GEOHYDROLOGY OF THE FLATHEAD INDIAN RESERVATION, NORTHWESTERN MONTANA

By Steven E. Slagle

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CONTENTS

	Page
Abstract	1
Introduction	2
Purpose and scope	2
Location and general features of the area	2
Climate	4
Previous investigations	4
System for specifying geographic locations	7
Methods of investigation	7
Well inventory	7
Water-level monitoring	7
Seismic-refraction surveys	9
Test drilling	9
Aquifer testing	9
Water-quality sampling	9
Geology	9
Precambrian rocks	10
Precambrian and Tertiary(?) igneous rocks	10
Tertiary(?) and Quaternary rocks and deposits	12
Hydrology	13
Valley-fill aquifers	13
Lithologic distribution	13
Mission Valley	13
Little Bitterroot River valley-Big Draw area	15
Camas Prairie basin	16
Jocko and lower Flathead River valleys	17
Aquifer properties	18
Mission Valley	19
Little Bitterroot River valley-Big Draw area	19
Camas Prairie basin	24
Jocko and lower Flathead River valleys	26
Ground-water movement	26
Mission Valley	26
Little Bitterroot River valley-Big Draw area	30
Camas Prairie basin	32
Jocko and lower Flathead River valleys	32
Recharge and discharge	34
Mission Valley	34
Little Bitterroot River valley-Big Draw area	39
Camas Prairie basin	41
Jocko and lower Flathead River valleys	44
Summary of recharge and discharge components	45
Bedrock aquifers	46
Aquifer properties	46
Ground-water movement	47
Recharge and discharge	52
Ground-water quality	52
Water-use standards	52
Valley-fill aquifers	55
Bedrock aquifers	55

	Page
Summary	56
Selected references	59
Supplemental information	64

PLATES

Plate 1.	Map showing generalized geology and depth to top of Belt Supergroup, Flathead Indian Reservation, northwestern Montana	In pocket
2.	Map showing altitude and configuration of the water surface of valley-fill aquifers, Flathead Indian Reservation, northwestern Montana	In pocket

ILLUSTRATIONS

Figure 1.	Map showing location of study area	3
2.	Map showing mean annual precipitation	5
3.	Graphs showing mean monthly precipitation at Polson Kerr Dam and Saint Ignatius	6
4.	Graphs showing mean monthly air temperature at Polson Kerr Dam and Saint Ignatius	6
5.	Diagram showing system of specifying location of wells, test holes, and springs	8
6-13.	Hydrographs showing water-level fluctuations in:	
	6. Shallow wells in the Mission Valley	28
	7. Deep wells in the Mission Valley	29
	8. A well in the central Little Bitterroot River valley	31
	9. A well in the southern Little Bitterroot River valley	31
	10. A well in Big Draw	32
	11. Wells in Camas Prairie basin	33
	12. A well in the upper Finley Creek valley	34
	13. Wells in the lower Finley Creek and Jocko River valleys	35
14.	Hydrogeologic section of the Flathead River valley near Dixon	38
15.	Hydrogeologic section of the lower Little Bitterroot River valley	42
16.	Map showing generalized altitude and configuration of the potentiometric surface of aquifers in the Belt Supergroup	49
17.	Conceptual model of flow systems in aquifers of the Belt Supergroup	50
18.	Hydrographs for wells completed in aquifers of the Belt Supergroup	50

TABLES

Table 1.	Generalized description of geologic units	11
2.	Specific capacity of wells in Mission Valley	20
3.	Summary of aquifer tests in Mission Valley	22

		Page
Table 4.	Specific capacity of wells in the Little Bitterroot River valley-Big Draw area	23
5.	Summary of aquifer tests in the Little Bitterroot River valley-Big Draw area	24
6.	Specific capacity of wells in the Camas Prairie basin	25
7.	Summary of aquifer tests in the Camas Prairie basin	25
8.	Specific capacity of wells in the Jocko and lower Flathead River valleys	27
9.	Summary of recharge and discharge components for valley-fill aquifer systems within the Flathead Indian Reservation	46
10.	Specific capacity of wells completed in the Belt Supergroup	48
11.	Records of inventoried wells, springs, and test holes	65
12.	Records of water level in monitoring wells	90
13.	Logs of wells and test holes	113
14.	Physical properties and primary-constituent concentrations in ground water	128
15.	Trace-element concentrations in ground water	137
16.	Summary of selected physical properties and chemical constituents in water from wells and springs	146
17.	Summary of selected trace elements in water from wells and springs	150

CONVERSION FACTORS

The following factors can be used to convert inch-pound units in this report to metric (International System) units.

Multiply inch-pound unit	By	To obtain metric unit
acre	0.4047	hectare
acre-foot (acre-ft)	1,233	cubic meter
acre-foot per acre (acre-ft/acre)	0.3048	cubic meter per square meter
acre-foot per year (acre-ft/yr)	1,233	cubic meter per year
cubic foot per day (ft^3/d)	0.02832	cubic meter per day
cubic foot per second (ft^3/s)	0.028317	cubic meter per second
foot (ft)	0.3048	meter
foot per day (ft/d)	0.3048	meter per day
foot per mile (ft/mi)	0.1894	meter per kilometer
foot squared per day (ft^2/d)	0.09290	meter squared per day
gallon per day (gal/d)	0.003785	cubic meter per day
gallon per minute (gal/min)	0.06309	liter per second
gallon per minute per foot [(gal/min)/ft]	0.2070	liter per second per meter
gallon per minute per foot per foot [(gal/min)/ft/ft]	0.6791	liter per second per meter per meter
inch (in.)	25.4	millimeter
mile (mi)	1.609	kilometer
square foot (ft^2)	0.09290	square meter
square mile (mi^2)	2.590	square kilometer

Temperature can be converted to degrees Celsius (°C) and degrees Fahrenheit (°F) by the equations:

$$°C = 5/9\ (°F - 32)$$
$$°F = 9/5\ (°C) + 32$$

Sea level: In this report "sea level" refers to the 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 "Sea Level Datum of 1929."

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ABSTRACT

The ground-water system in parts of the Flathead Indian Reservation has a large potential as a source of irrigation water for many areas that cannot be served economically by surface canal systems. The geohydrology of the area was studied to provide information that could be used by the Confederated Salish and Kootenai Tribes to formulate ground-water development plans.

The reservation encompasses an area of about 1,950 square miles characterized by mountains and structurally controlled valleys in northwestern Montana. Mean annual precipitation ranges from about 11 to 16 inches in the valleys to almost 100 inches in the Mission Mountains. The entire reservation is drained by the Flathead River and its tributaries. Parts of the reservation are irrigated by a complex system of canals that substantially alters the natural drainage system.

Bedrock in the area, which underlies the valleys and forms the surrounding mountains, consists of slightly metamorphosed carbonate and fine-grained clastic rocks of the Precambrian Belt Supergroup. Igneous rocks are present at the surface in two small areas of the reservation. Valley-fill deposits consist of alluvium of Holocene age; glacial and glaciolacustrine boulders, cobbles, gravel, sand, silt, and clay of Pleistocene age; and siltstone, fine-grained sandstone, and coal of probable Tertiary age. Thickness of valley-fill deposits may be as much as 3,500 feet.

Most wells in the reservation are completed in valley-fill aquifers. For these wells and aquifers, discharge ranges from 0.5 to 1,600 gallons per minute, specific capacity ranges from 0.03 to 305 gallons per minute per foot, and transmissivity ranges from 3.2 to 45,600 feet squared per day.

The principal direction of ground-water flow in most of the area follows the trend of the respective valleys. In the Mission Valley, the largest enclosed valley on the reservation, the ground-water flow is to the west and southwest across the valley from the Mission Range.

The water level in valley-fill aquifers fluctuates seasonally in response to recharge from streams and irrigation canals and discharge from wells. Where irrigation canals are present, the water level generally rises during the summer and declines during the winter. Water level in other areas generally rises during the winter and spring and declines the rest of the year.

Recharge to valley-fill aquifers occurs by direct infiltration of snowmelt and rainfall, leakage from streams and irrigation canals, subsurface inflow, and irrigation return flow. Discharge from the valley-fill aquifers occurs through evaporation, transpiration by plants, withdrawals from wells, leakage to rivers and streams, and subsurface outflow. This discharge is about 250,000 acre-feet per year from the Mission Valley, 19,000 acre-feet

per year from the Little Bitterroot River valley-Big Draw area, 1,800 acre-feet per year from Camas Prairie basin, and 39,000 acre-feet per year from the Jocko and lower Flathead River valleys.

Water in the bedrock is available from zones of secondary permeability where the rocks are fractured. Discharge from wells completed in Belt Supergroup aquifers ranges from 2.5 to 40 gallons per minute; specific capacity ranges from 0.08 to 3.2 gallons per minute per foot.

Water from wells and springs within the reservation commonly is a calcium bicarbonate or sodium bicarbonate type and contains dissolved-solids concentrations of 42 to 1,100 milligrams per liter. All dissolved constituents in most samples were within Federal drinking-water standards.

INTRODUCTION

The ground-water system in parts of the Flathead Indian Reservation has a large potential as a source of irrigation water for many areas that cannot be served economically by surface canal systems because of topography and large seepage losses. However, as ground-water use increases, the water level may decline or the water quality may be degraded. Such changes could affect rural domestic and municipal wells, which are the primary source of domestic water supply. Thus, planned development is necessary to protect existing uses and still maximize use of the ground-water system as a source of supply for increased irrigated agriculture, public supply, or industry. Indepth knowledge of the resource is a primary requirement for the formulation of successful ground-water development plans. As a result, the U.S. Geological Survey, in cooperation with the Confederated Salish and Kootenai Tribes and the U.S. Bureau of Indian Affairs, conducted a study of the geohydrology of the reservation.

Purpose and Scope

The purpose of this report is to describe the geohydrology within the Flathead Indian Reservation. Specific objectives are to describe the generalized geology, distribution and hydrologic properties of aquifers, ground-water movement, recharge and discharge relations, and ground-water quality.

To accomplish the objectives of the study, geohydrologic data were collected from selected existing wells. Twenty-three test holes and observation wells were drilled where data were lacking. Aquifer tests were conducted on the test wells, and a network of observation wells was established to measure short-term and long-term fluctuations of ground-water levels. Water samples were collected and analyzed for chemical quality. Seismic-refraction surveys were conducted to determine subsurface geology at selected locations. Most onsite investigations were conducted in 1983 and 1984.

Location and General Features of the Area

The Flathead Indian Reservation is located in northwestern Montana approximately midway between the cities of Kalispell and Missoula and includes an area of about 1,950 mi^2 in parts of Flathead, Lake, Missoula, and Sanders Counties (fig. 1).

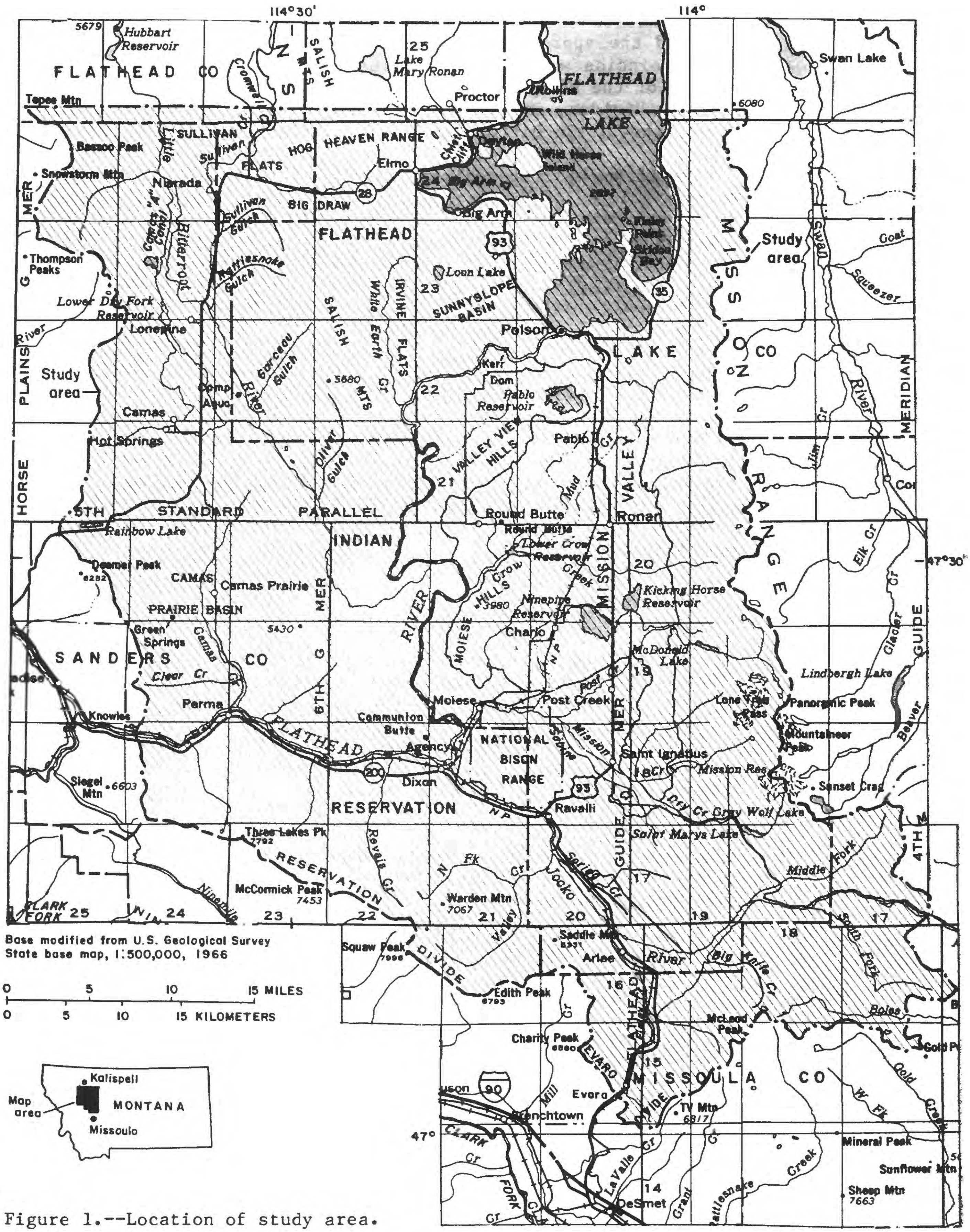


Figure 1.--Location of study area.

The northern boundary consists of a nearly straight east-west line passing through the Hog Heaven Range and the approximate center of Flathead Lake. The remaining boundaries essentially coincide with natural drainage divides. The eastern boundary lies along the crest of the Mission Range, the southern boundary is aligned with the Evaro and Reservation Divides, and the major part of the western boundary parallels the divide between the Little Bitterroot River and Clark Fork drainages.

The Flathead Reservation is composed principally of isolated alluvial-filled structurally controlled valleys and basins separated by mountain ridges. The major valleys of the reservation, the Mission and the Little Bitterroot River, are separated by the Salish Mountains. Other principal valleys and basins contained in the reservation include Big Draw, Irvine Flats, Sunnyslope, Camas Prairie, the Jocko River and Finley Creek drainages, and the Flathead River downstream from Dixon. Prominent topographic highs within the reservation include Valley View Hills, Round Butte, and Moiese Hills.

The entire reservation is drained by the Flathead River and its tributaries. The Flathead River flows from the south end of Flathead Lake at Polson along the west side of the Mission Valley, turns west near Dixon, then flows through a narrow valley to the point where it leaves the reservation near the former settlement of Knowles. Major tributaries to the Flathead River include Crow, Mission, White Earth, and Camas Creeks, and the Jocko and Little Bitterroot Rivers. The Mission and Jocko River valleys and the northern part of the Little Bitterroot River valley are irrigated extensively by a complex system of canals that substantially alters the natural drainage system.

Climate

Mean annual precipitation (fig. 2) in the valleys generally ranges from about 11 to 16 in., whereas annual precipitation in the Mission Mountains, which form the eastern boundary of the reservaton, is almost 100 in. Annual precipitation on the lower hills within the reservation typically is about 20 to 30 in. Most of the precipitation in the mountains occurs as snow. About 50 percent of the precipitation in the valleys is rain. Precipitation is distributed fairly evenly throughout most of the year, but precipitation in May and June is about twice that of other months (fig. 3).

Mean annual temperature in the valleys is about 45 °F, but temperature at higher altitudes is much cooler, as indicated by glaciers and permanent snowfields. In the valleys, mean monthly temperature in degrees Fahrenheit ranges from the mid-20's in January to the high 60's in July and August (fig. 4). The difference between daily maximum and minimum temperature ranges from about 12 to 16 °F in December and January to about 31 to 35 °F in July and August.

Previous Investigations

The geology of the study area is included in regional reports by Harrison and Campbell (1963), Ross (1963), Obradovich and Peterman (1968), Kleinkopf and others (1972), Harrison and others (1981), and Hobbs (1984). Shenon and Taylor (1936), Johns and McClernan (1969), and Johns and others (1970) described the geology of the Hog Heaven area with special reference to mineral occurrence. A similar study in the Ravalli, Dixon, Perma, and Camas Prairie area was conducted by Johns and

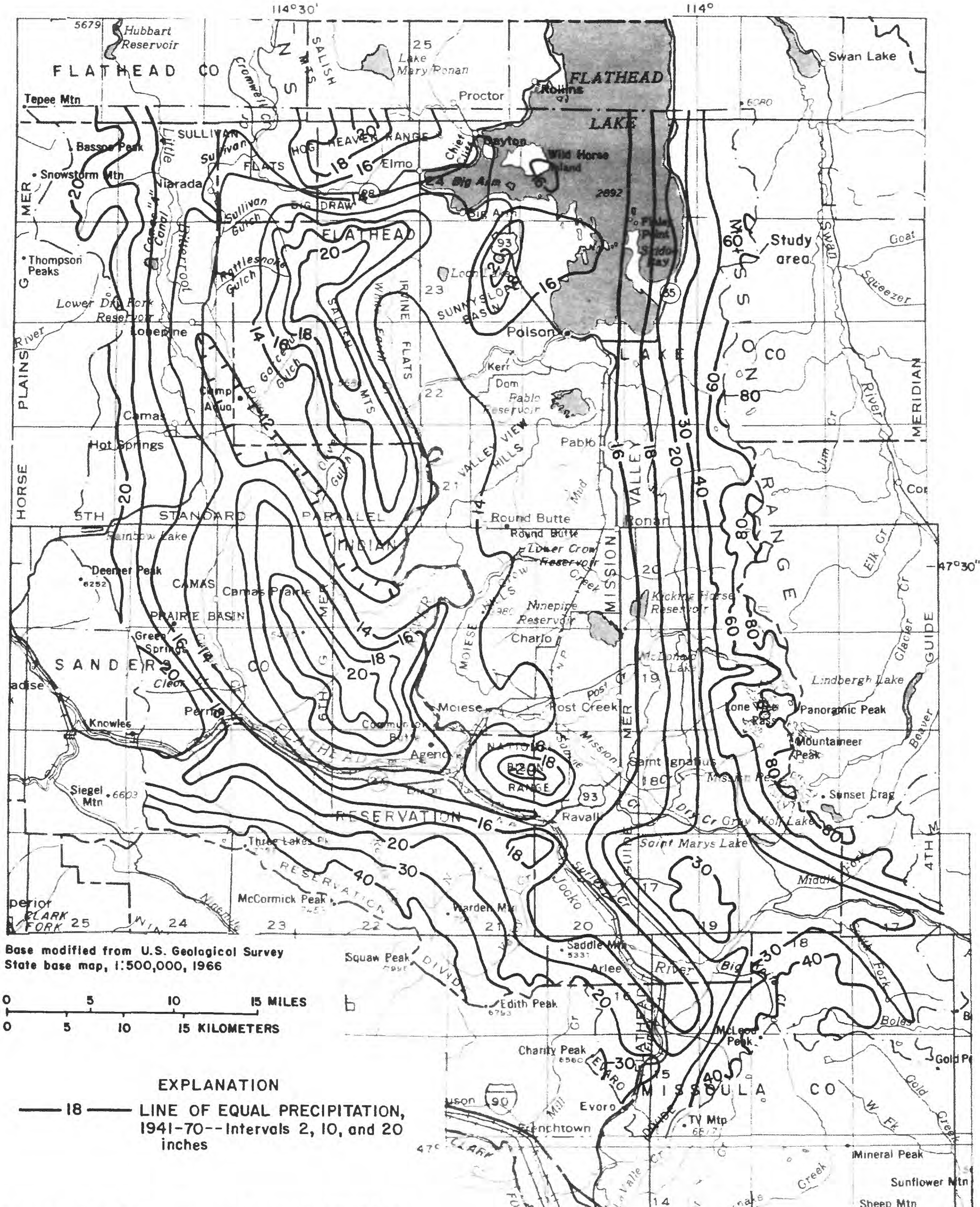


Figure 2.--Mean annual precipitation.

