	48	1.8	1.3	.1	13	64	.05
APR										
01-05	.3	.7	58	48	1.8	1.3	.1	13	64	.05
06-11	.3	.8	64	52	3.0	1.0	.1	15	72	.16
12-30	.2	.7	51	42	2.6	.9	.1	11	57	.07
24...	.2	.7	48	39	2.0	.6	.1	9.3	52	.02
MAY										
01...	.2	.7	51	42	2.6	.9	.1	11	57	.07
02-21	.3	1.0	59	48	3.2	.6	.1	12	65	.09
13...	.3	1.0	62	51	2.2	.8	.1	11	66	.05
22-30	.3	1.5	79	65	3.6	.9	.1	19	89	.16
31-31	.3	1.1	65	53	2.8	1.2	.1	14	72	.14
JUN										
01-03	.3	1.1	65	53	2.8	1.2	.1	14	72	.14
04-08	.2	.8	53	43	2.0	1.0	.1	12	59	.14
09-20	.3	.9	58	48	2.4	.9	.1	12	63	.14
11...	.2	.9	56	46	2.0	.7	.1	12	61	.11

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
JUN , 1968											
21-30	89	7.5	--	5	--	--	38	0	8.4	4.0	3.1
JUL											
01-02	89	7.5	--	5	--	--	38	0	8.4	4.0	3.1
03-16	78	7.6	--	5	--	--	35	0	7.9	3.6	2.8
09...	75	7.3	15.0	5	9.3	730	33	0	7.4	3.5	2.7
17-31	86	7.6	--	10	--	--	37	0	8.4	3.9	3.4
AUG											
01-14	86	7.6	--	10	--	--	37	0	8.4	3.9	3.4
11...	88	7.9	19.3	0	10.6	830	37	0	8.2	4.0	3.3
15-24	104	7.6	--	5	--	--	42	0	9.3	4.5	4.3
25-31	117	7.7	--	5	--	--	48	0	11	4.9	5.2
SEP											
01-06	117	7.7	--	5	--	--	48	0	11	4.9	5.2
07-30	104	7.6	--	5	--	--	41	0	9.5	4.2	4.1
16...	101	7.5	11.8	5	10.6	3400	41	0	9.2	4.4	4.3
OCT											
01-11	117	7.7	--	5	--	--	48	0	11	5.0	4.9
12-18	142	7.8	--	5	--	--	60	0	14	5.9	6.4
19-31	160	8.0	--	5	--	--	65	0	15	6.7	7.4
NOV											
01-12	160	8.0	--	5	--	--	65	0	15	6.7	7.4
OCT											
23...	150	7.7	10.5	5	9.8	330	61	0	14	6.3	6.7
NOV											
13...	130	7.6	5.0	5	10.2	820	54	0	14	4.6	5.3
13-22	142	7.8	--	5	--	--	60	0	14	6.0	6.2
23-30	124	7.9	--	5	--	--	50	0	12	4.9	5.3
DEC											
01-04	124	7.9	--	5	--	--	50	0	12	4.9	5.3
05-08	101	7.4	--	5	--	--	43	0	11	3.7	4.3
09...	108	7.4	3.1	5	9.3	2900	44	0	11	4.0	4.7
09-20	120	7.7	--	5	--	--	50	0	12	4.7	5.2
21-31	147	7.8	--	5	--	--	60	0	14	6.0	6.9
JAN											
01-05	147	7.8	--	5	--	--	60	0	14	6.0	6.9
JAN , 1969											
06-20	121	7.8	--	5	--	--	50	0	12	4.7	5.0
21...	124	7.7	.5	5	11.8	7900	51	0	12	5.1	5.5
21-31	137	7.7	--	10	--	--	55	0	13	5.5	6.3
FEB											
01-10	137	7.7	--	10	--	--	55	0	13	5.5	6.3

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	SODIUM ADSORPTION RATIO	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)
JUN , 1968											
21-30	.2	.8	51	42	2.0	.8	.1	11	56	.11	--
JUL											
01-02	.2	.8	51	42	2.0	.8	.1	11	56	.11	--
03-16	.2	.7	46	38	.4	.7	.1	9.2	49	.11	--
09...	.2	.6	44	36	.6	.7	.1	8.5	46	.05	--
17-31	.2	.9	51	42	1.0	1.0	.1	10	54	.14	--
AUG											
01-14	.2	.9	51	42	1.0	1.0	.1	10	54	.14	--
11...	.2	.8	52	43	1.8	.7	.1	11	56	.14	--
15-24	.3	1.0	60	49	2.4	1.1	.1	14	67	.07	--
25-31	.3	1.2	69	57	2.6	1.1	.1	16	76	.05	--
SEP											
01-06	.3	1.2	69	57	2.6	1.1	.1	16	76	.05	--
07-30	.3	.8	58	48	2.8	1.0	.1	13	64	.05	--
16...	.3	1.0	57	47	2.2	.9	.1	12	62	.07	--
OCT											
01-11	.3	1.1	68	56	3.0	1.3	.1	14	74	.05	--
12-18	.4	1.4	83	68	3.4	1.6	.2	18	92	.07	--
19-31	.4	1.4	94	77	4.2	1.7	.2	19	102	.05	--
NOV											
01-12	.4	1.4	94	77	4.2	1.7	.2	19	102	.05	--
OCT											
23...	.4	1.2	88	72	4.0	1.5	.2	18	96	.07	.03
NOV											
13...	.3	1.1	73	6	4.0	1.0	.2	16	83	.14	.06
13-22	.3	1.1	83	68	4.0	1.5	.1	19	93	.14	--
23-30	.3	.9	71	58	3.6	1.0	.1	16	79	.14	--
DEC											
01-04	.3	.9	71	58	3.6	1.0	.1	16	79	.14	--
05-08	.3	.8	57	47	3.2	.7	.0	14	66	.14	--
09...	.3	.9	62	51	2.8	1.1	.1	14	69	.07	.08
09-20	.3	1.0	67	55	3.4	1.1	.1	15	76	.16	--
21-31	.4	1.1	82	6	5.0	1.6	.1	19	95	.23	--
JAN											
01-05	.4	1.1	82	6	5.0	1.6	.1	19	95	.23	--
JAN , 1969											
06-20	.3	.8	66	54	3.6	1.1	.1	15	75	.11	--
21...	.3	.8	71	58	3.6	1.4	.1	16	80	.14	.06
21-31	.4	.9	76	62	4.6	2.1	.1	18	89	.25	--
FEB											
01-10	.4	.9	76	62	4.6	2.1	.1	18	89	.25	--

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)
FEB , 1969									
11-20	120	7.7	--	0	--	--	50	0	12
19...	118	7.6	.1	0	11.4	2800	47	0	11
21-28	101	7.8	--	0	--	--	41	0	10
MAR									
01-07	101	7.8	--	0	--	--	41	0	10
08-19	163	7.8	--	10	--	--	69	0	16
12...	172	7.6	4.4	5	13.5	940	70	0	16
20-26	144	7.9	--	10	--	--	60	0	14
27-31	120	7.7	--	5	--	--	52	0	13
APR									
01-05	120	7.7	--	5	--	--	52	0	13
06-30	99	7.6	--	5	--	--	43	0	11
MAY									
01-05	99	7.6	--	5	--	--	43	0	11
APR									
14...	96	7.2	8.5	5	11.7	630	37	0	9.1
MAY									
06-23	94	7.6	--	5	--	--	41	0	9.8
19...	106	7.5	12.5	5	9.5	1600	46	0	11
24-31	78	7.5	--	5	--	--	34	0	7.9
JUN									
01-09	78	7.5	--	5	--	--	34	0	7.9
10-17	80	7.6	--	0	--	--	35	0	8.0
18-20	108	8.0	--	0	--	--	47	0	11
21-30	87	7.3	--	0	--	--	37	0	8.6
JUL									
01-20	87	7.3	--	0	--	--	37	0	8.6
JUN									
24...	95	7.4	15.0	0	8.7	960	41	0	9.4
JUL									
21-31	82	7.7	--	0	--	--	35	0	8.1
AUG									
01-08	82	7.7	--	0	--	--	35	0	8.1
JUL									
22...	85	7.7	15.0	0	9.2	760	36	0	8.3
AUG									
09-30	98	7.5	--	0	--	--	37	0	8.1
18...	86	7.3	17.0	5	10.2	1500	36	0	8.0
31-31	116	7.5	--	0	--	--	43	0	9.9
SEP									
01-16	116	7.5	--	0	--	--	43	0	9.9

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
FEB . 1969									
11-20	4.8	5.4	.3	1.3	67	55	3.8	2.0	.1
19...	4.7	5.2	.3	1.1	65	53	3.0	1.4	.1
21-28	3.9	4.3	.3	1.2	55	45	2.8	1.7	.1
MAR									
01-07	3.9	4.3	.3	1.2	55	45	2.8	1.7	.1
08-19	6.9	7.4	.4	2.4	90	74	4.8	3.0	.2
12...	7.2	7.8	.4	1.9	94	77	4.8	4.0	.1
20-26	5.9	6.2	.4	1.8	81	66	4.2	2.3	.1
27-31	4.7	4.9	.3	1.1	67	55	3.5	1.7	.1
APR									
01-05	4.7	4.9	.3	1.1	67	55	3.5	1.7	.1
06-30	3.8	3.8	.3	.8	56	46	2.9	1.2	.1
MAY									
01-05	3.8	3.8	.3	.8	56	46	2.9	1.2	.1
APR									
14...	3.9	3.7	.3	.5	53	43	2.2	1.0	.2
MAY									
06-23	3.9	3.4	.2	.8	54	44	2.1	1.1	.1
19...	4.5	3.6	.2	1.0	61	50	3.7	1.0	.1
24-31	3.4	2.6	.2	.6	46	38	1.6	1.0	.1
JUN									
01-09	3.4	2.6	.2	.6	46	38	1.6	1.0	.1
10-17	3.5	3.1	.2	.8	47	39	3.2	1.0	.0
18-20	4.8	4.5	.3	1.2	64	52	4.2	.5	.0
21-30	3.8	3.4	.2	.8	48	39	3.4	2.2	.0
JUL									
01-20	3.8	3.4	.2	.8	48	39	3.4	2.2	.0
JUN									
24...	4.1	3.6	.2	1.5	54	44	3.8	1.1	.1
JUL									
21-31	3.7	3.1	.2	.8	48	39	3.2	.8	.0
AUG									
01-08	3.7	3.1	.2	.8	48	39	3.2	.8	.0
JUL									
22...	3.7	2.9	.2	.8	49	40	4.0	.8	.0
AUG									
09-30	3.9	3.7	.2	1.0	52	43	3.2	.8	.1
18...	3.8	3.3	.2	.8	50	41	1.6	1.0	.1
31-31	4.5	4.6	.3	1.2	60	49	2.4	1.2	.1
SEP									
01-16	4.5	4.6	.3	1.2	60	49	2.4	1.2	.1

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
FEB , 1969								
11-20	15	79	.29	--	--	--	--	--
19...	14	73	.16	.06	130	0	0	0
21-28	12	64	.18	--	--	--	--	--
MAR								
01-07	12	64	.18	--	--	--	--	--
08-19	18	105	.36	--	--	--	--	--
12...	19	108	.32	.08	--	--	--	--
20-26	20	96	.43	--	--	--	--	--
27-31	16	79	.23	--	--	--	--	--
APR								
01-05	16	79	.23	--	--	--	--	--
06-30	13	65	.11	--	--	--	--	--
MAY								
01-05	13	65	.11	--	--	--	--	--
APR								
14...	14	61	.14	--	--	--	--	--
MAY								
06-23	13	61	.11	--	--	--	--	--
19...	14	70	.16	.04	--	--	--	--
24-31	11	51	.05	--	--	--	--	--
JUN								
01-09	11	51	.05	--	--	--	--	--
10-17	11	54	.09	--	--	--	--	--
18-20	14	72	.11	--	--	--	--	--
21-30	11	58	.07	--	--	--	--	--
JUL								
01-20	11	58	.07	--	--	--	--	--
JUN								
24...	10	61	.05	.04	--	--	--	--
JUL								
21-31	11	55	.09	--	--	--	--	--
AUG								
01-08	11	55	.09	--	--	--	--	--
JUL								
22...	11	56	.07	.04	--	--	--	--
AUG								
09-30	12	60	.14	--	--	--	--	--
18...	11	55	.14	.04	0	0	0	10
31-31	13	68	.14	--	--	--	--	--
SEP								
01-16	13	68	.14	--	--	--	--	--

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)
SEP , 1969								
17-30	140	7.7	--	0	--	--	53	0
22...	118	7.5	16.0	0	10.5	1000	48	0
OCT								
20...	156	7.6	9.1	0	10.5	120	65	0
NOV								
17...	170	7.6	3.2	0	11.5	480	66	0
DEC								
15...	156	7.4	2.6	0	12.0	820	62	0
JAN , 1970								
19...	190	7.8	.1	0	12.2	120	76	0
FEB								
16...	195	7.9	3.9	30	11.3	4000	72	0
MAR								
16...	147	7.5	7.6	10	12.1	3500	60	0
APR								
13...	117	7.7	8.3	5	12.4	300	48	0
MAY								
18...	112	7.6	11.7	10	10.6	980	49	0
JUN								
15...	145	7.9	15.1	10	10.0	2800	60	0
JUL								
27...	91	7.7	15.4	5	10.4	520	39	0
AUG								
17...	87	7.7	16.8	5	10.7	260	37	0
SEP								
15...	105	7.9	14.2	0	11.3	580	45	0

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	SODIUM AD-SORP-TION RATIO	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
SEP , 1969									
17-30	12	5.5	5.4	.3	1.5	73	60	3.2	1.6
22...	12	4.4	4.9	.3	1.4	68	56	2.4	1.7
OCT									
20...	15	6.7	7.1	.4	1.6	88	72	4.0	2.6
NOV									
17...	15	6.8	7.8	.4	1.6	92	75	4.5	3.4
DEC									
15...	15	6.0	7.7	.4	1.6	85	70	4.4	2.7
JAN , 1970									
19...	17	8.0	9.0	.5	1.7	105	86	6.6	3.0
FEB									
16...	16	7.7	9.0	.5	4.5	100	82	4.4	4.1
MAR									
16...	14	6.1	6.2	.3	2.0	79	65	4.6	2.4
APR									
13...	12	4.4	4.8	.3	1.0	66	54	3.6	1.6
MAY									
18...	12	4.5	4.4	.3	1.2	63	52	2.8	1.1
JUN									
15...	14	6.1	6.0	.3	1.8	81	66	4.8	1.5
JUL									
27...	8.5	4.2	3.5	.2	1.0	52	43	2.0	.8
AUG									
17...	8.3	4.0	3.3	.2	.8	50	41	2.2	.9
SEP									
15...	10	4.8	4.3	.3	1.0	60	49	4.4	1.0

TABLE 21.--Continued

12484900 - YAKIMA RIVER AT ROZA DAM, WASH.--Continued

WATER QUALITY DATA

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)
SEP , 1969								
17-30	.1	16	82	.14	--	--	--	--
22...	.1	15	76	.16	.04	--	--	--
OCT								
20...	.1	17	98	.16	.03	--	--	--
NOV								
17...	.1	19	104	.25	.05	--	--	--
DEC								
15...	.1	17	98	.29	.07	--	--	--
JAN , 1970								
19...	.2	21	120	.36	.08	--	--	--
FEB								
16...	.1	24	123	.99	.30	0	0	0
MAR								
16...	.2	20	97	.54	.10	--	--	--
APR								
13...	.1	15	75	.11	.10	--	--	--
MAY								
18...	.1	16	74	.20	.08	--	--	--
JUN								
15...	.2	19	94	.23	.08	--	--	--
JUL								
27...	.1	11	58	.11	.04	--	--	--
AUG								
17...	.1	11	56	.07	.04	--	--	--
SEP								
15...	.0	13	69	.20	.05	--	--	--

TABLE 22.--Records of wells

EXPLANATION

Well number: See page vii for well-numbering system.

Owner: Name of owner, user, lessee, or tenant.

Use of water: The principal use of water from the well: D, dewater; F, fire; H, domestic; I, irrigation; N, industrial; P, public supply; S, stock; U, unused; and Z, other. Secondary and tertiary water use may also be indicated.

Altitude of land surface: The altitude of the land surface at the site, in feet above mean sea level, as determined from a topographic map.

Depth of well: The depth of the finished well, in feet below land surface datum.

Casing diameter: The nominal diameter of the largest casing of the well, in inches.

Method constructed: The method of drilling or constructing the well as follows: A, air-rotary rig; C, cable-tool rig; D, dug; V, driven; and Z, other.

Water level: The measured or reported water level of the well, in feet below land surface datum. F, flowing above land surface at unknown head; plus (+) is a known head above land surface datum; D, dry. Computer printout carries to two decimal places, whereas accuracy is generally to nearest foot.

Date water level measured: Date on which water level was measured or reported, usually from well driller's record.

Discharge: The pumping discharge of the well, in gallons per minute. A natural flowing discharge is indicated by"F".

Drawdown: The distance, in feet, that the water level was lowered by pumping at the stated discharge rate.

Finish: The method of finish or the nature of the openings that allow water to enter the well: F, gravel pack with perforations; G, gravel pack with screen; O, open end at bottom of hole and casing only; P, perforated or slotted casing; S, commercial well screen; X, open hole below cased section; and Z, other.

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
13N/18E-01A01	JENSEN	H	1100	20	2	V	8.00	11/24/1973	8	--	--
13N/18E-01A02	PRINCE, CECIL	I	1090	135	6	--	10.00	07/09/1977	75	6	--
13N/18E-02E01	JOHNSON, ROBERT	H	1420	296	6	A	209.00	11/11/1975	38	--	--
13N/18E-02E02	NELSON, KEN	H	1440	215	6	C	175.00	04/08/1976	9	10	--
13N/18E-02E03	HORNER	H	1400	182	6	--	166.00	04/07/1972	20	--	--
13N/18E-02E04	BOYD	H	1400	299	6	--	225.00	08/23/1974	--	--	--
13N/18E-02J01	OWENS, BUD	H	1105	55	6	A	15.00	05/23/1975	--	--	--
13N/18E-03G01	JOHNSON, ROBERT L	H	1460	266	5	A	204.00	05/24/1976	30	--	X
14N/18E-01F01	GOMEZ, TED	H,I	1400	266	6	A	170.00	05/26/1977	60	--	X
14N/18E-01F02	HANEY, WAYNE	H	1420	255	6	A	200.00	06/05/1977	45	--	X
14N/18E-01M01	CAMERON	I	1324	125	12	--	4.57	12/14/1945	625	52	--
14N/18E-01M02	OLSON	I	1324	156	12	--	48.00	--	360	--	--
14N/18E-01M03	CAMERON	I	1335	158	--	--	50.00	08/ /1943	100	--	--
14N/18E-01N01	SAUNDERS	S	1314	139	10	--	55.00	--	125	55	--
14N/18E-01N02	SAYLER, LYLE	H	1290	115	6	A	69.00	03/22/1976	60	--	--
14N/18E-01N03	ZEIGLER, HARRY	H	1310	125	--	--	30.00	--	60	60	--
14N/18E-01P01	SNIVELY	I	1305	120	8	--	20.00	--	720	--	--
14N/18E-01P02	MURDOFF	I	1291	85	10	--	30.00	--	46	--	--
14N/18E-01P03	SAUNDERS	H	1306	140	10	--	56.00	--	125	--	--
14N/18E-01P04	SNIVELY	--	1306	135	--	--	79.70	09/30/1949	230	--	--
14N/18E-01P06	SNYDER 2, LARRY A	H,I	1300	292	6	A	97.00	05/14/1976	85	--	X
14N/18E-02A01	MILES	I	1305	475	--	--	70.00	04/ /1941	750	--	--
14N/18E-02B01	BERGER	H	1295	190	6	--	98.00	11/02/1972	--	--	--
14N/18E-02B02	CARLILE	H	1450	118	6	Z	--	--	15	--	--
14N/18E-02C01	ENBODY	H	1440	220	8	C	90.00	05/ /1975	30	--	--
14N/18E-02D01	MILLER	H	1400	140	6	--	39.00	08/05/1974	35	--	--
14N/18E-02D02	MOOK	H	1425	205	8	C	85.00	10/14/1974	27	--	--
14N/18E-02D03	MILES	H,S	1400	96	--	--	40.00	--	--	--	--
14N/18E-02E01	SINCLAIR, STAN	H	1380	110	6	C	35.00	01/13/1977	34	0	X
14N/18E-02E02	SINCLAIR, STAN	H	1380	102	6	C	40.00	01/07/1977	34	0	X
14N/18E-02G01	MILES	U	1300	235	14	--	--	--	18	--	--
14N/18E-02G02	ZENTERS	H	1415	150	6	C	46.00	06/07/1975	37	--	--
14N/18E-02H01	MILES	H	1348	140	8	--	60.00	04/ /1945	50	--	--
14N/18E-02J01	MILLER	H	1342	31	32	D	27.15	10/25/1948	--	--	--
14N/18E-02J02	MILLER	H	1358	35	36	D	28.24	10/25/1948	--	--	--
14N/18E-02J03	MILLER	I	1352	190	10	--	37.55	10/25/1948	--	--	--
14N/18E-02J04	DANNER	--	1358	198	10	--	56.00	06/19/1953	340	165	--
14N/18E-02J05	SMITH	H	1208	150	6	C	39.00	04/28/1975	35	--	--
14N/18E-02K01	ADDINGTON	I	1340	253	--	--	--	--	380	--	--
14N/18E-02L01	FLOYD	H	1357	42	6	C	24.00	09/01/1975	35	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	METHOD CONST-RUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAW-DOWN (FEET)	FINISH
14N/19E-02L02	KIEBE	--	1350	200	10	--	34.00	--	600	--	--
14N/18E-02L03	VAN HEYSEN	H	1357	127	6	C	32.00	09/18/1975	49	--	--
14N/18E-02N01	HEATH	H	1318	142	6	C	41.00	08/06/1975	30	--	--
14N/18E-02N02	FLOYD, ROGER	H	1320	50	6	C	34.00	06/15/1976	20	7	U
14N/18E-02N03	RAGLAND, MIKE	H	1320	96	5	A	33.00	12/06/1976	30	--	X
14N/18E-02N04	D.SENTER CONSTR	H	1320	96	5	A	24.00	12/27/1976	50	--	X
14N/18E-02N05	D.SENTER CONSTR	H	1320	96	5	A	24.25	12/29/1976	50	--	X
14N/18E-02P01	GOODWIN	I	1305	251	14	--	45.00	03/05/1945	225	--	--
14N/18E-02Q01	SMITH	H	1297	--	6	--	35.00	01/16/1975	25	--	F
14N/18E-02Q02	SPARKS	H	1297	125	6	--	42.00	08/09/1971	60	--	--
14N/18E-02Q03	SENTERS	H	1297	135	6	C	24.00	05/12/1975	35	--	--
14N/18E-02Q04	BURRONHOFF, HARRY	H	1320	150	6	C	38.00	12/23/1975	34	0	--
14N/18E-02Q05	ADDINGTON	S	1310	202	--	--	40.00	1941	300	70	--
14N/18E-02Q05	D.SENTER CONSTR	H	1310	125	6	C	19.00	04/23/1976	35	0	X
14N/18E-02Q06	HARRIS ESTATE, RUTH M	H	1300	147	6	A	58.00	07/29/1976	43	--	X
14N/18E-02R01	TATE	H	1297	150	8	C	41.00	06/05/1973	30	--	--
14N/18E-02R02	OGBURN	H	1297	146	6	--	59.00	08/30/1973	--	--	--
14N/18E-03A01	SINCLAIR	--	1400	125	--	--	50.00	02/26/1975	30	--	P
14N/18E-03A02	OLSON, DAVID	H	1410	162	6	C	45.00	05/21/1975	30	10	X
14N/18E-03A03	DANIELS, DICK	H	1380	126	6	C	56.00	04/28/1976	15	16	U
14N/18E-03B01	MCPHERSON	I	1410	270	--	--	85.00	--	520	20	--
14N/18E-03D01	MCPHERSON	I	1380	335	--	--	--	--	80	--	--
14N/18E-03D02	MCPHERSON	H	1390	310	6	--	--	--	--	--	--
14N/18E-03D03	BRINEY, DON	H	1440	120	6	--	--	--	20	--	X
14N/18E-03E01	CODIGA	S	1400	500	--	--	70.00	1930	550	--	--
14N/18E-03E02	CODIGA	I	1400	500	--	--	50.00	1932	600	90	--
14N/18E-03F01	CODIGA	I	1380	253	14	--	45.00	03/08/1946	900	--	--
14N/18E-03G01	MCPHERSON	I	1380	570	--	--	84.00	1948	685	--	--
14N/18E-03G02	MCPHERSON	I	1380	250	--	--	--	--	--	--	--
14N/18E-03H01	LITTLE	H	1400	165	6	C	45.00	04/08/1975	30	--	--
14N/18E-03H02	JOHNSON, JAMES L	H,I	1380	82	6	--	22.00	04/28/1976	100	58	U
14N/18E-03H03	ANTANAITIS	H	1400	116	5	--	40.00	03/20/1975	20	--	--
14N/18E-03J01	FRANZ	H	1295	252	--	--	34.00	--	36	--	--
14N/18E-03J02	HALLINGFORD	H	1358	180	--	--	35.00	03/24/1975	--	--	--
14N/18E-03J03	SINCLAIR	H	1295	205	--	--	32.00	05/11/1974	50	--	--
14N/18E-03J04	SMITH	H	1358	162	6	C	50.00	--	35	--	--
14N/18E-03J05	MEAGHER	H	1358	104	6	C	42.00	--	20	--	--
14N/18E-03J06	GIBSON	H	1358	84	6	C	43.00	--	20	--	--
14N/18E-03M01	ORSHORN	H	1330	170	6	--	24.00	1947	--	--	--
14N/19E-03M02	SCHRAND, JAMES M	H	1380	112	6	C	41.00	07/20/1976	30	15	X