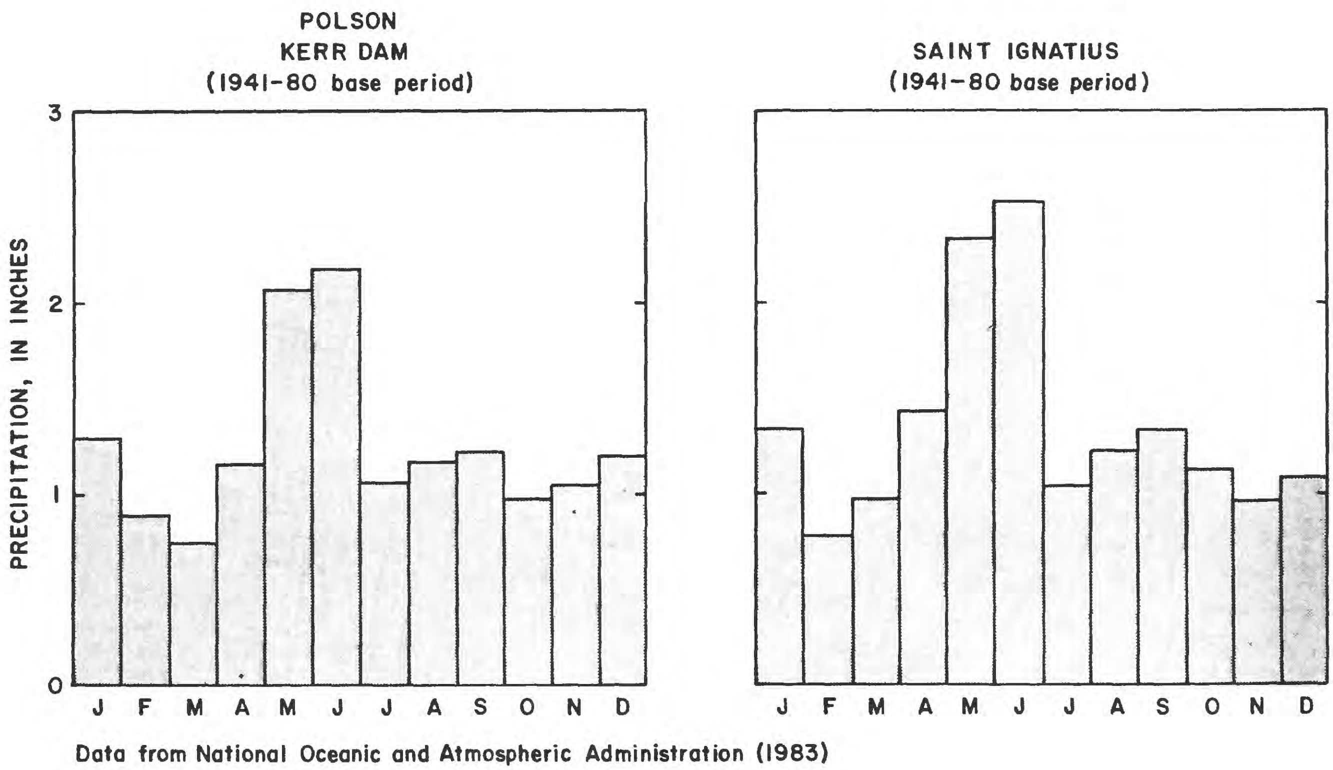


Figure 3.--Mean monthly precipitation at Polson Kerr Dam and Saint Ignatius.

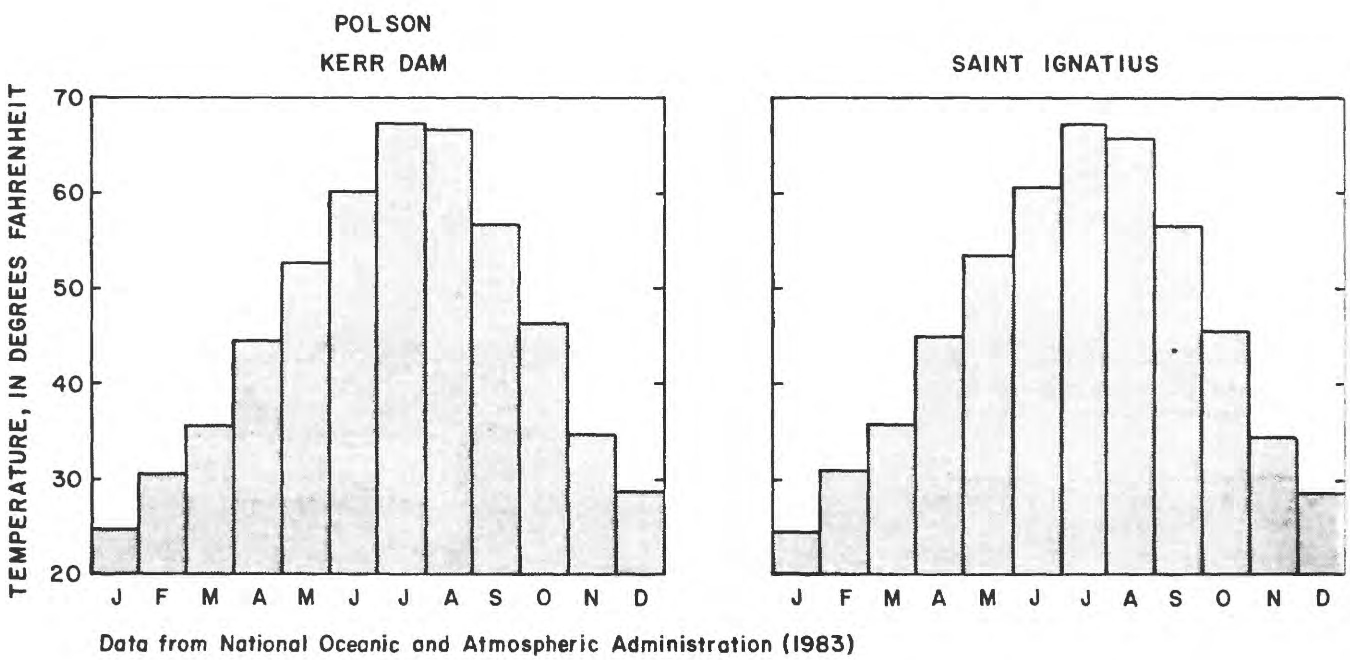


Figure 4.--Mean monthly air temperature at Polson Kerr Dam and Saint Ignatius.

others (1971). Soward (1965) described the geology of several damsites along the Flathead River. The geology of Flathead County was described by Johns (1970).

Reports by Nobles (1952), Alden (1953), Smith (1965), LaPoint (1971), Curry and others (1977), Smith (1977), and Wold (1982) placed special emphasis on the glacial geology of the area. Hydrology is emphasized in reports by Meinzer (1917), Donovan and others (1980), Donovan and Sonderegger (1981), Boettcher (1982), and Donovan (1985).

System for Specifying Geographic Locations

In this report, locations are numbered according to geographic position within the rectangular grid system used in Montana by the U.S. Bureau of Land Management (fig. 5). The location (local) number consists of as many as 14 characters. The first three characters specify the township and its position north (N) of the Montana Base Line. The next three characters specify the range and its position west (W) of the Montana Principal Meridian. The next two characters are the section number. The next one to four characters designate the quarter section (160-acre tract), quarter-quarter section (40-acre tract), quarter-quarter-quarter section (10-acre tract), and quarter-quarter-quarter-quarter section (2.5-acre tract), respectively, in which the well, test hole, or spring is located. The subdivisions of the section are designated A, B, C, and D in a counterclockwise direction, beginning in the northeast quadrant. The last two characters form a sequence number indicating the order of inventory. For example, as shown in figure 5, well 20N21W25BBCC01 is the first well inventoried in the SW1/4SW1/4NW1/4NW1/4 sec. 25, T. 20 N., R. 21 W.

METHODS OF INVESTIGATION

Well Inventory

As an initial step in establishing the hydrologic framework of the area, existing wells were inventoried to acquire data in areas not included in recent investigations. The data collected (table 11 in the Supplemental Information section) include well location, type of site, altitude, use of water, well depth, type of finish, interval open to the aquifer, water level, discharge, water temperature, specific conductance, pH, and geologic unit. Lithologic logs of the wells were obtained where available.

Water-Level Monitoring

A network of 71 wells was established for documentation of short-term and long-term water-level changes. Some of the wells are included in a statewide observation-well network, with water-level records as early as 1943. Other wells were monitored during previous studies (Boettcher, 1982; Donovan, 1985), and additional wells were selected specifically for this study. Water-level records for most previous monitoring wells began in the late 1960's or early 1970's. Most wells were monitored quarterly; six wells were equipped with recorders for continuous water-level monitoring. Records of water levels for monitoring wells are given in table 12 in the Supplemental Information section.

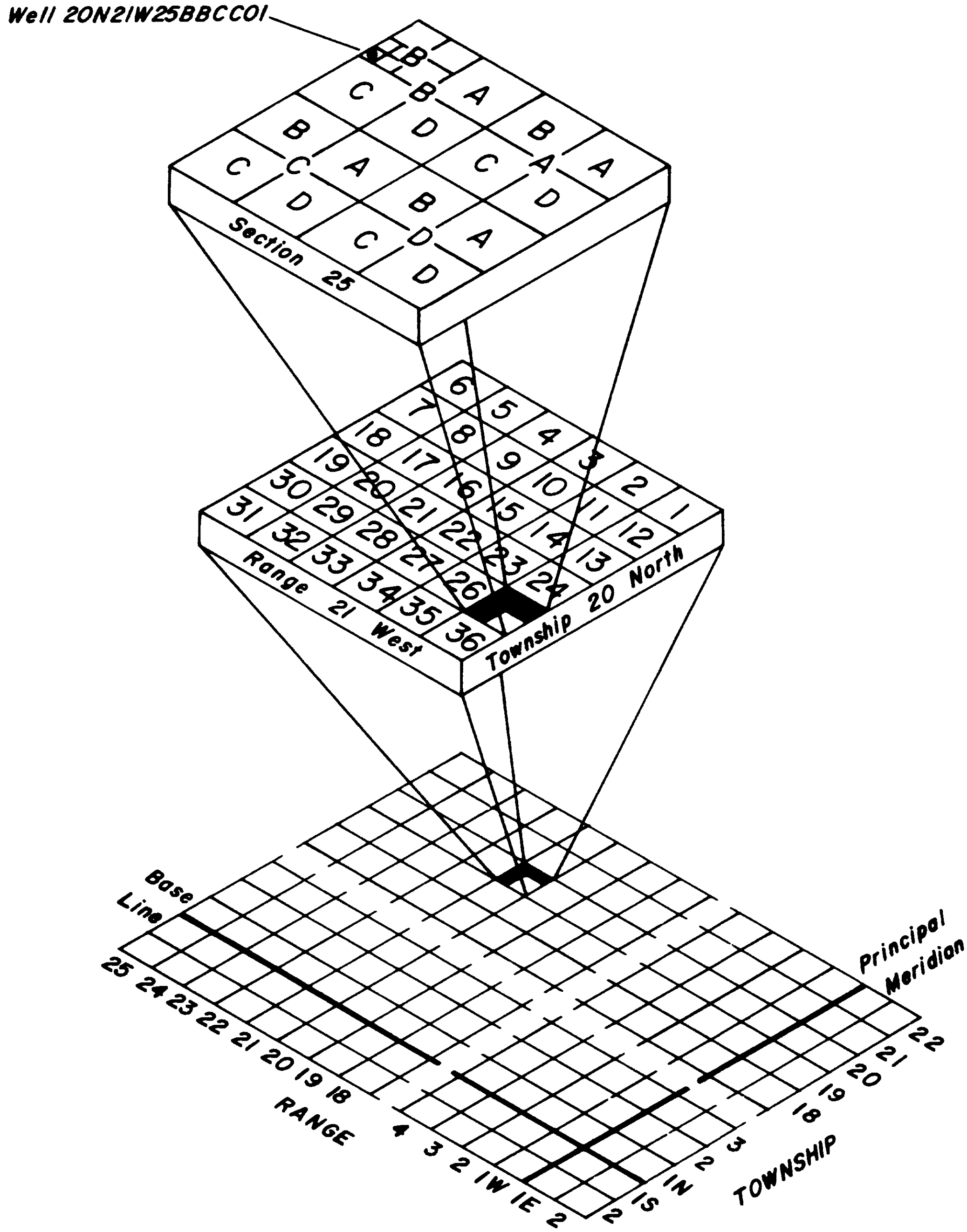


Figure 5.--System of specifying location of wells, test holes, and springs.

Seismic-Refraction Surveys

Seismic-refraction surveys were conducted to describe subsurface geology, particularly contacts of bedrock and alluviual or glacial materials. Most seismic profiles were located across major basin areas of ground-water inflow and outflow to determine ground-water levels and the geometry and cross-sectional area of saturated unconsolidated materials.

A 12-channel signal-enhancement seismograph was used to record onsite data. Geophone spacing usually was 100 ft. Two-component explosives, commonly placed at a depth of about 9 ft, were used as an energy source. Onsite data were analyzed by computer using a program developed by Scott and others (1972).

Test Drilling

Twenty-three test holes were drilled for definition of subsurface geology, calibration of seismic-refraction profiles, monitoring of water levels, and testing of the hydraulic characteristics of aquifers. Nineteen of the test holes were completed as wells (table 11). Depths of test holes ranged from 96 to 840 ft. Completed well depths ranged from 50 to 665 ft. All holes were drilled by an air-rotary rig. Logs of test holes are given in table 13 in the Supplemental Information section.

Aquifer Testing

Sixteen aquifer tests were conducted to determine the hydraulic characteristics of the aquifers. Wells were pumped at an average discharge ranging from 6.7 to 276 gal/min. Data were analyzed using the modified nonequilibrium method (Jacob, 1950; Jacob and Lohman, 1952) and the recovery method (Theis, 1935; Jacob, 1963).

Water-Quality Sampling

Water samples for chemical analysis were collected from selected wells during the well inventory to document ground-water quality in the area. In addition, 22 wells sampled by Boettcher (1982) were re-sampled to document any water-quality changes since that study.

Water samples were analyzed for dissolved major ions--calcium, magnesium, sodium, potassium, bicarbonate, carbonate, sulfate, chloride, fluoride, silica, nitrate, and phosphorus. Most samples also were analyzed for dissolved trace constituents--aluminum, boron, bromide, cadmium, chromium, copper, iron, lead, lithium, manganese, molybdenum, nickel, silver, strontium, titanium, vanadium, zinc, and zirconium. Results of analyses are given in tables 14 and 15 in the Supplemental Information section.

GEOLOGY

Precambrian rocks of the Belt Supergroup underlie nearly the entire Flathead Indian Reservation (pl. 1). Belt rocks are exposed in the surrounding mountains as well as the mountains and larger hills within the study area. Tertiary(?) volcanic igneous rocks are present in the northwestern part of the area. The valleys are partly underlain with poorly consolidated sandstone, siltstone, and coal of probable Tertiary age and with gravel, sand, silt, and clay deposited in association with Pleistocene glaciation (table 1).

Precambrian Rocks

Bedrock in the area consists principally of rocks of the Belt Supergroup, a fairly homogeneous unit composed primarily of carbonate and fine-grained clastic rocks that have been subjected to low-grade regional metamorphism. Grain size commonly is medium silt or finer (Harrison and Campbell, 1963). Typical rock types include argillite, siltite, quartzite, and limestone, and are generally light- to medium-gray, commonly having green and purple tints. Rock structures are blocky to flaggy.

Belt rocks were deposited during late Precambrian time in an extensive elongate basin that extended from the present Gulf of Mexico in southern California and Arizona to the Arctic Ocean in northeastern Alaska and the Yukon and Northwest Territories of Canada. Ross (1963) estimated the original total thickness of Belt rocks to be about 40,000 ft. The limited areal extent of individual formations and the presence of ripple marks, mud cracks, and raindrop impressions indicate deposition in shallow water or perhaps even in an assemblage of lakes, swamps, and exposed mud flats (Ross, 1963).

The Belt rocks have undergone several tectonic episodes, including folding and faulting, as well as low-grade regional metamorphism since deposition. The principal structural events occurred during late Precambrian, in early Tertiary during the development of the Montana overthrust belt, in late Tertiary during the development of the Rocky Mountain trench, and from very late Tertiary to late Quaternary during block faulting. The result is a sequence of rocks that is commonly but not greatly deformed and is extensively faulted and fractured.

Precambrian and Tertiary(?) Igneous Rocks

Igneous rocks occur at the surface in two areas within the reservation. In the southwest part of the area between the town of Hot Springs and the reservation boundary south of Perma, intrusive rocks crop out in a linear pattern (pl. 1). Ross (1963) describes these rocks as dark, fine-to medium-grained dikes and sills. The age of the rocks is uncertain, possibly Precambrian, Cretaceous, or Tertiary. Harrison and others (1981) assign these rocks to the Precambrian; that age is used in this report.

Extrusive rocks are present north and west of Niarada near the northwest corner of the reservation. These rocks consist primarily of white to light-gray andesitic tuff but, in places, have been altered to clay. The volcanic rocks represent the southern end of an assemblage of flows, tuffs, and intrusives of the Hog Heaven mining district, which encompasses about 25 mi^2 north of the study area. Because of their stratigraphic position with surrounding Tertiary and Quaternary sediments, the volcanic rocks are regarded to be either late Tertiary or early Pleistocene in age but generally is regarded to be late Tertiary (Silverman, 1972); Tertiary(?) age is used in this report (table 1).

Table 1.--*Generalized description of geologic units*

Erathem	System	Series	Geologic unit	General description
CENOZOIC	QUATERNARY	Holocene	Alluvium	Moderately sorted to well-sorted silt, sand, and gravel containing cobbles locally.
CENOZOIC	QUATERNARY	Pleistocene	Lake Missoula silt	Tan silt and clay, commonly varved. Contains local lenses of sand, gravel, and cobbles and scattered cobbles and boulders.
CENOZOIC	QUATERNARY	Pleistocene	Glacial deposits	Morainal and outwash deposits. Morainal deposits, both ground and terminal, are composed of an unsorted mixture of materials from clay size to boulders. Outwash deposits consist primarily of well-sorted deposits of fine sand to coarse gravel and cobbles, commonly lenticular.
CENOZOIC	TERTIARY (?)	Pliocene(?)	Volcanic igneous rocks	White to light-gray andesitic tuff. Weathers to dark gray. Altered to various shades of brown along solution zones. Locally altered to white clay, commonly containing pebbles of Ravalli Group.
CENOZOIC	TERTIARY (?)	Miocene(?) or Oligocene(?)	Sedimentary rocks	Tan siltstone, brown to reddish-brown soft fine-grained sandstone, and conglomerate. Sandstone contains plant material and beds of very low rank coal.
PRECAMBRIAN[1]			Intrusive igneous rocks	Diabase, metagabbro, diorite, and related rocks. Primarily dark-gray, fine- to medium-grained dikes and sills; dominantly mafic but contain alkalic feldspar and micropegmatite in some areas. The age of these rocks has not been definitely established and may range from Precambrian to Cretaceous or Tertiary. Assigned to the Precambrian by Harrison and others (1981).
PRECAMBRIAN[1]			BELT SUPERGROUP — Missoula Group	Principally red, green, purple, and gray fine- to coarse-grained clastic rocks, locally metamorphosed with subordinate amounts of carbonates.
PRECAMBRIAN[1]			BELT SUPERGROUP — Helena Dolomite	Primarily carbonate rocks with some argillite. Contains light- to dark-gray finely laminated argillite, commonly calcareous or sandy; greenish-gray and brown fine-grained quartzite and sandstone; light-gray dolomitic limestone that weathers brown; and light-gray to buff thinly laminated sericitic and slightly calcareous shale.
PRECAMBRIAN[1]			BELT SUPERGROUP — RAVALLI GROUP — Grinnell Formation	Reddish-purple, grayish-purple, and grayish-blue-green micaceous and felspathic quartzite and quartzitic argillite, locally coarse grained; ripple marks, mud cracks, and intraformational conglomerate common.
PRECAMBRIAN[1]			BELT SUPERGROUP — RAVALLI GROUP — Appekunny Formation	Gray to black thick-bedded siliceous argillite with varying amounts of carbonate rock, quartzite, and slate; ripple marks, mud cracks, and intraformational conglomerate common; weathers in large joint blocks.
PRECAMBRIAN[1]			BELT SUPERGROUP — PRE-RAVALLI ROCKS — Prichard Formation	Dark- to medium-gray laminated argillite and siliceous argillite, locally sandy, interbedded with gray fine-grained quartzite and brown sandstone; locally metamorphosed to quartz-sericite phyllite and micaceous schist and gneiss.

[1] Descriptions of Precambrian rocks modified from Ross (1963).

Tertiary(?) and Quaternary Rocks and Deposits

The larger valleys and basins are partly underlain with semi-consolidated t well-cemented siltstone and fine-grained sandstone which contain plant matter low-rank coal, and local conglomerate. The siltstones commonly are light tan and range from soft to very hard. The sandstones generally are dark brown to dark reddish brown and are poorly consolidated. Coal beds as much as 10 ft thick were located in a test hole in the southern Little Bitterroot River valley. These coals probably would be considered as sub-lignite, at best. Fresh cuttings appear to be black but, when dry, appear dark brown; plant structures are evident. These valley-fill deposits likely are of Tertiary age and are considered by Alden (1953 to be Oligocene and Miocene lakebed deposits.

Surficial deposits in the valleys consist of unconsolidated deposits of boulders, cobbles, gravel, sand, silt, and clay, primarily of glacial or glaciolacustrine origin. Deposits include ground, terminal, and lateral moraines; glacial outwash; and lakebed deposits of Pleistocene age as well as more recent alluvium along most streams.

Glacial moraines consist of an unsorted mixture of materials ranging in size from clay to boulders. Moraines locally contain stringers of sand or sand and gravel deposited by meltwater from receding ice. Moraines in the study area (pl. 1) have resulted from both continental and alpine glaciation.

Glacial outwash consists of moderately to well-sorted stratified fluvial deposits of sand and gravel. Deposits typically are composed of pebbles and cobbles in a sandy matrix. Because of the high-energy deposition by glacial meltwaters the beds commonly consist of interfingered layers of sand and gravel.

Lakebed deposits consist of whitish-tan to light-tan silt and clay deposited in glacial Lake Missoula as well as local ice-dammed lakes. The lakebed sediments commonly are varved, but appear massive at many locations. Locally, mud cracks and other evidence of subaerial exposure are evident. Scattered small lenses of fluvially deposited sand to pebble-size gravel, sometimes crossbedded, are present.

Curry and others (1977) discuss the probability that the lacustrine silts were deposited during a multiple series of lake fillings and drainings, citing the occurrence of cyclic units of basal unvarved crossbedded silts with a recognizable weathered zone at the base overlain by a sequence of varved silts. Waitt (1983, 1985) correlates the occurrence of cyclic units west of Missoula with similar occurrences in Idaho and Washington and presents evidence that Lake Missoula drained 40 or more times within 2,000 to 2,500 years.

Scattered pebbles, cobbles, and boulders are imbedded in many of the deposits. Most investigators have surmised that these erratics were dropped from melting icebergs.

Alluvium of Holocene age, located in most stream and river valleys, is composed of moderately sorted to well-sorted silt, sand, and gravel derived from Precambrian rocks as well as reworked glacial deposits. Because alluvium is stream deposited, it typically consists of interlayered lenses of silt, sand, and gravel resulting from the migration of the stream channel.

HYDROLOGY

Valley-Fill Aquifers

The valleys and basins within the Flathead Reservation comprise two principal geologic regions: (1) areas overridden and principally affected by several advances of the Flathead lobe of the Cordilleran ice sheet or mountain glaciers and (2) areas only indirectly affected by continental glaciation as a result of inundation by glacial Lake Missoula. The character of the valley-fill deposits is dependent upon the respective geologic history. Because of the differing modes of deposition and the physical, and consequent hydrologic, separation of the basins by topographic highs composed of Belt Supergroup containing limited local flow systems, the hydrology of each basin is discussed separately.

Lithologic Distribution

Mission Valley

The Mission Valley lies south of Flathead Lake, just west of the Mission Range, and is bounded on the west by the Salish Mountains. The area discussed here includes Irvine Flats and the Sunnyslope basin, northwest of Polson, which are separated from the Mission Valley only by the Flathead River.

The unconsolidated valley-fill deposits in the Mission Valley reflect a complicated history of several glacial advances followed by inundation of the area by glacial Lake Missoula. Alden (1953) presents evidence that at one stage the glacier extended as far south as Dixon and the hills south of Saint Ignatius. However, the glacier apparently did not enter Irvine Flats, because no evidence of glaciation has been identified in that area.

Prominent features resulting from the glaciation include the Mission and Polson moraines. The Mission moraine, interpreted by Alden (1953) as a series of imperfectly developed recessional moraines, occupies a crescent-shaped area in the southern part of Mission Valley (pl. 1). This moraine extends from the foot of the Mission Mountains on the east to the Flathead River and the hills on the west, and is generally bounded on the north by Crow and Spring Creeks and on the south by Mission and Post Creeks. The surface of the moraine is characterized by a swell-and-swale topography containing numerous undrained depressions. The extreme southern part of the moraine is covered by remnants of lacustrine silt deposited by glacial Lake Missoula. Examination of well logs indicates that wells drilled into the Mission moraine typically penetrate a sequence of clay containing gravel, cobbles, and boulders (glacial till) and commonly terminate in gravel or sand and gravel. Surface exposures indicate that these sands and gravels represent intercalated layers within the till. At some locations no sand or gravel horizons are present and wells near the margins of the valley are drilled into bedrock to obtain water.

The Polson moraine, located in the northern part of the Mission Valley near the southern end of Flathead Lake (pl. 1), forms the prominent hill just south of Polson. The surface of the Polson moraine, in contrast to the Mission moraine, is fairly smooth and is not marked by knobs and kettle holes. Alden (1953) indicates that the moraine may have developed below the surface of glacial Lake Missoula based on the following: the character of the surface, the presence of lake shore lines on the south slope of the moraine, and the relative altitudes of shore lines located on the surrounding hills. Sand and gravel pits dug into the Polson moraine expose fine sand and interbedded gravel. The presence of a large percentage of sorted sand and gravel is indicative of reworking of glacial till or lacustrine sands and deposition in shallow standing water. Wells drilled into the Polson moraine commonly penetrate a larger percentage of sorted sand and gravel than wells drilled in the Mission moraine. For example, well 22N20W11CADB01 is 577 ft deep and penetrates 129 ft, or 22 percent, of sand or gravel. Most of this sand is fine to very fine, however, making the completion of a productive sand-free well very difficult.

The rest of the Mission Valley, not including Irvine Flats, is mantled by ground moraine deposited by various advances of the Flathead glacier. Alden (1953) believes that the ground moraine also underlies part, if not all, of the previously discussed terminal and recessional moraines. Most wells drilled into these deposits penetrate tan, brown, or gray clay, commonly containing imbedded gravel and cobbles, and terminate in sand and gravel. Examination of the altitude of the top of sand and gravel reported in drill holes and the distribution of wells where sand and gravel is reported to be present indicate that the deposits generally are not contiguous over large areas. Furthermore, most wells penetrate only a small percentage of the total thickness of glacial material, and the sand and gravel reported on well logs commonly represents the first water-yielding unit. Additional sand or gravel stringers may or may not exist at greater depth.

Moraines along the western front of the Mission Mountains (pl. 1) include both lateral and terminal moraines deposited by alpine glaciers. Very few wells have been drilled into these moraines. Available well logs provide evidence that the composition is clay with gravel and boulders. Alden (1953) describes the lithology of these moraines as a stony clay till containing boulders as much as 20 ft in diameter.

Glacial till locally is overlain by erosional remnants of silt deposited in glacial Lake Missoula. Principal occurrence of lake silts is north of the Polson moraine, in the northern part of the valley; north of the National Bison Range, in the southern part of the valley; along the western part of the valley in the general area of the Flathead River; and northwest of Ronan in the central and northwestern parts of the valley. Alluvium composed of sand, gravel, silt, and clay is present beneath the flood plains of most creeks.

Irvine Flats, although contiguous hydrologically with the major part of the Mission Valley, contains a much different lithologic distribution. Because glacial ice never entered the valley, the sediments consist of fluvial sand and gravel, overlain by silts from glacial Lake Missoula.

Examination of well logs indicates that the Mission Valley, including Irvine Flats, may be underlain by fine-grained sediments of probable Tertiary age. Four test wells (21N22W36BDCC01, 22N21W30CBBA01, 22N22W26DDDD01, 23N22W26BDCC01) drilled during this study (table 13) penetrated dark-green, light-gray, or light-tan claystone or siltstone that is distinctly different in appearance from Quaternary deposits in the study area. Materials that, by description, appear to be of Tertiary age are reported on the log of one existing well; blue and pink clay is reported at 370 ft and cream-colored hard clay is reported at 440 ft below land surface in well 22N21W28DDDD01. These occurrences coupled with the report of probable Tertiary sediments in an outcrop near the mouth of Mission Creek (Alden,

1953) lend credence to the idea that most of the Mission Valley may be underlain by Tertiary(?) sediments.

The base of valley-fill sediments in the Mission Valley is defined by the contact with the underlying Belt Supergroup. Gravity information (Boettcher, 1982; LaPoint, 1971) combined with seismic-refraction and well-log data provide evidence of an extremely irregular bedrock surface, with slopes averaging about 1,000 to 1,300 ft/mi in some locations. Because of these steep slopes, depths to bedrock change greatly in short distances. For example, gravity data (Boettcher, 1982) indicate a depth to bedrock of at least 3,500 ft (pl. 1) near the NW1/4 sec. 30, T. 22 N., R. 21 W., in the southeastern part of Irvine Flats, where the width of the valley is only about 5.5 mi. Gravity information also indicates a north-trending trough, with the axis extending through Flathead Lake and Skidoo Bay to about 4 mi east of Polson and 1 to 2 mi east of Pablo, Ronan, and Saint Ignatius. The depth to bedrock below lake surface is about 1,000 ft in the north-central part of Skidoo Bay, based on an analysis of gravity data by LaPoint (1971). Depths of 3,000 ft about 4 mi east-southeast of Polson and about 2,000 ft 4 mi north-northeast of Saint Ignatius were reported by Boettcher (1982).

Little Bitterroot River Valley-Big Draw Area

The Little Bitterroot River occupies a south- to southeast-trending valley in the northwestern part of the reservation west of, and separated from the northern part of the Mission Valley by, the southern end of the Salish Mountains. Big Draw constitutes a narrow west-trending valley extending from the Big Arm of Flathead Lake at Elmo on the east to its confluence with Sullivan Creek and the Little Bitterroot River valley near Niarada on the west. The Little Bitterroot-Big Draw system is described by Meinzer (1917) as the pre-glacial course of the Flathead River. No evidence of glacial advance into these drainages has been found except near the head of Big Draw where the Big Arm lobe of the Flathead glacier deposited a terminal moraine about 2 mi west of Elmo.

The Little Bitterroot River valley is underlain by lacustrine silt and clay deposited by glacial Lake Missoula. The thickness of lacustrine materials reported on logs of inventoried wells ranges from 0 to 357 ft and commonly is 150 to 300 ft. Stringers of very fine, fluid, gray sand, commonly termed "quick sand" by local drillers, are common throughout this sequence.

Underlying the lacustrine deposits is a sequence of fluvial sand and gravel that constitutes the principal aquifer in the Little Bitterroot River valley. Because most wells in the valley have been drilled only a few feet into these deposits and do not penetrate the entire section, the thickness is not well defined. Drillers' logs of fully penetrating wells indicate that the thickness ranges from about 15 to 60 ft and generally thins from north to south. Test wells drilled during this study penetrated variable thickness in short distances. For example, well 20N22W28ABCB02 penetrates 16 ft of sand and gravel whereas well 20N22W21CBDA01, about 3,000 ft away, contains 52 ft of sand and gravel.

Deposits of probable Tertiary age underlie the sand and gravel in most of the Little Bitterroot valley. These deposits commonly consist of loosely cemented, very fine grained, gray sandstone; gray, brown, blue, or green clay; or tan or brown siltstone. Low-grade coal and other organic matter is present at some locations. Well 20N22W28ABCB02 penetrated numerous small stringers of coal between 360 and 840 ft with more prominent coal beds, each about 10 ft thick, at about 360, 540, and 585 ft below land surface. Siltstone containing stringers of coal also was found in well 22N23W15DCDC01 and test hole 22N23W15CDDD01 in Garceau Gulch.

The northern part of the Little Bitterroot River valley, generally north and west of Niarada, contains volcanoclastic sediments that possibly are contemporaneous with the Tertiary(?) volcanic rocks of the Hog Heaven Range. Interbedded conglomerate, volcanic ash, and lacustrine silt are exposed in an outcrop near Niarada. Well 24N24W27ABDB01, west of Niarada, penetrated silt containing gravel-size angular chips of argillite, probably conglomerate with a silt matrix, and some volcanic ash. The distinctive smell of hydrogen sulfide at about 110 ft below land surface indicates the probable presence of organic material, although none was noted in the drill cuttings.

Bedrock beneath the valley-fill sediments consists of argillites and quartzites of the Belt Supergroup in most of the Little Bitterroot River valley. Parts of the extreme northern end of the valley are underlain by Tertiary(?) volcanic rocks. Depth to bedrock, determined using gravity information from Boettcher (1982) and LaPoint (1971), seismic-refraction data, and well logs, is less than 250 ft in most of the valley. Based on gravity information, the maximum depth is about 1,000 ft near the northwest corner of sec. 2, T. 21 N., R. 23 W. (pl. 1).

Although the surface of Big Draw is strewn with cobbles and boulders, the log of well 24N22W30BCCC01 indicates that the subsurface consists of a complex sequence of interlayered sand, gravel, and silt with some clay. The valley-fill material in Big Draw was deposited by sediment-choked glacial meltwaters, and at times catastrophic glacial lake drainings (Smith, 1965), that carved Chief Cliff and formed an ice-marginal channel at the north end of the Elmo moraine. The thickness of unconsolidated material is not well defined. Only two wells in the area are known to have been drilled to bedrock. Well 24N22W20CAC01, located only 400 ft from the valley wall, is reported to have penetrated 191 ft of unconsolidated material above bedrock (Smith, 1965). Well 24N23W16BCB01, located in the Sullivan Flats area near the west end of Big Draw, penetrates Tertiary(?) volcanic bedrock at 273 ft. Test well 24N22W30BCCC01 was drilled to a depth of 480 ft and did not reach bedrock. Seismic-refraction data collected during the study indicate that bedrock is about 600 ft below land surface at this location.

Camas Prairie Basin

Camas Prairie basin comprises a small, nearly closed basin in the southwestern part of the reservation about half-way between the towns of Hot Springs and Perma. Evidence of glacial advance into the basin has not been found (Alden, 1953), but the basin was occupied by the waters of glacial Lake Missoula.

The surface material ranges from predominantly large cobbles and boulders in the north to lacustrine silt in the south. The northern end of the basin is marked by delta-like benches and numerous ridges radiating outward from two mountain passes and oriented perpendicular to the general slope of the land surface. These ridges have been interpreted as giant ripple marks caused by the spillage of tremendous volumes of water through mountain passes at the north and northeast margins of the basin (Pardee, 1942) or as beach ridges formed by the lowering waters of glacial Lake Missoula (Alden, 1953).

Well logs and augered test holes provide evidence that most of Camas Prairie basin is underlain by sand and gravel of Quaternary age. Gravel in the northern and northeastern parts of the basin is extremely coarse, consisting principally of cobbles with little or no sand or finer material. Grain size rapidly decreases southward. Test well 20N24W23CBAA01 penetrated gravel with a maximum diameter of three-fourths in. and medium to coarse sand with interbedded layers of silt and clay. Wells in the extreme southern end of the basin commonly do not penetrate any sand or gravel.

The thickness of Quaternary deposits is not well defined. Most wells in the basin are shallow, about 10 ft deep, and do not penetrate the entire Quaternary section. Those wells that do penetrate the entire section commonly are completed in bedrock near the edge of the valley-fill deposits, where the Quaternary deposits contain no water-yielding material. Test well 20N24W23CBAA01 near the center of the basin penetrates Quaternary sand, gravel, silt, and clay for an interval of 119 ft, the maximum thickness described.

Red, brown, and reddish-brown clay and sand reported on some well logs may indicate the presence of Tertiary(?) sediments such as have been found in other areas of the reservation. Test well 20N24W23CBAA01 penetrated 381 ft of slightly consolidated dark-tan to reddish-brown silt and fine-grained silty sand to a depth of 500 ft without reaching any underlying formation. No coal or other organic material, which has been found in probable Tertiary age sediments in other areas, was noted. The greater degree of consolidation, however, provides evidence that these sediments may be considerably older than the overlying unconsolidated material.

Only a few wells have been drilled to bedrock, all near the southwestern margin of the basin. Logs of these wells indicate an irregular bedrock surface with steep slopes. Depth to bedrock in wells 19N24W10BBAB01 and 20N24W29CDCD01, both only about 0.5 mi from the bedrock outcrop at the edge of the basin, is 333 and 320 ft, respectively, whereas bedrock in well 19N24W04AADB01, about a mile from the outcrop, is 208 ft below land surface. Test well 20N24W23CBAA01 was drilled to a depth of 500 ft and did not reach bedrock. Seismic-refraction data indicate that the bedrock surface is about 700 ft below land surface in the NE1/4NW1/4 sec. 23, T. 20 N., R. 24 W., about 0.5 mi north of the test well.

Jocko and Lower Flathead River Valleys

The Jocko River valley extends from near the divide of the southern part of the Mission Range in the southeastern part of the reservation to its confluence with the Flathead River near Dixon. The lower Flathead River occupies a narrow valley extending from near Dixon to about 6 mi west of Perma, where the river exits the reservation.

Alden (1953) cites the presence of glacial till in the vicinity of Saint Marys Lake and the lower part of Valley Creek as evidence of glaciation in the Jocko drainage. Clay-bound gravel reported on well logs in the Finley Creek drainage provides evidence that this valley is filled with glacial till. There are no indications of advance of the Flathead glacier southward across the hills east of Ravalli (Alden, 1953). Therefore, the tills in the Jocko drainage apparently were deposited by alpine glaciers. Small exposures of glacial till near the Flathead River and the lower end of the Jocko River near Dixon led Alden (1953) to the conclusion that a lobe of the Flathead glacier may have extended through the gap west of the National Bison Range.

Logs of wells indicate that--with the exception of the tills in the Finley Creek valley, the lower Valley Creek drainage, and near Saint Marys Lake--the Jocko and lower Flathead River valleys are filled principally with medium to coarse sand and gravel containing minor clay lenses. The valley fill in the Jocko River valley is especially coarse from about 4 mi east to about 7 mi northwest of Arlee, with coarse gravel and cobbles commonly reported on drillers' logs.

Parts of the Jocko River valley may be underlain by deposits of Tertiary(?) age. Red gravel, sandstone, and clay are reported on several well logs in the vicinity of Arlee. Cemented gravel containing dark-brown and yellow silt found in test well 18N21W21BCBB01 may represent deposits of Tertiary age. Alden (1953) has assigned a probable Tertiary age to several exposures of rust-colored or red clay, partly cemented gravel, and friable gray sandstone containing thin seams and pockets of lignite. Evidence of Tertiary(?) deposits in the Flathead River valley downstream from Plains, which is about 6 mi west of the study area, has not been detected.

Remnants of lacustrine silt are scattered in most of the valley. The most prominent occurrences are from the downstream part of lower Valley Creek to Dixon. Only small remnants of Lake Missoula silt remain in the lower Flathead River valley downstream from Dixon.

Most wells in the Jocko and lower Flathead River valleys are not drilled to bedrock. Logs of inventoried wells indicate a maximum thickness of valley-fill materials of about 500 ft in an area 4 to 6 mi southeast of Arlee (pl. 1). Well 15N19W05BCCC01 penetrated bedrock at 410 ft below land surface, and well 16N19W20CAAD01 was drilled to a depth of 482 ft but did not reach bedrock. Based on analysis of well logs, thickness decreases to about 100 ft north of Arlee. Bedrock was detected at 159 ft in well 18N21W21BCBB01, near Perma. No inventoried wells in the lower Flathead River valley west of Perma were drilled to bedrock but well logs denote that maximum depths to bedrock in this area are in excess of 100 ft. Well 19N23W32BCBA01 was drilled to 124 ft and did not reach bedrock.

Aquifer Properties

Specific capacity, expressed in units of gallons per minute per foot of water-level drawdown, provides an index of the ability of the aquifer to transmit water. Specific capacity, however, can be affected by the method of well construction, which will affect the ability of the well to transmit water. Most wells within the study area are finished with only a minimal number of slots in the casing (less than 10 percent of the surface area) or with only the end of the casing open, which limits the area of the well open to the aquifer. If such wells are pumped to near capacity, the specific-capacity value obtained will be an indication of the capacity of the well rather than the capacity of the aquifer. Because most wells are domestic wells with pumping systems designed to produce only quantities necessary for household use, the discharges reported from most wells are considerably less than the capacity of the wells. Furthermore, most wells are drilled only to the depth required to obtain the quantity and quality of water necessary for the intended use and do not penetrate the entire thickness of the aquifer, nor are the wells necessarily completed in a manner to produce water from all aquifer units penetrated. The specific capacity, therefore, commonly is an indication of the value for only the aquifer unit in which the well is completed and not the value for all the aquifers at the well location.

A more precise method of determining the hydraulic properties of an aquifer is by use of a controlled aquifer test. The aquifer test has the advantage of providing data on the rate of water-level fluctuation in, or in the vicinity of, a pumped or recently pumped well in relation to time rather than a single value of water-level change, thereby allowing a more detailed analysis of aquifer characteristics.

Mission Valley

Reported and measured discharges of wells in the Mission Valley range from 0.5 to 1,500 gal/min (table 11). Large-capacity wells, with discharges of more than 200 gal/min, have been completed in four general areas:

(1) Irvine Flats;
(2) the Sunnyslope area northwest of Polson in the southwestern corner of T. 23 N., R. 20 W., and the southeastern part of T. 23 N., R. 21 W.;
(3) an area, 3 to 5 mi wide, extending from east of Polson, through Pablo and Ronan, to near Lower Crow Reservoir; and
(4) an area in the southern part of the valley generally bordered by Dry Creek southeast of Saint Ignatius, Charlo, Moiese, and the northeastern edge of the National Bison Range.

In contrast, an area of about 50 mi^2 west of Ronan between the Moiese Hills and the Valley View Hills is essentially devoid of producible ground-water supplies. Many attempts have been made to locate domestic supplies in this area, but most have been unsuccessful. The area is now served by a community system utilizing water produced from a well about 2 mi west of Ronan.

Wells capable of large discharge are present throughout the eastern and southern parts of the Mission Valley, but their occurrence is scattered. Because the valley-fill deposits consist of a complex system of morainal deposits and outwash channels, the distribution of grain size and the degree of sorting are diverse.

The extreme heterogeneity of the valley-fill deposits in the Mission Valley is demonstrated by the wide range in specific-capacity values (table 2). To obtain a more complete knowledge of aquifer properties, seven wells were drilled and tested in the Mission Valley (table 3). Three of these wells are completed in Quaternary alluvium and four are completed in Quaternary glacial deposits. The results of seven aquifer tests reported by Boettcher (1982) are also included in table 3. Transmissivity values determined from aquifer tests using wells completed in Quaternary alluvium range from 87 to 45,600 ft^2/d, demonstrating the large range of water-transmitting capabilities of the alluvial aquifers in the Mission Valley. Large diversity in the hydrologic characteristics of glacial deposits is evidenced by transmissivity values ranging from 42 to 43,600 ft^2/d.