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
14N/18E-03M03	TRAILINGER, SHERMAN	H	1380	165	6	C	46.00	07/24/1976	35	0	X
14N/18E-03N01	HALSEY, PAUL	H	1340	108	5	C	34.00	09/20/1975	20	9	O
14N/18E-03N02	COX, JOHN	H	1340	132	--	C	--	--	30	--	P
14N/18E-03P01	WILLSON, BILL	H	1320	170	6	C	45.00	12/05/1975	35	5	X
14N/18E-03P02	KORPI, DUANE E	H	1340	170	6	C	37.00	07/01/1975	35	2	X
14N/18E-03Q01	MILES	I	1350	635	--	--	70.00	08/10/1939	540	100	--
14N/18E-03R01	LOEFFLER	H	1295	165	6	C	35.00	02/05/1975	35	--	F
14N/18E-03R02	JONES	H	1295	72	6	C	--	--	20	--	--
14N/18E-03R03	HULL	H	1295	90	6	--	30.00	10/11/1974	20	--	P
14N/18E-03R04	HEIDE	--	1295	--	6	C	41.00	05/21/1975	20	--	--
14N/18E-03R05	WALLINGFORD	H	1295	180	--	--	35.00	03/25/1975	25	3	P
14N/18E-04C01	SUTTON, FRANK	H,I	1450	260	6	C	60.00	09/20/1977	40	5	P
14N/18E-04C01	KERSHAW	H,S	1420	1359	--	--	32.00	--	--	--	--
14N/18E-04D01	KERSHAW	H	1410	150	8	--	20.00	--	--	--	--
14N/18E-04E01	CALVENT	H	1490	225	10	C	15.00	--	340	--	--
14N/18E-04F01	WEINMAN	I	1380	127	8	--	14.00	--	450	--	--
14N/18E-04G01	BELCHER	I	1375	380	--	--	57.00	06/ /1948	450	--	--
14N/18E-04H01	BELCHER	I	1300	400	12	--	80.00	--	550	--	--
14N/18E-04N01	MINGUS	I	1420	214	6	--	--	--	--	--	--
14N/18E-04N02	MINGUS	H	1420	90	--	--	--	--	--	--	--
14N/18E-04N03	GOBRAND, VICTOR	H	1410	80	6	C	19.00	09/25/1976	30	4	O
14N/18E-05D01	LONGMIRE	H	1650	160	--	--	45.00	1924	140	--	--
14N/18E-05F01	FLETCHER	H	1400	531	12	--	48.50	--	700	--	--
14N/18E-05J01	BAKER	I	1440	115	10	--	16.00	--	--	--	X
14N/18E-09A01	HAYEN, THOMAS	I	1355	503	10	C	30.00	03/01/1976	450	40	--
14N/18E-09C01	PINGLEY	I	1360	265	14	--	28.00	1941	600	--	--
14N/18E-09G01	PINGLEY	H	1690	100	6	--	90.00	--	--	--	--
14N/18E-10B02	YERGEN	I	1338	150	12	--	--	--	--	--	--
14N/18E-10E01	EASTWOOD, CLYDE A	H	1320	101	6	A	35.00	09/18/1975	43	--	--
14N/18E-10E02	OGBORN	H	1400	135	6	--	90.00	--	20	--	X
14N/18E-10G01	BAYLESS	--	1404	165	--	--	--	--	--	--	--
14N/18E-11A01	KNOPP & SONS	I	1305	130	12	--	24.00	--	--	--	--
14N/18E-11A02	PETTY	H	1316	125	--	--	--	--	--	--	--
14N/18E-11A03	NEAL, BILL	H,I	1290	105	6	C	40.00	07/ /1977	45	47	P
14N/18E-11B01	KNOPP	I	1297	200	--	--	--	--	--	--	--
14N/18E-11B02	KNOPP	S	1280	112	10	--	50.00	--	--	--	--
14N/18E-11B03	WEBB	H	1280	100	8	--	--	--	--	--	--
14N/18E-11B04	KNOWLES	H	1297	126	--	--	15.00	09/ /1941	--	--	--
14N/18E-11C01	RIEGE	H	1300	--	8	--	25.00	--	--	--	--
14N/18E-11C02	KNOWLES	H	1300	80	--	--	40.00	--	--	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
14N/18E-11D01	AHLSTEAD	I	1300	365	--	--	19.00	--	--	--	--
14N/18E-11H01	STACY	I	1270	105	12	--	20.00	--	63	--	--
14N/18E-11H02	BOYD, SAMMUAL P	H	1260	231	6	A	3.50	09/29/1976	150	--	X
14N/18E-11M01	DAHL	H	1250	--	--	D	--	--	--	--	--
14N/18E-11R01	FREEBORN	H	1300	127	6	--	--	--	100	--	--
14N/18E-12A01	VOLLON, LANCE	H	1400	360	6	A	201.00	06/09/1977	60	--	X
14N/18E-12B01	ARMITAGE	U	1322	130	--	--	87.80	12/14/1945	--	--	--
14N/18E-12B02	ARMITAGE	I	1302	117	--	--	--	--	--	--	--
14N/18E-12B03	ARMITAGE	S	1295	108	--	Z	51.53	02/20/1947	50	--	--
14N/18E-12B04	RASH	H	1300	126	6	--	73.00	04/23/1975	20	--	--
14N/18E-12B05	RASH	H	1300	277	6	--	90.00	07/23/1975	60	--	--
14N/18E-12B06	PETRIE	H	1300	233	6	--	77.00	08/07/1975	100	--	--
14N/18E-12B07	RASH, KEN	H	1290	228	6	A	100.00	03/07/1977	50	--	X
14N/18E-12B08	PETRIE 2, DAVE	H	1290	122	6	A	74.00	06/10/1977	75	--	X
14N/18E-12C01	KNOPP, JOHN	S	1288	127	--	--	31.00	02/20/1947	--	--	--
14N/18E-12E01	BEAVCHENE	U	1269	103	12	--	10.64	10/25/1948	--	--	--
14N/18E-12F01	LEHMAN	H	1300	217	10	--	25.00	02/02/1968	250	--	--
14N/18E-12F02	MECH.ORCHRD.TOP	H	1350	240	6	A	42.00	10/18/1976	75	150	X
14N/18E-12G01	SNIVELY	H	1263	75	--	--	--	--	--	--	--
14N/18E-12G02	GIBSON	I	1284	130	--	--	--	--	--	--	--
14N/18E-12G03	GIBSON	--	1282	130	--	--	--	--	--	--	--
14N/18E-12G04	FIFE, BILL	H	1260	314	8	--	59.00	10/21/1977	95	--	X
14N/18E-12J01	CONRAD	H	1200	155	6	--	40.00	09/11/1970	125	--	--
14N/18E-12J02	ASHBAUGH	--	1360	290	8	--	56.00	07/01/1975	145	--	--
14N/18E-12M01	MADISON	H	1340	103	6	--	8.00	05/01/1973	150	--	--
14N/18E-12M02	BEEBE	I	1305	221	10	--	11.00	02/07/1968	375	--	--
14N/18E-12N01	KING	H	1305	156	6	--	6.00	10/09/1974	--	--	--
14N/18E-12N02	ATWOOD, NINGIL K	H	1240	141	6	A	25.00	06/05/1973	50	--	X
14N/18E-12P01	JOSTES	H	1230	148	7	--	4.00	02/21/1947	--	--	--
14N/18E-12P02	SUTHERLAND	H	1210	15	--	--	--	--	--	--	--
14N/18E-12Q01	VOSE	H	1220	21	--	--	10.00	--	--	--	--
14N/18E-12Q02	SAVAGE	H	1320	251	6	--	20.00	08/18/1975	150	--	--
14N/18E-12R01	ROBEL, JERRY	H,I	1220	230	6	A	34.00	08/04/1971	65	--	--
14N/18E-12R02	HORNER, DONALD	H	1210	171	6	A		F 07/15/1976	200	--	X
14N/18E-12R03	VOSE, GORDON	H	1240	158	6	A	20.00	08/03/1977	75	--	X
14N/18E-13B01	AUSTIN	H	1248	43	10	--	--	--	--	--	--
14N/18E-13B02	RANDOLPH	H	1288	68	8	--	49.00	--	--	--	--
14N/18E-13B03	FOLLONSBEE	H	1450	141	6	--	20.00	03/20/1972	100	--	--
14N/18E-13C01	KING	H,S	1260	155	8	C	32.00	06/ /1965	75	43	X
14N/18E-13C01	NEIL, PAUL	H	1300	85	5	A	34.58	06/18/1976	9	--	X

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	METHOD CONST-RUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAW-DOWN (FEET)	FINISH
14N/18E-13C02	NEIL 2, PAUL	H,I	1300	158	6	A	33.00	06/06/1977	60	--	X
14N/18E-13D01	HEEDLEY	H	1328	93	6	--	53.00	--	--	--	--
14N/18E-13E02	LARSON	H	1312	125	--	D	35.00	--	--	--	--
14N/18E-13E03	DEHNHOFF	H	1330	72	6	--	36.00	--	--	--	--
14N/18E-13F01	HAATT	H	1275	32	--	--	--	--	--	--	--
14N/18E-13F02	MILLER	S	1268	12	--	D	2.69	--	--	--	--
14N/18E-13F03	ELDRIDGE	H	1230	200	6	C	120.00	10/12/1959	50	--	--
14N/18E-13F04	SIRES	H	1230	77	5	--	49.00	03/26/1974	30	--	--
14N/18E-13F05	UNITED BUILDERS	H	1270	55	5	A	27.25	06/30/1977	10	--	X
14N/18E-13G01	FARLEY	H	1267	100	6	--	--	--	--	--	--
14N/18E-13H01	SCHULLER	H,S	1270	68	--	--	40.00	--	--	--	--
14N/18E-13H02	PFEIFFER	H	1250	100	--	--	30.00	--	--	--	--
14N/18E-13H03	HUSTEAD	I	1264	208	--	--	32.00	--	--	--	--
14N/18E-13J01	SCHULLER	I	1300	297	8	C	50.00	07/ /1952	300	--	--
14N/18E-13K01	KINNEY	H	1277	50	--	--	--	--	--	--	--
14N/18E-13K02	CONLEY	H	1325	86	--	--	40.00	--	--	--	--
14N/18E-13K03	WILLOUGHBY	H	1304	60	--	--	--	--	--	--	--
14N/18E-13L01	ERICKSON	H	1280	100	8	--	45.00	--	3	--	--
14N/18E-13L02	CLARKE	H,S	1315	60	--	--	30.00	09/ /1946	--	--	--
14N/18E-13M01	SMITH, DAMON B	H	1380	285	6	A	125.00	10/10/1977	150	--	X
14N/18E-13N01	WATKINS	H	1430	45	6	--	15.00	--	--	--	--
14N/18E-13P01	KERNS	H	1300	99	6	C	59.00	--	25	--	--
14N/18E-13P02	UNITED BUILDERS	H	1350	96	5	A	35.17	07/06/1977	10	--	X
14N/18E-13Q01	FIX	H	1350	253	9	--	101.40	11/17/1948	--	--	--
14N/18E-13R01	LEFFEL	H	1369	168	6	--	--	--	30	--	--
14N/18E-13R02	BARNHEART, B	H	1316	60	6	--	--	--	--	--	--
14N/18E-13R03	HEADLEY	H	1330	93	--	--	53.00	08/ /1947	--	--	--
14N/18E-14A01	CHARRON	H	1339	75	--	--	--	--	--	--	--
14N/18E-14B01	FAGER	S	1320	140	--	--	--	--	--	--	--
14N/18E-14B02	FAGER	U	1350	70	--	--	--	--	--	--	--
14N/18E-14C01	FAHQUIST	U	1421	212	8	--	46.00	--	--	--	--
14N/18E-14C02	FONQUIST	H	1385	130	--	--	65.00	--	--	--	--
14N/18E-14H01	HAMILTON	H	1320	30	--	D	16.00	--	--	--	--
14N/18E-14H02	KEAN	H	1331	75	--	--	--	--	--	--	--
14N/18E-14J01	FLOYD, ROGER	H	1340	128	6	C	--	--	10	--	U
14N/18E-14J02	LEHMAN, GARY L	H,I	1380	335	8	A	230.00	04/02/1976	200	--	X
14N/18E-14Q01	PLATT, JOHN W	H	1500	196	5	A	144.58	10/31/1977	5	--	X
14N/18E-14R01	JONES	H	1515	90	5	--	53.00	07/11/1974	5	--	--
14N/18E-15M01	VAN VIELK	--	1500	112	--	--	70.00	--	32	--	--
14N/18E-15N01	PRUITT	H	1400	202	6	--	67.00	10/23/1974	45	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
14N/18E-15P01	RADFORD, GEORGE H	H	1400	102	6	C	65.00	08/ /1969	--	--	A
14N/18E-15P02	UNITED BUILDERS	H	1420	100	5	A	61.50	03/02/1977	10	--	X
14N/18E-15P03	UNITED BUILDERS	H	1430	116	5	A	70.00	03/01/1977	20	--	X
14N/18E-15Q01	SHANE, RUDY	H	1400	110	5	A	56.00	06/04/1976	10	--	X
14N/18E-15Q02	HOWIE, MIKE	H	1430	135	5	A	76.30	03/03/1977	10	--	X
14N/18E-16J01	WILSON	H	1500	251	6	--	135.00	10/18/1974	--	--	--
14N/18E-16P01	CLEEM	H	1600	131	5	--	98.00	09/17/1975	5	--	--
14N/18E-16P03	CLEIM, HARVEY	H	1560	282	6	A	--	--	15	--	X
14N/18E-19G01	ASHLEY	H	1420	96	5	--	69.00	09/23/1975	5	--	--
14N/18E-21B01	BEE	H	1550	147	6	--	109.00	03/04/1972	5	--	--
14N/18E-21B02	FOREMAN, ART	H	1550	106	6	C	30.00	10/20/1976	12	30	P
14N/18E-21C01	POULIN FRUIT	N	1550	261	6	--	--	--	150	--	--
14N/18E-21D01	PARISH, DONALD	H	1640	136	5	A	110.00	09/27/1976	5	--	X
14N/18E-21J01	STEVENS	H	1550	170	6	C	95.00	12/15/1974	10	--	--
14N/18E-21J02	PARKINSON	H	1550	116	5	--	62.00	05/29/1974	5	--	--
14N/18E-21K01	PRATHER	H	1540	239	6	--	178.00	09/19/1975	12	--	--
14N/18E-21M01	WILKINSON, ROSS	H	1520	249	6	C	180.00	11/09/1977	8	50	P
14N/18E-22B01	BROWN, GENE	H	1350	103	5	A	57.00	06/14/1976	10	--	X
14N/18E-22C01	UNITED BLD	H	1400	145	5	A	84.00	05/25/1976	10	--	X
14N/18E-22D01	WILES, JERRY E	H	1440	--	5	A	--	--	--	--	--
14N/18E-22D02	CERAR, JOHN	H	1480	90	6	C	49.00	11/12/1977	15	20	P
14N/18E-22E01	MARSHALL	H	1440	90	6	C	56.00	03/12/1973	20	--	--
14N/18E-22H01	A & B BUILDERS	H	1480	97	--	C	59.00	07/19/1971	34	--	--
14N/18E-22J01	REHREMAN, STEVEN L	H	1340	152	6	C	20.00	02/23/1977	10	88	X
14N/18E-22J02	TAYLOR, KENNETH	H	1340	166	5	A	100.00	09/24/1976	15	--	X
14N/18E-22J03	JOHNSON&THOMPSN, BEN & BIL	I	1320	145	6	C	6.00	--	60	54	P
14N/18E-22L01	HILLSTROM, BETTY	H	1480	261	5	A	202.00	11/05/1975	10	--	--
14N/18E-22N01	STAR	H	1490	210	6	C	--	--	12	--	--
14N/18E-22N03	RATH	H	1440	220	6	C	124.00	--	17	40	--
14N/18E-22R01	ASTON	H	1470	85	6	C	39.00	02/24/1973	20	--	--
14N/18E-23A01	UNITED BUILDERS	H	1500	116	5	A	61.00	10/24/1977	5	--	X
14N/18E-23A02	WASHBURN, JOHN	H	1450	136	5	A	70.00	10/18/1977	10	--	X
14N/18E-23B01	SOULE	I	1515	--	--	--	--	--	--	--	--
14N/18E-23B03	SANBORN	H	1516	88	6	--	45.00	--	10	8	--
14N/18E-23B04	ABEL, DARYL	H	1340	226	5	A	178.00	03/28/1977	10	--	X
14N/18E-23B05	PARTCH CON	H	1340	166	5	A	111.00	04/07/1977	15	--	X
14N/18E-23C01	TUTTLE	H	1520	127	6	--	73.00	02/04/1972	50	--	--
14N/18E-23C02	ALPINE LUMBER	H	1380	106	6	--	46.00	03/13/1975	14	31	--
14N/18E-23C03	JACKSON, HARRY	H	1440	215	--	A	150.00	09/07/1977	8	--	X
14N/18E-23D01	GARDINE	H	1516	106	6	C	50.00	03/18/1964	20	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
14N/18E-23D02	HEINTZ	H	1520	245	--	--	70.00	03/26/1974	75	--	--
14N/18E-23D03	LONGMIKE	H	1516	80	6	C	55.00	02/10/1971	25	--	--
14N/18E-23D04	COMMERCE	H	1240	134	5	--	90.00	10/31/1975	10	--	--
14N/18E-23D05	HATH	H	1520	123	6	--	55.00	10/21/1966	34	--	--
14N/18E-23E01	TABOR	I	1359	119	10	C	3.00	--	55	--	--
14N/18E-23E02	WALLIS, BERNNIS	H	1350	95	6	C	30.00	04/01/1977	25	45	U
14N/18E-23E03	BOUGARD, PERRY	I	1320	212	10	C	35.00	07/16/1964	170	--	P
14N/18E-23F03	TABOR	I	1300	206	10	C	36.00	07/16/1964	--	--	P
14N/18E-23F04	ARMSTRONG	H	1300	117	6	--	70.00	05/12/1970	42	--	--
14N/18E-23G01	TEEL, JAMES	H	1280	142	6	C	100.00	03/22/1976	25	10	X
14N/18E-23G02	ASSOC.REALTORS	H	1280	180	5	A	138.00	04/11/1977	15	--	X
14N/18E-23G03	ABEL, DARYL	I	1270	196	5	A	142.00	06/23/1977	15	--	X
14N/18E-23G04	STURGEON, DWAIN	H	1370	118	6	C	80.00	06/11/1977	20	8	P
14N/18E-23H01	FOSTER	H	1300	86	6	C	40.00	05/26/1954	510	--	--
14N/18E-23J01	PARKS	I	1375	96	6	--	30.00	--	30	60	--
14N/18E-23K01	ALPINE LUMBER	H	1250	144	6	--	84.00	02/24/1975	15	42	P
14N/18E-23K02	ALPINE LUMBER	H	1250	142	6	--	80.00	03/05/1975	15	47	P
14N/18E-23N01	SCHULL, MARK	H	1380	125	6	C	12.00	06/04/1977	20	58	X
14N/18E-23P01	GODFREY	H	1380	89	--	C	30.00	--	35	--	--
14N/18E-23Q01	OUCHSHERER	--	1215	198	8	--	28.00	--	60	--	P
14N/18E-24A01	BUSSE	H	1350	175	6.25	--	--	--	--	--	--
14N/18E-24A02	ADAMS	H	1300	176	--	--	140.00	09/11/1974	--	--	--
14N/18E-24D01	RAVER	H	1500	166	5	--	80.00	--	10	--	--
14N/18E-24D02	KILLION	H	1500	97	--	--	20.00	--	--	--	--
14N/18E-24D03	ISSEL, CARL	H	1380	136	5	A	86.25	02/03/1977	20	--	X
14N/18E-24D04	RAVER, RONNIE	H	1370	203	5	A	108.00	03/08/1977	15	--	X
14N/18E-24E01	SEITZ	--	1325	143	6	--	30.00	--	60	30	P
14N/18E-24E02	SAMMAR	H	1359	157	5	--	122.00	12/10/1973	15	--	--
14N/18E-24H01	RECORD	I	1300	125	10	--	--	--	--	--	--
14N/18E-24J01	RECORD	H	1300	151	10	--	110.00	--	100	--	--
14N/18E-24K01	KEECH	I	1200	123	--	--	--	--	--	--	--
14N/18E-24N01	ISSEL	H	1218	166	5	--	122.00	--	10	--	--
14N/18E-24P01	BRIGGS, CALVIN	H	1270	285	--	C	108.00	06/09/1976	20	5	--
14N/18E-24Q01	COPELAND, ROBERT H	H	1260	96	5	A	49.75	12/26/1975	15	--	--
14N/18E-24Q02	COPELAND, ROBERT	H	1270	110	5	A	52.00	05/27/1976	10	--	X
14N/18E-25A01	PEARSON	--	1200	50	--	D	15.00	--	60	2	--
14N/18E-25D01	LOCKHART, LYNN	H	1200	110	6	C	0.00	10/15/1975	15	10	X
14N/18E-25E01	BOWERS	H	1240	88	5	--	70.00	08/15/1975	10	--	--
14N/18E-25E02	BREEDING, HENRY	H	1225	110	5	A	62.33	01/25/1977	20	--	X
14N/18E-25F01	FYKE	--	1200	40	6	--	15.00	--	37	15	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
14N/18E-25G01	KINNE	F	1300	275	6	--	16.00	08/29/1966	--	--	--
14N/18E-25M01	OLSON	I	1200	50	20	D	12.50	02/06/1946	--	--	--
14N/18E-25N01	HEITMIER, EILEEN	H	1220	122	6	C	80.00	--	15	20	P
14N/18E-25P01	GODFREY	--	1190	218	--	C	--	--	--	--	--
14N/18E-25P02	CHOLLENS	H	1200	160	6	C	20.00	10/07/1958	51	--	--
14N/18E-25Q01	LANDON, MARJORIA	H	1120	90	6	C	25.00	04/22/1976	10	6	X
14N/18E-26A01	SILVR.SPUR MOBL, WELL 3	I,P	1250	215	6	A	36.00	07/27/1975	250	--	X
14N/18E-26D01	FOSTER	H	1480	190	6	--	--	--	--	--	G
14N/18E-26E01	GODDERSON, KEN	H	1425	195	6	C	168.00	03/29/1977	15	5	P
14N/18E-26F01	ISSEL, CARL	H	1360	181	5	A	140.00	05/13/1976	10	--	X
14N/18E-26F02	SMITH, DON	H	1380	181	6	A	141.00	09/16/1976	40	--	X
14N/18E-26F03	STOLTENOW, DALE	H	1360	267	8	C	172.00	03/04/1977	70	10	O
14N/18E-26J01	HEURG LDS	H	1237	180	6	--	65.00	--	35	--	--
14N/18E-26J02	KNAPP	H	1237	79	--	C	59.00	07/25/1955	40	--	--
14N/18E-26J03	TREAT	H	1237	265	6	--	114.00	04/22/1974	60	--	--
14N/18E-26Q01	MCCAW	Z	1300	425	10	C	167.00	--	300	--	P
14N/18E-27A01	JOHNSON, J	H	1425	190	6	C	140.00	12/05/1975	10	10	X
14N/18E-27A02	MATSON, ALAN	H	1360	307	6	C	214.00	07/11/1977	20	29	P
14N/18E-27B01	NELL, L	H	1460	180	6	C	180.00	12/20/1975	15	20	X
14N/18E-27H01	KIRBY	I	1325	400	6	--	210.00	--	90	--	--
14N/18E-27L01	HOVDE	H	1339	190	--	--	95.00	11/13/1973	--	--	--
14N/18E-27L02	AMOS, MIKE	H	1400	166	5	A	112.00	08/17/1976	15	--	X
14N/18E-27M01	TOMCHICK, GENE	H	1400	151	6	A	--	--	22	--	F
14N/18E-27M02	TOMCHICK, GENE	H	1400	149	6	A	114.00	11/11/1977	30	--	P
14N/18E-27P01	SAMMAR INC	H	1400	201	5	--	142.00	--	15	--	--
14N/18E-27P02	SAMMAR INC	H	1400	181	5	--	128.00	08/02/1974	15	--	--
14N/18E-27P03	SAMMAR INC	H	1400	226	5	--	160.00	--	20	--	--
14N/18E-27P04	SAMMAR INC	H	1400	231	--	--	165.00	07/24/1974	--	--	--
14N/18E-28K01	MATSON FRUIT CO	H	1420	236	6	--	177.00	11/26/1974	38	--	--
14N/18E-28K02	HUTCHISON	H	1420	227	6	V	196.00	02/22/1974	15	--	--
14N/18E-34D01	GARDNER, LORENCE R	H	1500	207	6	C	164.00	10/12/1977	14	35	P
14N/18E-34E01	AQUA WELL ASSOC	H	1561	465	6	C	276.00	10/11/1969	--	--	--
14N/18E-34J01	DYK	H	1520	461	6	--	281.00	12/18/1970	75	--	--
14N/18E-34K01	SHULTZ, JAMES E	H	1440	206	6	A	100.00	09/19/1975	43	--	--
14N/18E-34L01	DRAKE, NORMAN	H	1500	339	6	A	275.00	10/19/1977	25	--	X
14N/18E-34M01	GRIEVES	H	1500	320	6	--	230.00	10/16/1974	30	--	--
14N/18E-34Q01	UDU	H	1500	352	6	--	205.00	--	--	--	--
14N/18E-34Q02	SAATHOFF	I	1500	345	6	--	195.00	08/21/1968	75	--	P
14N/18E-34Q03	NUCKLES	H	1500	280	6	A	250.00	--	50	--	--
14N/18E-34R01	MELTON, ALLEN	H	1460	326	6	A	231.00	04/28/1976	50	--	X