Little Bitterroot River Valley-Big Draw Area

The principal aquifer in the Little Bitterroot River valley consists of a widespread and continuous sequence of fluvial sand and gravel. Reported yield from wells completed in this aquifer ranges from 2.5 to 1,600 gal/min (table 11). Measured discharge ranges from 2.7 to 268 gal/min. Measured specific capacity ranges from 0.05 (gal/min)/ft in well 21N24W03DBAB01 to 38 (gal/min)/ft in well

Table 2.--*Specific capacity of wells in Mission Valley*

[Discharge: R, reported]

Local No.	Thickness of saturated sand and gravel in well (feet)	Percent saturated sand and gravel in well	Discharge (gallons per minute)	Specific capacity (gallons per minute per foot)	Specific capacity per foot sand and gravel (gallons per minute per foot per foot)	Pumping period (hours)
18N19W10BCCC01	1	0.3	5.0 R	[a]1.7	1.7	4
18N19W19CBAC01	2	3.6	11	1.8	.92	.3
18N19W19CBCB01	1	1.2	6.3	1.8	1.8	.3
18N19W29DACC01	31	21	8.8	5.3	.17	.3
18N19W30CCCA01	5	7.7	8.9	.20	.04	.3
18N20W01CCAC01	10	13	5.0	.39	.04	.5
18N20W02AAAD01	8	11	7.5	.47	.06	.3
18N20W03BAAB01	2	4.3	25 R	[a]8.3	4.2	2
18N20W04AABB01	2	3.7	9.2	2.0	.98	.3
18N20W13DCCD01	6	8.0	11	1.2	.20	.5
18N20W15DCAD01	12	22	4.4	.98	.08	.5
19N19W06CCCB01	58	25	8.6	4.8	.08	.5
19N19W09DBBD01	97	15	25 R	[a].17	.002	3
19N19W21CBCD01	57	31	6.7	.73	.01	.5
19N20W15DAAA01	4	1.2	6.3	4.6	1.2	.5
19N20W19BABD01	3	.7	10	1.1	.36	.3
19N20W22AAAB01	1	.4	8.3	1.9	1.9	.3
19N20W24CDDA01	6	15	8.9	11	1.98	.3
19N21W06CCBC01	80	25	4.3	1.6	.02	.3
19N21W06DBCC01	20	13	5.1	3.9	.20	.3
19N21W14BAAA01	3	.8	9.6	.17	.06	.3
19N21W18BBDA01	96	37	8.0 R	[a].73	.01	.3
19N21W23DDDD01	3	1.1	6.2	4.8	1.6	.3
19N21W25DDDD01	4	2.4	7.3	2.3	.58	.3
19N21W30ADCD01	7	6.0	5.0	1.8	.30	.3
20N19W06CDBC01	58	59	50 R	[a]10	.17	3
20N19W20ADDD01	6	13	20 R	[a]6.7	1.1	1.5
20N20W15ADDD01	10	2.4	10	.79	.08	.3
21N19W05AABA01	8	12	11	4.9	.61	.3
21N19W07DCDD01	32	16	10	2.0	.06	.3

Table 2.--*Specific capacity of wells in Mission Valley*--Continued

Local No.	Thickness of saturated sand and gravel in well (feet)	Percent saturated sand and gravel in well	Discharge (gallons per minute)	Specific capacity (gallons per minute per foot)	Specific capacity per foot sand and gravel (gallons per minute per foot per foot)	Pumping period (hours)
21N19W16BCDB01	90	22	7.5	.58	.01	.3
21N19W20CABB01	30	18	8.0	1.7	.06	.3
21N19W28DBBB01	59	42	4.4	.29	.005	.5
21N20W09AAAB01	12	3.3	12	1.8	.15	.3
21N20W20AADA01	6	1.9	24	.61	.10	.3
21N20W22BABA01	78	18	2.9	.32	.004	.3
21N20W27BBCC01	57	16	10	25	.44	.3
21N21W05BAAA01	25	5.4	13	.64	.03	.3
22N19W04CCCC01	30	25	6.0	([b])	([b])	.3
22N19W20ADAA01	15	9.0	10	9.5	.63	.3
22N19W20BBDD01	172	33	4.5	.31	.002	.3
22N19W32BCAD01	197	62	10	1.5	.01	.3
22N19W32BCDD01	155	52	10	2.5	.02	.3
22N20W11CADB01	129	22	5.0 R	[a].10	.001	10
22N20W13ADDD01	50	17	5.2	17	.34	.3
22N20W25BABD01	14	4.7	6.7	2.3	.17	.3
22N20W26AAAA01	33	29	2.0	.13	.004	.3
22N20W35ADCC01	12	2.6	6.1	305	25.4	.5
22N20W36BBAB01	16	22	6.0	1.1	.07	.3
22N21W25DDCB01	33	24	10	33	1.0	.2
22N21W32ABAB01	197	38	11	.56	.003	.3
23N19W18BDAC01	217	95	70 R	[a]3.2	.02	.3
23N19W29ADAD01	220	86	6.0	1.5	.01	.3
23N21W25ADDD01	26	14	10	.76	.03	.3
23N21W25DAAA01	21	18	9.0	.29	.01	.3
23N21W34AAAA01	3	.9	20 R	[a].21	.07	1
24N21W04CDDC01	136	45	8.0	.42	.003	.3

[a]Specific capacity calculated from data reported on driller's log.
[b]No measurable drawdown.

Table 3.--*Summary of aquifer tests in Mission Valley*

Local No.	Depth of well below land surface (feet)	Open interval below land surface (feet)	Discharge (gallons per minute)	Estimated transmissivity (feet squared per day): Drawdown	Estimated transmissivity (feet squared per day): Recovery	Specific capacity (gallons per minute per foot)	Duration of test, pumping plus recovery (minutes)	Aquifer
18N19W28CCDB01	147	142-147	161	14,900	43,600	16	220	Glacial outwash
18N21W04BCDA01	124	103-124	230	340	270	3.6	420	Alluvium
18N21W05ADCB01	320	175-187, 190-202, 205-217	65	[1]42,000	--	140	120	Glacial outwash
19N21W31ADC01[2]	165	open end	397	--	10,000	--	1,400	Glacial drift
19N21W31DAB01[2]	189	169-189	250	--	13,000	--	1,380	Glacial drift
20N20W02AAC01[2]	550	unknown	80	--	2,100	3.6	70	Glacial drift
21N20W24CAA01[2]	300	280-300	761	--	22,000	16	1,620	Glacial drift
21N22W36BDCC01	103	37-44, 81-84, 96-100	(3)	340	340	--	480	Alluvium
21N22W36BDCC02	99	80-99	25	250	87	1.2	480	Alluvium
22N20W02CBD01[2]	525	251-261 287-292 490-525	380	--	3,400	14	188	Glacial drift
22N22W24DAAA01	198	150-163	43	--	200	5.0	36	Glacial outwash
22N22W26DDDD01	50	20-35	75	38,000	45,600	81	240	Alluvium
23N20W29BAB01[2]	156	open end	4.7	[1]42	--	.14	100	Glacial drift
23N21W23CDC01[2]	301	unknown	26	--	2,300	25	150	Glacial drift
23N22W26BDCC01	80	40-65	234	20,600	36,700	46	480	Glacial outwash

[1]Estimated from specific capacity.
[2]Test conducted by Boettcher (1982).
[3]Observation well.

23N24W15CCBB01 (table 4). Maximum specific capacity (calculated from reported data) was 80 (gal/min)/ft. Specific capacity per foot of sand and gravel aquifer ranges from 0.02 to 3.3 (gal/min)/ft. Transmissivity determined from aquifer tests using wells completed in the sand and gravel aquifer ranges from 490 ft^2/d in well 24N22W30BCCC01 to 20,000 ft^2/d in well 22N23W15DCDC01 (table 5).

Table 4.--*Specific capacity of wells in the Little Bitterroot River valley-Big Draw area*

[Discharge: R, reported]

Local No.	Thickness of saturated sand and gravel in well (feet)	Percent saturated sand and gravel in well	Discharge (gallons per minute)	Specific capacity (gallons per minute per foot)	Specific capacity per foot sand and gravel (gallons per minute per foot per foot)	Pumping period (hours)
21N22W30BDAA01	--	--	5.6	12	--	0.2
21N23W13CCBC01	49	18	40 R	[a]80	1.6	1
21N24W03DBAB01	2	1.0	4.6	.05	.03	.5
21N24W09ACBA01	1	1.8	5.7	.30	.30	.2
21N24W09CABC01	2	4.4	9.6	4.2	2.1	.3
22N24W01BDCC01	5	1.6	8.8	.07	.01	.3
22N24W03DAAB01	20	6.1	9.2	2.9	.15	.5
23N24W10BCDD01	2	5.3	11	6.6	3.3	.3
23N24W13DBBA01	123	69	50 R	[a]3.3	.03	1
23N24W15CCBB01	16	6.4	1.9	38	2.4	.3
23N24W22DACA01	14	8.0	30 R	[a].25	.02	2
23N24W35DCCC01	3	1.0	5.5	.80	.27	.2
24N24W27BDBB01	16	11	6.1	5.6	.35	.3

[a]Specific capacity calculated from data reported on driller's log.

Two test wells in the Little Bitterroot River valley were completed in Tertiary(?) sediments. Data from these two wells indicate that these deposits are not promising for the production of large quantities of water. Well 20N22W28ABCB02 was test pumped at 11 gal/min with 81.70 ft of drawdown, indicating a specific capacity of 0.13 (gal/min)/ft and a transmissivity of 17 to 18 ft^2/d (table 5). Well 24N24W27ABDB01 was pumped at 8.5 gal/min with 139.88 ft of drawdown, indicating a specific capacity of 0.06 (gal/min)/ft and a transmissivity of 3.2 to 3.8 ft^2/d (table 5).

Little information is available on the aquifers in Big Draw. Test well 24N22W30BCCC01, however, provides some insight into the properties of these aquifers. The materials penetrated by the well consist of numerous layers of sand and

Table 5.--*Summary of aquifer tests in the Little Bitterroot River valley-Big Draw area*

Local No.	Depth of well below land surface (feet)	Open interval below land surface (feet)	Discharge (gallons per minute)	Estimated transmissivity (feet squared per day)		Specific capacity (gallons per minute per foot)	Duration of test, pumping plus recovery (minutes)	Aquifer
				Drawdown	Recovery			
20N22W21CBDA01	331	300-310	136	7,200	11,500	9.8	360	Glacial outwash
20N22W28ABCB01	340	312-325	175	5,400	5,400	20.3	240	Glacial outwash
20N22W28ABCB02	665	602-642	11	17	18	.13	260	Tertiary(?) sediments
21N22W07DCAA01	186	140-170	256	4,500	5,600	23.0	420	Glacial outwash
22N23W15DCDC01	92	60-80	65	7,900	20,000	47.4	200	Glacial outwash
24N22W30BCCC01	460	436-445	6.7	490	540	13.4	70	Glacial outwash
24N24W25DDBB01	328	319-326	183	2,200	2,300	9.6	500	Glacial outwash
24N24W27ABDB01	217	157-177	8.5	3.8	3.2	.06	119	Tertiary(?) sediments

gravel and interbedded silt. Many of the sand and gravel layers are dry. No saturated sand or gravel was found above a depth of 373 ft. Many of the saturated sands and gravels are very silty and therefore produce sediment-laden water to wells. These zones possibly would produce sediment-free water with sufficient well development. This well was test pumped at 6.7 gal/min with a drawdown of 0.50 foot. Specific capacity was 13.4 (gal/min)/ft and transmissivity was 490 to 540 ft^2/d (table 5).

Camas Prairie Basin

Reported well yield in the Camas Prairie basin ranges from 10 to 600 gal/min (table 11). A yield of 2.7 to 276 gal/min has been measured. In general, the largest yield is from wells in the northern part of the basin, corresponding to the occurrence of the coarse gravels. Specific-capacity values (table 6) indicate the same general trend. Specific capacity for well 20N24W01DCCD01, in the northwestern part of the basin, was about 200 (gal/min)/ft, whereas the minimum specific capacity measured, in well 20N24W24CBBC01 in the south-central part of the basin, was 0.56 (gal/min)/ft.

An aquifer test was conducted using test well 20N24W23CBAA02 as the pumped well and test well 20N24W23CBAA01 as the observation well. Calculated transmissivity ranges from 10,200 ft^2/d in the observation well to 11,700 ft^2/d in the pumped well (table 7).

Table 6.--*Specific capacity of wells in the Camas Prairie basin*

[Discharge: R, reported]

Local No.	Thickness of saturated sand and gravel in well (feet)	Percent saturated sand and gravel in well	Discharge (gallons per minute)	Specific capacity (gallons per minute per foot)	Specific capacity per foot sand and gravel (gallons per minute per foot per foot)	Pumping period (hours)
20N24W01DCCD01	5	50	600 R	[a]200	40	20
20N24W11AADC01	8	50	500 R	[a]125	16	14
20N24W15BBBB01	29	6	5.4	.76	.03	.3
20N24W23CBAA01	60	69	74	12	.20	1
20N24W23CBAA02	66	69	80	45	.69	1
20N24W24CBBC01	11	15	5.5	.56	.05	.3

[a]Specific capacity calculated from data reported on driller's log.

Table 7.--*Summary of aquifer tests in the Camas Prairie basin*

Local No.	Depth of well below land surface (feet)	Open interval below land surface (feet)	Discharge (gallons per minute)	Estimated transmissivity (feet squared per day)		Storage coefficient (dimensionless)	Duration of test, pumping plus recovery (minutes)	Aquifer
				Drawdown	Recovery			
20N24W23CBAA02 (pumped well)	98	11-22, 38-62, 68-98	276	--	11,700	--	480	Alluvium
20N24W23CBAA01 (observation well)	99	5-18, 33-42, 63-94	--	10,200	10,200	0.017	480	Alluvium

No wells have been completed in the Tertiary(?) sediments that underlie the Quaternary deposits in Camas Prairie basin. During the drilling of test well 20N24W23CBAA01, which was drilled to a depth of 500 ft and penetrated 381 ft of Tertiary(?) sediments, no significant aquifer units were found.

Jocko and Lower Flathead River Valleys

Reported well discharge in the Jocko and lower Flathead River valleys ranges from 7 to 400 gal/min, with most reported discharge values in the 20 to 60 gal/min range (table 11). Measured discharge ranges from 2 to 33 gal/min, with most discharge values in the 5 to 10 gal/min range. Because nearly all the wells in the Jocko and lower Flathead River valleys are used for domestic purposes, the measured discharge primarily reflects the limitations of the pumping systems, which are designed to produce only the quantity of water for the intended use, and not necessarily the capacity of the aquifer.

Specific-capacity values for wells tested in the Jocko and lower Flathead valleys range from 0.03 to 56 (gal/min)/ft (table 8). Specific-capacity values indicate that yield values of 300 to 500 gal/min may be available from properly constructed wells in many parts of the Jocko River valley. However, recharge may not be adequate to sustain these yields for extended periods. The most productive parts of the aquifer appear to be in an area from about 4 mi southeast of Arlee to the vicinity of Valley Creek.

Ground-Water Movement

Mission Valley

The principal direction of ground-water movement in the Mission Valley is to the west and southwest from near the front of the Mission Range, which serves as a major recharge area, to the Flathead River (pl. 2). Several variations occur locally, primarily near the valley margins. In the northeastern part of the valley near the southern end of Flathead Lake, ground water flows northward toward the lake. In the Sunnyslope basin northwest of Polson and in Irvine Flats direction of flow is southeast. The Dry Creek-Sabine Creek area in the southeastern corner of the Mission Valley is characterized by northwest ground-water flow, which turns west, then flows south through the gap between the Moiese Hills and the hills of the National Bison Range.

The spacing of the contours on plate 2 gives a general indication of the water-transmitting properties of the aquifers. Areas with a small ground-water gradient, shown by widely spaced contours, generally depict transmissive aquifers. In contrast, closely spaced contours indicate a steeper ground-water gradient and less transmissive aquifers. Water-level contours shown on plate 2 signify that the most transmissive aquifers are in the central part of the Mission Valley near Pablo and Ronan.

The water level in wells in the Mission Valley fluctuates seasonally in response to recharge from creeks and irrigation canals. The water level in shallow wells generally rises from May or June through August or September and declines during the rest of the year (fig. 6). Water level in deeper wells commonly indicates some lag time, with the water level rising from August or September through November or December (fig. 7).

Table 8.--*Specific capacity of wells in the Jocko and lower Flathead River valleys*

[Discharge: R, reported]

Local No.	Thickness of saturated sand and gravel in well (feet)	Percent saturated sand and gravel in well	Discharge (gallons per minute)	Specific capacity (gallons per minute per foot)	Specific capacity per foot sand and gravel (gallons per minute per foot per foot)	Pumping period (hours)
15N19W05BBCC01	25	13	7.2	0.40	0.02	0.8
15N19W07BCCC01	10	11	4.1	.26	.03	.6
15N20W13CADA02	15	25	60 R	[a]6.6	.44	9
15N20W13CADA03	6	3.2	30 R	[a]3.0	.50	8
15N20W13DCAA01	10	7.7	11	.19	.02	.6
15N20W24BCCB01	8	19	6.2	56	7.0	.4
16N19W06CCBB01	5	4.7	12 R	[a]1.5	.30	1
16N19W07DBCA01	3	1.6	35 R	[a]1.0	.33	4
16N19W08CADB01	24	34	9.2	4.2	.18	.3
16N19W09CADB01	29	62	8.4	17	.58	.3
16N19W09CCAB01	27	19	6.7	([b])	([b])	.3
16N19W09CDBA01	20	13	9.0	18	.90	.3
16N19W10DBAC01	25	21	7.7	32	1.3	.4
16N19W16ABAB01	34	23	5.2	10	.29	.2
16N19W16BABA01	13	7.5	6.3	([b])	([b])	.3
16N19W16DCCD01	10	4.3	3.4	.03	.003	1.3
16N19W16DDCA01	5	4.1	5.3	.14	.03	.5
16N19W18AABD01	27	23	24 R	[a]1.2	.04	2
16N19W18BBAA01	27	33	6.0	1.3	.05	.5
16N19W18BBBC01	39	49	4.9	.92	.02	.3
16N19W20CAAD01	90	19	9.8	.45	.005	.5
16N19W30BCCD01	22	55	5.5	5.5	.25	.5
16N19W30CDBC01	19	33	11	1.4	.07	.3
16N19W31BBBB01	26	76	6.8	.58	.02	.4
16N19W31DDAB01	45	38	5 R	[a].14	.003	2
16N20W11ADDC01	27	40	4.1	1.5	.06	.4
16N20W11DAAB01	53	71	7.2	1.2	.02	.3
16N20W11DBBD01	14	21	6.0	9.0	.64	.3
16N20W12BBBD01	47	54	12 R	[a].92	.02	2
16N20W12CDAB01	21	30	12 R	[a]6.0	.29	2
16N20W13ACAC01	20	50	8.3	4.3	.21	.3
17N18W29CAAC01	23	46	3.9	5.4	.24	.3
17N20W05BBAA01	44	88	11	8.6	.20	.3
17N20W05DBAD01	26	81	10	([b])	([b])	.3
17N20W20ADAA01	20	36	9.2	1.8	.09	.3
17N20W25CCCA01	31	62	4.6	5.3	.17	.3
17N20W26DCAA01	57	93	8.5	4.7	.08	.5
17N20W35BAAA01	35	73	6.1	2.9	.08	.3
17N20W35BDAD01	31	67	10	23	.75	.3
17N20W35DABD01	35	70	60 R	[a]20	.57	4
17N20W35DBCA01	5	12	10 R	[a]20	4.0	1
17N20W36BBBA01	6	12	13	9.7	1.6	.3
18N20W32CBDA01	39	70	7.2	1.7	.04	.3
18N21W26DDCA01	34	69	5.5	10	.29	.3
18N22W21BADC01	10	17	6.3	7.0	.70	.3
19N23W32BCBA01	34	27	5.0	4.4	.13	.3

[a]Specific capacity calculated from data reported on driller's log.
[b]No measurable drawdown.

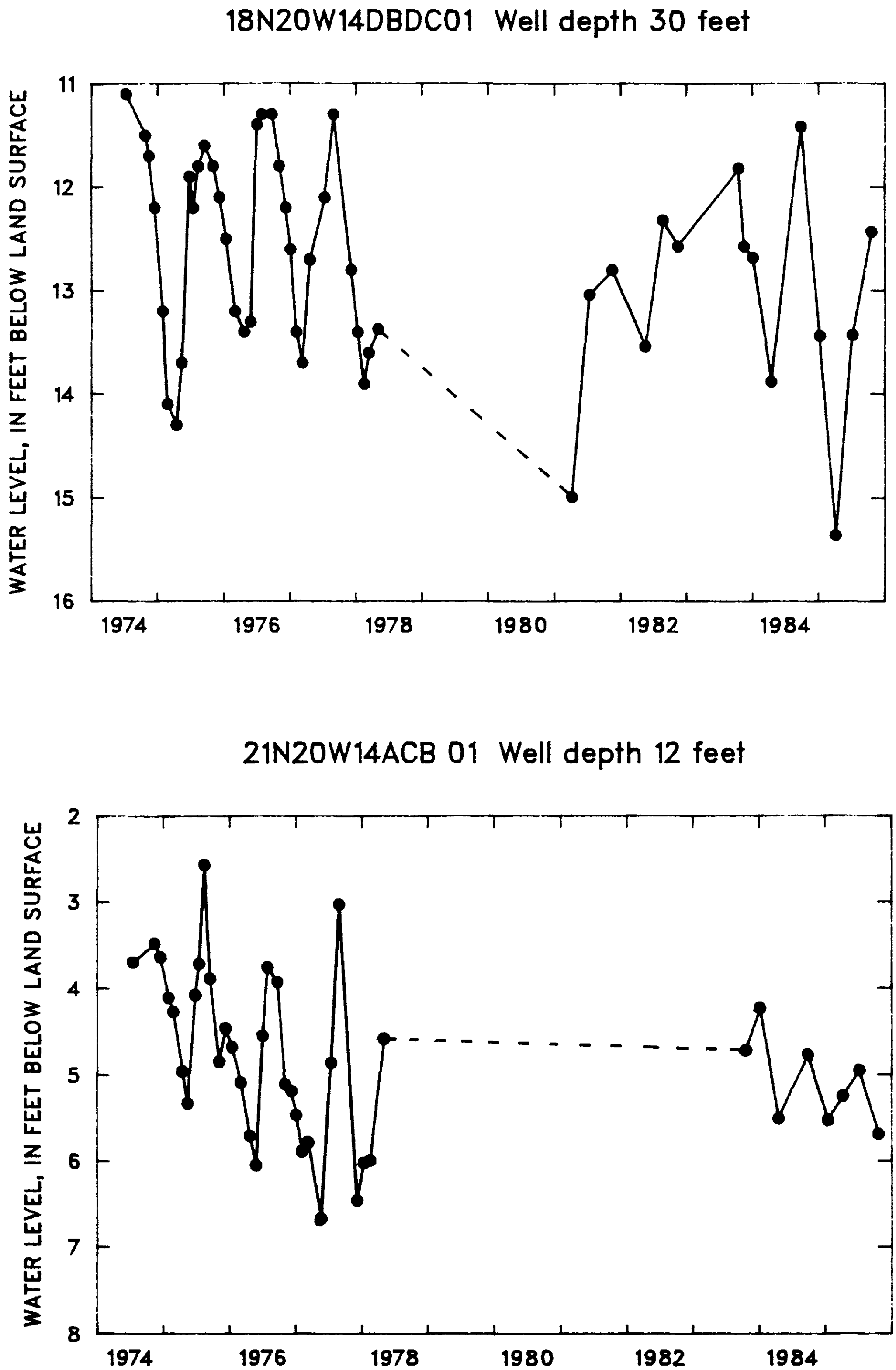
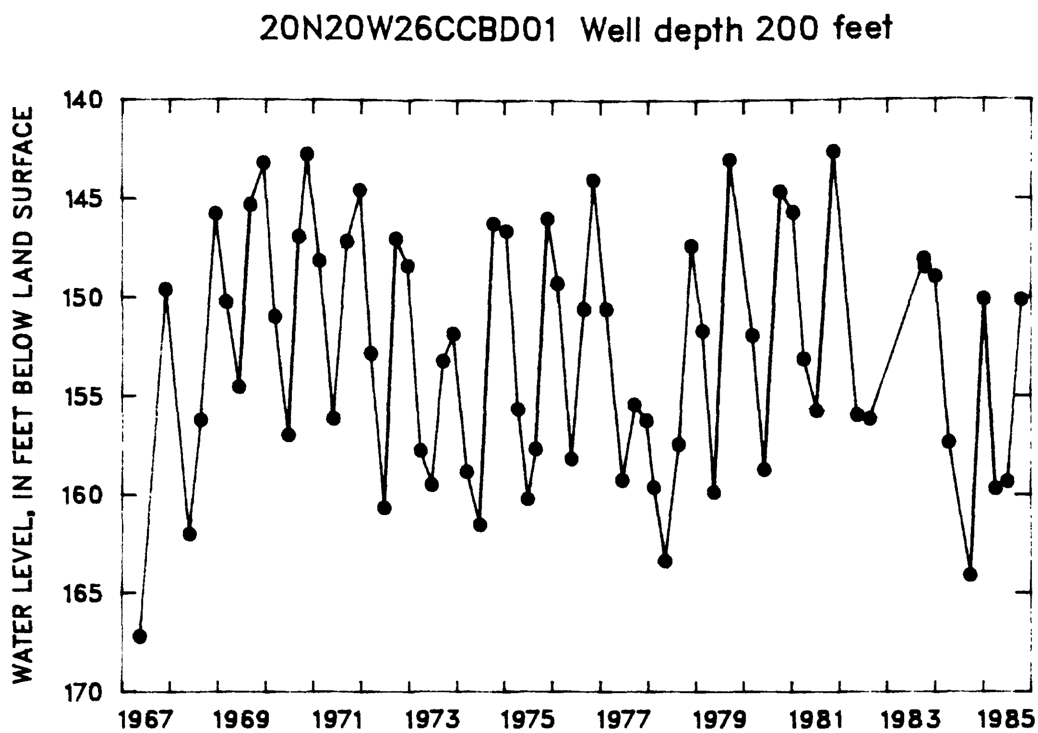


Figure 6.--Water-level fluctuations in shallow wells in the Mission Valley.