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
14N/18E-35K01	SELAH	P	1152	295	--	--	66.00		12/31/1942	--	--	--
14N/18E-35K02	SELAH TOWN	P	1153	285	8	--	36.00		--	--	--	--
14N/18E-35K03	TOWN OF SELAH	--	1300	966	8	--	--		--	--	--	P
14N/18E-35P01	REID	H	1520	170	6	C	120.00		04/15/1970	20	--	--
14N/18E-35Q01	TOWN OF SELAH	P	1125	431	16	--	4.00		12/ /1944	400	--	P
14N/18E-35Q02	SELAH TOWN OF	P	1118	465	8	--	36.00		--	350	36	P
14N/18E-36D01	WERNEX	--	1300	56	8	--	18.00		08/23/1947	28	--	--
14N/18E-36L01	W W JUDY FRUIT	N	1125	12	--	D	7.00		--	250	1	--
14N/18E-36L02	W W JUDY FRUIT	N	1125	17	48	D	7.00		--	200	--	--
14N/18E-36L03	CASSADY, JESSIE	H	1100	84	6	C	7.00		09/10/1976	30	4	U
14N/18E-36N01	TOWN OF SELAH	P	1150	578	12	--		F	--	--	--	--
14N/18E-36R01	YAKIMA CO	N	1100	10	36	D	--		--	200	--	--
14N/19E-02A01	DODD	H	2500	173	6	--	68.00		--	30	--	--
14N/19E-08R01	SCHIFFELBEIN, CLARENCE	H	1170	131	6	A	15.00		07/28/1976	125	--	X
14N/19E-11L01	WASH STATE HWY	H	2000	623	8	C	380.00		--	38	--	--
14N/19E-15M01	WASH HWY COMMIS	H	1300	380	8	--	315.00		09/18/1968	65	--	--
14N/19E-16N01	ROCHE POMONA	I	1300	435	10	--	135.00		12/05/1967	390	--	P
14N/19E-16N02	ROCHE POMONA OR, WELL 3	I	1310	900	16	A	--		--	--	--	X
14N/19E-17A01	SCHIFFELBEIN	I	1160	900	--	--	12.00+		10/01/1967	--	--	--
14N/19E-17G01	ZANDER, FRANK F	H	1270	160	6	A	59.00		09/29/1965	--	--	U
14N/19E-17H01	CLIFFACRES ORCH	I	1300	400	10	A	74.00		04/25/1977	300	--	X
14N/19E-17L01	LYNCH	H	1250	173	8	C	130.00		01/23/1974	3	--	--
14N/19E-17P01	ROCHE POMONA OR	I	1240	575	8	A	77.00		04/15/1977	800	--	X
14N/19E-18N01	MCCORMICKS, JAMES W	--	1330	0	5	A	--		--	--	--	U
14N/19E-18P01	MCDEVITT, JOHN	H,I	1140	232	8	A	124.00		08/01/1975	--	--	X
14N/19E-19E01	CARLSON, BERT	H	1280	96	5	A	70.00		02/19/1976	10	--	--
14N/19E-19E02	CLARK, S.	H	1280	110	5	A	81.00		05/16/1977	10	--	X
14N/19E-19E02	ANGLIN, CHARLES	H,I	1280	--	6	V	90.00		--	--	--	--
14N/19E-19E03	WIGGER, DARRELL	H	1280	106	5	A	75.00		05/18/1977	10	--	X
14N/19E-19E05	HUDSON, KENNETH W	H	1280	127	5	A	85.00		02/05/1974	25	--	X
14N/19E-19G01	LARSON, H B	H	1215	134	6	--	50.00		--	50	--	--
14N/19E-19L01	HAWKINS	--	1215	59	--	--	--		--	--	--	--
14N/19E-19M01	TREAT, MERLE	--	1250	0	5	A	--		--	--	--	X
14N/19E-19Q01	BROOM, MAURICE	H	1215	84	6	A	57.00		08/26/1977	9	22	X
14N/19E-20B01	WATKIN	H	1234	287	5.50	--	80.00		--	15	20	--
14N/19E-20B02	SCHULTZ	H	1234	79	6	C	24.00		10/25/1974	15	--	--
14N/19E-20F01	CRAWFORD	H	1234	172	6	--	--		--	100	--	--
14N/19E-20F02	DANIALS	H	1234	260	8	--	20.00		10/01/1970	100	--	--
14N/19E-20N01	CORPS ENGINEERS	--	1200	602	8	--	330.00		--	239	--	--
14N/19E-21N01	SMUEL	H	1260	171	6	--	16.00		05/03/1972	40	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAM-ETER (INCHES)	METHOD CONST-RUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)		DRAW-DOWN (FEET)	FINISH
14N/19E-28B01	US ARMY 1	P	--	600	--	--	--	--	--		--	--
14N/19E-28F01	US ARMY 2	P	--	548	--	--	--	--	--		--	--
14N/19E-28H01	US ARMY 3	P	1334	590	5	--	67.34	09/20/1942	72		--	--
14N/19E-29D01	BAILEY, EUGENE M	H	1140	52	5	A	12.50	12/26/1975	10		--	--
14N/19E-29E01	KING, DUANE	H	1125	82	6	--	41.00	07/16/1977	18		4	U
14N/19E-29H01	BACHMAN, DAVE	H	1240	100	6	A	40.00	07/10/1976	25		55	X
14N/19E-29L01	SCHAFER	H	1300	135	5	--	66.00	04/01/1974	30		--	--
14N/19E-29L02	SCHAFER	H	1300	104	5	--	45.00	10/14/1973	40		--	--
14N/19E-29L03	SCHAFER	H	1300	107	5	--	50.00	01/07/1974	18		--	--
14N/19E-29L04	BIVINS	H	1220	140	--	--	66.00	06/10/1975	--		--	--
14N/19E-29M01	MURPHY, BILL	H	1120	56	5	A	10.00	04/05/1977	10		--	X
14N/19E-29Q01	HAGAN	H	1200	42	5	--	17.00	11/06/1974	20		--	--
14N/19E-29Q02	BELLES, KENNETH	H	1210	180	6	A	49.00	07/18/1975	100		--	--
14N/19E-30D01	FOLEN, ANDREW B	I	1220	900	8	C	30.00	--	--		--	X
14N/19E-31G01	HALL	H	1105	167	6	--	8.00	05/08/1974	--		--	--
14N/19E-31J01	WASH STATE HWY	N	1100	270	--	--	--	--	120		--	--
14N/19E-31K01	MADEN	H	1105	48	--	C	5.00	07/25/1968	--		--	--
14N/19E-31N01	VAUGHAN, DENNIE	I	1090	14	24	D	5.00	--	120		3	P
14N/19E-32F01	SYMMONDS	I	1175	495	6	--	18.00*	--	43	F	--	X
14N/19E-32F02	SHEELEY, MARTIN	H	1160	43	5	A	32.00	02/07/1977	10		--	X
14N/19E-32K01	FORD	H	1200	166	5	--	45.00	--	5		--	--
14N/19E-32M01	WOODIN	S	1125	311	--	--	14.00*	--	--		--	--
14N/19E-32N01	NKOUTS	--	1150	75	8	C	18.00	--	--		--	--
14N/19E-34N01	SHEMELD	H	1700	60	6	C	7.00	10/23/1968	20		--	--
14N/20E-20N01	YAKIMA FIRE CTR	H	2160	602	8	C	327.00	10/ /1971	--		--	0
14N/20E-20N02	U.S. GOVT	Z	2020	440	6	A	258.00	10/14/1976	50		--	U
15N/17E-02A01	BRISCOE	--	2400	158	6	--	40.00	--	36		--	P
15N/17E-11A01	HAZSEN	--	2800	498	8	--	173.00	--	--		--	--
15N/17E-12E01	SANDERSON	I	1742	245	8	--	14.00	--	--		--	--
15N/17E-12L01	WHITE	U	1770	210	10	--	56.30	09/28/1948	35	F	--	--
15N/17E-12N01	LANCE	I	1800	550	10	--		F --	3000	F	--	--
15N/17E-13B01	CAMERON	--	1760	500	10	--	244.00	--	--		--	--
15N/17E-13C01	CAMERON	I	1725	385	--	--	22.00	--	1300		37	P
15N/17E-13J01	HENNIE	H	1630	70	--	--	--	--	--		--	--
15N/17E-13L01	UNKNOWN	--	1600	710	--	--	--	--	--		--	--
15N/17E-13N01	KUENHER	U	1690	535	12	--	66.25	09/28/1948	--		--	--
15N/17E-13P01	SISK	H	1630	60	--	--	50.00	--	--		--	--
15N/17E-24A01	ABBS	--	1620	535	12	--	147.00	--	--		--	--
15N/17E-24H01	SCHOOL DIST	U	1605	80	--	--	--	--	--		--	--
15N/17E-24J01	CORUELL	H	1590	21	48	D	15.05	--	--		--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
15N/17E-24K01	CONDELL	--	1600	464	12	--	62.00		09/28/1948	--	--	--
15N/17E-24Q01	CLIFT	I	1600	385	--	--	--		--	700	--	--
15N/17E-25A01	LONGMIRE	I	1550	19	144	D	11.99		01/01/1950	--	--	--
15N/17E-25H01	CONRAD ET LES	H	1550	252	6	A	174.00		10/10/1977	50	--	A
15N/17E-31H01	BAUGUESS	H	2900	32	--	--	6.14		06/14/1951	--	--	--
15N/17E-31R02	RUSSELL	--	2900	31	6	--	3.25		--	60	--	--
15N/17E-33Q01	EWING, JAMES	H,I,D	1590	82	8	--	20.50		12/31/1975	30	23	--
15N/17E-35Q01	JOHNSON	--	1830	500	6	--		D	--	--	--	--
15N/17E-35Q02	JOHNSON	--	1830	200	--	--		D	--	--	--	--
15N/17E-36F01	JOHNSON	--	1650	265	--	--	232.00		1947	--	--	--
15N/18E-18N01	FAIL	H	1620	32	8	--	--		--	--	--	--
15N/18E-19D02	KUEHNEN	U	1660	720	8	--		D	--	--	--	--
15N/18E-19E01	KUEHRER DR	U	1580	706	12	--	8.59		09/28/1948	--	--	--
15N/18E-19F01	KUEHRER DR	I	3600	18	--	D	8.34		09/28/1948	105	--	--
15N/18E-19G01	KUENNEN	I	1590	12	10	D	2.93		09/28/1948	105	--	--
15N/18E-19L02	CEMETERY ASSC	--	1580	100	8	--	--		--	--	--	--
15N/18E-19M01	CLIFT	H	1560	17	--	--	11.60		09/29/1948	--	--	--
15N/18E-19M02	CLIFT	U	1560	17	--	D	11.46		09/28/1948	--	--	--
15N/18E-24R01	DALE	H	1420	113	--	D	87.00		--	--	--	--
15N/18E-28L01	SKOV	I	1600	417	12	C	160.00		03/28/1966	760	--	--
15N/18E-29C01	LONGMIRE	U	1615	512	12	--	153.85		10/22/1948	270	--	--
15N/18E-29C02	JIM LONGMIRE	I	1690	403	10	C	156.00		02/ /1972	--	--	P
15N/18E-29C03	NORDBERG	--	1615	525	12	--	150.00		--	225	--	--
15N/18E-29F01	NORDBERG	--	1600	400	12	--	134.00		--	800	--	P
15N/18E-29H01	NORDBERG	--	1600	200	6	--	100.00		--	20	--	--
15N/18E-29N01	LARSON	--	--	--	--	D	7.00		--	210	--	--
15N/18E-29P01	LONGMIRE	H	1490	91	--	--	50.00		--	--	--	--
15N/18E-29R01	BOYD, JOHN H	I	1560	360	12	--	118.00		03/29/1963	1000	50	--
15N/18E-30A01	LONGMIRE	H	1540	215	7	--	50.00		--	30	--	--
15N/18E-30E01	LONGMIRE	I	1590	702	--	--	180.00		--	90	--	--
15N/18E-30F01	LABREE	I	1580	380	10	--	80.00		1948	--	--	--
15N/18E-30G01	LA BOCE	I	1587	480	--	--	80.00		1929	900	--	--
15N/18E-30K01	BOYD, JOHN H	I	1540	582	12	C	75.00		09/ /1977	370	15	A
15N/18E-31C01	LA BALL	I	1535	500	--	--	100.00		05/ /1935	400	--	--
15N/18E-31C02	LABREE	H	1535	36	36	D	25.42		--	--	--	--
15N/18E-31D01	LABOER	I	1550	610	--	--	--		--	50	--	--
15N/18E-31G01	LONGMIRE	I	1525	333	12	--	70.00		02/15/1944	1070	--	A
15N/18E-31G02	LONGMIRE	I	1550	575	6.63	--	110.00		06/ /1927	680	--	A
15N/18E-31J01	LONGMIRE	I	1495	360	10	--	--		--	70	--	--
15N/18E-31K01	FLETCHER	S	1580	200	6	--	--		--	--	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
15N/18E-31R01	LONGMIRE	S	1230	360	10	--	50.00	--	650	10	--
15N/18E-32C01	FOREST	I	1480	195	15	--	--	--	80	--	--
15N/18E-32D01	DALE	I	1440	306	--	--	113.80	04/23/1946	180	--	--
15N/18E-32K01	FLETCHER	H	1450	75	6	--	17.00	--	--	--	--
15N/18E-32K02	FLETCHER	I	1460	100	10	--	3.00	--	675	64	U
15N/18E-32K03	BENAS VALLEY GR	H	1460	85	6	C	37.00	10/ /1948	--	--	A
15N/18E-32N01	LONGMIRE	I	1495	170	--	--	--	--	--	--	--
15N/18E-32N02	LONGMIRE	H	1480	68	--	--	--	--	--	--	--
15N/18E-32R01	FORE, ELMER C	H,I	1440	150	8	C	40.00	10/05/1965	--	--	P
15N/18E-33C01	FAVILLA	H	1550	205	6	C	119.00	03/15/1975	17	--	--
15N/18E-33C02	SKOV	I	1550	345	12	C	--	--	1000	--	P
15N/18E-33D01	LUTTHAMS	H	1475	99	5	--	82.00	10/22/1948	--	--	A
15N/18E-33E01	SHELTON	I	1460	430	--	--	90.00	--	--	--	--
15N/18E-33G01	HILL	I	1500	335	--	--	125.00	--	--	--	--
15N/18E-33H01	HILL JR	I	1420	340	12	--	12.50	03/23/1941	500	--	--
15N/18E-33K01	HILL	I	1425	350	12	--	120.00	--	400	--	--
15N/18E-33L01	UNKNOWN	H,I	1480	117	8	V	80.00	--	--	--	U
15N/18E-33M01	SHELTON	H	1435	75	10	--	20.00	--	--	--	--
15N/18E-33M02	CLARK	I	2900	420	10	--	--	--	--	--	--
15N/18E-33P01	KERSHAW, H H	I	1430	400	10	--	95.00	--	--	--	--
15N/18E-33P02	CRAIN, EASTON E	H	1465	160	6	A	60.00	05/31/1972	--	--	U
15N/18E-33P03	KERSHAW, RAY T	I	1460	--	8	B	--	--	650	--	--
15N/18E-33Q01	ALLEN	I	1430	400	--	--	70.00	--	--	--	--
15N/18E-34A01	NYWENING	--	1600	400	--	--	87.00	--	600	107	--
15N/18E-34A02	NYWENING	--	1600	273	--	--	151.00	04/04/1949	50	47	--
15N/18E-34A03	NYWENING	--	1600	455	--	--	140.00	--	430	--	--
15N/18E-34J01	GEORGE	H	1350	430	--	--	170.00	--	125	--	--
15N/18E-34J02	DALE	I	1450	450	--	--	--	--	--	--	--
15N/18E-34K01	IRWIN	I	1470	500	20	--	150.00	05/ /1945	500	--	A
15N/18E-34L01	NYWENING	--	1470	530	--	--	150.00	--	450	--	--
15N/18E-34M01	PODMAN	I	1440	465	12	--	126.00	1935	450	150	A
15N/18E-34Q01	NYWENING	U	1430	133	--	--	99.00	11/18/1948	--	--	--
15N/19E-22L01	USGS	U	1390	602	12	A	F	11/02/1977	1600	32	A
16N/16E-11L01	WARNICK BROS	U	2600	35	--	--	4.94	09/24/1948	--	--	--
16N/16E-13N01	WOOD	U	2280	20	36	D	16.00	09/24/1948	--	--	--
16N/16E-14C01	WARNICK BROS	H	2380	385	3	--	80.00	1932	5	--	--
16N/16E-14P01	CLAYTON	--	2280	27	4	D	22.32	09/24/1948	--	--	--
16N/16E-14Q01	SCHUBERT, JOHN	I	2310	408	8	A	40.00	07/12/1977	450	--	A
16N/16E-24D01	BENAS CATTLE CO	I	2298	818	10	--	F	--	589	--	P
16N/16E-24F01	BENAS CATTLE CO	I	2208	498	12	C	1.00	12/27/1964	760	--	P

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
16N/16E-24H01	NACHES SCHOOL D	U	2220	90	--	--	60.00	--	--	--	--
16N/17E-19E01	GREEN, GRANT S	H	2230	115	6	--	36.00	09/24/1948	12	36	--
16N/17E-19P01	JENNINGS, WILLIAM	H	2160	110	6	A	30.00	10/06/1976	135	--	A
16N/17E-19Q01	ALLEY	H,S	2160	28	--	D	24.95	09/25/1948	--	--	--
16N/17E-20K01	WENAS CATTLE CO	I	2350	195	12	C	14.50	11/15/1962	710	74	--
16N/17E-29M01	NEWLAND	I	2050	401	8	C	16.00	1929	350	--	P
16N/17E-29M02	DALTON	H	2050	25	--	--	20.00	--	--	--	--
16N/17E-32C01	NEWLAND	H	2130	33	--	--	23.00	--	--	--	--
16N/17E-33Q01	JENNINGS, WILLIAM	I	1990	340	10	A	16.00+	06/30/1977	700	208	A
16N/17E-34H01	JENNINGS, WILLIAM	I	2160	326	12	A	74.00	10/06/1977	250	--	S
16N/18E-03F01	KUMMEL, TERRIL	U	2640	700	8	C	--	--	--	--	--
16N/19E-28C01	USGS/BLM	U	1425	1019	16	A	24.28	02/10/1978	960	5	A
16N/20E-05N01	NICOLAISEN, JACK	H	1800	260	6	C	30.00	12/19/1973	16	10	--
16N/20E-05P01	NICOLAISEN, E	H	1750	265	6	C	F --		50 F	--	A
16N/20E-07Q01	SABIN, PAUL R	Z	2000	543	8	--	355.00	06/17/1976	--	--	--
17N/17E-12F01	MCVEY, RICHARD T	H	1925	230	5	A	60.00	04/25/1975	10	170	P
17N/17E-12M01	MCDONALD, THOMAS	H	1960	65	6	A	21.00	07/14/1977	10	34	O
17N/17E-12N01	BACKEN, GARY	H	1960	45	--	--	--	--	--	--	--
17N/17E-12P01	EASTERLING, ILDA-MARI	H,I	1930	65	6	--	10.00	01/23/1976	--	--	--
17N/17E-13C01	HELLESON, GEORGE	H	2040	81	6	C	12.00	12/09/1973	15	20	--
17N/17E-13C02	JOHNSON, A W	H	2085	80	6	A	30.00	12/12/1973	12	50	--
17N/17E-16F01	MOHLER, SAMUEL R	H	2320	10	--	--	--	--	--	--	--
17N/18E-01B01	MUNDY, E E	H	1580	285	6	Z	52.00	04/ /1947	--	--	U
17N/18E-01C01	ELLENSBURG CITY, RODEO	P	1580	1209	12	Z	7.00	12/08/1945	700	160	P
17N/18E-01D01	ELLENSBURG CITY, MEMORIAL	P	1540	307	10	--	35.00	08/15/1977	700	--	--
17N/18E-02C01	BIRDSEYE FOODS	N	1520	50	3.50	--	0.00	03/06/1948	--	--	--
17N/18E-02D01	N PACIFIC R R	N	1520	19	--	D	--	--	--	--	--
17N/18E-02F01	KITTITAS DAIRYM	N	1520	420	12	--	--	--	185	--	--
17N/18E-02G01	ELLENSBURG CITY	Z	1500	--	--	--	--	--	--	--	--
17N/18E-02Q01	BROWAINS MOTEL	N	1500	20	6	C	6.00	12/10/1973	--	--	--
17N/18E-02Q02	PONDEROSA MOTEL	N	1500	20	6	C	7.00	12/13/1973	--	--	--
17N/18E-04B01	EBERLY, BILL	H	1580	150	6	C	38.00	03/09/1974	5	75	--
17N/18E-04K01	ANDERSON, LARRY	H	1590	20	6	C	--	--	--	--	--
17N/18E-04K02	ANDERSON, LARRY	S	1590	65	--	--	--	--	--	--	--
17N/18E-04L01	NAISON, CLIFF	H	1620	43	6	A	12.00	11/14/1977	20	15	O
17N/18E-07E01	FIRE DST 2	H	1650	50	6	C	--	--	--	--	--
17N/18E-07P01	HULL, WARREN	H,I	1680	176	--	--	--	--	--	--	--
17N/18E-08R01	CONNOLLY, JOHN	H	1671	60	--	--	--	--	--	--	--
17N/18E-10H01	SCHAAKE PACK.CO	N	1495	--	8	C	--	--	--	--	--
17N/18E-10N01	SNOWDEN, HERB	H	1580	80	6	C	--	--	--	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
17N/18E-11M01	SCHAAKE PACK CO	N	1480	750	16	--	--	--	500	--	F
17N/18E-15Q01	RIEGEL, RICHARD	H	1560	110	6	C	24.50	08/11/1977	--	--	--
17N/18E-16J01	CHAVERS, CARL	H	1660	143	6	A	70.00	06/27/1974	30	47	--
17N/18E-25M01	STANFIELD, CHARLES E	I	--	9	48	D	4.00	--	180	2	--
17N/18E-34C01	KUMMEL, TERRIL	U	2360	10	84	D	D	--	--	--	--
17N/19E-05M01	SIMPSON, DALE	H	1585	72	6	A	25.00	06/11/1977	30	42	U
17N/19E-05N01	BENSON, BILL	H	1580	260	6	A	15.00	08/19/1977	90	--	U
17N/19E-09P01	OLMSTEAD PLACE	H	1540	30	72	D	--	--	--	--	--
17N/19E-09P02	OLMSTEAD PLACE	I	1540	10	36	D	5.90	08/17/1977	--	--	--
17N/19E-09P03	STATE PARK	H	1540	20	6	C	--	--	--	--	--
17N/19E-11A01	KITTITAS, CITY OF	P	1655	140	8	C	--	--	--	--	--
17N/19E-11G01	KITTITAS ICE CO	U	1630	200	6	--	6.68	06/07/1968	70	18	X
17N/19E-11H01	KITTITAS CITY	U	1620	252	11.56	C	36.00	--	250	100	U
17N/19E-29D01	MENZEL, MARK A	H	1460	90	6	A	4.62+	09/22/1970	75	75	--
17N/19E-29M01	PRENTICE, GORDON	I	--	318	12	Z	2.00	06/ /1949	360	38	P
17N/20E-05K01	ORCUTT, LELAND	I	1960	450	10	--	110.00	08/06/1977	600	--	X
17N/20E-07R01	JOHNSTON, DEAN	H	1705	160	6	C	15.00	08/ /1977	--	--	X
17N/20E-16J01	KERN, PHILLIP B	H	1900	127	6	A	57.00	06/11/1970	--	--	--
17N/20E-18A01	GRAAFF, VINCENT	H	1630	230	8	C	--	--	--	--	X
17N/20E-29Q01	DE KONING, ALBERT	H	1805	380	5	C	60.00	--	--	--	U
17N/20E-29R01	BOGR PCKT TEST	U	1830	725	10	A	70.60	11/17/1977	--	--	X
17N/20E-32R01	DE KONING, ELVIN	H	1850	150	6	C	60.00	08/ /1977	--	--	O
17N/21E-21G01	WASH ST HWY COM	H	2500	631	8	A	528.40	10/03/1968	61	19	--
18N/14E-32D01	US FOREST SER	P	--	70	--	--	19.50	05/01/1968	--	--	--
18N/17E-03H01	ROSS, DONALD	H	1640	40	6	C	3.50	08/17/1977	--	--	--
18N/17E-11G01	THORP SCHL	P	1635	185	6	C	--	--	--	--	--
18N/17E-11H01	N PACIFIC R R	N	1648	249	4.25	--	23.00	--	--	--	--
18N/17E-12R01	ELLENSBURG CITY	P	1640	23	144	D	11.00	--	5000	--	--
18N/17E-14R01	HARRELL, PAUL	H,S	1695	25	36	D	10.00	08/ /1977	--	--	--
18N/17E-15Q01	SELL, JOHN	H	1610	258	6	A	--	--	6	--	X
18N/17E-17R01	SCHAFF, RICHARD	H	1615	60	6	C	--	--	--	--	--
18N/17E-23M01	DAVIS, HARRY	H	1635	40	6	A	10.00	06/25/1976	8	25	O
18N/17E-26K01	CARTER, GERALD R	H	1880	116	6	A	60.00	06/04/1977	12	51	O
18N/17E-26N01	DUPREE, I	H	2000	134	6	--	79.20	11/06/1969	7	--	P
18N/17E-26R01	CHRISTENSN, LEE	H	1840	160	6	A	85.00	06/02/1977	12	70	U
18N/18E-03K01	LIPPENCOTT, CHAS	H	1905	120	6	C	78.00	08/18/1977	--	--	--
18N/18E-15G01	VANDERGRFF, DICK	H	1690	100	--	--	--	--	--	--	--
18N/18E-22P01	SPURLING, GROVER	H	1620	35	6	C	F	--	--	--	--
18N/18E-25C01	PORT.DST.ATS.CO	U	1716	420	8	C	--	--	190	146	P
18N/18E-25D01	ATS.CO.AIRPORT	P	1700	730	10	C	68.00	07/04/1943	600	76	P

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)		DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
18N/18E-26F01	PRICE, JOSEPH W	H	1640	132	6	A	22.00		02/04/1971	--	--	--
18N/18E-26J01	CORBAIN, CHALMER G	H	1655	100	6	A	20.00		05/25/1976	60	75	U
18N/18E-26M01	BURRIS, C A	H,I	1600	100	6	C	--		--	--	--	--
18N/18E-29N01	WATERS, VERN	H	1605	125	6	--	12.00		06/ /1968	--	--	--
18N/18E-30J01	ELLNSBG.GOLF CS	H	1605	40	--	--	--		--	--	--	--
18N/18E-32D01	SHAW, JOHN A	H	1600	455	6	Z		F	--	10	--	--
18N/18E-32H01	LYM, HERB	H	1590	55	6	A	30.00		04/22/1975	20	25	U
18N/18E-32J01	WHEELER, LEO	H	1600	66	6	C	22.00		01/24/1974	15	20	--
18N/18E-32J02	EATON, KENNETH W	H	1650	150	6	A	73.00		04/18/1975	12	--	--
18N/18E-33K01	WA.ST.PATROL	H	1510	137	6	C	35.00		07/05/1974	18	75	S
18N/18E-33M01	MCCULLOUGH, JERRY	H	1581	67	6	A	27.00		05/10/1976	20	37	--
18N/18E-33M02	SWAN, CHARLES B	H	1582	58	6	A	22.00		05/12/1976	15	31	--
18N/18E-33P01	KETTENTON, GEORGE JR	H,I	1600	62	6	--	10.00		04/ /1949	--	--	--
18N/18E-35F01	WINEGAR'S DAIRY	S	1580	46	8	C	--		--	--	--	--
18N/18E-35K01	ELLENSBURG CITY, PARK	I	1600	400	10	Z	--		--	80	--	--
18N/18E-36B01	CENT.WA.COLLEGE	P	1640	1200	16	--	--		--	--	--	--
18N/19E-04G01	MORRISON, TOM	I	2135	12	--	--	6.00		--	--	--	--
18N/19E-05K01	LUNDY, DAVE	S	2110	150	6	C	28.10		08/18/1977	--	--	X
18N/19E-05K02	JENKINS, HAROLD	H	2110	246	6	C	--		--	15	--	X
18N/19E-07E01	MCNEIL, BYRL	H	--	290	6	C	7.00		08/18/1977	--	--	P
18N/19E-18E01	WYATT, MARVIN	H	1890	53	6	A	5.00		06/14/1977	15	43	U
18N/19E-19G01	SIGLER, LEON	H	1808	100	6	A	21.00		11/18/1973	10	--	X
18N/19E-31Q01	ARCAUIPANE, TONY	H	1630	2409	6	C	31.30		08/18/1977	--	--	U
18N/19E-32B01	DEPT OF GAME	H	1723	267	10	C	28.00		06/ /1968	48	85	P
18N/19E-32E01	HOWELL, JAMES H	H,I	1670	287	8	C	--		--	100	--	--
18N/19E-32E02	WAHLE, A	H	1670	50	--	--	15.00		--	--	--	--
18N/20E-08Q01	GREENACRES INC	H,Z	2200	191	8	A	20.00		05/16/1970	--	--	--
18N/20E-17D01	GREENACRES	H	2160	142	6	A	2.00+		05/08/1970	45	--	--
18N/20E-17E01	GREENACRES INC	H,Z	2120	281	8	A	25.00		05/22/1970	--	--	--
18N/20E-23D01	ABADOU&KAZANJAN	--	2470	600	10	A		F	--	2105	--	--
18N/20E-23E01	COLE, FRANK	H	2380	240	--	--	60.06+		--	--	--	--
18N/20E-27A01	CLERF, HOWARD	I	2260	465	8	A	219.45+		09/09/1976	2000	--	--
18N/20E-33R01	WEEKES, MARTIN G	I	2010	675	8	A	155.00		07/19/1977	1500	--	X
18N/21E-06D01	DIAMBRI, VICTOR	H	3600	22	--	--	10.00		1976	--	--	--
19N/14E-01A01	WISWELL, ALMON P	H	2090	172	--	--	100.00		--	13	10	--
19N/14E-01C01	DOW, BUCK	H	2050	78	--	C	60.00		05/02/1974	20	0	P
19N/15E-04H01	BURCHAK, GEORGE	H	2220	284	6	A	65.00		07/08/1977	43	200	X
19N/15E-04N01	WALLACE, JOHN H	H	2240	193	8	C	95.00		1965	60	0	P
19N/15E-12B01	DANISHEK, EMIL	H	2200	160	6	C	120.00		08/ /1977	--	--	--
19N/15E-04P01	WASH ST HWY COM	I,H	2080	307	8	C	220.00		01/03/1968	64	10	S

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
19N/16E-04Q01	WASH ST HWY COM	I,H	2080	359	8	C	290.00	02/13/1968	50	46	--
19N/16E-17D01	SKY MEADOWS DEV	H	2700	290	6	C	120.00	1968	--	--	P
19N/16E-17N01	SKY MEADOWS	H	3500	82	10	C	20.00	11/24/1973	6	--	F
19N/16E-25C01	SUNLIGHT WATERS	H,R	2520	487	6	A	92.00	1969	75	108	X
19N/16E-25C02	SUNLIGHT WATERS	U	2560	500	6	A	87.00	05/05/1969	75	103	P
19N/17E-21C01	HARTUNG, DARRYL	H,I	2320	343	6	A	140.00	04/11/1977	55	--	X
19N/17E-34F01	BENTHAN, NORMAN	I	1700	95	8	Z	4.00	--	120	2	P
19N/18E-22D01	BREDESON, GORDON	H	2380	370	5	A	230.00	05/01/1975	30	140	P
19N/18E-27N01	REECER CR.SCHL.	U	2027	150	--	--	130.00	08/18/1977	--	--	--
19N/18E-28G01	GLASS, GEORGE	H	2111	347	6	A	230.00	11/16/1977	50	114	O
19N/19E-20J01	HENDERSON, MRS.CLYDE	H	2440	131	6	C	--	--	--	--	--
19N/19E-32H01	OWEN, BILL	H	2210	162	6	A	10.00	06/12/1977	8	147	P
19N/19E-33P01	WILLIAMS, CHARLES	H	2205	140	6	A	35.00	08/26/1977	8	100	U
19N/20E-21H01	NELSON, MICHAEL R	H,I	3800	6	36	D	0.17	06/10/1977	10	6	F
19N/20E-30H01	UNDERHILL, E C	H	2820	203	--	--	100.00	--	35	--	--
20N/13E-03J01	US BURO OF RECL	H	2100	61	10	--	44.00	01/09/1962	200	30	P
20N/13E-11D01	EASTON ST.PARK	P	2150	65	8	C	--	--	--	--	--
20N/13E-11G01	STATE PKS RECRE	P	2160	62	10	--	45.00	01/08/1962	250	6	P
20N/13E-11H01	NP RAILWAY CO	H,Z	2600	121	12	Z	32.00	09/25/1940	288	33	P
20N/13E-11R02	EASTON, TOWN OF	P	2155	75	8	C	--	--	400	--	S
20N/13E-12N01	WA.ST.GRANGE	--	2150	56	10	C	12.00	04/07/1952	100	7	--
20N/13E-14A01	GRANDSTAFF, CLYDE	H	2170	78	--	--	40.00	10/ /1963	12	--	--
20N/13E-24B01	KMPKCHSS YTH.SV	H	2110	38	6	A	18.00	11/18/1976	15	7	S
20N/14E-02L01	NW IMP CO	U	2254	445	--	--	--	--	--	--	--
20N/14E-02L02	SUNNYLANDS	H	2240	210	6	V	130.00	08/ /1968	10	--	P
20N/14E-02L03	ROSLYN CASCADE	H	2240	210	8	C	148.00	12/15/1972	23	--	P
20N/14E-10A01	USBR	H	2240	167	--	--	--	--	--	--	--
20N/14E-10A02	NW IMP CO	U	2230	216	--	--	--	--	--	--	--
20N/14E-11A01	USFS	P	2220	201	8	C	101.00	10/ /1968	150	--	P
20N/14E-12F01	LYCOL VENEER	N	2320	500	10	--	155.00	10/17/1973	450	145	P
20N/14E-12J01	ROSLYN-CS.MINEY	N,Z,H	2300	450	10	C	125.80	11/17/1969	--	--	P
20N/14E-13L01	NW IMP CO	U	2203	916	--	--	--	--	--	--	--
20N/14E-17N01	DOMAROTSKY, WILLIAM	H	2080	18	--	--	8.00	06/02/1972	--	--	--
20N/14E-21C01	CIRCLE L D S	H	2105	40	6	C	16.00	07/25/1974	15	12	S
20N/14E-27H01	BOGACHUS, ED	H	2120	50	--	--	27.70	08/16/1977	20	--	--
20N/15E-25P01	ACKERLUND, GUS A	U	1887	10	48	D	9.84	04/ /1946	--	--	U
20N/15E-27H01	NW IMP CO	U	1950	831	--	--	--	--	--	--	--
20N/15E-27J01	NW IMP CO	U	1950	840	--	--	--	--	--	--	--
20N/15E-27Q01	NW IMP CO	U	1900	1500	--	--	--	--	--	--	--
20N/15E-27Q02	NW IMP CO	U	1912	980	--	--	--	--	--	--	--

TABLE 22.--Continued

LOCAL NUMBER	OWNER	USE OF WATER	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	CASING DIAMETER (INCHES)	METHOD CONSTRUCTED	WATER LEVEL (FEET)	DATE WATER LEVEL MEASURED	DISCHARGE (GALLONS PER MINUTE)	DRAWDOWN (FEET)	FINISH
20N/15E-27Q03	CLE ELUM, TOWN OF	P	1910	20	8	C	--	--	500	--	U
20N/15E-31K01	WASH ST DEP HWY	H,N	2000	216	6	C	5.00	08/ /1966	40	190	U
20N/15E-34C01	PARMENTIER, HARRY L	I	1910	12	--	D	7.00	06/28/1973	20	0	--
20N/15E-34N01	DUNN, RODNEY T	H	2000	198	6	C	27.00	04/23/1974	40	13	P
20N/15E-35D01	NW IMP CO	U	1900	708	--	--	--	--	--	--	--
20N/16E-26H01	MUNDY, BOB	H	1925	25	--	--	--	--	--	--	--
20N/16E-31C01	ALLOWAY, FOUNTAIN	--	1900	--	--	--	4.00	--	1100	4	--
20N/16E-31P01	EDEN, JOHN	H	1890	320	6	A	50.00	09/09/1976	15	50	U
20N/16E-34N01	ZEPHYR ALUM	H	1840	311	5	C	260.00	05/14/1974	1	50	P
20N/17E-01Q01	STROUP, J D	H	2700	80	6	--	30.00	08/03/1974	19	35	--
20N/17E-10Q01	ALLEMANDI, CHARLES	H	2400	160	6	--	46.00	10/28/1976	1	114	U
20N/17E-19N01	FERGUSON, W C	H	1980	87	6	C	10.00	08/ /1977	--	--	--
20N/17E-20F01	LITTLE, ROBIN K	H,I	2400	202	6	--	25.00	09/ /1972	--	--	--
20N/17E-20P01	LITTLE, ROBIN	H,I,Z	2400	310	6	C	250.00	04/12/1976	--	--	--
20N/17E-28J01	HANSON, J J	H	2180	200	6	C	15.00	--	--	--	P
21N/12E-10Q01	W S H D	--	2375	128	10	A	88.00	02/05/1974	--	--	--
21N/12E-14M01	US FOREST SERV	P	2400	61	8	--	3.00	06/13/1965	100	--	P
21N/12E-15B01	WA.ST.DEPT.HWYS	--	2370	89	8	A	D	--	--	--	--
21N/12E-22B01	SONS OF NORWAY	H	2450	200	8	--	27.00	10/08/1976	3	163	X
21N/12E-34D01	WEATHER BUREAU, U.S.	H	3954	281	8	C	260.00	10/15/1974	20	0	--
21N/13E-17P01	KACHESS VLG ASO	H	2320	15	--	--	--	--	--	--	--
21N/14E-28J01	USFS	P	2265	220	--	C	142.00	04/ /1966	50	--	P
21N/14E-34C01	DRIFTWOOD ACRES	--	2400	330	10	--	--	--	--	--	P
21N/14E-34C02	WEBER	H	--	548	6	A	56.00	06/25/1969	25	--	--
21N/14E-34C04	STETNER, DAVE	H	2300	70	6	C	53.00	08/21/1974	15	0	S
21N/14E-34E01	WEBBER, JOSEPH E	P	2180	245	6	C	87.00	06/05/1974	50	13	P
21N/14E-34G01	VLAHOVICH, GEORGE	--	2320	66	--	--	33.00	--	15	8	--
21N/14E-34H01	SANDELIN, D.SCOTT	H	2400	8	--	D	--	--	--	--	Z
21N/14E-34K01	OIEN, SIG	H	2300	100	6	C	55.00	08/12/1974	1	--	--
21N/14E-35N01	HANSSON, ROBERT	H	2300	190	6	C	25.00	06/17/1974	2	160	--
21N/17E-17R01	USFS,MIN.SP.CMP	P	3500	75	6	C	2.50	08/15/1965	12	53	P
21N/17E-22P01	MINERAL SP.RES	P	--	60	--	--	20.00	09/12/1962	--	--	--
22N/11E-09G01	TANNER, RAY	H	2880	322	12	C	159.00	09/25/1972	12	--	P
22N/11E-15L01	MT.MYAK RESORT	P	2600	279	8	C	--	--	70	--	X
22N/13E-32C01	US FOREST SER	P	2300	70	8	--	22.00	07/15/1965	100	--	P

TABLE 23.--Drillers' logs of selected wells

Material	Thickness (ft)	Depth (ft)
13/18-2E1. Robert Johnson. Altitude about 1,420 ft. Drilled by Eastwood Drilling Co., 1975. Casing: 6-inch to 181 ft.		
Topsoil	5	5
Gravel and clay layers	175	180
Boulders and clay	60	240
Clay	16	256
Sandstone	24	280
Sandstone and water	16	296
14/18-1F1. Ted Gomez. Altitude about 1,400 ft. Drilled by Eastwood Drilling Co., 1977. Casing: 6-inch to 105 ft.		
Boulders and clay	60	60
Clay	25	85
Lava rock, brown	55	140
Basalt, black	85	225
Sandstone and water	41	266
14/18-5F1. W. Fletcher. Altitude about 1,400 ft. Drilled by Riebe Drilling, 1929. Casing: 12-inch to 100 ft.		
Soil	5	5
Gravel, cemented	25	30
Hardpan	40	70
Sand and gravel	15	85
Clay, yellow	220	305
Clay, white	80	385
Clay, blue	100	485
Shale, green	40	525
Sand, black	6	531
14/18-12A1. Lance Vollone. Altitude about 1,400 ft. Drilled by Eastwood Drilling Co., 1977. Casing: 6-inch to 161 ft.		
Dirt	8	8
Clay, white	32	40
Clay, brown	40	80
Sandstone and clay layers	65	145
Rock, brown and red	15	160
Basalt, black	98	258
Rock, red and water	4	262
Sandstone	28	290
Gravel, cemented	4	294
Sandstone and water	66	360
14/18-14J2. Gary Lehman. Altitude about 1,380 ft. Drilled by Riebe Drilling, 1976. Casing: 8-inch to 20 ft.		
Topsoil	1	1
Clay, hard	87	88
Clay, sandy	24	112
Sandstone and clay	58	170
Clay, yellow	8	178
Boulders and some water	14	192
Basalt, black, broken	18	210
Basalt, black	62	272
Clay, orange, and sandstone	18	290
Basalt	25	315
Sandstone, clay, and shale	20	335

Material	Thickness (ft)	Depth (ft)
14/18-16J1. Elmre Wilson. Altitude about 1,500 ft. Drilled by Eastwood Drilling Co., 1974. Casing: 6-inch to 112 ft.		
Topsoil	6	6
Clay	92	98
Rock, broken	7	105
Basalt, black, solid	27	132
Lava, red	8	140
Basalt, black	80	220
Sandstone	6	226
Clay	9	235
Sandstone and water	16	251
14/18-24P1. Calvin Briggs. Altitude about 1,270 ft. Drilled by Cassel Drilling, deepened 1976.		
No record of original well	210	210
Basalt, black, hard	50	260
Sandstone, brown and clay	15	285
14/18-26Q1. Donald McCaw. Altitude about 1,300 ft. Drilled by Eastwood Drilling Co., 1964. Casing: 10-inch to 391 ft.		
Dirt	16	16
Sandstone and clay layers	159	175
Sandstone with some water	15	190
Clay	35	225
Sandstone with some water	25	250
Sandstone, brown	40	290
Sandstone, water-bearing	45	335
Sandstone and shale	10	345
Sandstone and water	25	370
Shale	30	400
Sandstone and water	25	425
14/18-34E1. Aqua Well Association. Altitude about 1,561 ft. Drilled by Riebe Drilling, 1969. Casing: 6-inch to 360 ft.		
Hardpan	12	12
Gravel, cemented	58	70
Rock, decomposed	18	88
Clay, brown	7	95
Basalt, broken	45	140
Clay, brown, soft	5	145
Basalt, broken	10	155
Clay, white, sandy	55	210
Conglomerate	15	225
Basalt, broken	5	230
Sandstone and clay	15	245
Sandstone and some water	15	260
Siltstone	15	275
Sandstone, coarse and water	15	290
Clay, brown	5	295
Sandstone, green and some silt	170	465