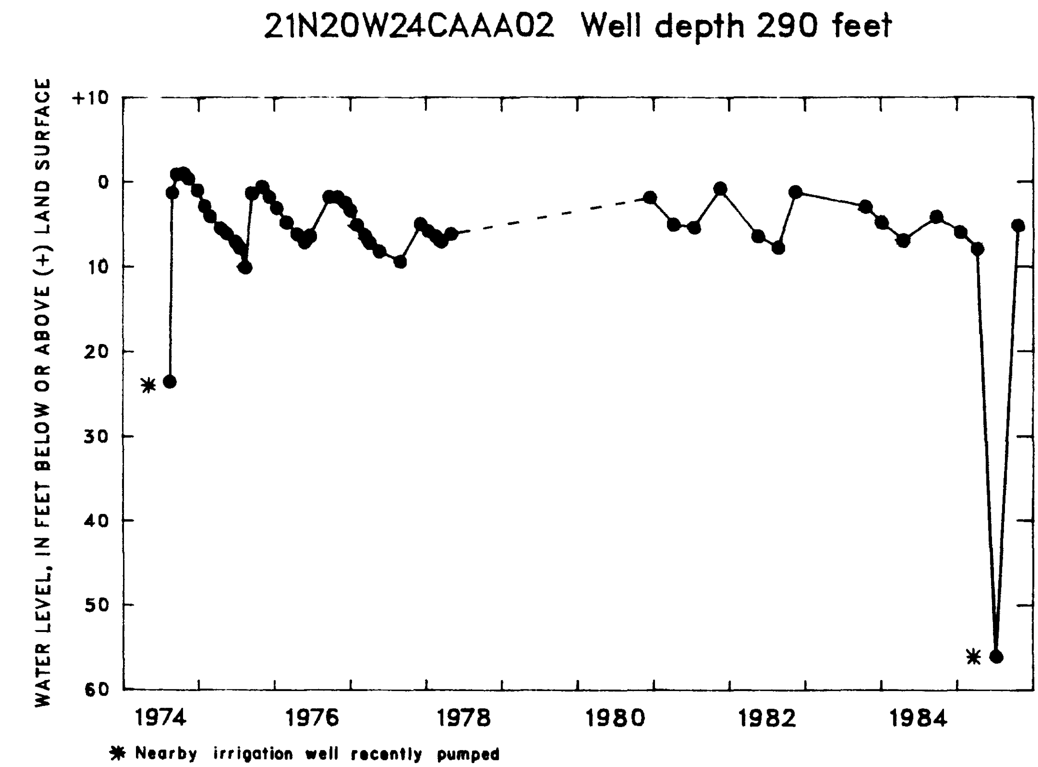


Figure 7.--Water-level fluctuations in deep wells in the Mission Valley.

Little Bitterroot River Valley-Big Draw Area

The primary component of ground-water flow is west, south, and southeast following the valley of the Little Bitterroot River and Big Draw (pl. 2). A secondary component of flow is from the valley margins toward the axis of the valley. In the vicinity of Hot Springs, the primary flow is northeastward.

Water-level data from wells in the Elmo area indicate the probability of a ground-water divide, which coincides with the Elmo moraine in T. 24 N., R. 22 W. Ground-water flow east of this divide is easterly toward Flathead Lake. Because no wells penetrate the entire thickness of the Elmo moraine, it is not known if a ground-water divide is present at the base of the aquifer. However, because the water level in test well 24N22W30BCCC01 is at an altitude of about 2,907 ft, nearly 11 ft above full lake level of 2,896.26 ft, it is not likely that water flows down Big Draw from Flathead Lake.

The ground-water gradient is small in approximately the northern one-half of the Little Bitterroot River valley, indicating the presence of a transmissive aquifer. The numerous irrigation wells in the area provide additional evidence. The gradient steepens near the central part of the valley, in T. 21 N., indicating a less transmissive aquifer. In the southern one-third of the valley the gradient again flattens. Few wells have been drilled in this part of the valley; however, data from test wells 20N22W21CBDA01 and 20N22W28ABCB02 demonstrate the possibility for development of large-capacity wells in the southern Little Bitterroot River valley.

Water level in the Little Bitterroot valley fluctuates principally in response to withdrawals by irrigation wells in the area south of Lonepine. Water-level records from well 23N24W34ADAA01 (fig. 8), which is equipped with a continuous water-level recorder, show that the water level generally begins declining between mid-April and mid-May and begins rising between mid-August and mid-September. The degree of annual water-level fluctuation is affected largely by precipitation patterns. Maximum water-level values occurred in early 1981 following a year when precipitation in the region was about 5 to 8 in. more than normal, and water-level records indicate little water was withdrawn for irrigation. Minimum water-level values occurred during the dry years of 1977 and 1985.

Water-level fluctuations in the southern part of the Little Bitterroot River valley show about a 6-month offset from the irrigated area to the north. Water level in well 20N22W30DADD01 (fig. 9) generally begins to decline in August or September and begins to rise in April or May.

Water-level fluctuations in the Big Draw area, as indicated by water-level records from well 24N23W21BCDA10 (fig. 10), appear to be affected primarily by infiltration of surface runoff. Water level commonly begins to rise in May or June when the volume of streamflow increases, continues to rise throughout the summer, and begins to decline in October or November. Exceptions to the usual pattern (fig. 10) may be the result of lack of sufficient recharge during periods of less than normal precipitation and runoff or timing of measurements such that water-level rises were not detected.

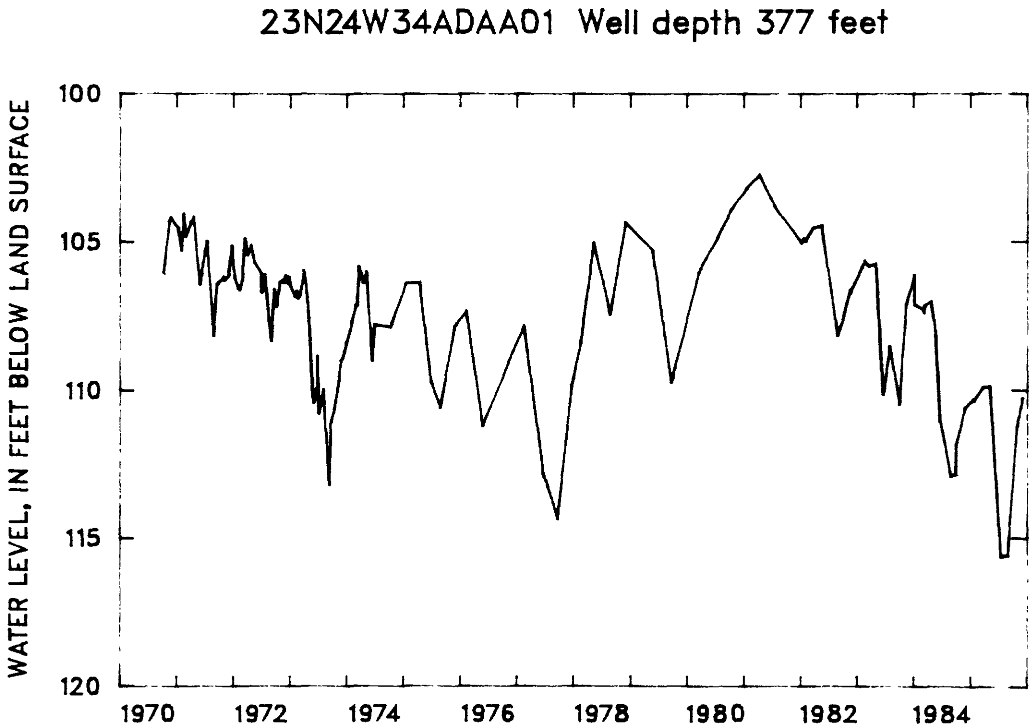


Figure 8.--Water-level fluctuations in a well in the central Little Bitterroot River valley.

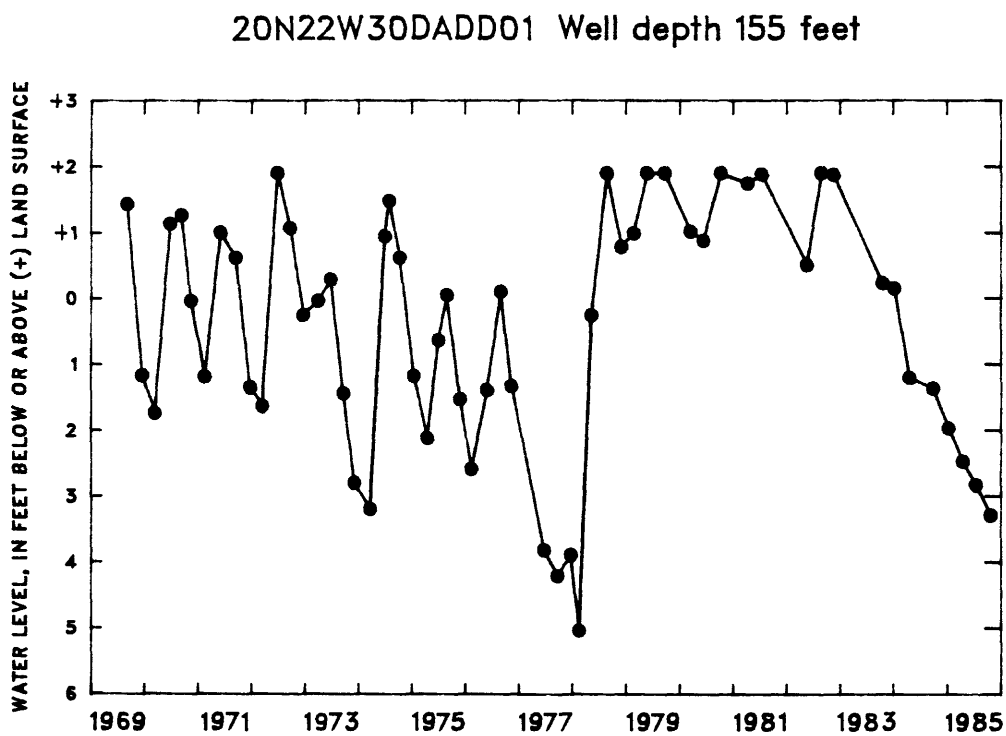


Figure 9.--Water-level fluctuations in a well in the southern Little Bitterroot River valley.

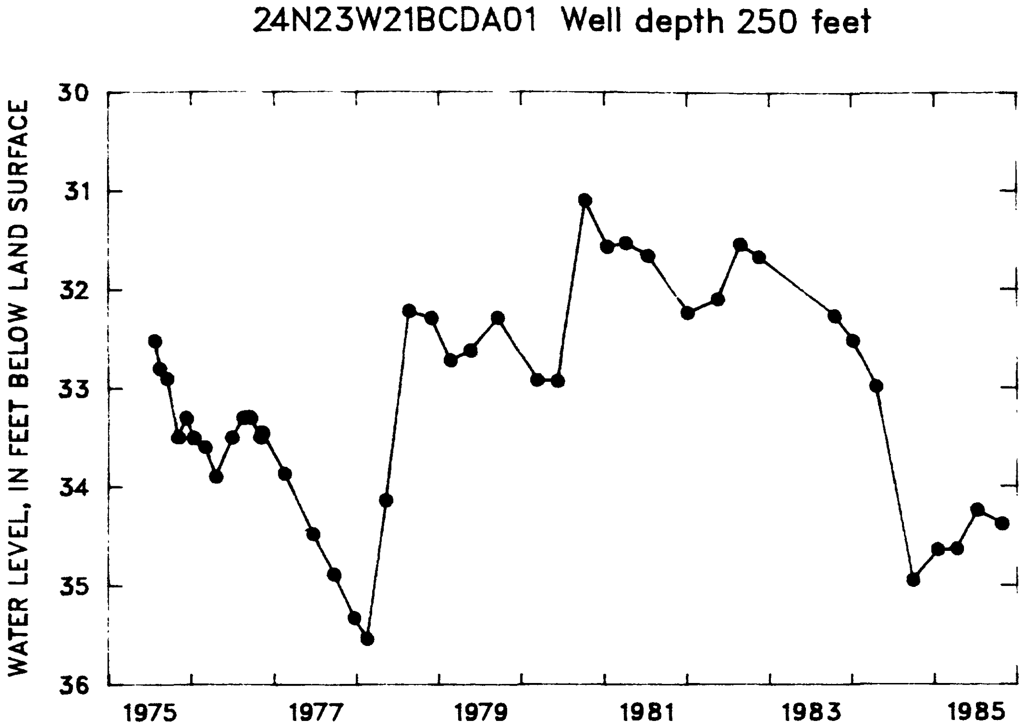


Figure 10.--Water-level fluctuations in a well in Big Draw.

Camas Prairie Basin

Principal movement in Camas Prairie basin is from the north, east, and west margins toward the center of the basin and then southward from the basin to the Flathead River (pl. 2). Ground-water gradient is relatively flat in the northern, eastern, and central parts of the basin, essentially corresponding with the occurrence of gravels.

No observation wells in Camas Prairie basin have long-term records. Water level in wells measured during this study has fluctuated between 2 and 5 ft during the past 2 years. Records from wells 19N24W02DDCD01 and 20N24W03CCCD01 (fig. 11) indicate that the water level generally rises during the winter and spring and declines during the summer.

Jocko and Lower Flathead River Valleys

Ground water in the upstream reaches of the Jocko River valley flows southwestward. At a point southeast of Arlee the ground-water flow is joined by northwest to north ground-water flow from Finley Creek valley (pl. 2). The combined flows continue northwesterly, down the Jocko River valley to Dixon where the flow is joined by flow in the Flathead River valley, which drains the Mission Valley. Ground-water flows from the Jocko River and Mission valleys continue down the lower Flathead River valley and exit the reservation in the SW1/4 sec. 6, T. 18 N., R. 24 W.

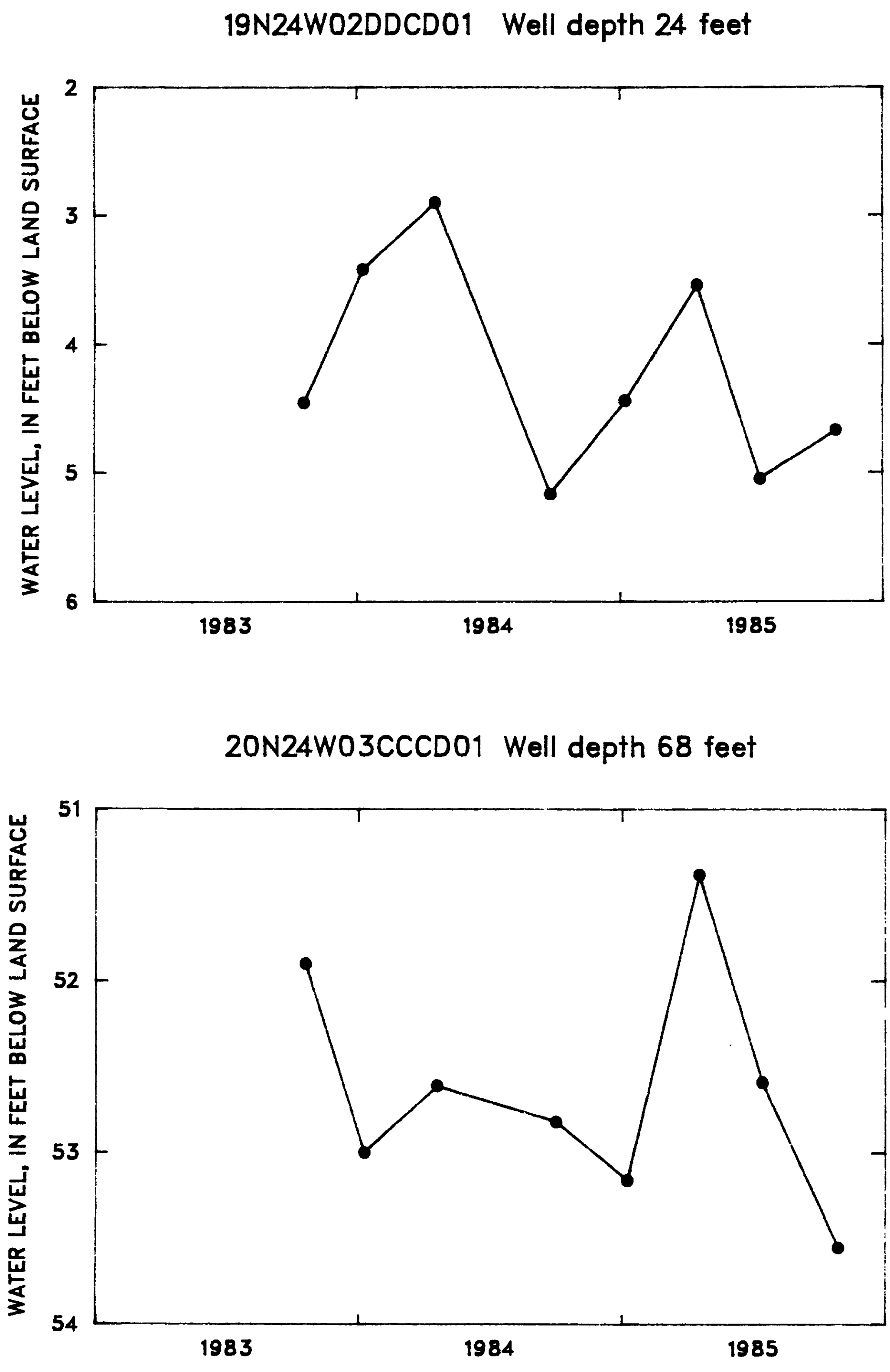


Figure 11.--Water-level fluctuations in wells in Camas Prairie basin.

Records of water levels in wells indicate the effect of seepage from streams and irrigation canals on water-level fluctuations. The water level in well 15N20W13CADA03 (fig. 12), in the upstream reaches of Finley Creek where irrigation canals are not present, generally is highest in April through June in response to runoff from snowmelt and spring and early summer rainfall. Maximum water-level values in wells 16N19W09CCAB02 and 16N19W31DABB01 (fig. 13), in the lower Finley Creek and Jocko River valleys where canals are nearby, occur later in July through September in response to sustained flow in the canals.

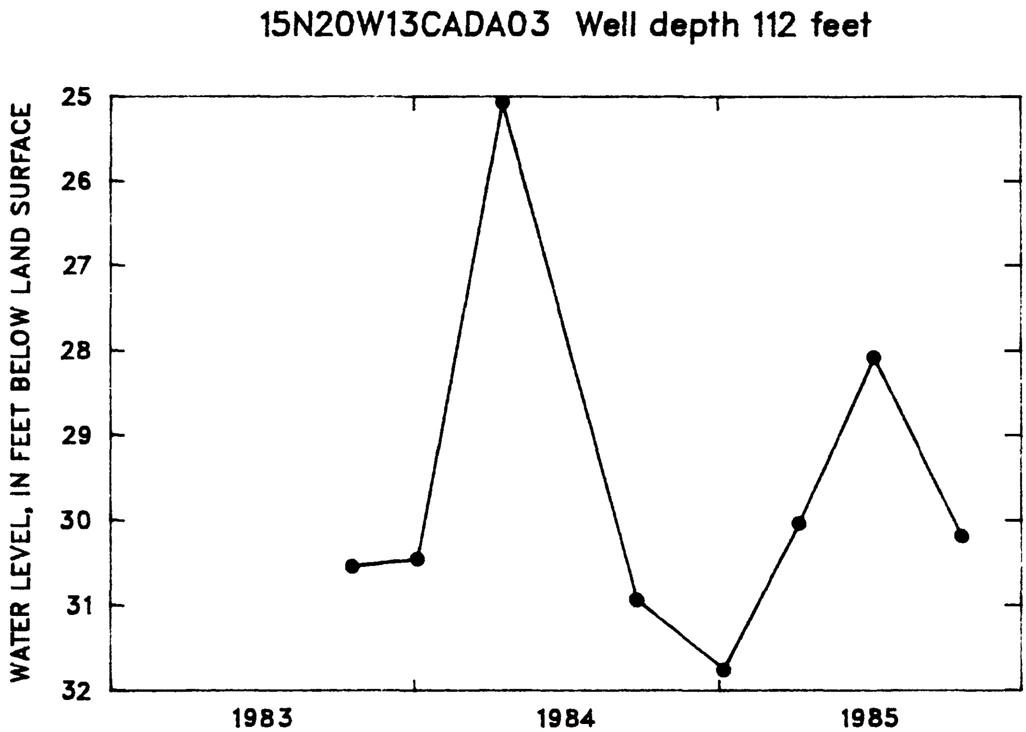
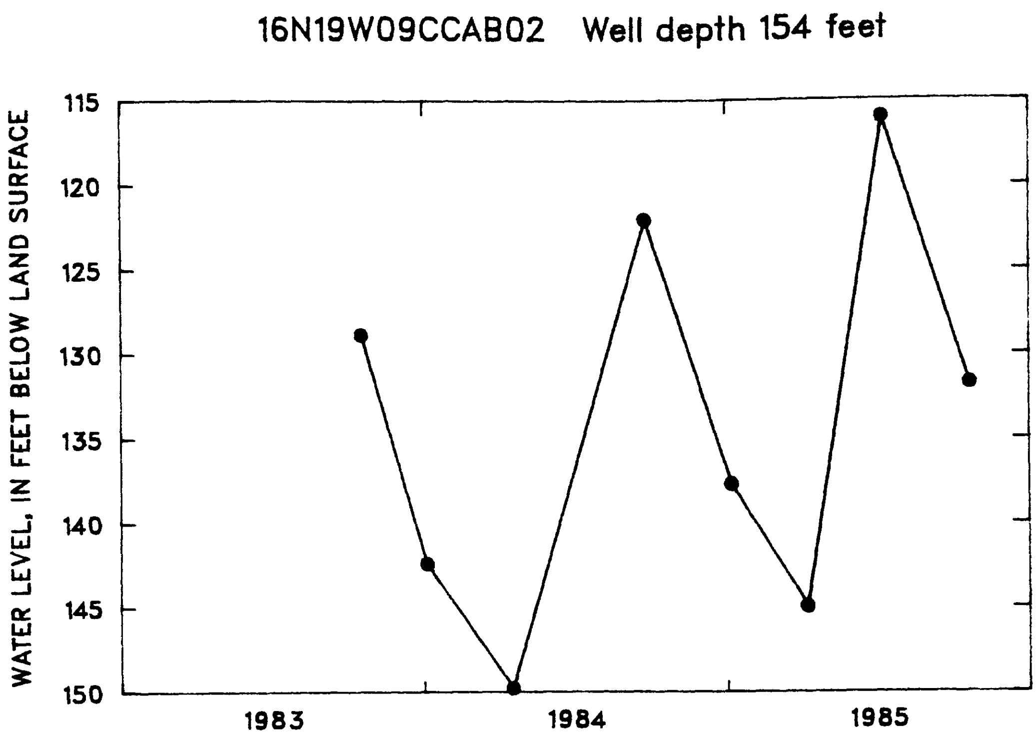


Figure 12.--Water-level fluctuations in a well in the upper Finley Creek valley.