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
14/18-35K3. Town of Selah. Altitude about 1,300 ft. Drilled by Gray and Osborne, Engineer, 1960. Casing: 20-inch to 543 ft, 16-inch to 526-553 ft, 10-inch 537-829 ft, 8-inch 819-919 ft; open-hole 919-966 ft.		
Soil and gravel	12	12
Sand	56	68
Clay, yellow and some gravel	5	73
Sand	183	256
Sand and some clay	29	285
Sand, gravel, and some clay	13	298
Clay, yellow and some sand and gravel	18	316
Sand and gravel	14	330
Gravel and clay	10	340
Sand and some clay	5	345
Shale, brown	9	354
Clay	30	384
Shale, green and gray clay	28	412
Clay, green	4	416
Sand, blue	2	418
Clay, blue and green	32	450
Sand	8	458
Clay, blue	28	486
Sand, blue	12	498
Clay, blue with sand and gravel	2	500
Sand, blue with clay and shale	5	505
Clay, blue	35	540
Sand, gray and blue	7	547
Basalt, black	104	651
Sand and gravel	17	668
Sand, blue	16	684
Sand, brown	17	701
Clay, brown with some sand	11	712
Sand with clay	8	720
Clay, blue	10	730
Sand, blue	45	775
Shale and green clay	5	780
Clay, green and gray	52	832
Sand and gravel	2	834
Basalt, black	40	874
Sand and shale	41	915
Basalt, black	37	952
Clay, gray, sandy	11	963
Basalt with some clay	3	966
14/19-11L1. Washington State Highways. Altitude about 2,000 ft. Drilled by Strasser Drilling Co., 1968. Casing: 8-inch to 430 ft.		
Lava, broken	72	72
Basalt, gray, medium hard	39	111
Ash, brown	27	138
Lava, broken	59	197
Clay, brown	17	214
Clay and broken rock	20	234
Basalt, gray, medium hard	158	392
Sand and silt	25	417
Lava, green, soft	11	428
Basalt, black	7	435
Basalt, gray	148	583
Basalt, gray, broken	2	585
Basalt, gray, hard	31	616
Sandstone, black	4	620
Basalt, gray, hard	3	623

Material	Thickness (ft)	Depth (ft)
14/19-16N2. Roche Pomona Orchards. Altitude about 1,310 ft. Drilled by Leach Drilling Co., 1977.		
Topsoil	2	2
Gravel, cemented	11	13
Clay, orange	3	16
Sandstone, brown	6	22
Basalt, black	33	55
Basalt, gray, hard	70	125
Claystone, brown	20	145
Gravel, cemented and water-bearing	65	210
Sandstone	22	232
Gravel, cemented and water-bearing	58	290
Basalt, fractured, water-bearing	20	310
Basalt, gray, hard	19	329
Basalt, fractured, water-bearing	9	338
Basalt, black, hard	5	343
Basalt, black, soft, porous	7	350
Basalt, gray, hard	23	373
Basalt, brown, soft, porous	3	376
Basalt, gray, hard	75	451
Sandstone, green	19	470
Basalt, gray, hard	32	502
Basalt, black, pourous	16	518
Basalt, fractured	32	550
Basalt, gray, hard	57	607
Basalt, gray, medium hard	10	617
Creviced and water-bearing	1	618
Basalt, gray, hard	24	642
Basalt, fractured	28	670
Basalt, black, hard, fractured and water-bearing	4	674
Basalt, gray, hard	64	738
Basalt, black, fractured	77	815
Basalt, gray, hard	15	830
Basalt, fractured, water-bearing	1	831
Basalt, gray, hard	9	840
Basalt, broken	2	842
Basalt, gray hard	6	848
Basalt, broken, water-bearing	4	852
Basalt, gray, hard	6	858
Basalt, black, broken	2	860
Basalt, gray, hard	5	865
Basalt, fractured, watker-bearing	1	866
Basalt, gray, hard	10	876
Basalt, black, soft, porous and water-bearing	7	883
Basalt, gray, hard	1	884
Basalt, soft, porous and water-bearing	5	889
Basalt, gray, hard	1	900

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
14/19-32F1. S. Symmonds. Altitude about 1,175 ft. Drilled by Fred Riebe, 1932. Casing: 8-inch to 210 ft.		
Dirt	20	20
Sand, gravel and boulders, water-bearing	20	40
Gravel, pea	20	60
Sandstone, brown	12	72
Clay, blue, water-bearing	132	204
Shale, blue	20	224
Basalt	135	359
Sandstone, water-bearing	95	454
Shale, blue	30	484
Basalt	11	495
14/20-20N2. U.S. Army. Altitude about 2,020 ft. Drilled by Eastwood Drilling, 1976. Casing: 6-inch to 312 ft.		
Gravel, cemented, and clay	4	4
Boulders	26	30
Basalt, broken	7	37
Clay and broken rock layers	38	75
Basalt, hard	60	135
Sandstone	4	139
Basalt, hard	6	145
Sandstone and clay	20	165
Basalt, hard	25	190
Rock, red, volcanic	13	203
Basalt, hard	18	221
Rock, volcanic and clay	15	236
Basalt, hard	15	251
Basalt, broken	15	266
Basalt, hard	74	340
Rock, volcanic and water	15	355
Basalt, hard	5	360
Rock, volcanic and water	9	369
Basalt, creviced	8	377
Basalt, hard	63	440
15/17-12N1. Perry Lance. Altitude about 1,800 ft. Drilled by Eastwood Drilling Co., 1970. Casing: 10-inch to 213 ft, 8-inch to 312 ft.		
Sand and boulders	12	12
Clay	10	22
Sandstone and shale layers	178	200
Sand with water	12	212
Basalt, black	53	265
Honeycomb rock, brown	13	278
Basalt, black	4	282
Honeycomb rock, brown	22	304
Basalt, black, hard	34	338
Basalt, broken with green shale	22	360
Basalt, black, hard	74	434
Shale, black	4	438
Shale, tan, hard	2	440
Sandstone and shale layers	80	520
Honeycomb rock, brown--water-bearing	30	550

Material	Thickness (ft)	Depth (ft)
15/17-24K1. W. Cordell. Altitude about 1,600 ft. Drilled by Riebe Drilling, 1948. Casing: 12-inch to 60 ft.		
Soil	25	25
Ellensburg Formation(?)		
Clay, sandy	5	30
Gravel and clay	5	35
Gravel	25	60
Clay, sandy	65	125
Gravel, coarse, with clay	30	155
Clay, sandy	20	175
Gravel, sand, and clay	30	205
Sandstone	10	215
Clay, brown, sandy	20	235
Sandstone	5	240
Clay, sandy	50	290
Sandstone	15	305
Clay, sandy	10	315
Sandstone	10	325
Clay, sandy	75	400
Sandstone	5	405
Clay, sandy	20	425
Sandstone	10	435
Clay, sandy	29	464
15/17-25R1. Les Conrad, well no. 2. Altitude about 1,550 ft. Drilled by Eastwood Drilling, 1977. Casing: 6-inch to 201 ft.		
Soil	1	1
Ellensburg Formation(?):		
Conglomerate	27	28
Sandstone	117	145
Sandstone and clay	39	204
Sandstone layers	48	252
15/17-31R2. J. Russell. Altitude about 2,900 ft. Drilled by Eastwood, 1959. Casing: 6-inch to 30 ft.		
Boulders	18	18
Gravel, cemented	11	29
Gravel, water-bearing	2	31
15/17-33Q1. James Ewing. Altitude about 1,590 ft. Drilled by Cassel Drilling, 1977. Casing: 8-inch to 59 ft.		
Soil	5	5
Ellensburg Formation(?):		
Gravel, sand, and clay, semiconsolidated	40	45
Clay, gray, and sand and gravel	10	55
Sandstone, brown with some clay	11	66
Clay, brown	12	74
Sandstone, brown, some water	6	80
Conglomerate	5	85

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
15/18-28L1. H. M. Skov. Altitude about 1,600 ft. Drilled by Riebe Drilling, deepened 1966. Casing: 12-inch to 243 ft.		
No record of original log	180	180
Sandstone, clay, and boulders	60	240
Clay, sandy	90	330
Clay, brown, sticky, and boulders	50	380
Sandstone and clay	37	417
Sandstone, coarse, water	3	420
15/18-29R1. John Boyd. Altitude about 1,560 ft. Drilled by Joe Riebe, 1963. Casing: 12-inch to 10 ft.		
No record of log	0	135
Dirt, sand and clay, water	10	145
Clay, soft	10	155
Sand and clay	25	180
Sand and clay, water-bearing	20	200
Sandstone	70	270
Pumice and sandstone	25	295
Clay	15	310
Clay and sand	30	340
Clay and rock	15	355
Clay, sand and rock	5	360
15/18-30K1. John H. Boyd. Altitude about 1,540 ft. Drilled by Youngs Drilling, 1977. Casing: 12-inch to 160 ft.		
Dirt	4	4
Gravel with water	2	6
Rock, solid	10	16
Gravel, coarse	3	19
Sandstone	6	25
Clay and sand	30	55
Clay, sand and gravel	46	101
Sand	4	105
Clay and sand	10	115
Sandstone	29	144
Clay, gray	3	147
Sandstone and gravel	14	161
Gravel, coarse, water-bearing	4	165
Clay and sand	75	240
Sandstone, soft	8	248
Sand, coarse	2	250
Clay and sand	10	260
Sandstone	20	280
Clay and sand	8	288
Sandstone, hard	12	300
Clay and sand	10	310
Sandstone	35	345
Clay and sand	5	350
Sandstone	62	412
Clay and sand	58	470
Sandstone, coarse	15	485
Clay, brown	5	490
Sand, hard	10	500
Sand, coarse with pumice and water	10	510
Clay and sand	3	513
Sand, coarse and gravel	22	535
Clay and sand	30	565
Clay	13	578
Gravel, pea and sand	4	582

Material	Thickness (ft)	Depth (ft)
15/18-33C2. H. M. Skov. Altitude about 1,550 ft. Drilled by Riebe Drilling, deepened 1962. Casing: 12-inch to 165 ft. Well caved to 345 ft.		
No record of original log	200	200
Clay, sandy, hard	140	340
Gravel, pea, water-bearing	8	348
Clay	72	420
Sandstone and water	15	435
15/18-34L1. J. Nywening. Altitude about 1,470 ft. Drilled by Fred Riebe, 1944. Casing: 12-inch to 46 ft.		
Topsoil	5	5
Gravel, cement	25	30
Clay, yellow	45	75
Boulders and clay	35	110
Sandstone	60	170
Clay and sand	40	210
Clay	20	230
Sandstone	30	260
Clay and sand	50	310
Gravel and clay, water-bearing	20	330
Sandstone, water-bearing	70	400
Clay and gravel	30	430
Clay and sand, water-bearing	30	460
Sandstone, water-bearing	40	500
15/19-22L1. U.S. Geological Survey test well. Altitude about 1,390 ft. Drilled by Adcock Drilling Co., 1977. Casing: 12-inch to 50 ft; 8-inch to 201 ft.		
Soil zone	3	3
Basalt, broken and weathered, brown and black, some sand and gravel (subangular to subrounded shapes) with silt and (or) clay	77	80
Sand, sand and gravel, subangular black basalt pebbles and cobbles, some vesicular, water-bearing	58	138
Clay, silt and (or) ash, brown, white, green, blue green, laminations (1-2 mm thick) of differeing colors visible	30	168
Basalt, broken, black, angular and subangular shapes	3	171
Sand and gravel, fine to medium, gravels 2-6 cm, partially cemented	1	172
Basalt, vesicular, black with some gray and green clays	3	175
Basalt, broken, vesicular, greenish-black	4	179
Clay and (or) ash, gray-white, laminations 1-2 mm thick are visible	10	189
Basalt, broken, black, with some blue-green clays	1	190
Basalt, fractured (hackly?), black, water-bearing artesian head, well flowing 150-200 gal/min	10	200
Basalt, hard, black	56	256
Basalt, broken, black with blue-green quartz and iron pyrite(?) as vein filling material, water-bearing artesian head	5	261

(continued)

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
15/19-22L1.--Continued		
(Water-bearing zones not easily distinguishable below this point.)		
Basalt, hard, black	33	294
Basalt, fractured (hackly?), black (free flow of well 1,200-1,600 gal/min at 296 ft depth)	3	297
Gravel and sand, coarse, well-rounded pea size and subrounded coarse sand, well washed, poorly sorted, 30 to 50 percent light-colored minerals	1	298
Basalt, broken, black	9	307
Gravel, and sand, thin layer(?) well-rounded, fair sorting	.5	307.5
Basalt, hard, black	16.5	324
Basalt, fractured, vesicular, black	2	326
Basalt, hard, black	58	384
Basalt, vesicular, black-brown	20	404
Basalt, broken(vesicular?), black	2	406
Basalt, hard, black	7	413
Basalt, fractured, black and brown, iron pyrite and quartz as vein filling material	5	418
Basalt, fractured (hackly?), slightly vesicular(?), black	7	425
Basalt, slightly fractured, vesicular at top, black	51	476
Basalt, fractured (hackly?), slightly vesicular, black, iron pyrite as vein filling material	16	492
Ash (or siltstone?), fine-grained, green	6	498
Basalt, vesicular, black and brown	6	504
Sandstone and/or ash, fine-grained, green, light gray, with green clay, some pieces of brown vesicular basalt(?)	44	548
Charcoal(?), black-brown, possibly tree stump	8	556
Clay, brown, gray	1	557
Basalt, broken, brown	6	563
Basalt, vesicular, brown	1	564
Basalt, hard, black	38+	602+
16/16-14Q1. John Schubert. Altitude about 2,310 ft. Drilled by Eastwood Drilling, 1977. Casing: 8-inch to 213 ft.		
Topsoil	2	2
Conglomerate	6	8
Boulders	14	22
Sandstone	45	67
Clay with broken rock	146	213
Sandstone	14	227
Basalt, broken	13	240
Sandstone	15	255
Basalt, broken	13	268
Sandstone	140	408
16/16-24D1. Wenas Cattle Co. Altitude about 2,288 ft. Drilled by Dilley Drilling, deepened 1961. Casing: 10-inch to 794 ft.		
No record of original log	754	754
Sand, clay and gravel	40	794
Basalt, black	24	818
16/16-24F1. Wenas Cattle Co. Altitude about 2,208 ft. Drilled by Eastwood Drilling, 1963. Casing: 12-inch to 336 ft.		
Boulders and sand	26	26
Sandstone	64	90
Gravel with water	5	95
Sandstone	105	200
Shale, blue, with water	298	498
16/17-29M1. B. Newland. Altitude about 2,050 ft. Drilled by Ludwig, 1929. Casing: 8-inch to 270 ft.		
Gravel	25	25
Sandstone	80	105
Clay	296	401
16/17-33Q1. William Jennings. Altitude about 1,990 ft. Drilled by Eastwood Drilling, 1977. Casing: 10-inch to 192 ft.		
Boulders	12	12
Clay	57	69
Basalt, black, with fractures	91	160
Basalt, black	43	203
Basalt, broken	39	242
Sandstone	93	335
Basalt, black	5	340
16/19-28C1. U.S. Geological Survey test well. Altitude about 1,425 ft. Drilled by Adcock Drilling Co., 1978. Casing: 16-inch to 54 ft, 12-inch to 169 ft. 10-inch to 476 ft.		
Sand, gravel, boulders, clay and silt, river deposits and possibly landslide material	50	50
Basalt, broken, black (large boulders with some sand and gravel between them?)	35	105
Basalt, broken, black with light-colored vein filling material	20	125
Basalt, hard, black	95	220
Basalt, broken, black, some vesicular basalt, some subrounded black basalt gravels, some light gray volcanic ash(?)	9	229
Charcoal, black	2	231
Basalt, broken, black	25	260
Ash(?), brown to gray	7	267
Basalt, broken, black	20	287
Basalt, hard, black	164	451
Basalt, broken, black	4	455
Basalt, hard, black	2	457
Ash(or clay), brownish-gray	4	461
Basalt (or volcanic glass?), aphanitic, (vitreous luster), blue-green	1	462
Basalt, broken, black to brownish-black	4	46
Basalt, hard, black	38	504
Basalt, broken, black, some sand and subrounded black basalt pebbles	5	509

(continued)

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
16/19-28C1.--Continued		
Basalt, broken, black to dark brown, some light-colored vein filling material	2	511
Basalt, hard, black to dark brown	2	513
Basalt, broken, highly vesicular, black to reddish-brown (scoria?)	12	525
Basalt, vesicular, reddish-brown to black	42	567
Basalt, broken, slightly vesicular black to reddish brown	10	577
Clay (or ash?) brown and black sand	1	578
Basalt, broken, slightly vesicular, black	7	585
Basalt, broken, black	2	587
Basalt, hard, black, some light-colored vein filling materials	5	592
Ash(?), yellowish-white to light brown-	7	599
Basalt, broken, black, some lighter-colored material, pillow palagonite(?)	33	632
Basalt, broken, black, some thin layers (6-12 inches) of slightly(?) vesicular basalt	16	648
Basalt, hard, black	101	794
Basalt, broken, black	14	763
Basalt, broken, vesicular, black	10	773
Basalt, hard, dark gray	5	778
Basalt, broken, vesicular, black to reddish-brown	76	854
Basalt, hard, black	9	863
Basalt, broken, black	8	871
Basalt, hard, black to dark gray	11	882
Basalt, slightly-broken, dark green-black, some green vein filling material	5	887
Basalt, hard, dark gray	7	894
Basalt, broken, black, vesicular in places	9	903
Basalt, hard, black	8	911
Basalt, very broken, vesicular, black to reddish-brown	6	917
Basalt, moderately broken, black	7	924
Basalt, broken, vesicular, black, with some blue-green vein filling material	18	942
Basalt, broken, black, vesicular in places	27	969
Basalt, moderately hard, black	2	971
Basalt, hard, black	4	975
Basalt, broken, black, vesicular in places, some flint(?) nodules	44+	1,019+
16/20-5N1. Jack Nicolaisen. Altitude about 1,800 ft. Drilled by Swift Water Drilling, 1973. Casing: 6-inch to 250 ft; gravel-packed 250-260 ft.		
Overburden	5	5
Clay, brown, and fine gravel	95	100
Sandstone	3	103
Clay, yellow, sandy with gravel	43	146
Clay, gray	52	198
Clay, gray and fine gravel	22	220
Clay, red	5	225
Clay, gray, sandy, and fine gravel	16	241
Sand and fine gravel	17	258
Clay, gray, and fine gravel	7	265

Material	Thickness (ft)	Depth (ft)
16/20-7Q1. Paul Sabin. Altitude about 2,000 ft. Drilled by Eastwood Drilling, 1976. Casing: 8-inch to 380 ft.		
Boulders	65	65
Sandstone	65	130
Sandstone and clay layers	130	260
Clay, gumbo	50	310
Clay, white	59	369
Lava, red	21	390
Basalt, black	56	446
Rock, brown, and water	14	460
Basalt, black	3	463
Rock, broken, crevices	7	470
Rock, soft	16	486
Basalt, black	26	512
Sandstone	27	539
Basalt, black	4	543
17/17-12F1. Richard McVey. Altitude about 1,925 ft. Drilled by B and B Drilling, 1975. Casing: 6-inch to 140 ft, 5-inch from 130-230 ft; perforated 210-230 ft.		
Soil, brown	1	1
Clay, brown, with gravel and boulders	189	190
Sand, brown, water-bearing	35	225
Clay, brown	5	230
17/17-12M1. Thomas McDonald. Altitude about 1,960 ft. Drilled by B and B Well Drilling, 1977. Casing: 6-inch to 44 ft.		
Soil	1	1
Gravel, coarse, cemented	34	35
Basalt, black	30	65
Sand, black, coarse, water-bearing	15	80
17/17-12P1. Ilda-Marie Easterling. Altitude about 1,930 ft. Drilled by Mike Bach Drilling, 1976. Casing: 6-inch to 65 ft.		
Cobbles	20	20
Gravel, cemented	20	40
Clay, sandy and gravel	20	60
Sand, water-bearing	5	65
17/17-13C1. George Helleson. Altitude about 2,040 ft. Drilled by Swift Water Drilling, 1973. Casing: 6-inch to 80 ft.		
Dirt, brown, and boulders	17	17
Sand	5	21
Gravel, cemented and boulders	7	29
Sand, coarse, and brown clay	18	47
Sand, cemented	12	59
Clay, dark blue with sand	2	61
Sand, cemented and gravel	12	73
Clay, blue with gravel	6	79
Gravel	2	81

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
17/17-13C2. A. W. Johnson. Altitude about 2,085 ft. Drilled by Swift Water Drilling, 1973. Casing: 6-inch to 20 ft, 5]-inch from 0-66 ft.		
Clay	2	2
Rock, consolidated	58	60
Clay	6	66
Gravel	14	80
17/18-1C1. City of Ellensburg (Rodes). Altitude about 1,580 ft. Drilled by Durand, 1946. Casing: 16-inch to 1,209 ft; perforated 232-250, 424-431, 470-475, 477-482, 507-509, 524-529, 1,170-1,177, 1,195-1,205 ft.		
Loam	2	2
Gravel	8	10
Sand, coarse, and gravel	1	11
Clay, yellow	9	20
Gravel, fine	7	27
dClay, sand and fine gravel	41	68
Clay	25	93
Clay and fine gravel	5	98
Gravel and clay	22	120
Sand, gravel, rocks, and clay	50	170
Clay and some sand	13	183
Gravel and clay	39	222
Clay	10	232
Gravel, sand and cemented gravel	35	267
Clay and gravel	24	291
Gravel	7	298
Sand and clay	26	324
Sand, gravel, and clay	13	337
Clay and gravel	10	347
Gravel, fine, and sand	1	348
Gravel, fine, coarse sand and clay	21	369
Clay, fine gravel and sandstone	24	393
Clay, sandy and pea gravel	10	403
Clay and sandstone	21	424
Gravel and fine sand	7	431
Clay and sand	34	465
Sand, gravel and clay	17	482
Clay	21	503
Clay and fine sand	8	511
Clay and sand	13	524
Gravel, sand and clay	26	550
Clay and sand	44	594
Gravel	6	600
Clay and sandy clay	45	645
Sand and fine sand	29	674
Sand, gravel and clay	16	690
Clay, sandy	24	714
Sand	2	716
Clay, sandy	38	754
Gravel and sand	3	757
Sand and clay	12	769
Sand and gravel	1	770
Sand and heaving sand	10	780
Sand and gravel	14	794
Clay, sand and gravel	55	849
Sand, heaving	6	855
Clay, sandy	6	861
Sand, red	4	865
Clay, sand and gravel mix	71	936
Clay	5	941
17/18-1C1.--Continued		
Sand, heaving	1	942
Clay, sand and gumbo	27	969
Sand, heaving	7	976
Clay, blue mud and gumbo	41	1,017
Sand, fine	7	1,024
Clay, blue	16	1,040
Gravel, coarse	6	1,046
Clay, blue	18	1,064
Sand, fine	4	1,068
Clay, blue and blue sand	32	1,100
Clay	53	1,153
Sand	3	1,166
Clay and blue clay	14	1,170
Sand and gravel	3	1,173
Sand	4	1,177
Shale, blue	1	1,178
Mud, greenish-gray	17	1,195
Sand and gravel	10	1,205
Shale and gray mud	4	1,209
17/18-1D1. City of Ellensburg (Memorial). Altitude about 1,580 ft. Drilled by Breckon, 1931. Casing: 12-inch to 188.5 ft; 10-inch 181 to 274 ft.		
Gravel and boulders	60	60
Sand and fine gravel	20	80
Sand, black, coarse and fine gravel	6	86
Sandstone and clay	19	105
Gravel, cemented, fine sand and clay	10	115
Clay and fine sand	25	140
Gravel, coarse	1	141
Clay	5	146
Gravel, fine and black sand	9	155
Clay, hard	19	174
Gravel, fine, water-bearing	14	188
Clay	12	200
Sandstone and small rocks	25	225
Gravel	1	226
Clay	7	233
Rock	2	235
Clay, light	20	255
Sand and gravel	19	274
No record	33	307
17/18-2Q1. Browains Motel. Altitude about 1,500 ft. Drilled by Swift Water Drilling, 1973. Casing: 6-inch to 20 ft.		
No record	10	10
Gravel	2	12
Sand, cemented	4	16
Clay, brown with sand	3	19
Gravel	1	20
17/18-2Q2. Ponderosa Motel. Altitude about 1,500 ft. Drilled by Swift Water Drilling, 1973. Casing: 6-inch to 20 ft.		
Overburden	10	10
Clay, brown and gravel	9	19
Gravel	1	20