Recharge and Discharge

Mission Valley

Water for recharge to the aquifers in the Mission Valley is derived from rainfall and snowmelt, both in the Mission Mountains and in the valley. Recharge water is transferred to the ground-water system by direct infiltration of snowmelt and rainfall on the land surface, by leakage from streams and irrigation canals, and by irrigation return flows. About 610 acre-ft/yr is contributed to the Mission Valley from the subsurface inflow from the Little Bitterroot River valley (see succeeding section on Little Bitterroot River Valley-Big Draw area). The numerous canals that traverse the Mission Valley provide ample means for infiltration to the ground-water system, especially where canals are underlain by gravel. Long-term water-level records (figs. 6 and 7) do not denote a general upward or downward trend, indicating that in spite of large withdrawals from the ground-water system, inflow and outflow are approximately equal.



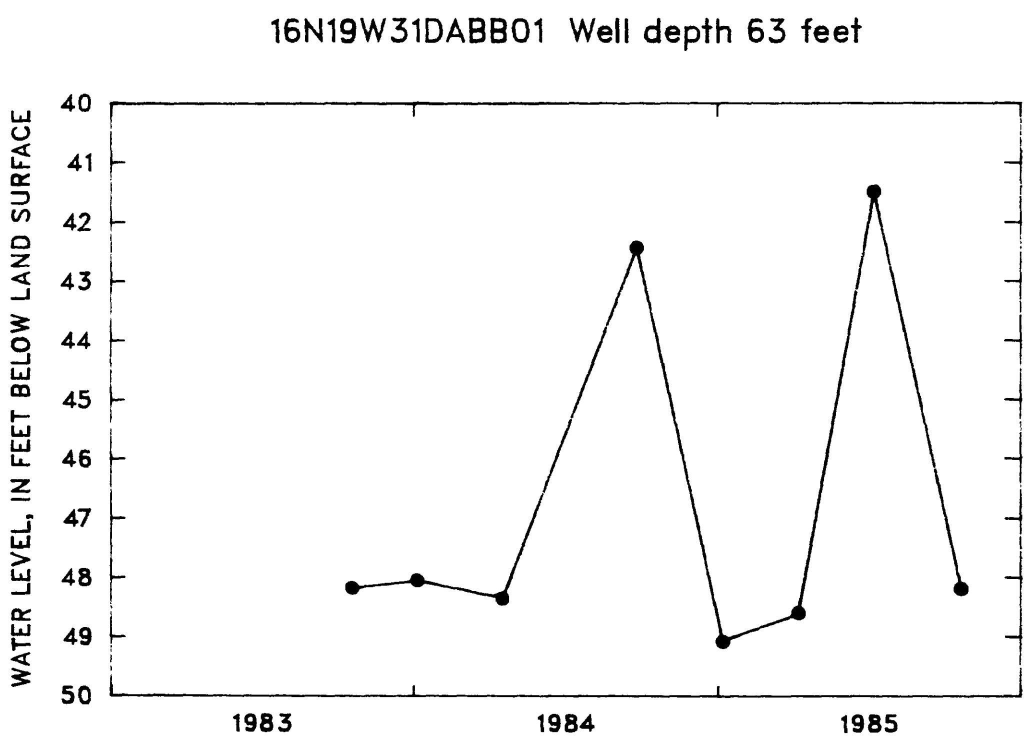


Figure 13.--Water-level fluctuations in wells in the lower Finley Creek and Jocko River valleys.

Because of the many interrelated processes involved, discharge from the ground-water system, like recharge, is difficult to determine. Ground-water discharge in the Mission Valley occurs primarily through evaporation, transpiration by plants, withdrawals from wells, leakage to streams, and subsurface flow from the area.

Water is discharged from the ground-water reservoir by evaporation and transpiration (evapotranspiration) where the water table is near the land surface. The rate of evapotranspiration is dependent on many factors including depth to water, type and density of vegetation, temperature, and solar radiation. The largest rate of evapotranspiration occurs during the summer when plant growth is active. According to Farnsworth and others (1982), the free-water-surface evaporation from a shallow water surface is considered to be a good index of potential evapotranspiration. Maps by Farnsworth and others (1982) show that the annual free-water-surface evaporation in the Mission Valley is about 30 in. Depths to water are less than 10 ft in many parts of the Mission Valley. Because of the shallow depth to the aquifer, free-water-surface evaporation provides an indication of the evapotranspiration from these areas.

Although many wells are present in the Mission Valley, the ground-water system is relatively undeveloped. The quantity of water withdrawn is small compared to the quantity of water discharged by natural means. Of the 316 wells inventoried in the Mission Valley, including Irvine Flats, 229 were used for household supplies, 17 for public water supply for towns and subdivisions, 15 for stock, 11 for irrigation, 3 for commercial or industrial supplies, and 2 for recreational supplies. Thirty-nine wells were unused. Withdrawals from wells principally are for domestic and irrigation uses.

Annual withdrawal for domestic use can be estimated using per-capita consumption and the number of persons served. The National Water Well Association (1977) states that the per-capita consumption may be as much as 150 gal/d when outdoor water use is considered. Census figures for 1980 (U.S. Department of Commerce, 1981) denote the population of the Charlo, Polson, Ronan, and Saint Ignatius divisions of Lake County as 17,058. The estimated withdrawal for domestic uses, based on the above figures, is about 2,850 acre-ft/yr.

Although the number of irrigation wells in the Mission Valley is not large, withdrawals can be substantial because of large yields. Average yield for irrigation wells inventoried in the Mission Valley was 581 gal/min. Discussions with irrigators and data on irrigation requirements for crops grown in the area indicate that pumping periods are equivalent to 90 to 120 days annually (U.S. Department of Agriculture, 1974). Calculations using the above information for the 11 inventoried wells result in a rate of withdrawal of ground water for irrigation of 2,500 to 3,400 acre-ft/yr (average of 2,950 acre-ft/yr). Together, the 2,850 acre-ft/yr withdrawal for domestic uses and the average 2,950 acre-ft/yr withdrawal for irrigation result in a total withdrawal of about 5,800 acre-ft/yr from wells in the Mission Valley.

Ground-water leakage to rivers and streams can be estimated using base-flow discharges of streams, when streamflow is derived from leakage from the ground-water system, not runoff from rainfall or snowmelt. All surface water leaving the Mission Valley is carried by the Flathead River through the gap between the National Bison Range and Communion Butte north of Dixon. The flow in this reach of the Flathead River that is derived from the ground-water system in Mission Valley can be estimated by comparing the streamflow at U.S. Geological Survey streamflow-gaging stations on the Flathead River near Polson located in the SW1/4NE1/4SE1/4 sec. 11, T. 22 N., R. 21 W. (station 12372000), and at Perma located in the SE1/4NE1/4NE1/4 sec. 36, T. 19 N., R. 24 W. (station 12388700). The procedure is to determine the net gain in streamflow between the two stations, and then to deduct flow from tributaries that drain areas other than the Mission Valley. The mean daily discharge of the Flathead River averaged 10,733 ft^3/s near Polson and 11,233 ft^3/s near Perma on February 13 to 15, 1984 (Shields and others, 1985)--a net gain of 500 ft^3/s. Streamflow measurements were made from February 13 to 15, 1984, to determine the leakage of ground water to Flathead River tributaries. Tributaries contributing water from areas outside the Mission Valley include the Little Bitterroot River (20.6 ft^3/s), the Jocko River (145 ft^3/s), and Camas Creek (1.50 ft^3/s). The net gain to the Flathead River between the two stations, including the flow of Crow Creek (76.6 ft^3/s) and Mission Creek (116 ft^3/s), is about 330 ft^3/s or about 240,000 acre-ft/yr.

Nearly all subsurface outflow from the Mission Valley exits through the valley of the Flathead River north of Dixon, between the National Bison Range and Communion Butte. A minimal amount probably flows to the Jocko River along the southeast corner of the National Bison Range northeast of Ravalli.

Subsurface outflow through the Flathead River valley near Dixon can be calculated using the Darcy equation:

$$Q = KIA \qquad (1)$$

where:

Q = flow, in cubic feet per day;
K = hydraulic conductivity, in feet per day;
I = hydraulic gradient, dimensionless; and
A = cross-sectional area, in square feet.

Hydraulic conductivity was determined from aquifer tests using wells 18N21W04BCDA01 and 18N21W05ADCB01. The two locations tested indicate a significant variation of hydraulic conductivity across the valley. The calculated hydraulic conductivity is 11.5 ft/d at well 18N21W04BCDA01, which produces from a 26-ft layer of silty sand and gravel, and 860 ft/d for well 18N21W05ADCB01, which produces from a 49-ft layer of sand and gravel. The average of these two values, 436 ft/d, is within the range of values that can be used to estimate hydraulic conductivity for very coarse sand to gravel (Lohman, 1972). The hydraulic conductivity of the silt and clay contained in the valley was not tested; however, it is minimal in comparison to the hydraulic conductivity of sand and gravel. Lohman (1972) indicates values of 1 ft/d for clay and 3 ft/d for very fine sand.

The hydraulic gradient can be determined from water-level measurements. The average gradient between measured wells in the area is about 15 ft/mi or a unit gradient of about 0.0028.

Cross-sectional area was determined from a section (fig. 14) constructed using data from two test-well logs and seismic-refraction surveys across the valley (pl. 2). The total saturated area computed from figure 14 is about 1,350,000 ft^2. Correlation of test-well logs indicates that about 53 percent or 720,000 ft^2 of the saturated area is composed of sand and gravel.

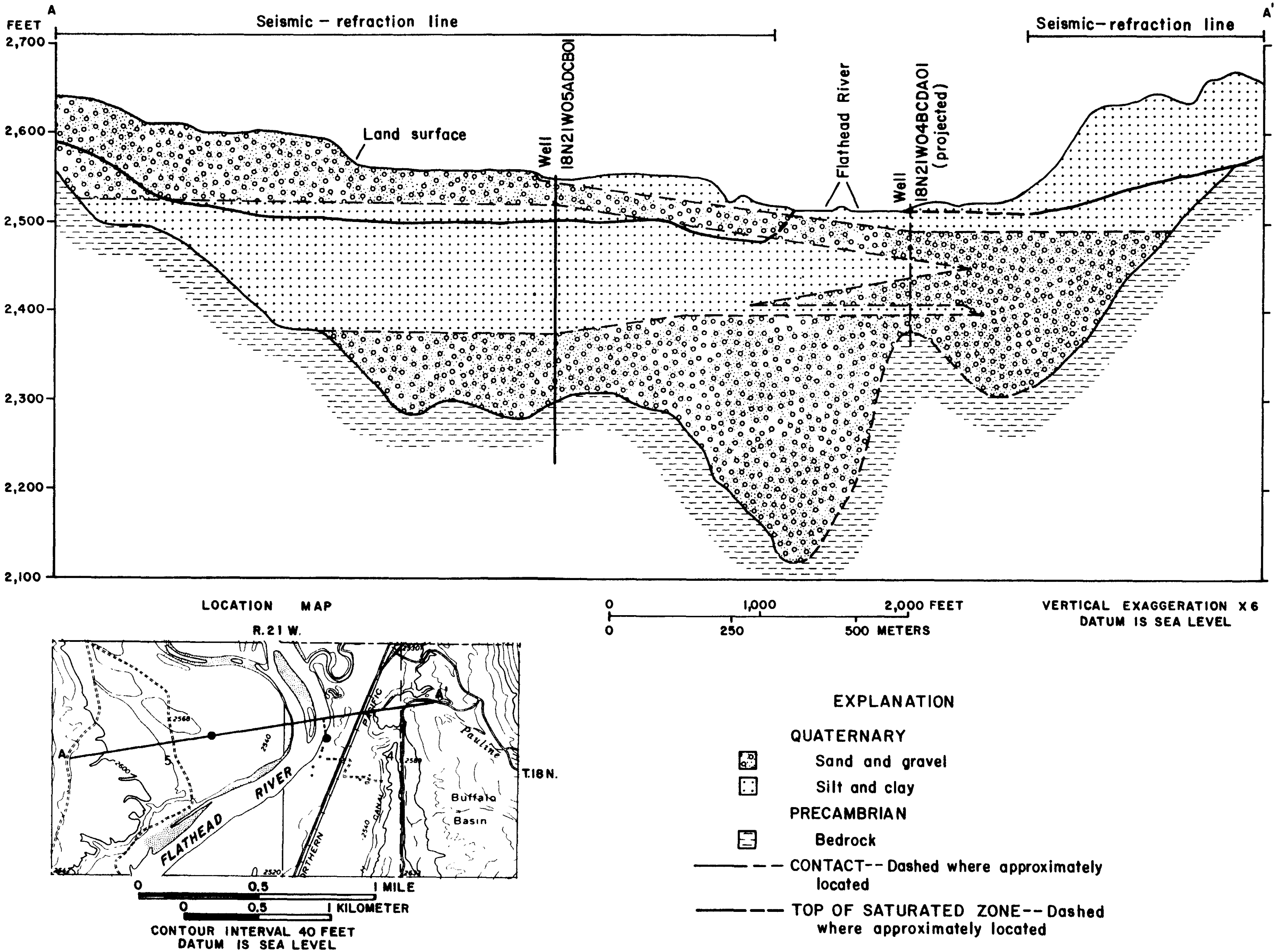


Figure 14.--Hydrogeologic section of the Flathead River valley near Dixon.

Flow through the sand and gravel in this section of the Flathead River valley (subsurface outflow) was calculated using a hydraulic conductivity of 436 ft/d, a gradient of 0.0028, and a cross-sectional area of 720,000 ft^2. The result is about 880,000 ft^3/d or 7,370 acre-ft/yr.

Lohman (1972) presents hydraulic-conductivity values of 1 and 3 ft/d for Quaternary clay and very fine sand. These values imply that the hydraulic conductivity of Quaternary clay and silt is about 2 ft/d. Flow through the silt and clay part of the section is about 3,500 ft^3/d or 30 acre-ft/yr, using a hydraulic conductivity of 2 ft/d, a gradient of 0.0028, and a cross-sectional area of 630,000 ft^2.

Little Bitterroot River Valley-Big Draw Area

Recharge to the valley-fill aquifers in the Big Draw area north and east of Niarada is derived principally from infiltration of rainfall and snowmelt and leakage from Sullivan and Cromwell Creeks. Some recharge may be contributed by subsurface inflow from fractures in the underlying Tertiary volcanic and Belt Supergroup and by irrigation return flow.

Because the Little Bitterroot River valley is directly underlain by an extensive thickness of Lake Missoula silts and clays, recharge by infiltration from land surface to the ground-water system in most of the valley is minor. Significant recharge, however, probably is contributed by infiltration in the northwestern part of the valley, and in the northeastern part of T. 23 N., R. 24 W., where the river traverses coarse gravel deposits. Donovan (1985) presents potentiometric, geologic, and aquifer-test data which indicate recharge occurs in this area. Recharge also is contributed through exposed gravels in the Sullivan Creek drainage.

The presence of warm water in the area between Lonepine and Oliver Gulch, particularly in the Camp Aqua area and in the vicinity of Camas and Hot Springs, indicates recharge of geothermal water from bedrock to the valley-fill aquifer system. Donovan (1985) calculated a depth of circulation of about 2 mi and estimates the volume of contribution in the Camp Aqua area to be about 1,000 gal/min or about 1,600 acre-ft/yr.

Ground-water discharge from the Little Bitterroot River valley-Big Draw system primarily is due to evaporation and transpiration by plants, withdrawals from wells, leakage to streams, and subsurface outflow. Most water is discharged by subsurface outflow.

An index of potential evapotranspiration in areas of shallow ground water is given by the free-water-surface evaporation. Maps by Farnsworth and others (1982) show that the annual free-water-surface evaporation in the Little Bitterroot River-Big Draw area is about 30 in. Shallow water-table aquifers, where the relation between free-water-surface evaporation and evapotranspiration applies, occur in only a small part of the Little Bitterroot River valley and Big Draw, along Cromwell and Sullivan Creeks, and southwest of Niarada in the northwestern part of the valley.

Most wells in the Little Bitterroot River valley and Big Draw are used for domestic, stock, or irrigation supply. Of the 144 wells inventoried in these areas, 52 are for domestic use, 2 are for public supplies, 23 are for stock watering, 21 are for irrigation, 1 is for commercial use, and 37 are unused. The use of water from eight wells is unknown.

Census figures for 1980 (U.S. Department of Commerce, 1981) give the population of the Flathead division (the Little Bitterroot River valley) of Sanders County as 1,887. Considering the areas of the Little Bitterroot River valley and Big Draw that are located in Flathead and Lake Counties, the total population of the area is about 2,000. Using a per-capita consumption of 150 gal/d (see previous section on Mission Valley), the quantity of ground water used for domestic supplies is about 340 acre-ft/yr.

Water use by livestock can be estimated by considering the number of livestock as well as the consumption per head. The Federal Water Pollution Control Administration (1968) lists the per-head consumption for cattle as 7 to 12 gal/d. Daily consumption at this rate would amount to about 8 to 13 acre-ft/yr for each 1,000 head.

Data from ground-water appropriation files and onsite observation indicate that about 50 irrigation wells are in use in the Little Bitterroot River valley. The average discharge of an irrigation well is about 235 gal/min, based on reported and measured discharge of 47 wells. If water-level records from well 23N24W34ADAA01 (fig. 8) are representative, water for irrigation commonly is withdrawn for about 4 months each year. Thus, about 6,300 acre-ft/yr is withdrawn for irrigation.

Donovan (1985) reports that 5,000 gal/min or about 8,000 acre-ft/yr of ground water is appropriated for irrigation use and that 3,000 to 3,500 acres are irrigated in the Little Bitterroot River valley. Withdrawals of 6,300 to 8,000 acre-ft/yr would be equivalent to an annual application rate of 1.8 to 2.7 acre-ft per acre.

Ground-water leakage to streams can be estimated by comparing streamflow measurements of inflow and outflow made on February 13-15, 1984. Surface-water inflow to the valley of 2.30 ft^3/s was measured in the Little Bitterroot River below the Camas "A" Canal (NW1/4SW1/4NE1/4 sec. 21, T. 24 N., R. 24 W.) and 2.55 ft^3/s in Sullivan Creek near Niarada (SW1/4NW1/4SE1/4 sec. 24, T. 24 N., R. 24 W.). Discharge of the Little Bitterroot River at the mouth (NW1/4NW1/4SW1/4 sec. 18, T. 20 N., R. 21 W.) was 20.6 ft^3/s. Substracting inflow from outflow gives a net gain through the valley of 15.7 ft^3/s or about 11,400 acre-ft/yr.

Test-well information and seismic-refraction data were used to develop estimates of subsurface outflow from the southern end of the Little Bitterroot River valley (pl. 2). These data indicate that a large percentage of the valley-fill deposits is silt- and clay-sized material of Tertiary(?) and Quaternary age (fig. 15). Because seismic refraction will not distinguish silt and clay from sand and gravel and because of the position of the test wells relative to the valleys on top of the Tertiary(?) deposits, it is not known if sand and gravel occur only in the lows as shown in figure 15 or is present across the entire section.

Subsurface outflow from the Little Bitterroot River valley was calculated using Darcy's equation (eq. 1). The hydraulic conductivity of the Quaternary sand and gravel determined from aquifer tests using test wells 20N22W21CBDA01 and 20N22W28ABCB01 averages about 250 ft/d. The hydraulic gradient in the area, determined from measured water levels in wells (pl. 2) ranges from 10.5 to 13.7 ft/mi and averages about 12 ft/mi or a unit hydraulic gradient of 0.0023. Using areas of saturated sand and gravel (fig. 15) of about 101,500 ft^2, the subsurface outflow through the sand and gravel is about 58,400 ft^3/d or about 490 acre-ft/yr.