(continued)

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
17/18-4B1. Bill Eberly. Altitude about 1,580 ft. Drilled by Swift Water Drilling, 1974. Casing: 6-inch to 145 ft.		
Overburden	3	3
Clay, gray and gravel	17	20
Clay, brown and gravel	18	38
Sand	8	46
Sand and gravel	3	49
Clay, brown, sandy and gravel	3	52
Sand and gravel	8	60
Clay, brown, sandy and gravel	11	71
Sand, cemented and gravel	36	107
Clay, brown, sandy and gravel	8	115
Sand and gravel	3	118
Clay, brown, sandy	9	127
Clay, brown, sandy and gravel	8	135
Sand, cemented and gravel	15	150
17/18-4L1. Cliff Raison. Altitude about 1,620 ft. Drilled by B and B Well Drilling, 1977. Casing: 6-inch to 37 ft.		
Soil	1	1
Gravel, fine cemented	16	17
Gravel, medium with brown clay	5	22
Gravel, fine, water-bearing	21	43
17/18-11M1. Schaake Packing Co. Altitude about 1,480 ft. Drilled by St. George Drilling, 1970. Casing, 16-inch to 410 ft, 12-inch from 0-743 ft; perforated from 710-740 ft.		
Sand, silty and gravel	20	20
Sand, silty	15	35
Sand, gravel and cobbles	15	50
Sand, gravel and large boulders	35	85
Gravel and heavy clay	20	105
Clay, gray	25	130
Clay, blue and large cobbles	55	185
Clay, brown and cobbles	425	610
Sand and gravel	12	622
Sand, brown, very fine	93	715
Sand and gravel	32	747
Clay, red	3	750
17/18-16J1. Carl Chavers. Altitude about 1,660 ft. Drilled by B and B Drilling, 1974. Casing: 6-inch to 117 ft.		
Soil, brown, sandy	5	5
Rock, cemented	12	17
Clay, brown, sandy	53	70
Sandstone, brown, hard	31	101
Clay, brown	9	110
Sandstone, brown	7	117
Sand, brown, water-bearing	26	143

Material	Thickness (ft)	Depth (ft)
17/19-5M1. Dale Simpson. Altitude about 1,585 ft. Drilled by B and B Drilling, 1977. Casing: 6-inch to 69 ft.		
Soil	3	3
Clay, brown, and fine gravel	25	28
Clay, brown	4	32
Clay and fine gravel, water-bearing	1	33
Clay, brown	25	58
Gravel, fine, and clay, water-bearing	3	61
Clay, dark-brown and fine sand	6	67
Gravel, fine and sand, water-bearing	6	73
17/19-11G1. Kittitas Ice and Storage Co. Altitude about 1,630 ft. Drilled by W. B. Henderson, 1950. Casing: 6-inch to 125 ft.		
Topsoil	3	3
Gravel, medium cemented	15	18
Gravel, medium, water-bearing	2	20
Clay and gravel	5	25
Clay and sand	17	42
Sand, water-bearing	15	57
Clay, brown	5	62
Sand, water-bearing	4	66
Clay and sand	56	122
Sand, brown and clay	5	127
Clay, brown, some sand	73	200
17/19-29D1. Marx Menzel. Altitude about 1,460 ft. Drilled by Riebe Drilling, 1970. Casing: 6-inch to 88 ft.		
Topsoil	6	6
Clay, blue	10	16
Gravel, water-bearing	5	21
Clay, brown	4	25
Clay	37	62
Clay, sandy and gravel	25	87
Conglomerate and gravel, water-bearing	3	90
17/19-29M1. Gordon Prentice. Altitude about 1,440 ft. Drilled 1949. Casing: 12-inch to 63 ft; 4-inch from 55-318 ft.; perforations 14-30, 50-58 ft., slotted 250-300 ft.		
Topsoil	7	7
Gravel	7	14
Sand, yellow and clay	40	54
Sand, water-bearing	2	56
Clay, gray and sand	44	100
Sand, gray, coarse	6	106
Sand and clay	29	135
Clay, yellow	15	150
Sand, green and clay, water-bearing 165-170, 200-205 ft.	65	215
Sandstone	5	220
Sand, green water-bearing	10	230
Clay and sand	66	296
Hard to drill, water-bearing	22	318

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
17/20-5K1. Leland Orcutt. Altitude about 1,960 ft. Drilled by Woerner Well Drilling, 1977. Casing: 16-inch to 25 ft., 10-inch to 228 ft.		
Topsoil	6	6
Clay, brown and yellow	40	46
Basalt, broken	91	137
Basalt, broken with gravel	23	160
Gravel, water-bearing	40	200
Basalt	79	279
Basalt with interbeds	25	304
Basalt	94	398
Basalt, with interbeds	52	450
17/20-16J1. Phillip Kern. Altitude about 1,900 ft. Drilled by Riebe Drilling, 1970. Casing: 6-inch to 100 ft.		
Soil	1	1
Caliche	8	9
Basalt, broken	83	92
Basalt, creviced and seamed, water	35	127
17/20-29R1. Geological Survey test well. Albert DeKoning, property owner. Altitude 1830 ft. Drilled by Adcock Air Drilling, November 1977. Cased: 12-inches to 62 ft., 10 inches from 1.5 ft above land surface to 400 ft. below land surface. Uncased 10 inch hole 400-625 ft. and 8 inch 625-725 ft.		
Topsoil	3	3
Sand, tan, medium with clay and basalt gravel	25	28
Gravel, basaltic mixed with sand	11	92
Sand, brown, medium	9	101
Gravel, basaltic, rounded & weathered	84	185
Gravel, basaltic, mixed with brown, coarse sand	25	210
Gravel, basaltic withsome pebbles of brown siltstone and clay	205	415
Sand, brown, medium mixed with silt and basalt gravel	100	515
Sand, brown, medium mixed with white grains of soapstone and basaltic gravel	7	522
Silt, brown, and sand	33	555
Sand, tan medium with arkosic fragments of pebbles	40	595
Silt, brown, semi-hard	26	621
Sand, brown and silt with basaltic gravel	1-4	725
17/21-21G1. Washington Highway Commission Altitude about 2,500 ft. Drilled by R. J. Strasser Drilling, 1968. Casing: 8-inch to 220 ft.		
Basalt, gray, broken	6	6
Basalt, gray, medium hard	18	24
Basalt, gray, broken	58	82
Lava, brown, broken	5	87
Basalt, gray, soft	31	118
17/21-21G1.--Continued		
Basalt, gray, medium hard	47	165
Basalt, gray and soapstone	15	180
Clay and soapstone	24	204
Basalt and brown clay	37	241
Basalt, gray	34	275
Basalt, brown, broken	45	320
Basalt, gray	46	366
Basalt, brown, broken	17	383
Basalt, gray, soft	5	387
Basalt, gray, hard	96	483
Basalt, brown, broken	12	495
Basalt, gray, soft	8	503
Basalt, gray, hard	27	530
Basalt, brown, broken	5	535
Basalt, gray, hard	45	580
Basalt, brown, broken	47	627
Basalt, gray, medium hard	4	631
18/17-11H1. Burlington Northern R.R. (Thorp). Altitude about 1,648 ft. Drilled. Casing: 5 5/8-inch from 3 to 144 ft., 4-inch from 3 to 190 ft.		
Soil	6	6
Gravel and sand	6	12
Hardpan	48	60
Clay and boulders	30	90
Clay, sandy	20	110
Sand, slightly water-bearing	18	128
Sandstone	10	138
Ledge rock	7	145
Sand, water-bearing	5	150
Clay	20	170
Sandstone, coarse	15	185
Sand	5	190
Ledgerock	4	194
Clay and sandstone	27	221
Sand, water-bearing	1	222
Shale, brown	4	226
Sandstone	21	247
Sand and pebbles	2	249
18/17-15Q1. John Sell. Altitude about 1,810 ft. Drilled by Oelke Drilling, 1977. Casing: 6-inch to 87 ft.		
Silt, dark brown	60	60
Silt with gravel	27	87
Basalt, some fractures	158	245
Basalt, highly fractured with water	13	258
18/17-25M1. Harry Davis. Altitude about 1,835 ft. Drilled by Band B. Drilling, 1976. Casing: 6-inch to 36 ft.		
Boulders	15	15
Clay, brown	10	25
Gravel, coarse and silt	5	30
Gravel, medium, water-bearing	10	40

(continued)

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
18/17-26K1. Gerald Carter. Altitude about 1,880 ft. Drilled by Band B. Drilling,1977. Casing: 6-inch to 113 ft.		
Soil	2	2
Boulders, loose	30	32
Gravel, cemented and brown silt	26	58
Gravel, coarse	5	63
Gravel and brown clay	12	75
Gravel, coarse and sand, water-bearing	25	100
Gravel, coarse	16	116
18/17-26R1. Lee Christensen. Altitude about 1,840 ft. Drilled by B and B Drilling, 1977. Casing: 6-inch to 137 ft.		
Soil	3	3
Gravel, loose	34	37
Gravel, sand and clay cemented	104	141
Sandstone, brown, water-bearing	14	155
Clay, brown, soft	5	160
18/18-25C1. Kittias County Airport. Altitude about 1,716 ft. Drilled by A. A. Durand, 1943. Casing: 10-inch to 326 ft, 8-inch from 316 to 420 ft; perforated 316.5-420 ft.		
Gravels and boulders	30	30
Sandy clay and gravel	70	100
Sand	5	105
Sandy brown clay	75	180
Sandstone	5	185
Clay, yellow, hard	10	195
Clay, brown and small gravel	25	220
Sand and clay, hard packed	30	250
Clay, brown and gravel	20	270
Clay and sand	25	295
Sand, coarse, hard packed	60	355
Clay, yellow	15	370
Sand and gravel	50	420
18/18-25D1. Kittitas County Airport. Altitude about 1,700 ft. Drilled by A. A. Durand, 19143. Casing: 12-inch to 290 ft., 10-inch from 292.5 to 580 ft., 8-inch from 516 to 660 ft.; perforated 580-660 ft.		
Clay and gravel	42	42
Clay	20	62
Clay and gravel	9	71
Sand and clay	51	122
Clay	68	190
Clay, sand and gravel	60	250
Sand and clay	32	282
Boulder, some clay	13	295
Sand, gravel and clay	75	370
Clay	66	436
Sand, gravel and clay	129	565
Sandstone	15	580
Sand and clay	106	686
Granite, decomposed	4	690
Clay, brown	40	730

Material	Thickness (ft)	Depth (ft)
18/18-26F1. Joseph Price. Altitude about 1,640 ft. Drilled by Riebe Drilling, 1971. Casing: 6-inch to 120 ft.		
Topsoil	2	2
Gravel and boulders	15	17
Clay and gravel	17	34
Gravel	15	49
Clay and gravel	49	98
Boulders	4	102
Gravel, cemented	25	127
Sand and gravel	5	132
18/18-26J1. Chalmer Corbain. Altitude about 1,655 ft. Drilled by B & B Well Drilling, 1976. Casing, 6-inch to 96 ft.		
Gravel, coarse	20	20
Gravel, medium and brown silt	15	35
Sand, brown, medium, water-bearing	8	43
Clay, brown	33	76
Sand, fine, water-bearing	3	79
Clay, brown	17	96
Gravel, black, water-bearing	4	100
18/18-32D1. J. A. Shaw. Altitude about 1,600 ft. Drilled by A. H. Miller, 1957. Casing: 6-inch to 380 ft.		
Soil	6	6
Gravel, cemented	34	40
Sand and gravel	21	61
Gumbo and boulders	14	75
Rock and clay	28	103
Gravel, cemented and sand	120	223
Gumbo and gravel	116	339
Sand and clay	10	349
Cement	6	355
Clay, hard	9	364
Sandstone, soft	91	455
18/18-32H1. Herb Lym. Altitude about 1,590 ft. Drilled by B & B Well Drilling, 1975. Casing: 6-inch to 54 ft.		
Soil	2	2
Boulders	8	10
Sand and gravel	30	40
Gravel, medium, water-bearing	3	43
Gravel, cemented	10	53
Gravel, water-bearing	2	55
18/18-32J1. Leo Wheeler. Altitude about 1,600 ft. Drilled by Swift Water Drilling, 1974. Casing: 6-inch to 66 ft.		
Gravel and boulders	13	13
Clay, brown, sandy and gravel	8	21
Sand, black and gravel	1	22
Clay, brown, sandy	13	35
Sand, cembented and gravel	6	41
Clay, blue and gravel	5	46
Clay, brown, sandy and gravel	10	56
Sand, cemented and gravel	7	63
Sand and gravel	2	65
Clay, blue and gravel	1	66

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
18/18-32J2. Kenneth Eaton. Altitude about 1,650 ft. Drilled by Riebe Drilling, 1975. Casing: 6-inch to 147 ft.		
Topsoil	4	4
Boulders and silt	12	16
Clay and boulders	45	61
Gravel and boulders, water	7	68
Clay and boulders	55	123
Sand, gravel and clay	13	136
Gravel, clay and sand, water	14	150
18/18-33K1. Washington State Patrol. Altitude about 1,510 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6-inch to 137 ft; screened 132-137 ft.		
Rocks	15	15
Gravel, bonded	41	56
Hardpan, brown	43	99
Gravel, bonded	9	108
Clay, yellow, sandy	4	112
Gravel, bonded	21	133
Sand, coarse and gravel	4	137
Clay, yellow	5	142
18/18-33M1. Jerry McCullough. Altitude about 1,581 ft. Drilled by Band B. Drilling, 1976. Casing; 6-inch to 64 ft.		
Gravel, coarse	18	18
Gravel, black with silt	8	26
Silt, black	4	30
Gravel, black, coarse and silt	4	34
Silt, brown, sandy	11	45
Gravel, black, water-bearing	22	67
18/18-33M2. Charles Swan. Altitude about 1,582 ft. Drilled by Band B Drilling, 1976. Casing: 6-inch to 55 ft.		
Boulders	22	22
Gravel, black, medium	10	32
Clay, brown	4	36
Gravel, black, medium and silt	12	48
Gravel, black, water-bearing	10	58
18/19-18E1. Marvin Wyatt. Altitude about 1890 ft. Drilled by B & B Well Drilling, 1977. Casing: 6-inch to 50 ft.		
Boulder, small	22	22
Clay, brown	3	25
Gravel, coarse	8	33
Clay, brown	2	35
Sand and gravel, water-bearing	5	40
Clay, light brown	6	46
Sand and gravel, water-bearing	7	53
18/19-19G1. Leon Sigler. Altitude about 1,808 ft. Drilled by Swift Water Well Drilling, 1973. Casing: 6-inch to 35 ft.		
Rock	35	35
Gravel, cemented	47	82
Gravel, water-bearing	18	100
18/19-32B1. Department of Game. Altitude about 1,723 ft. Drilled by A. H. Miller, 1946. Casing: 10-inch to 242 ft; perforated 100-114, 141-155, 177-191, 196-20, and 219-233 ft.		
Gravel, cemented and boulders	24	24
Clay and sand	243	267
18/19-32E1. J. H. Howell. Altitude about 1670 ft. Drilled by Wilson Drilling, 1961. Casing: 8-inch to 280 ft.		
Topsoil	4	4
Boulders and clay	14	18
Clay, tan	262	280
Gravel	7	287
18/20-8Q1. Greenacres Inc. Altitude about 2200 ft. Drilled by Riebe Drilling, 1970. Casing: 8-inch to 48 ft.		
Gravel, cemented and boulders	35	35
Clay, brown and boulders	7	42
Basalt, broken	62	104
Clay, brown	4	108
Basalt, black, creviced	24	132
Basalt, black, porous	18	150
Basalt, black, creviced	23	173
Lava, porous	14	187
Basalt, black, broken	2	189
Basalt, crevice	2	191
18/20-17D01. Greenacres Inc. Altitude about 2160 ft. Drilled by Riebe Drilling, 1970. Casing: 6-inch to 142 ft.		
No record	37	37
Basalt, broken	99	136
Clay and gravel, water	6	142
18/20-17E1. Greenacres Inc. Altitude about 2120 ft. Drilled by Riebe Drilling, 1970. Casing: 8-inch to 52 ft.		
Clay and boulders	25	25
Gravel, cemented and boulders	22	47
Basalt, broken	80	127
Scoria, water	30	157
Basalt, fractured	37	194
Basalt, gray, creviced (water from 210-281 ft)	87	281

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
18/20-23D1. Abadon, Kazan, and Arazi. Altitude about 2470 ft. Drilled by Riebe Drilling, 1975. Casing: 10-inch to 305 ft.		
Basalt, gray broken	41	41
Basalt, broken	11	52
Rock, brown	12	64
Basalt, gray	33	97
Basalt, porous	3	100
Rock, brown	10	110
Basalt, gray, fractured	7	117
Rock, brown	47	164
Shale, blue and sandstone	27	191
Basalt, gray, broken	24	215
Basalt, porous	5	220
Basalt, gray	141	361
Basalt, porous	19	380
Basalt, gray, fractured	11	391
Basalt, porous	3	394
Basalt, gray, fractured	4	398
Basalt, porous with brown shale	82	480
Basalt, gray, broken with blue shale	18	498
Basalt, gray, broken	46	544
Basalt, red, brown, blue, broken	23	567
Basalt, gray, fractured	15	582
Basalt, porous	5	587
Basalt, fractured	7	594
Basalt, gray, creviced	6	600
18/20-23E1. Frank Cole. Altitude about 2380 ft. Drilled by Bach Drilling. Casing: 6-inch to 63 ft.		
Dirt	2	2
Shale, broken	48	50
Basalt, black, hard	9	59
Basalt, medium	14	73
Rock, brown, soft	11	84
Basalt, medium	6	90
Rock, brown-yellow, soft	10	100
Rock, brown, medium	10	110
rock, brown, soft	8	118
Rock, brown, medium	2	120
Rock, black, hard	7	127
Rock, black, soft	13	140
Basalt, black, hard	19	159
Basalt, blue, soft	26	185
Basalt, hard	8	193
Rock, soft	7	200
Basalt, hard	5	205
Rock, blue, soft, water	20	225
Basalt, hard	15	240
18/20-27A1. Howard Clerf. Altitude about 2260 ft. Drilled by Bach Drilling, 1976. Casing: 8-inch to 465 ft.		
Dirt and cobbles	16	16
Rock, broken	84	100
Basalt, black, hard	20	120
Basalt, broken, water	2	122
Basalt, hard	18	140
Basalt, soft, broken	1	141
Basalt, hard	62	203
18/20-27A1.--Continued		
Basalt, soft with blue clay	177	380
Basalt, medium	20	400
Basalt, soft	10	410
Basalt, medium	40	450
Basalt, soft	5	455
Basalt, black, hard	10	465
18/20-33R1. Martin Weekes. Altitude about 2010 ft. Drilled by Woerner Well Drilling, 1977. Casing: 12-inch to 95 ft, 8-inch from 95-320 ft.		
Topsoil	3	3
Basalt boulders	17	20
Basalt, medium	80	100
Basalt, broken, water-bearing	50	150
Basalt, soft	135	285
Basalt, broken, water-bearing	15	300
Basalt, hard	95	395
Basalt, broken, water-bearing	5	400
Basalt, hard	110	510
Basalt, very hard	165	675
19/14-1A1. Albon Hiswell. Altitude about 2090 ft. Drilled by W. W. Johnson. Casing, 6-inch to 172 ft.		
Topsoil	15	15
Clay, yellow	130	145
Gravel	10	155
no record	17	172
19/14-1C1. Buch Dow. Altitude about 2050 ft. Drilled by H. O. Meyer, 1974. Casing: 6-inch to 84 ft.		
Topsoil	2	2
Gravel	17	19
Gravel and hardpan	33	52
Sand, clay and gravel	17	69
Sand and gravel	5	74
Sand and gravel, water-bearing	10	84
19/15-4H1. George Burchak. Altitude about 2220 ft. Drilled by B & B Well Drilling, 1977. Casing: 6-inch to 79 ft.		
Soil	3	3
Clay, gray	6	9
Basalt, hard	10	19
Clay and boulders	27	46
Clay, gray	8	54
Clay and boulders	25	79
Basalt, gray, medium hard	11	90
Basalt and clay	26	116
Basalt, gray, medium hard	119	235
Basalt, fractured, water-bearing	49	284

(continued

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
19/16-4P1. Washington State Highway Commission. Altitude about 2080 ft. Drilled by Puget Sound Drilling, 1967. Casing: 8-inch to 292 ft; screened 292-307 ft.		
Topsoil	20	20
Hardpan with boulders	22	42
Boulders	78	120
Hardpan	42	162
Boulders	10	172
Hardpan	33	205
Clay, brown	27	232
Clay, blue, sandy	33	265
Gravel, some	22	287
Gravel, water-bearing	20	307
19/16-4Q1. Washington State Highway Commission. Altitude about 2080 ft. Drilled by Puget Sound Drilling, 1968. Casing: 8-inch to 359 ft.		
Clay	8	8
Clay and gravel	24	32
Rocks	8	40
Clay and gravel	11	51
Gravel, clay and rocks	40	91
Clay, sand and gravel	153	244
Sand, fine and some clay	21	265
Clay, blue	84	349
Clay and sand	6	355
Gravel, pea	4	359
19/16-17N1. Sky Meadows. Altitude about 3500 ft. Drilled by H. O. Meyer Drilling, 1973. Casing: 10-inch to 16 ft; 6-inch from 0-82 ft; perforated 60-73 ft.		
Boulders	14	14
Clay, green	6	20
Rocks and some clay	2	22
Gravel and broken rock	22	44
Gravel with clay	7	51
Rock, broken	9	60
Clay and broken rock	18	78
Sand and gravel	2	80
Rock, hard	2	82
19/16-25C2. Sunlight Waters. Altitude about 2220 ft. Drilled by Bach Drilling, 1969. Casing: 12-inch to 62 ft, 8-inch from 62-203 ft; perforated 190-200 ft.		
Soil	3	3
Clay	16	19
Clay, soft	15	34
Boulder	1	35
Clay, soft	23	58
Basalt	8	66
Basalt, medium	39	105
Basalt, hard	35	140
Cly with sand and gravel	45	195
Basalt, broken	25	220
Basalt, hard	130	350
Crack	5	355
Basalt, gray, hard	70	425
Basalt, hard	75	500
18/19-22D1. Gordon Bredeson. Altitude about 2380 ft. Drilled by B & B Well Drilling, 1975. Casing: 6-inch to 200 ft, 5-inch from 130-370 ft.		
Soil	5	5
Sand, graveland boulders, cemented	198	203
Clay, brown	127	330
Sand, brown, water-bearing	40	370
19/18-28G1. George Plass. Altitude about 211 ft. Drilled by B & B Well Drilling, 1977. Casing: 6-inch to 344 ft.		
Topsoil	1	1
Gravel, medium and brown clay	69	70
Clay, brown	200	270
Gravel, medium, water-bearing	20	290
Clay, brown, soft	153	343
Gravel, medium with brown sand	4	347
19/19-32H1. Bill Owen. Altitude about 2210 ft. Drilled by B & B Well Drilling, 1977. Casing: 6-inch to 29 ft, 5-inch to 80 ft.		
Soil	1	1
Boulders and clay	24	25
Basalt, hard	7	32
Basalt, fractured, water-bearing	61	93
Basalt, hard	39	132
Clay, brown and gravel	6	138
Basalt, brown, soft	24	162
19/19-33P1. Charles Williams. Altitude about 2205 ft. Drilled by B & B Well Drilling, 1977. Casing: 6-inch to 136 ft.		
Soil	4	4
Boulders and gravel	21	25
Boulders and brown clay	47	72
Gravel, coarse, and clay	7	79
Clay, brown an gravel	57	136
Gravel, fine, water-bearing	1	137
Clay, brown and gravel	3	140
19/20-21H1. Michael Nelson. Altitude about 3800 ft. Dug by owner, 1977. Casing: 36-inch concrete pipe.		
Topsoil	2	2
Clay, black	2	4
Gravel and brown mud	2	6
19/20-30H1. E. C. Underhill. Altitude about 2820 ft. Drilled by Bach Drilling. Casing: 6-inch to 44 ft.		
Rock, broken	34	34
Basalt, black, soft	26	60
Shale, broken	30	90
Shale, yellow	20	110
Shale, brown, soft	75	185
Basalt, black, hard	18	203