Although silt and clay occupy as much as 98 percent of the saturated area, the subsurface outflow through these materials is minimal owing to the extremely small hydraulic conductivity. The cross-sectional area of Quaternary silt and clay (fig. 15) is about 1,700,000 ft^2. Using an average hydraulic conductivity of 2 ft/d (see discussion in section on Mission Valley) and a hydraulic gradient of 0.0023, the subsurface outflow through the Quaternary silt and clay is about 7,800 ft^3/d or 65 acre-ft/yr. The Tertiary(?) deposits, although about 50 percent silty sandstone, appear to be more compact than the Quaternary deposits. An aquifer test of well 20N22W28ABCB01 indicates a hydraulic conductivity of these deposits of about 1 ft/d. With a cross-sectional area of about 2,800,000 ft^2 (fig. 15), subsurface outflow through the Tertiary(?) deposits is about 6,400 ft^3/d or 54 acre-ft/yr. The total subsurface flow near the mouth of the Little Bitterroot River is about 610 acre-ft/yr.

Camas Prairie Basin

Most recharge to valley-fill aquifers in the Camas Prairie basin is from infiltration of snowmelt and rainfall on the land surface, leakage from streams, subsurface inflow, and irrigation return flow. Most stream channels in the northern and eastern parts of the basin disappear before reaching a major drainage system, indicating the infiltration of runoff from the adjacent hills as well as precipitation on the basin. Only one of the drainages into Camas Prairie is gaged. Records from a U.S. Geological Survey streamflow-gaging station (station 12388650) located in the NE1/4SW1/4SE1/4 sec. 18, T. 20 N., R. 24 W., indicate discharge of 600 to 700 acre-ft/yr in Camas Creek at that location.

The presence of Green Springs, a hot spring in sec. 33, T. 20 N., R. 24 W., and the high temperature (26.0 °C) of water in well 19N24W04AADB01 indicate a subsurface inflow of geothermal water from the underlying Belt Supergroup. The recharge water probably is from a deep source, similar to the geothermal recharge in the Little Bitterroot River valley.

Primary discharge from aquifers in the Camas Prairie basin is by evaporation and transpiration, withdrawals from wells, and leakage to Camas Creek. Because Camas Creek essentially flows through a bedrock canyon downstream from Clear Creek, subsurface outflow from the basin is minor.

An index of potential evapotranspiration in areas of shallow ground water is given by the free-water-surface evaporation. The annual free-water-surface evaporation mapped by Farnsworth and others (1982) is about 30 in. Water-level measurements (table 11) indicate that, in general, water is less than 10 ft below land surface where the surface altitude is less than 2,820 ft. Thus, depth to water is less than 10 ft below land surface in most of the central part of the basin. In many locations depth to water is less than 5 ft.

Water is withdrawn from wells for domestic supplies, stock watering, and irrigation. Forty wells inventoried in the Camas Prairie basin are completed in valley-fill deposits. Of these wells, 21 are used for domestic supplies, 6 are used for irrigation, 3 are used for stock water, and 10 are unused. Nearly all water withdrawn from wells in the Camas Prairie basin is for domestic or irrigation use. Withdrawals for stock use are insignificant.

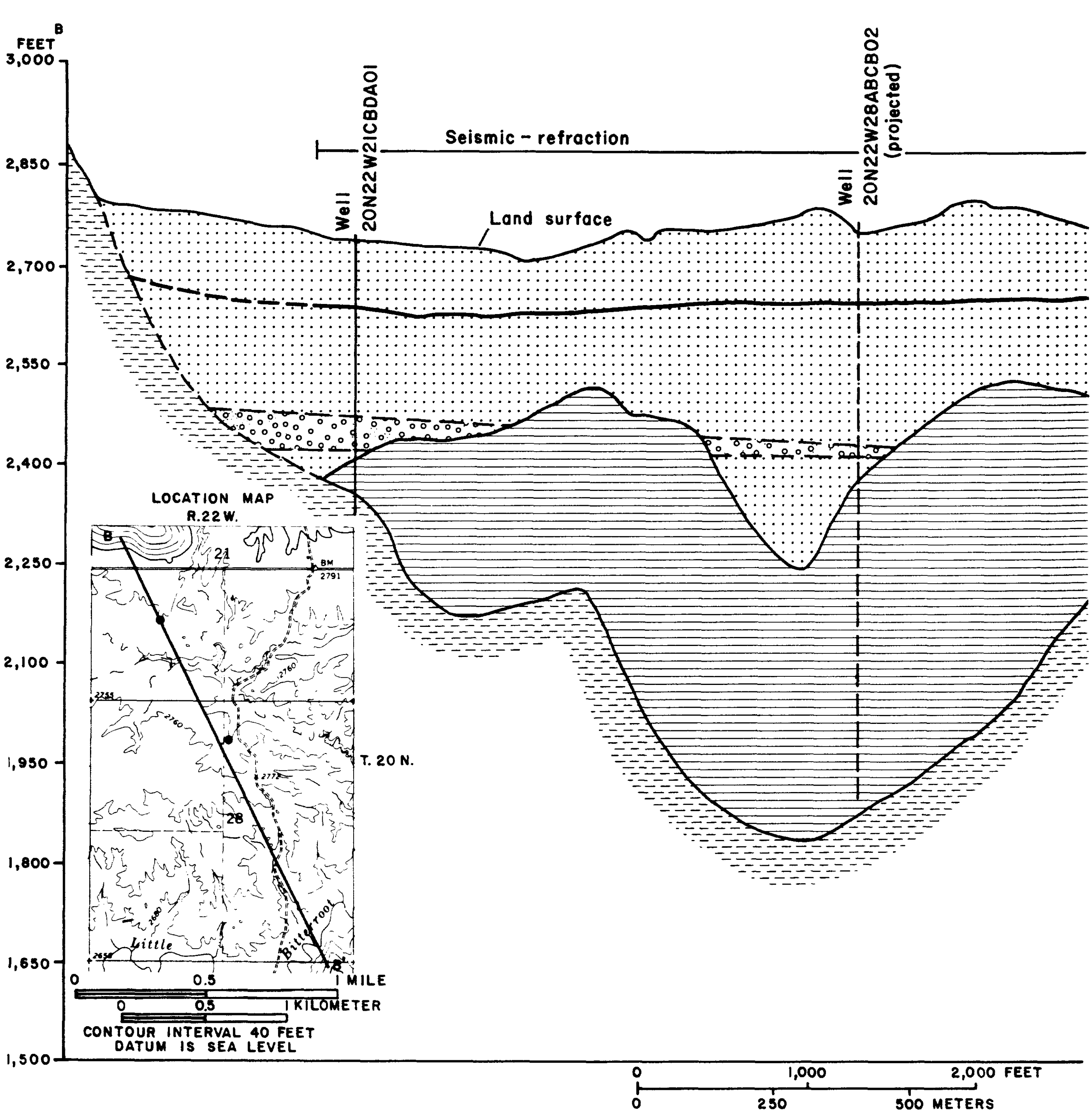
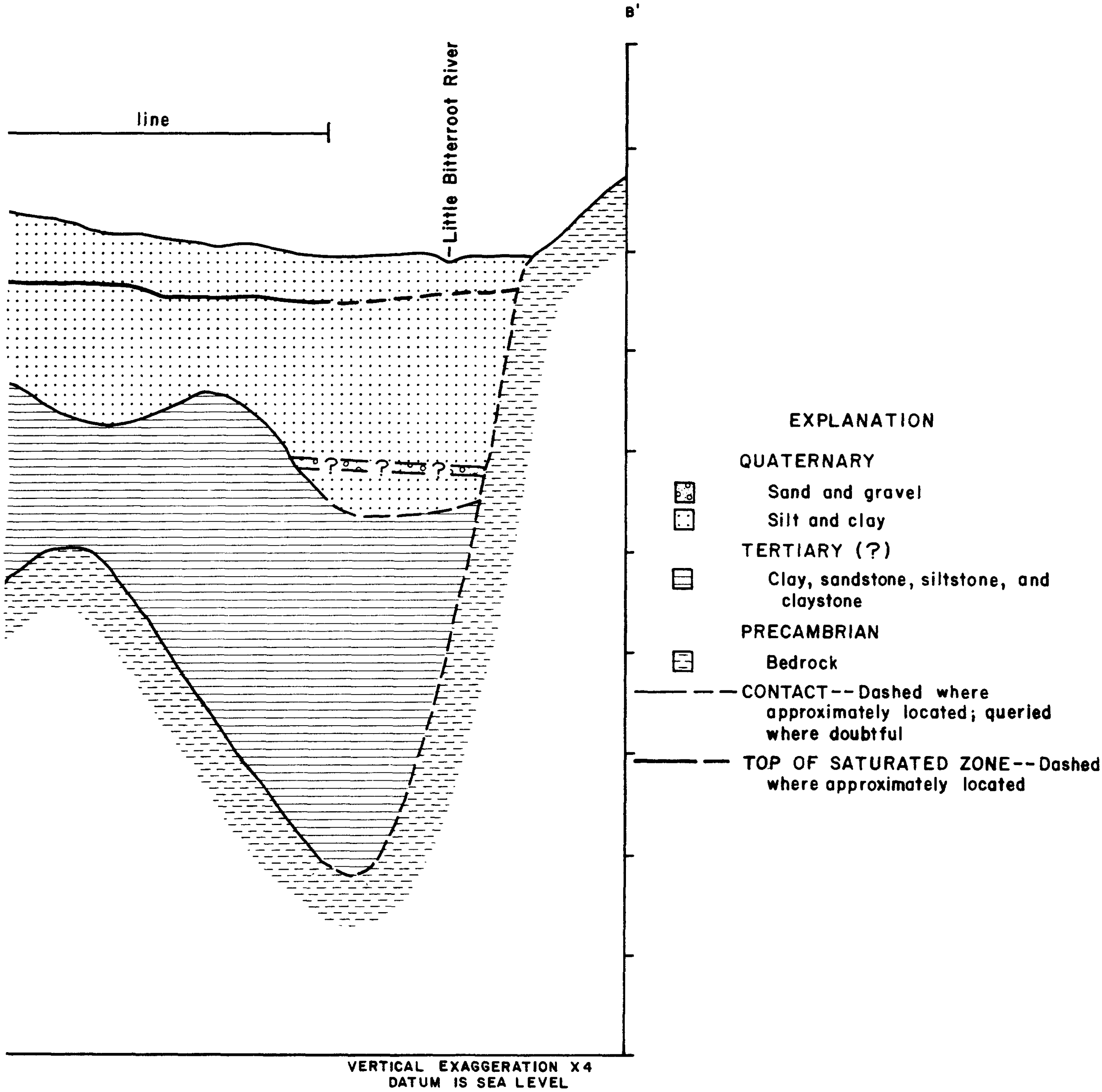


Figure 15.--Hydrogeologic section of the lower



Little Bitterroot River valley.

Reported census figures are not structured in a manner that permits determination of the population of Camas Prairie basin. However, population can be estimated from the number of households and the average number of persons per household. U.S. Geological Survey topographic maps show about 50 residences within the part of the basin underlain by valley-fill deposits. Population characteristics (U.S. Department of Commerce, 1982) denote the average household size as 2.7 persons in Sanders County, for a population of 135. Using a per-capita consumption of 150 gal/d (National Water Well Association, 1977), the estimated annual consumption for domestic use in the Camas Prairie basin is about 20,000 gal/d or 23 acre-ft/yr.

Six currently used irrigation wells have been inventoried in the Camas Prairie basin. The average of the reported and measured discharge values for three of these wells is 403 gal/min. Pumping of the six wells for 4 months at the average discharge would result in withdrawal of 1,300 acre-ft/yr for irrigation.

Leakage from the basin to streams can be estimated from base-flow measurements and streamflow records. Measured surface outflow through the downstream part of Camas Creek (SE1/4SE1/4NE1/4 sec. 13, T. 19 N., R. 24 W.) on February 15, 1984, was 1.50 ft^3/s. Surface inflow to the basin at Camas Creek near Hot Springs (station number 12388650) was 0.80 ft^3/s on the same date, for a net increase of 0.70 ft^3/s or 507 acre-ft/yr.

Jocko and Lower Flathead River Valleys

Recharge to the Jocko and lower Flathead River valleys is primarily from infiltration of rainfall and snowmelt on the valley, leakage from streams and irrigation canals that traverse the area, and irrigation return flow. The cyclic effects on the ground-water level created by infiltration of surface runoff is evident in figures 12 and 13. There is no evidence of subsurface inflow from geothermal waters in the upper part of the Jocko drainage. However, a water temperature of 18.0 °C in well 18N20W32CBDA01, which is 6 to 9 °C greater than common temperatures in the area, indicates the probability of some subsurface inflow from geothermal water in the vicinity of the downstream part of the Jocko River valley. Some water probably enters the valley-fill deposits by subsurface inflow from the underlying Belt Supergroup.

Water is discharged from aquifers in the Jocko and lower Flathead River valleys by evaporation and transpiration in areas of shallow water table, withdrawals from wells, leakage to streams, and subsurface outflow through valley alluvium. The principal means of ground-water discharge is leakage to streams.

The free-water-surface evaporation is about 30 in. annually (Farnsworth and others, 1982) in the Jocko and lower Flathead River valleys. Depth to water generally is greater than that which can be affected by evaporation or transpiration by most plants. Depth to water of less than 10 ft, however, is common in downstream parts of the Jocko valley from near Arlee to near the confluence with Valley Creek.

Wells in the Jocko and lower Flathead River valleys are used principally for domestic supplies. Of 84 inventoried wells completed in valley-fill aquifers, 70 are used for domestic supply, 1 is used for public supply at the high school in Arlee, 1 is used for recreation at a campground, and 12 are unused.

Reported census figures (U.S. Department of Commerce, 1981) are not structured to permit accurate determination of the population of the Jocko and lower Flathead River valleys. However, census figures indicate that the population of the area probably is between 3,000 and 5,000. Assuming the National Water Well Association (1977) per-capita consumption of 150 gal/d applies, withdrawals for domestic supplies would be about 500 to 840 acre-ft/yr (average of 670 acre-ft/yr).

Ground-water discharge to streams from the Jocko River valley was estimated from the difference between surface inflow and outflow. Outflow from the valley of 145 ft^3/s was measured near the mouth of the Jocko River (NE1/4NW1/4NE1/4 sec. 20, T. 18 N., R. 21 W.) on February 13, 1984. Measured surface inflow to the Jocko River valley was 15.6 ft^3/s at the mouth of Finley Creek (SW1/4SW1/4NW1/4 sec. 2, T. 16 N., R. 20 W.) and 10.0 ft^3/s at the mouth of Valley Creek (NW1/4SE1/4SE1/4 sec. 18, T. 17 N., R. 20 W.) on the same date. The measured contribution from Spring Creek (NE1/4SE1/4SE1/4 sec. 22, T. 17 N., R. 20 W.) was 17.9 ft^3/s on March 12, 1984. According to records from U.S. Geological Survey gaging stations on the South Fork Jocko River and Big Knife Creek, flow was uniform from mid-January to mid-April. Flow of the South Fork Jocko River near Arlee (station 12381400 located in the NE1/4NW1/4NE1/4 sec. 35, T. 17 N., R. 18 W.) was 17 ft^3/s and flow of the Big Knife Creek near Arlee, (station 12383500 located in the NW1/4SW1/4NW1/4 sec. 14, T. 16 N., R. 19 W.) was 4.4 ft^3/s on February 13, 1984. Flow in two additional drainages, Jocko River above the South Fork and Middle Fork Jocko River, were not measured but appeared to have flows similar to the South Fork. Adding the flow of individual streams, estimated total surface inflow to the Jocko River on February 13, 1984, is about 100 ft^3/s. Total ground-water contribution to the Jocko River, the difference of inflow and outflow, therefore is estimated to be about 45 ft^3/s or about 33,000 acre-ft/yr.

Subsurface outflow can be estimated using data from test well 18N21W21BCBB01, which contains 58 ft of producing gravel and soft sandstone. An average hydraulic conductivity of 500 ft/d was estimated from drill cuttings using a method described by Lohman (1972, p. 53). Water-level measurements from wells in the downstream part of the Jocko River valley indicate an average hydraulic gradient of 20 ft/mi or a unit gradient of 0.0038. The width of the valley at the well location is about 6,000 ft. An average thickness of the sand and gravel deposits of 60 ft in this section of the valley would permit a subsurface outflow of 660,000 ft^3/d or about 5,500 acre-ft/yr.

Summary of Recharge and Discharge Components

Recharge and discharge components for the valley-fill aquifer systems for each of the four basins on the reservation are summarized in table 9. Recharge to ground-water systems includes direct infiltration of precipitation, leakage from streams and irrigation canals, subsurface inflow to the basins including contribution from deep geothermal ground-water circulation, and irrigation return flow. Discharge from ground-water systems in the basins includes evaporation, transpiration by plants, withdrawals from wells, leakage to streams, and subsurface outflow.

Because of the expanse and complexity of the irrigation systems on the Flathead Reservation, the determination of many of the components was beyond the scope of this study. Also, owing to the complexity of determination of the components of inflow and the apparent balanced condition of the ground-water systems, emphasis was placed on determination of discharge components to provide an indicatio of the ground-water budget for the basins.

Table 9.--*Summary of recharge and discharge components for valley-fill aquifer systems within the Flathead Indian Reservation*

Component	Quantity, in acre-feet per year			
	Mission Valley	Little Bitterroot River valley-Big Draw area	Camas Prairie basin	Jocko and lower Flathead River valley
Recharge				
Infiltration of precipitation	([1])	([1])	([1])	([1])
Leakage from streams and canals	([1])	([1])	([1])	([1])
Subsurface inflow	[2]610	[3]1,600	([1])	([1])
Irrigation return flow	([1])	([1])	([1])	([1])
Discharge				
Evaporation and transpiration	([1])	([1])	([1])	([1])
Withdrawals from wells	5,800	6,600	1,300	670
Leakage to streams	240,000	11,400	510	33,000
Subsurface outflow	7,400	610	([4])	5,500

[1]Not measured.
[2]From Little Bitterroot River valley.
[3]Geothermal inflow in Camas-Hot Springs-Camp Aqua area.
[4]Minor, owing to bedrock canyon in outflow area.

Bedrock Aquifers

Bedrock aquifers, comprised principally of the Belt Supergroup, underlie the entire Flathead Reservation. Bedrock aquifers commonly contain the only source of ground water in the mountains and hills surrounding and within the reservation, where bedrock is exposed.

Aquifer Properties

Primary permeability of the quartzites, argillites, shales, and carbonates that compose the Belt Supergroup is negligible. Secondary permeability, however, is present, and water is available in areas where the rocks are fractured. Depth of drilling required for water supplies is dependent on the depth of fractured zones at the drillsite, and the quantity of water available is dependent on the degree of fracturing. For example, well 15N19W05BCCC01, with 21 ft of well open to Belt rocks, yields 33 gal/min with 10.3 ft of drawdown, whereas well 24N21W32DDDD01, with 597 ft of the well open to Belt rocks, produces only 6.3 gal/min with 36.15 ft of drawdown. However, according to the driller's log (not in this report), only 110 ft of the rocks are fractured in well 24N21W32DDDD01.

Discharge of 33 tested wells ranges from 2.5 to 40 gal/min and averages 9.5 gal/min (table 10). Specific capacity of the tested wells ranges from 0.08 to 3.2 (gal/min)/ft and averages 0.73 (gal/min)/ft. From 5 to 597 ft of Belt rocks are open to the wells tested. The specific capacity per foot of rock open to the well ranges from 0.0003 to 0.152 (gal/min)/ft and averaged 0.024 (gal/min)/ft.

Most wells within the study area producing from Belt rocks are used for domestic water supplies. Of the 48 wells inventoried, 38 are used for household purposes, 2 are used to supply housing subdivisions, 1 is used for stock watering, 1 is used for stock and irrigation, and 6 are unused.

Ground-Water Movement

The principal direction of water movement in aquifers of the Belt Supergroup is from the mountains surrounding the reservation, where the rocks crop out, toward the areas where the bedrock surface is lower. The very generalized potentiometric surface represented in figure 16 probably depicts the general pattern of a regional flow system within the study area.

High water levels in the north-central part of figure 16 depict the effect of recharge from local bedrock highs within the interior of the reservation and represent a local flow system superimposed on the regional system. If water-level data were available, similar patterns likely would be evident in other topographically high areas such as Moiese Hills, Valley View Hills, and the Salish Mountains. Springs and seeps along the hillsides, resulting from the interception of downward-moving water from higher altitudes, are evidence of local flow systems. A generalized conceptual model of flow systems in aquifers of the Belt Supergroup is shown in figure 17.

Water levels in three wells completed in aquifers of the Belt Supergroup have been measured since October 1983. Wells 23N21W19CBC01 and 23N21W23BCAA01 are located north of the Flathead River in the higher altitudes of Irvine Flats and Sunnyslope basin; water levels in these wells are representative of conditions in recharge areas. Well 22N21W28DDDD01 is located south of the Flathead River in the northwestern part of the Mission Valley; the water level, about 360 ft above the top of the formation, is representative of a discharge area.

Water-level records for all three wells indicate a general water-level decline (fig. 18). These records, however, were collected during approximately 2 years of less than normal precipitation that were preceded by 4 consecutive years of greater than normal precipitation at the Polson Kerr Dam and Saint Ignatius weather stations. The water level in wells with long-term records, but completed in valley fill materials, shows a similar pattern. Water level in these wells generally was higher than normal during the early 1980's and declined during 1984 and 1985. The declining water level may be only a reflection of the precipitation pattern.