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
20/13-3J1. Bureau of Reclamation. Altitude about 2100 ft. Drilled by R. R. Charlton, 1962. Casing: 10-inch to 61 ft; perforated 41-61 ft.		
Till, glacial	41	41
Gravel, water-bearing	20	61
20/13-11G1. Easton State Park. Altitude about 2160 ft. Drilled by R. R. Charlton, 1962. Casing: 10-inch to 62 ft; perforated 95-105 ft.		
Till, glacial	42	42
Gravel, water-bearing	20	62
20/13-11R1. Burlington Northern R. R. Altitude about 2600 ft. Drilled 1940. Casing: 12-inch to 121 ft; perforated 95-105 ft.		
Topsoil	2	2
Clay, yellow and boulders	6	8
Sand, coarse	2	10
Gravel, cemented	9	19
Clay, yellow and boulders	41	06
Clay, blue and gravel	15	75
Gravel, pea	5	80
Clay, blue and gravel	24	104
Sand, blue and gravel	17	121
20/13-12N1. Washington State Grange. Altitude about 2150 ft. Drilled by Richardson, 1952. Casing: 10-inch to 56 ft.		
Topsoil	3	3
Clay, yellow and boulders	25	28
Hardpan, blue	26	54
Sand, fine-coarse	2	56
20/13-24B1. Kampkachess Youth Services. Altitude about 2110 ft. Drilled by Richardson Well Drilling, 1976. Casing: 6-inch to 38 ft.		
Topsoil	2	2
Sand and clay	10	12
Clay and gravel	20	32
Clay and gravel, water-bearing	6	38
Clay, sandy	5	43
20/14-2L1. Northwest Improvement Company, bore hole 34. Altitude about 2,254 ft.		
Gravel	10	10
Boulders	10	20
Gravel	110	130
Boulders	29	159
Gravel	14	173
Roslyn formation	272	445
20/14-2L2. Sunnylands Development. Altitude about 2240 ft. Drilled by Bach Drilling, 1968. Casing: 6-inch to 210 ft; perforated 150-210 ft.		
Silt, gravel and large boulders	100	100
Gravel, coarse and sand	70	170
Silt, blue	40	210
20/14-2L3. Roslyn Cascade Co. Altitude about 2240 ft. Drilled by Bach Drilling, 1972. Casing: 8-inch to 250 ft.		
Soil, sandy and gravel, some boulders	140	140
Sand, gravel and boulders	70	210
20/14-10A1. U.S. Bureau of Reclamation, Cle Elum Dam, testhole 52. Altitude about 2,237 ft.		
Soil	5	5
Sand and gravel	2	7
Clay, sand, and gravel	5	12
Clay	4	16
Sand, clay, and gravel	11	27
Clay and sand	20	47
Clay, sand, gravel, boulders, water-bearing	30	77
Sand, gravel, and clay	90	167
20/14-10A2. U.S. Bureau of Reclamation, Cle Elum Dam, testhole 53. Altitude about 2,230 ft.		
Gravel and boulders	8	8
Clay, gravel, and boulders	2	10
Clay and gravel	7	17
Sand and gravel	2	19
Clay and gravel	9	28
Sand and gravel, coarse	1	29
Clay and gravel	5	34
Sand and gravel	4	38
Sand, gravel, clay, and boulders	4	42
Sand, clay, gravel, and boulders	9	51
Sand, clay, and gravel	88	139
Clay and gravel	5	144
Sand, clay, and gravel	32	176
Sand, coarse	15	191
Clay	25	216
20/14-11A1. Speelyi, USFS. Altitude about 2220 ft. Drilled by Henry Bach, 1968. Casing: 8-inch to 201 ft; perforated 179-191 ft.		
Boulders and gravel	49	49
Gravel and some sand	10	59
Gravel and sand	90	149
Gravel and fine sand	22	171
Gravel, coarse	24	195
Sand	6	201

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
20/14-12F1. Lycol Veneer Co. Altitude about 2,320 ft. Drilled by H. O. Meyer Drilling, 1973. Casing: 10-inch to 42 ft.		
Rocks	8	8
Clay and rocks	30	38
Sandstone	114	152
Coal, brown	1	153
Sandstone, gray	64	217
Coal, brown	2	219
Sandstone	31	250
Sandstone, brown, soft	15	265
Sandstone, gray	25	290
Sandstone, water	17	307
Sandstone, gray	3	310
Sandstone, red and brown	70	380
Sandstone, more water	18	398
Rock, black with sand	2	400
Sandstone, gray, hard	50	450
Caving material	10	460
Sandstone, hard	40	500
20/14-13L1. Northwest Improvement Company, borehole 35. Altitude about 2,203 ft.		
Gravel	282	282
Roslyn formation	534	916
20/14-21C1. Circle L.D.S. Ranch. Altitude about 2,105 ft. Drilled by Puget Sound Drilling, 1974. Casing, 6-inch to 40 ft; screened 34-39 ft.		
Gravel	4	4
Hardpan	25	29
Sand and gravel	10	39
Clay, blue	1	40
20/1-27H1. Northwest Improvement Company, borehole 17. Altitude about 1,042 ft. Drilled, 1892.		
Quaternary fill	110	110
Roslyn formation	721	831
20/15-27J1. Northwest Improvement Company, borehole 49. Drilled, 1941.		
Sand and gravel, coarse	21	21
Sand and gravel	7	28
Clay and sand	69	97
Sand	14	111
Clay and sand	31	142
Clay, hard, sandy	21	163
Clay, sandy	41	204
Sad, very fine	31	235
Sand, fine	18	253
Clay	15	268
Clay, hard	16	284
Sand and clay	14	298
Clay	14	312
Clay, hard, sandy	14	326
Sand and pebbles	9	335
Roslyn formation	505	840

Material	Thickness (ft)	Depth (ft)
20/15-27Q1. Northwest Improvement Company, borehole 15. Altitude about 1,914 ft. Drilled 1891.		
Quaternary fill: Drift	450	450
Roslyn formation	1,050	1,500
20/15-27Q2. Northwest Improvement Company, borehole 59. Altitude about 1,912 ft.		
Gravel and boulders	43	43
Sand, fine, and boulders	77	120
Sand and gravel, fine	1	121
Sand, blue	11	132
Clay, blue	4	136
Clay and fine sand	97	233
Sand, blue	32	265
Gravel and boulders	35	440
Clay and boulders	3	443
Roslyn formation	537	980
2/15-31K1. Department of Highways. Altitude about 2,000 ft. Drilled by Wayne Wilson, 1966. Casing: 6-inch to 196 ft; screened 196-216 ft; gravel packed 216-223 ft.		
Gravel, boulders and sand	5	5
Gravel and boulders	22	27
Sand and fine gravel	63	90
Clay, blue	5	95
Gravel	3	98
Sand and fine gravel	95	193
Clay, blue	2	195
Gravel, fine	6	201
Gravel, coarse	15	216
Clay with gravel	2	218
Clay, blue	4	222
20/15-34N1. Rodney Dunn. Altitude about 2,000 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6-inch to 95 ft; perforated 79-81 ft.		
Topsoil	3	3
Clay, yellow	19	22
Gravel, cemented	8	30
Hardpan, brown	12	42
Gravel, cemented	16	58
Sand, fine and gravel	6	64
Sand, blue, fine	13	77
Sand, gray, coarse	4	81
Sand, gray, fine	8	89
Rock	1	90
Sand and gravel	3	93
Sandstone, gray	26	119
Sandstone, brown	13	132
Sandstone, gray	23	155
Sandstone, brown and coal	7	162
Sandstone, greay and coal	31	193
Coal and some sandstone	1	194
Sandstone, brown and coal	4	198

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
20/15-35D1. Northwest Improvement Company, borehole 64. Altitude about 1,903 ft.		
Sand and gravel	3	3
Boulders	6	9
Gravel and small boulders	7	16
Silt, blue, with gravel streaks	54	70
Boulders and gravel	3	73
Gravel and fine silt	8	81
Boulders, small, and clay	23	104
Silt, fine	296	400
Sit, fine, hard	40	440
Silt and clay	20	460
Clay and fine gravel	13	473
"Hardpan"	5	478
Clay, coarse sand, and "hardpan"	20	498
Sand and gravel	8	506
Clay	2	508
Clay "hardpan"	35	543
Sand and gravel	3	546
Clay, blue	12	558
Clay, fine gravel, and "hardpan"	4	562
Sand and gravel	4	566
Clay, "hardpan"	2	568
Clay, fine sand, and "hardpan"	14	582
Gravel and boulders	2	584
Sand, hardpacked	7	591
Sand, gravel, and "hardpan"	8	599
Boulders, small, and gravel	2	601
Sand, loose	3	604
Sand, hardpacked, dark	4	608
Gravel and "hardpan"	4	612
Clay	12	624
Sand and gravel and "hardpan"	1	625
Sand, fine	8	633
Sand and gravel and "hardpan", dark	6	639
Gravel, cemented	1	640
Sand, hard	5	645
Sand and boulders	1	646
Boulders	3	649
Roslyn formation	59	708
20/16-31P1. John Eden. Altitude about 1890 ft. Drilled by B & B Well Drilling, 1976. Casing: 6 inch to 317 ft.		
Clay, brown	21	21
Gravel, medium	11	32
Clay, gray	273	305
Claystone	7	312
Sand and gravel, water-bearing	8	320
20/16-34N1. Zephyr Aluminum. Altitude about 1840 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6 inch to 127 ft, 5 inch from 120-311 ft; perforated 91-105 ft.		
Topsoil	2	2
Clay, yellow	5	7
Rocks	2	9
Sand, brown	3	12
Clay, blue	29	41
Rock	1	42
Sand, soft	2	44

(continued)

Material	Thickness (ft)	Depth (ft)
20/16-34N1.--Continued		
Boulders	2	46
Sand	9	55
Hardpan, gray	36	91
Gravel, cemented	14	105
Hardpan, gray	18	123
Sandstone, gray	27	150
Shale, gray	50	200
Shale, green	30	230
Shale, gray	40	270
Shale, gray and quartz	2	272
Shale, dark gray	39	311
20/17-1Q1. J. D. Stroup. Altitude about 2700 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6 inch to 32 ft.		
Clay, yellow	4	4
rocks and yellow clay	16	20
Gravel, cemented	10	30
Sandstone, gray	50	80
20/17-20F1. Robin Little. Altitude about 2400 ft. Drilled by Bach Drilling, 1972. Casing: 6-inch to 25 ft.		
Dirt and cobbles	25	25
Shale, blue	165	190
Shale, white	12	202
20/17-20P1. Robin Little. Altitude about 2400 ft. Drilled by Bach Drilling, 1976. Casing: 6-inch to 290 ft.		
Clay, sandy	210	210
Clay, blue	35	245
Sand	5	250
Clay, blue	40	290
Sandstone, brown	20	310
21/11-12R1. U.S. Bureau of Reclamation, test pit 94 and drill hole in cutoff trench. Altitude about 2,484 ft.		
Soil	2.5	2.5
Gravel, cemented	8.5	11
Clay and sand	2.5	13.5
Gravel and boulders, cemented	5	18.5
Gravel, cemented	12.5	31
Gravel and clay	9	40
Gravel and sand	20	60
Clay, sand, and gravel	28	88
Gravel and sand	1	89
Gravel, sand, and clay	13	102
Sand, fine	10	112
Clay	1.5	113.5
Sand, fine	4.5	118
Clay	2	120
Gravel, fine, and coarse sand	2	122
Sand, fine	3	125
Sand, coarse	2	127
Gravel	4	131

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
21/12-10Q1. Department of Highways. Altitude about 2,375 ft. Drilled by Western Water Supply, 1974. Casing: 10-inch to 22 ft, 8-inch from 0-102 ft.		
Clay, brown	17	17
Boulders and gravel	1	18
Sand, gravel and boulders	68	86
Sand, cemented and gravel	6	92
Basalt, gray	36	128
21/11-15B1. Department of Highways. Altitude about 2,370 ft. Drilled by Western Water Supply, 1974. Casing: 8-inch to 79 ft.		
Boulders	25	25
Sand, gravel and boulders	50	75
Rock	14	89
21/12-22B1. Sons of Norway. Altitude about 2,450 ft. Drilled by B & J Drilling, 1976. Casing: 8-inch to 40 ft.		
Clay, brown, soft	16	16
Rock, reddish, decmposted	12	28
Rock, gray, semi-hard	2	30
Clay, ligt brown and sand	4	34
Rock, reddish brown	2	36
Rock, light gray	7	43
Rock, gray, hard	13	56
Rock, gray with light blue streaks	109	165
Granite	35	200
21/11-34D1. Westher Service station. Altitude about 354 ft. Drilled by Band J Drilling, 1974. Casing: 8-inch.		
Rock, brown, decomposed	17	17
Rock, black, sandy and coal	5	23
Rock, brown, decomposed	8	31
Rock, green, decomposed	5	36
Rock green with brown streaks	8	44
Rock, green, decomposed	133	177
Shale, green	10	187
Rock, green, decomposed with brown streaks	13	200
Rock, gray, decomposed	5	205
Rock, red and gray, decomposed	64	274
Rock, green	7	281
21/14-34C1. Driftwood Acres. Altitude about 2,400 ft. Drilled by Puget Sound Drilling, 1964. Casing: 10-inch to 156 ft; perforated 70-75 ft.		
"Hardpan"	60	60
"Hardpan" and blue shale	10	70
Sand and gravel, water	5	75
"Hardpan"	18	93
"Hardpan" with large boulders	19	114
Clay, yellow, hard	32	146
Shale, blue, hard	10	156

(continued)

Material	Thickness (ft)	Depth (ft)
21/14-34C1.--Continued		
Sand, white	74	230
Clay, blue, hard	8	238
Shale and blue clay	10	248
Sandstone and shale	32	280
Sandstone, hard	45	325
Shale, brown	5	330
21/14-34C2. Driftwood Acres (Weber). Altitude about 2,400 ft. Drilled by Courtney Bach, 1969. Casing, 6-inch to 240 ft; perforated 75-85, 115-126, 200-212, 223-233 ft.		
No record	240	240
Granite	160	400
Coal	5	445
Shale, blue	55	460
Granite	40	500
Shale, blue, caving	48	548
21/14-34C4. Dave Stetner. Altitude about 2,300 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6-inch to 70 ft; screened 65-70 ft.		
Clay, red, sandy	20	20
Rocks and gravel	6	26
Gravel, brown, cemented	4	30
"Hardpan", brown	25	55
Gravel, cemented	5	60
Gravel and sand, water	10	70
21/14-34E1. Joseph Webber. Altitude about 2,180 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6-inch to 192 ft; perforated 97-102, 123-127, 131-140 ft.		
No record	140	140
Gravel, cemented	34	174
Clay, blue, sandy	6	180
Gravel, cemented	11	191
Sandstone, gray	54	245
21/14-34G1. George Vlahovich. Altitude about 2,320 ft. Drilled by A. H. Miller, 1962. Casing: 6-inch to 66 ft.		
Dirt and rock	4	4
Sand, gravel and boulders	42	46
Sand, gravel and boulders, water-bearing	20	66
21/14-34H1. D. S. Sadelin. Altitude about 2,400 ft. Dug by Elmer Miller, 1964.		
Topsoil	1	1
Sand and gravel	7	8

TABLE 23.--Continued

Material	Thickness (ft)	Depth (ft)
21/14-34K1. Sig Oien. Altitude about 2,400 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6-inch to 50 ft.		
Topsoil	1	1
Clay, yellow, sandy	37	38
Gravel, cemented	1	39
Rock and gravel	11	50
Sandstone	50	100
21/14-35N1. Robert Hansson. Altitude about 2,300 ft. Drilled by Puget Sound Drilling, 1974. Casing: 6-inch to 95 ft.		
Bark and roots	1	1
Clay, yellow	19	20
Sand, brown and gravel	25	45
Clay, blue, sandy	15	60
Silt and fine sand	10	70
Gravel and clay	10	80
"Hardpan, brown	11	91
Sandstone, gray	99	190
22/11-9G1. Ray Tanner (Ski Acres). Altitude about 2,880 ft. Drilled by H. O. Meyer Drilling, 1972. Casing: 12-inch to 9 ft, 10-inch from 0-21 ft, 8-inch from 0-24 ft, 6-inch from 0-322 ft; perforated 150-170, 292-322 ft.		
Cobbles and boulders	10	10
Bedrock, decomposed	3	13
Rock with soft layers	6	19
Rock, hard	46	65
Rock, soft, some water	15	80
Rock, firm, water	110	190
Rock, black, firm	50	240
Rock, black, hard	46	286
Rock, firm	36	322

TABLE 24.--Water levels in observation wells, 1945-79

WATER LEVEL LISTING

WELL 15N/18E-32K03 SITE NUMBER 466465120360001

HIGHEST WATER LEVEL 36.82 FEET BELOW LAND SURFACE DATUM OCT 22, 1948.

LOWEST WATER LEVEL 74.14 FEET BELOW LAND SURFACE DATUM NOV 06, 1969.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22, 1948	36.82	JAN 05, 1961	42.31	JUL 19, 1967	44.93	JUN 06, 1973	47.2
JUN 27, 1954	39.87	MAR 22	42.31	AUG 23	46.35	AUG 02	48.7
SEP 03	41.94	SEP 24	44.21	OCT 04	47.75 P	SEP 25	48.8
OCT 20	41.30	DEC 03	42.94	NOV 03	46.08	NOV 15	48.7
DEC 15	40.50	JAN 23, 1962	43.67	DEC 06	45.94	MAR 13, 1974	47.1
FEB 04, 1955	40.33	MAR 20	43.48	JAN 18, 1968	45.64	JUL 10	45.6
APR 25	39.31	MAY 22	43.77	FEB 29	45.60	AUG 27	45.1
JUN 20	39.72	JUL 31	44.62	MAY 07	44.65	OCT 25	44.9
AUG 17	42.00	SEP 19	44.77	JUN 04	45.40	FEB 13, 1975	47.2
APR 22, 1956	39.34	DEC 02	44.13	JUL 16	46.37	APR 17	46.5
JUN 30	38.69	OCT 01, 1963	44.70	AUG 28	47.28	JUN 03	45.8
DEC 20	41.40	OCT 30, 1964	45.53	OCT 08	47.29	AUG 07	48.2
FEB 28, 1957	40.51	JAN 19, 1965	44.90	NOV 20	52.17 R	SEP 25	45.9
APR 28	39.43	MAR 02	44.65	JAN 17, 1969	50.72	NOV 18	49.3 P
JUN 27	39.53	APR 06	44.66 R	MAR 20	72.75	JAN 06, 1976	47.1
AUG 22	42.17	JUN 05	45.52	APR 20	47.71	MAR 01	47.4
OCT 23	37.73	JUL 14	45.27	JUL 23	62.0 R	APR 28	46.3
DEC 15	41.93	AUG 27	46.35	NOV 06	74.14	JUL 01	49.1
FEB 24, 1958	40.85	OCT 05	45.84	DEC 16	47.35	OCT 05	49.1
APR 24	38.94	DEC 01	46.54	JUN 03, 1970	43.60	JAN 25, 1977	48.5
JUN 24	39.87	JAN 11, 1966	45.66	JUL 01	46.98 R	MAR 23	48.0
AUG 27	42.26	FEB 25	45.49	JAN 07, 1971	47.0	JUL 13	69.90
DEC 15	41.69	APR 06	44.15	FEB 19	46.3	SEP 13	45.70
FEB 26, 1959	42.32	MAY 03	43.33	APR 02	46.8	NOV 01	50.80
APR 22	40.02	JUN 09	43.80	MAY 13	45.7	DEC 28	49.5
JUL 01	41.19	JUL 15	44.81	SEP 16	48.3	FEB 28, 1978	47.7
AUG 25	41.37	SEP 08	46.73	OCT 29	47.7	JUN 27	47.8
NOV 02	44.61	OCT 10	47.58	APR 12, 1972	45.3	AUG 21	49.7
DEC 02	42.43	NOV 04	49.95	JUN 07	44.34	OCT 03	49.4
FEB 02, 1960	42.90	DEC 12	49.68	JUL 20	44.9	DEC 06	50.3
MAR 28	42.01	JAN 23, 1967	45.38	SEP 12	50.8 R	MAR 07, 1979	49.9
JUN 06	42.05	FEB 20	47.15	NOV 07	51.5 R	JUN 05	49.4
JUL 26	44.19	MAR 30	43.34	JAN 04, 1973	46.4	AUG 07	51.8
OCT 06	43.82	APR 28	43.08	FEB 22	46.1	OCT 02	52.9
DEC 03	43.07	JUN 05	42.40	APR 20	46.4		

P = well pumping

R = well pumped recently

TABLE 24.--Continued

WATER LEVEL LISTING

WELL 17N/19E-11G01 SITE NUMBER 465854120250801

HIGHEST WATER LEVEL 5.50 FEET BELOW LAND SURFACE DATUM SEP 06, 1972.

LOWEST WATER LEVEL 8.29 FEET BELOW LAND SURFACE DATUM MAY 10, 1971.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUN 07, 1968	6.68	JUL 24, 1969	6.41	JUL 08, 1970	6.79	AUG 02, 1971	6.12
JUL 11	6.49	AUG 27	6.00	AUG 25	5.89	SEP 13	5.72
AUG 27	5.72	OCT 06	5.91	OCT 05	5.57	OCT 22	5.56
OCT 07	5.71	NOV 06	6.04	NOV 16	6.31	DEC 13	6.72
NOV 18	6.79	DEC 16	7.17	JAN 21, 1971	7.96	SEP 06, 1972	5.50
JAN 15, 1969	7.66	FEB 04, 1970	7.58	FEB 16	6.81	OCT 31	5.90
MAR 17	7.42	MAR 10	6.99	MAR 30	7.31	DEC 27	6.52
APR 25	7.70	APR 15	7.21	MAY 10	8.29		
MAY 05	6.94	MAY 28	6.63	JUN 21	6.89		

TABLE 24.--Continued

WATER LEVEL LISTING

WELL 18N/18E-25C01 SITE NUMBER 470140120314801

HIGHEST WATER LEVEL 57.62 FEET BELOW LAND SURFACE DATUM JUL 24, 1956.

LOWEST WATER LEVEL 71.71 FEET BELOW LAND SURFACE DATUM SEP 01, 1965.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08, 1954	62.91	DEC 22, 1959	64.95	SEP 01, 1965	71.71	JUL 26, 1969	66.1
DEC 06	64.13	JAN 04, 1960	65.26	OCT 18	64.33	AUG 27	65.9
JAN 03, 1955	65.05	27	65.40	DEC 10	66.16	OCT 07	65.33
MAR 31	66.40	FEB 16	65.55	JAN 12, 1966	67.07	NOV 06	64.92
APR 25	67.10	29	65.17	FEB 23	66.51	DEC 15	66.25
JUN 25	63.93	APR 15	65.21	MAR 30	65.44	FEB 05, 1970	66.65
JUL 05	63.55	MAY 09	64.99	MAY 05	65.22	10	66.20
SEP 23	63.03	JUN 06	63.99	JUN 07	63.82	APR 15	66.45
NOV 03	63.07	AUG 30	65.29	JUL 13	63.89	JUN 01	69.40
DEC 08	64.12	OCT 06	64.71	SEP 07	64.87	JUL 08	64.96
JAN 12, 1956	64.74	24	64.66	28	64.56	AUG 25	66.30
MAR 19	64.27	DEC 03	64.31	NOV 07	64.72	OCT 05	64.84
APR 27	64.16	APR 13, 1961	64.57	DEC 09	64.99	NOV 16	65.97
JUL 24	57.62	JUL 18	64.57	JAN 16, 1967	65.05	JAN 05, 1971	66.9
MAR 15, 1957	65.37	SEP 19	64.65	FEB 20	65.49	FEB 17	65.6
APR 17	65.11	DEC 03	64.52	MAR 28	66.78	MAR 31	66.8
MAY 12	64.48	FEB 26, 1962	65.30	APR 28	65.33	MAY 12	65.5
AUG 15	63.25	JUN 18	62.20	JUN 05	64.87	JUN 23	64.4
OCT 31	63.15	OCT 22	63.17	JUL 13	66.7 R	AUG 03	64.8
FEB 28, 1958	64.58	NOV 23	63.97	AUG 21	67.4	SEP 13	64.5
MAY 02	64.97	FEB 25, 1963	65.32	OCT 03	65.8	OCT 26	64.5
AUG 26	63.83	MAR 29	65.30	NOV 02	66.1 R	DEC 13	65.4
SEP 14	63.35	MAY 03	65.62	DEC 07	65.6	JAN 31, 1972	65.3
MAR 09, 1959	64.25	JUN 26	64.44	JAN 18, 1968	66.05	APR 10	65.3
26	64.81 P	AUG 21	64.31	MAR 26	68.94	JUN 09	64.1
JUN 03	63.29	DEC 16	65.38	MAY 01	65.75	JUL 15	70.2
29	63.26	FEB 24, 1964	66.28	JUN 05	64.41	18	70.2
JUL 13	63.77	APR 20	67.30	JUL 11	64.97	NOV 01	65.1
AUG 05	64.53	JUN 22	64.26	AUG 27	64.27	DEC 28	67.5
29	64.81	AUG 24	64.46	OCT 07	71.02	FEB 21, 1973	67.5
SEP 15	63.83	DEC 10	64.97	NOV 18	63.58	APR 16	68.1
28	63.56	JAN 18, 1965	65.78	JAN 04, 1969	65.43	JUN 12	65.8
OCT 12	63.39	MAR 01	64.35	29	65.80	JUL 30	65.6
NOV 01	64.01	APR 05	65.16	MAR 18	69.10	OCT 02	65.7
16	64.47	JUN 03	64.28	APR 24	66.4	NOV 20	65.4
DEC 02	66.99	JUL 15	64.42	JUN 06	69.47		

P = well pumping.

R = well pumped recently.

TABLE 24.--Continued

WATER LEVEL LISTING

WELL 18N/19E-32B01 SITE NUMBER 470052120290001

HIGHEST WATER LEVEL 20.0 FEET BELOW LAND SURFACE DATUM SEP 22, 1975.

LOWEST WATER LEVEL 40.01 FEET BELOW LAND SURFACE DATUM JUN 05, 1969.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL		DATE	WATER LEVEL	
JUN 08, 1968	28.06		NOV 06, 1969	25.22		JUN 23, 1971	25.4		NOV 26, 1973	25.3	
JUL 11	25.28		DEC 16	27.59		AUG 03	30.9	R	JAN 09, 1974	22.4	
AUG 27	26.33		FEB 04, 1970	26.98		SEP 13	26.1	R	AUG 30	48.4	P
OCT 07	30.99		MAR 10	31.19		OCT 26	40.0	P	FEB 12, 1975	24.2	
NOV 19	27.5	P	APR 16	32.41	P	DEC 13	25.6		SEP 22	20.0	
JAN 04, 1969	28.14		JUN 01	65.59	P	SEP 07, 1972	26.7	P	JAN 07, 1976	24.3	
29	28.72		JUL 08	62.80	P	OCT 31	21.5		AUG 18	34.1	
MAR 18	35.16	P	AUG 25	38.31	R	DEC 27	25.0		JAN 24, 1977	28.3	
APR 24	30.7		OCT 05	25.68		FEB 21, 1973	27.8		SEP 06	37.80	P
JUN 05	40.01		NOV 16	25.25	P	APR 16	30.1		FEB 28, 1978	19.	R
JUL 26	43.11	P	JAN 05, 1971	27.8	R	JUN 12	29.0		AUG 21	29.7	P
AUG 27	43.21	P	FEB 17	23.4		JUL 30	35.8	P	MAR 06, 1979	28.4	
OCT 06	24.16		MAR 30	37.6	P	OCT 02	24.0		OCT 01	36.8	P

P = well pumping.

R = well pumped recently.

TABLE 24.--Continued

WATER LEVEL LISTING

WELL 20N/15E-25P01 SITE NUMBER 471132120543901

HIGHEST WATER LEVEL 3.18 FEET BELOW LAND SURFACE DATUM MAR 12, 1949.

LOWEST WATER LEVEL WELL DRY NOV 17, 1970; JAN 04, 1971.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
SEP 29, 1945	8.29	SEP 08, 1955	7.50	NOV 23, 1962	7.42	MAR 25, 1968	7.36
APR 04, 1946	6.89	DEC 03	7.99	FEB 25, 1963	7.43	MAY 02	8.15
AUG 22	7.79	APR 27, 1956	6.48	MAR 29	7.71	JUN 04	8.57
FEB 27, 1947	5.06	JUN 25	7.42	MAY 03	7.79	JUL 12	8.40
JUL 23	7.37	AUG 21	7.55	JUN 26	7.14	OCT 07	9.61
OCT 28	8.65	FEB 20, 1957	8.65	JUL 22	7.49	NOV 18	9.73
JAN 13, 1948	8.48	MAR 15	7.55	SEP 23	8.07	JAN 04, 1969	10.02
APR 11	7.80	APR 23	7.97	NOV 18	8.52	MAR 17	6.53
AUG 15	7.02	JUN 20	7.87	FEB 24, 1964	5.89	APR 23	6.82
OCT 29	8.35	AUG 15	7.99	APR 20	7.08	MAY 06	6.07
MAR 12, 1949	3.18	DEC 20	9.27	MAY 19	6.95	JUL 23	7.85
JUN 27	7.77	FEB 27, 1958	7.66	AUG 24	7.76	AUG 28	6.68
APR 10, 1950	6.53	MAY 02	9.33	DEC 04	7.71	SEP 25	8.44
OCT 04	8.02	JUN 29	6.80	JAN 19, 1965	7.18	FEB 05, 1970	9.94
DEC 11	8.02	AUG 27	8.03	MAR 01	4.89	MAR 11	8.08
MAR 28, 1951	5.70	DEC 21	7.16	APR 05	6.98	APR 16	8.19
MAY 06	7.32	MAR 08, 1959	7.04	JUN 03	6.95	MAY 28	7.48
AUG 19	7.77	APR 01	7.47	JUL 15	6.98	JUL 07	7.28
OCT 15	8.68	29	8.09	SEP 01	9.14	AUG 26	7.06
DEC 10	8.19	JUN 29	7.56	OCT 21	9.53	OCT 06	8.58
FEB 12, 1952	7.60	AUG 03	8.48	DEC 09	9.62	07	8.58
APR 10	8.23	SEP 15	8.21	JAN 12, 1966	9.75	NOV 17	DRY
JUN 02	7.09	NOV 10	8.50	FEB 23	8.83	JAN 04, 1971	DRY
AUG 25	7.71	DEC 22	6.81	MAR 30	7.62	FEB 17	6.7
OCT 27	8.47	JAN 27, 1960	7.98	MAY 05	7.75	MAY 10	7.69
DEC 08	9.17	FEB 29	7.76	JUN 08	8.45	JUN 22	7.18
FEB 27, 1953	7.36	MAR 29	7.69	JUL 20	8.31	AUG 03	8.92
APR 22	8.04	JUN 06	7.44	SEP 07	8.78	SEP 13	8.37
JUN 16	6.69	JUL 05	7.45	29	8.49	OCT 28	9.73
AUG 27	6.46	AUG 30	8.24	NOV 07	8.47	DEC 15	9.25
OCT 27	8.51	SEP 26	7.54	DEC 09	10.05	MAY 16, 1972	7.15
DEC 15	7.50	OCT 24	8.56	JAN 16, 1967	9.97	JUN 01	6.08
FEB 28, 1954	4.70	NOV 28	7.71	FEB 20	7.72	JUL 18	6.92
APR 19	7.67	JAN 23, 1961	7.54	MAR 27	7.20	SEP 07	9.13
JUN 23	6.42	MAR 28	6.58	MAY 24	8.48	NOV 01	8.92
SEP 03	8.08	SEP 19	7.92	JUL 13	8.60	DEC 28	8.50
OCT 26	9.05	NOV 27	9.32	OCT 02	9.84	FEB 20, 1973	8.84
DEC 15	9.20	FEB 26, 1962	7.62	NOV 01	8.69	APR 18	8.32
FEB 21, 1955	8.11	MAR 29	7.14	DEC 07	8.92	JUL 30	7.68
APR 25	7.55	JUN 18	7.33	JAN 17, 1968	9.65	OCT 02	8.76
JUN 25	6.70	SEP 26	8.03	FEB 19	8.40	NOV 21	9.12

TABLE 25.--Chemical analyses and temperature of water from selected springs and wells

LOCAL IDENTIFIER	LATITUDE	LONGITUDE	SEQ. NO.	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)
14/18E-03N01S	46 43 37	120 34 07	01	48-11-19	--	--	370	7.6	15.0	--
14/18E-12C01	46 46 35	120 31 20	01	48-11-22	--	127	437	8.3	--	--
14/18E-13R02	46 41 46	120 30 42	01	68-11-19	--	60.00	676	7.7	--	--
14/18E-36N01	46 39 05	120 31 39	01	70-12-01	--	578	180	8.1	16.0	5
				71-05-18	--	578	216	8.1	16.0	--
14/19E-19G01	46 41 18	120 29 42	01	61-05-05	--	136	823	7.9	12.0	5
14/19E-28B01	46 40 36	120 27 09	01	51-04-20	--	600	235	8.0	21.0	6
				53-09-29	--	600	244	7.8	21.0	6
				54-11-29	--	600	235	7.6	18.0	7
				55-10-05	--	600	238	8.1	20.0	0
				56-10-25	--	600	236	7.8	19.5	0
				58-01-06	--	600	236	7.8	20.0	0
				59-03-30	--	600	239	7.8	20.0	5
				60-09-16	--	600	220	7.9	20.0	0
				64-12-14	--	600	239	7.9	13.5	0
				67-02-28	--	600	237	8.1	20.0	0
14/19E-28F01	46 40 23	120 27 28	01	51-06-20	--	548	429	7.7	18.5	3
				52-09-18	--	548	364	7.6	17.0	2
				53-09-29	--	548	441	7.5	16.0	8
				54-11-29	--	548	425	7.3	15.5	6
				55-10-05	--	548	432	7.7	15.0	0
				62-01-08	--	548	422	7.4	16.0	0
				66-02-24	--	548	487	7.5	14.5	0
14/19E-28H01	46 40 26	120 26 50	01	52-09-17	--	590	246	7.9	19.0	3
				54-11-29	--	590	249	7.7	16.5	8
				55-10-05	--	590	247	7.7	17.0	0
				64-03-11	--	590	241	7.8	18.0	0
				68-03-22	--	590	245	7.4	17.0	0
15/18E-33P01	46 39 07	120 35 05	01	48-11-22	--	400	266	7.5	--	--
16/17E-19E01	46 51 51	120 45 31	01	48-11-19	--	115	202	7.4	--	--
16/17E-32J01S	46 49 51	120 43 11	01	48-11-19	--	--	185	7.7	16.5	--
17/18E-01C01	46 59 59	120 31 48	01	57-03-16	--	1200	197	7.4	12.0	0
				59-10-19	--	1200	202	7.7	13.0	--
17/19E-11G01	46 58 54	120 25 08	01	62-11-02	--	200	207	7.5	11.0	--
18/18E-25D01	47 01 41	120 32 04	01	70-12-03	--	730	213	7.7	13.0	0
				71-05-21	--	730	214	8.8	14.0	--
18/18E-32D01	47 00 42	120 37 20	01	62-11-02	--	455	172	8.2	14.5	--
19/16E-28N01S	47 06 17	120 51 20	01	62-09-05	--	--	124	7.4	11.0	10
20/14E-11A01	47 14 43	121 03 04	01	68-10-07	--	200	249	8.3	9.0	5
21/12E-14H01	47 18 37	121 18 40	01	65-06-13	--	61.00	107	7.5	4.5	0
21/14E-28J01	47 16 45	121 05 05	01	68-04-25	--	220	187	7.8	--	0
21/17E-17R01	47 18 18	120 43 39	01	65-08-15	--	75.00	179	7.7	10.0	0
21/17E-22P01	47 17 26	120 41 50	01	62-09-12	--	60.00	211	8.6	8.0	5
22/13E-32C01	47 21 31	121 16 42	01	65-07-28	--	70.00	41	6.6	4.5	0

TABLE 25.--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	HARDNESS (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE FET-FLD (MG/L AS HCO3)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)
14/18E-03N01S	48-11-19	160	32	19	13	.5	5.8	190	158	18
14/18E-12C01	48-11-22	180	42	19	23	.8	2.9	210	172	21
14/18E-13R02	48-11-19	260	60	26	62	2	4.8	440	363	20
14/18E-36N01	70-12-01	45	15	1.9	19	1	2.7	88	72	13
	71-05-18	58	17	3.7	--	--	--	110	90	--
14/19E-19G01	61-05-05	340	84	31	58	1	6.3	460	376	60
14/19E-28B01	51-04-20	83	15	11	19	.9	6.2	150	124	.7
	53-09-29	85	16	11	19	.9	3.6	150	122	.7
	54-11-29	85	16	11	19	.9	3.6	150	121	1.8
	55-10-05	79	16	9.4	19	1	4.0	150	121	.2
	56-10-25	83	15	11	19	.9	3.5	150	122	.7
	58-01-06	81	16	10	18	.9	3.6	150	121	.3
	59-03-30	88	17	11	18	.9	4.0	150	120	.5
	60-09-14	83	15	11	19	.9	3.7	150	121	.8
	64-12-14	79	15	10	19	1	4.0	150	122	.0
	67-02-28	81	16	10	20	1	3.7	150	121	.4
14/19E-29F01	51-04-20	170	35	19	32	1	7.2	250	202	23
	52-09-18	120	25	15	27	1	4.1	200	162	12
	53-09-29	160	36	18	32	1	4.5	240	196	23
	54-11-29	150	33	17	31	1	4.4	220	179	21
	55-10-05	150	34	17	30	1	4.4	220	182	21
	62-01-08	160	35	18	28	1	4.7	220	182	24
	66-02-24	180	41	20	33	1	4.9	240	200	32
14/19E-28M01	52-09-17	84	17	10	22	1	4.5	150	126	1.2
	54-11-29	84	17	10	21	1	4.3	150	126	1.4
	55-10-05	81	17	9.3	20	1	4.6	150	124	.2
	64-03-11	81	16	9.9	21	1	4.6	150	124	.4
	68-03-22	86	18	10	21	1	4.3	150	125	.4
15/18E-33P01	48-11-22	110	23	12	13	.6	4.0	150	120	10
16/17E-19E01	48-11-19	78	16	9.2	8.8	.4	4.8	120	95	3.3
16/17E-32J01S	48-11-19	57	12	6.6	17	1	4.3	100	85	9.2
17/18E-01C01	57-03-14	83	18	9.2	8.6	.4	2.0	120	98	1.3
	59-10-19	84	--	--	--	--	--	120	100	--
17/19E-11G01	62-11-02	84	19	8.9	9.9	.5	2.3	120	97	3.2
18/18E-25D01	70-12-03	86	18	10	9.4	.5	2.2	120	103	2.6
	71-05-21	88	17	11	--	--	--	130	107	--
18/18E-32D01	62-11-02	57	15	4.7	14	.8	2.0	100	83	3.0
19/16E-28N01S	62-09-05	56	12	6.4	4.2	.3	2.3	82	67	2.6
20/14E-11A01	68-10-07	120	28	12	4.4	.2	1.4	150	130	4.8
21/12E-14M01	65-06-13	47	15	2.2	3.7	.2	.60	62	51	2.0
21/14E-28J01	68-04-25	82	20	7.7	6.2	.4	.70	120	99	.0
21/17E-17R01	65-08-15	62	22	1.6	15	.9	.60	110	89	3.2
21/17E-22P01	62-09-12	15	6.0	.10	43	5	.20	97	86	3.0
22/13E-32C01	65-07-28	17	5.2	1.0	1.9	.2	.20	25	21	.2

TABLE 25.--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	BORON, DISSOLVED (UG/L AS B)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
14/18E-03N01S	48-11-19	9.1	.20	66	260	--	--	--	--	50
14/18E-12C01	48-11-22	20	.40	58	290	--	--	--	--	260
14/18E-13R02	48-11-19	5.2	.40	53	450	--	--	--	--	30
14/18E-36N01	70-12-01	3.3	.30	46	140	--	<0	--	<50	450
	71-05-18	16	--	--	--	--	--	--	--	--
14/19E-19G01	61-05-05	13	.60	57	540	--	--	--	--	<0
14/19E-28B01	51-04-20	4.1	.50	56	190	--	--	--	--	40
	53-09-29	3.8	.50	59	190	--	--	--	--	150
	54-11-29	6.4	.50	53	180	--	--	--	--	60
	55-10-05	3.5	.50	50	170	--	--	--	--	80
	56-10-25	4.0	.40	49	180	--	--	--	--	60
	58-01-06	6.0	.50	--	--	--	--	--	--	30
	59-03-30	3.5	.60	51	180	--	--	--	--	50
	60-09-14	4.0	.60	52	180	--	--	--	--	40
	64-12-14	3.8	.60	49	170	--	--	--	--	50
	67-02-28	4.0	.60	56	180	--	--	--	--	40
14/19E-28F01	51-04-20	9.2	.62	50	300	--	--	--	--	50
	52-09-18	6.4	.50	50	240	--	--	--	--	120
	53-09-29	8.8	.60	53	290	--	--	--	--	200
	54-11-29	9.2	.50	48	270	--	--	--	--	120
	55-10-05	8.2	.60	45	270	--	--	--	--	80
	62-01-08	9.0	.60	51	280	--	--	--	--	130
	66-02-24	14	.60	46	310	--	--	--	--	220
14/19E-28H01	52-09-17	6.3	.50	52	190	--	--	--	--	110
	54-11-29	4.9	.50	49	180	--	--	--	--	860
	55-10-05	4.5	.50	49	180	--	--	--	--	270
	64-03-11	3.8	.60	50	180	--	--	--	--	140
	68-03-22	4.5	.90	52	190	--	--	--	--	2000
15/18E-33P01	48-11-22	5.2	.20	59	200	--	--	--	--	40
16/17E-19E01	48-11-19	2.4	.20	61	160	--	--	--	--	80
16/17E-32J01S	48-11-19	1.8	.40	53	160	--	--	--	--	60
17/18E-01C01	57-03-14	2.0	.20	58	160	--	--	--	--	740
	59-10-19	--	--	--	--	--	--	--	--	--
17/19E-11G01	62-11-02	4.2	.20	46	150	--	--	50	--	<0
18/18E-25D01	70-12-03	2.3	.20	53	160	--	<0	--	<50	600
	71-05-21	--	--	--	--	--	--	--	--	--
18/18E-32D01	62-11-02	2.0	.30	39	130	--	--	<0	--	0
19/16E-28N01S	62-09-05	1.0	.20	37	110	--	--	--	--	60
20/14E-11A01	68-10-07	.40	.10	25	160	--	--	--	--	20
21/12E-14M01	65-06-13	1.5	.10	12	68	--	--	--	--	410
21/14E-28J01	68-04-29	1.0	.20	20	120	--	--	--	--	340
21/17E-17R01	65-08-15	1.0	.20	18	110	--	--	--	--	470
21/17E-22P01	62-09-12	14	.40	20	140	--	--	--	--	50
22/13E-32C01	65-07-29	.50	.00	11	32	--	--	--	--	240

TABLE 25.--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	NICKEL, DISSOLVED (UG/L AS NI)	STRONTIUM, DISSOLVED (UG/L AS SR)	ZINC, DISSOLVED (UG/L AS ZN)
14/18E-03N01S	48-11-19	--	--	--	--	--	--
14/18E-12C01	48-11-22	--	--	--	--	--	--
14/18E-13R02	48-11-19	--	--	--	--	--	--
14/18E-36N01	70-12-01	<100	<20	<20	<50	<50	<10
	71-05-18	--	--	--	--	--	--
14/19E-19G01	61-05-05	--	--	--	--	--	--
14/19E-28B01	51-04-20	--	--	--	--	--	--
	53-09-29	--	--	--	--	--	--
	54-11-29	--	--	--	--	--	--
	55-10-05	--	--	--	--	--	--
	56-10-25	--	--	--	--	--	--
	58-01-06	--	--	--	--	--	--
	59-03-30	--	--	--	--	--	--
	60-09-14	--	--	--	--	--	--
	64-12-14	--	--	<50	--	--	--
	67-02-28	--	--	20	--	--	--
14/19E-28F01	51-04-20	--	--	--	--	--	--
	52-09-18	--	--	--	--	--	--
	53-09-29	--	--	--	--	--	--
	54-11-29	--	--	--	--	--	--
	55-10-05	--	--	--	--	--	--
	62-01-08	--	--	100	--	--	--
	66-02-24	--	--	100	--	--	--
14/19E-28H01	52-09-17	--	--	--	--	--	--
	54-11-29	--	--	--	--	--	--
	55-10-05	--	--	--	--	--	--
	64-03-11	--	--	<50	--	--	--
	68-03-22	--	--	40	--	--	--
15/18E-33P01	48-11-22	--	--	--	--	--	--
16/17E-19E01	48-11-19	--	--	--	--	--	--
16/17E-32J01S	48-11-19	--	--	--	--	--	--
17/18E-01C01	57-03-14	--	--	--	--	--	--
	59-10-19	--	--	--	--	--	--
17/19E-11G01	62-11-02	--	--	--	--	--	--
18/18E-25D01	70-12-03	<100	<20	<20	<50	30	50
	71-05-21	--	--	--	--	--	--
18/18E-32D01	62-11-02	--	--	--	--	--	--
19/16E-28N01S	62-09-05	--	--	--	--	--	--
20/14E-11A01	68-10-07	--	--	120	--	--	--
21/12E-14H01	65-06-13	--	--	100	--	--	--
21/14E-28J01	68-04-25	--	--	170	--	--	--
21/17E-17R01	65-08-15	--	--	100	--	--	--
21/17E-22P01	62-09-12	--	--	--	--	--	--
22/13E-32C01	65-07-28	--	--	<50	--	--	--