Table 10.--*Specific capacity of wells completed in the Belt Supergroup*

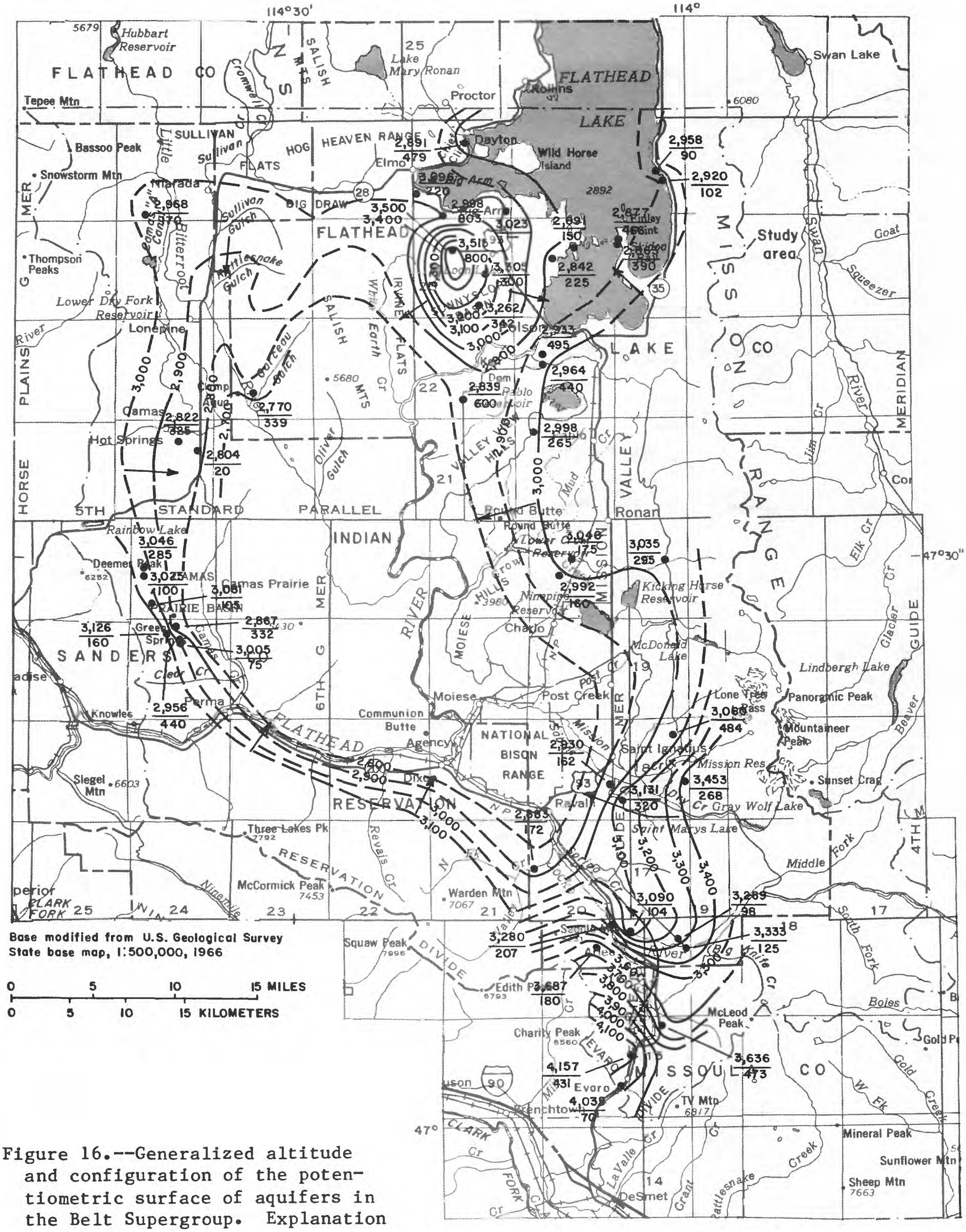
Local No.	Length of saturated open interval (feet)	Dis-charge (gallons per minute)	Specific capacity (gallons per minute per foot)	Specific capacity per foot open (gallons per minute per foot per foot)	Pumping period (hours)
15N19W05BCCC01	21	33	3.2	0.152	1.5
15N20W13BABB01	52	30	3.1	.060	.2
15N20W23DCAA01	15	6.9	1.6	.107	1.5
16N19W09BCAD01	62	4.4	2.5	.040	8.3
16N19W09DDCC01	40	17	1.5	.038	.8
16N20W02BBDD01	42	7.2	.60	.014	1.0
16N20W10CCBA01	110	5.1	1.3	.012	.2
17N20W18CCDA01	5	7.0	.15	.031	.3
18N19W04DDBB01	12	7.9	.33	.027	.6
18N19W22CADD01	68	4.2	.15	.002	.5
18N20W23DADA01	10	3.9	.10	.010	.5
18N20W25DBDD01	76	5.2	.31	.004	.5
19N24W04CACA01	10	3.2	.22	.022	.3
20N19W16BDCB01	10	6.5	.28	.028	.5
20N20W16ABDC01	5	6.7	.08	.015	.3
20N20W20AADA01	52	2.5	.35	.007	.3
20N21W25BBCC01	15	12	.65	.043	.3
20N24W18DDAC01	20	3.2	.13	.007	.5
20N24W19AAAA01	45	5.7	.17	.004	.3
20N24W29CDDD01	6	5.7	.26	.043	.5
21N24W10AADD01	221	40	2.2	.010	.2
21N24W11DDDD01	68	12	.45	.006	.5
22N20W17ABAC01	145	3.8	.23	.002	.2
22N20W17DCAB01	124	7.5	.69	.006	.3
22N23W28BADD01	132	8.0	.30	.002	.3
23N19W07BAAA01	--	6.0	.94	--	.3
23N19W07BDAC01	166	7.5	.25	.002	.3
23N20W10DCDC01	15	5.9	.60	.040	.3
23N20W16BDCA01	35	8.0	.20	.006	.3
24N19W22CBAA01	18	11	.32	.018	.3
24N21W10BDCA01	386	15	.59	.002	.3
24N21W32DDDD01	597	6.3	.17	.0003	.3
24N21W36DBCA01	576	4.6	.30	.001	.3
Average		9.5	.73	.024	

EXPLANATION FOR FIGURE 16

2,900 --POTENTIOMETRIC CONTOUR--Shows approximate altitude of the water surface in wells, 1983. Represents an approximation of a composite hydraulic head. Dashed where approximately located. Contour interval 100 feet. Datum is sea level

GENERALIZED DIRECTION OF GROUND-WATER FLOW

$\frac{2,770}{339}$ WELL--Upper number is altitude of water surface, in feet above sea level. Lower number, where shown, is depth of well, in feet below land surface



Base modified from U.S. Geological Survey State base map, 1:500,000, 1966

0 5 10 15 MILES

0 5 10 15 KILOMETERS

Figure 16.--Generalized altitude and configuration of the potentiometric surface of aquifers in the Belt Supergroup. Explanation on facing page.

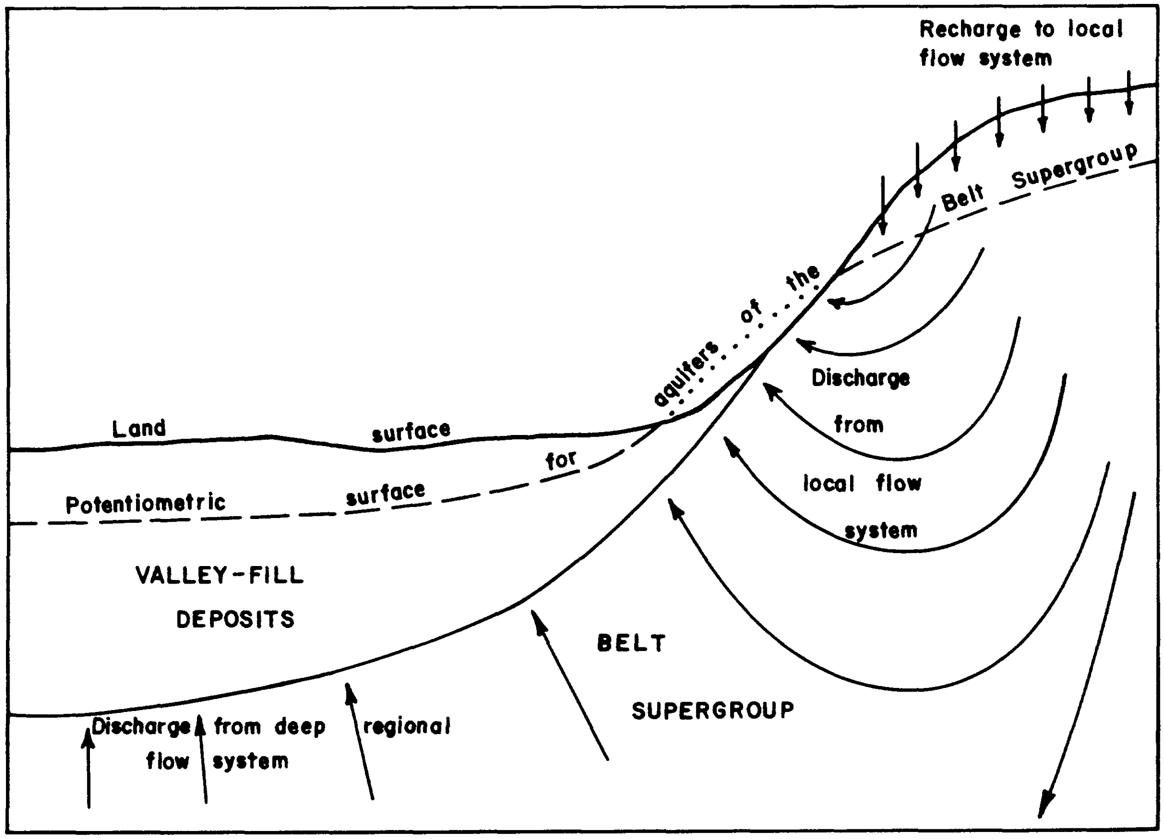


Figure 17.--Conceptual model of flow systems in aquifers of the Belt Supergroup.

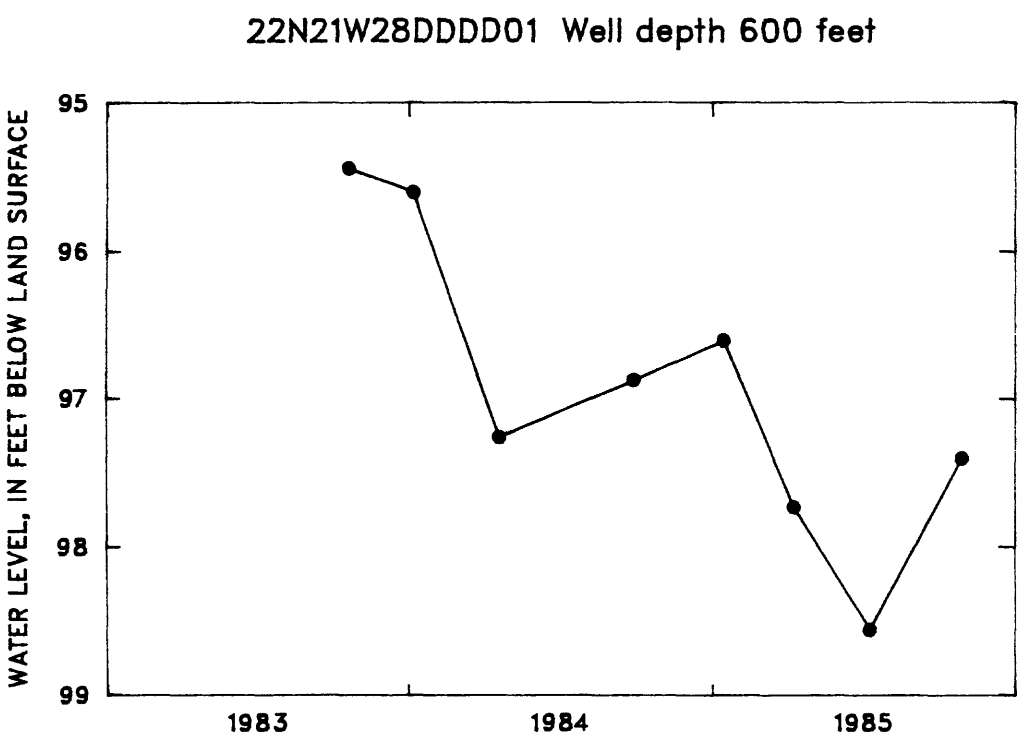


Figure 18.--Hydrographs for wells completed in aquifers of the Belt Supergroup.

Recharge and Discharge

Recharge to bedrock aquifers results from infiltration of rainfall and snowmelt where Belt rocks are exposed (pl. 1). Recharge to deep flow systems, which may be at depths of several thousand feet, may originate outside the study area and enter by subsurface flow. The presence of geothermal water in the Hot Springs and Camp Aqua areas provides evidence of deep, and probably regional, circulation of ground water in the Little Bitterroot River valley. Donovan (1985) estimates that the depth of circulation of the geothermal water in the Camp Aqua area is 2 mi.

Discharge from local flow systems in Belt rocks occurs as numerous springs and seeps on hillsides as well as subsurface discharge to valley-fill deposits. Water-level data from wells completed in Belt rocks indicate that hydraulic head increases with depth in most areas, indicating an upward-flow component. In areas overlain by valley-fill deposits, the water level in bedrock wells typically is above the contact of Belt rocks and valley-fill deposits, indicating discharge from the bedrock aquifers to the valley fill in most of the reservation. Water within the deep regional flow system also flows from the study area through the Belt rocks.

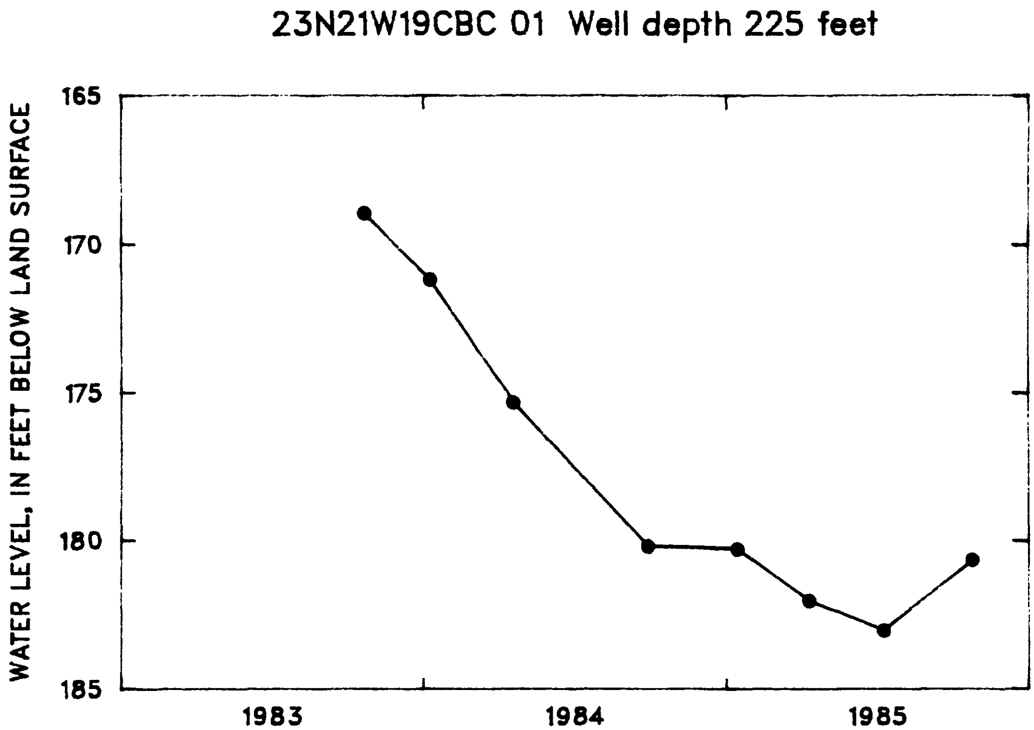
The quantity of discharge from the bedrock to the valley-fill deposits is dependent on the differential hydraulic head between the bedrock and valley-fill aquifers, the hydraulic characteristics of the two units, and the areal extent and distribution of fracture systems contiguous with the valley-fill deposits. Because the depth of valley-fill deposits has been estimated to be as much as 3,500 ft (Boettcher, 1982), data for the determination of these variables are difficult and expensive to collect and have not yet been obtained.

Ground-Water Quality

Water-Use Standards

Domestic and public supply, livestock watering, and irrigation constitute the most common uses of ground water in the study area. Some ground water also is used for commercial, industrial, and recreational purposes.

Primary and secondary drinking-water standards established by the U.S. Environmental Protection Agency (1986a,b) may be used as guides to the suitability of water for domestic use. Primary standards, which are Federally enforceable, pertain to public water supplies and include substances known to be toxic to humans in small quantities. An excess concentration of any of the constituents constitutes a basis for rejection of the supply. Secondary standards are not Federally enforceable but are intended as guidelines for the States. These regulations control contaminants that primarily affect the esthetic qualities relating to the public acceptance of drinking water. U.S. Environmental Protection Agency drinking-water standards are:



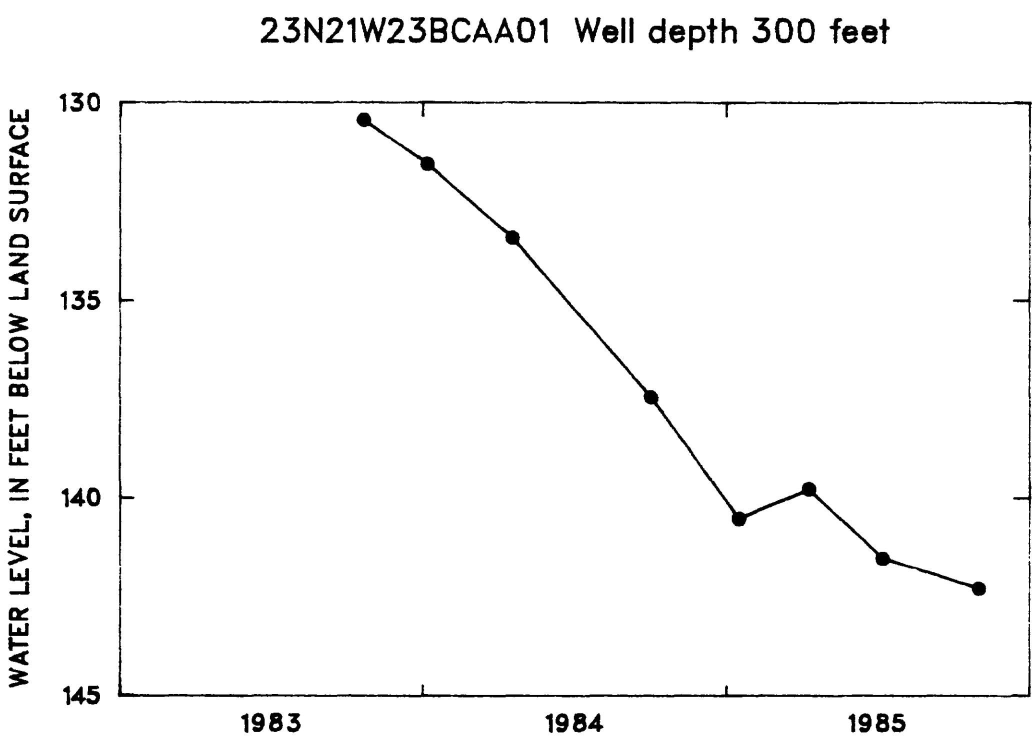


Figure 18.--Hydrographs for wells completed in aquifers of the Belt Supergroup--Continued

	Maximum contaminant level		
	Primary standard[1], in milligrams per liter	Secondary standard[2], in milligrams per liter	Equivalent trace-constituent concentration[3], in micrograms per liter
Arsenic	0.05	--	50
Barium	1	--	1,000
Cadmium	.010	--	10
Chloride	--	250	--
Chromium	.05	--	50
Copper	--	1	1,000
Dissolved solids	--	500	--
Fluoride	4.0	2.0	--
Iron	--	.3	300
Lead	.05	--	50
Manganese	--	.05	50
Mercury	.002	--	2
Nitrate (as N)	10	--	--
Selenium	.01	--	10
Silver	.05	--	50
Sulfate	--	250	--
Zinc	--	5	5,000
pH	--	[4]6.5-8.5	--

[1]U.S. Environmental Protection Agency (1986b).
[2]U.S. Environmental Protection Agency (1986a).
[3]The U.S. Geological Survey reports trace-constituent concentrations in micrograms per liter.
[4]Reported as unit.

Livestock raising is a major industry throughout the area and stock consumption is an important water use. McKee and Wolf (1971, p. 112) list the maximum limits of dissolved-solids concentration for various types of livestock as follows:

Livestock	Dissolved-solids concentration, in milligrams per liter	Livestock	Dissolved-solids concentration, in milligrams per liter
Poultry	2,860	Cattle (dairy)	7,150
Swine	4,290	Cattle (beef)	10,000
Horses	6,435	Sheep (adult)	12,900

Some investigators (see McKee and Wolf, 1971, p. 113) indicate that these values are much too large for optimum growth and development of livestock. Also, certain major ions may be more limiting than the sum of all constituents. For example, livestock can tolerate the greatest dissolved solids when the primary constituents in the water are sodium and chloride. Water containing a large concentration of sulfate is much less desirable.

The suitability of ground water for livestock watering can be assessed by reference to a classification developed by the Montana State College, Agriculture Experiment Station (McKee and Wolf, 1971, p. 113):

Classification	Dissolved-solids concentration, in milligrams per liter
Good	0-2,500
Fair	2,500-3,500
Poor	3,500-4,500
Unfit	More than 4,500

The suitability of water for irrigation use is dependent on the concentrations of dissolved solids and specific ions as well as factors such as soil type, soil drainage, and crop type. Sustained application of water containing large dissolved-solids concentrations can result in increased salt concentrations in the root zone. The part of the applied irrigation water that remains in the soil, the soil solution, tends to become more concentrated as relatively pure water is used by plants or lost upward through capillary action and evaporation. If the root zone is not leached, the salt concentration of the soil solution will increase until it reaches the limit of solubility of the salt.

According to McKee and Wolf (1971, p. 107) the maximum concentration of dissolved solids considered suitable for best crop growths of all types of plants, including salt-susceptible plants, is about 1,000 mg/L (milligrams per liter). A dissolved-solids concentration of about 3,150 mg/L generally is the maximum for the safe watering of any plant, provided that drainage is excellent and each watering is of sufficient volume to leach the root zone.

A large concentration of sodium in irrigation water can cause accumulations of sodium ions and a breakdown of granular soil structure. The result is deflocculation of the soil, which results in a sealing of soil pores and a decrease in soil permeability. Additional increases in sodium percentage cause continued deterioration of the soil and an increase in pH, producing alkali soil.

A measure of the probability of damage to soil structure from applied irrigation water, termed sodium-adsorption ratio (SAR), was developed by the U.S. Salinity Laboratory Staff (1954). SAR indicates the tendency of water to enter into ion-exchange reactions in the soil and is defined as:

$$SAR = \frac{(Na^{+})}{\sqrt{\dfrac{(Ca^{+2}) + (Mg^{+2})}{2}}} \qquad (2)$$

where ion concentrations (Na = sodium, Ca = calcium, and Mg = magnesium) are expressed in milliequivalents per liter. Because divalent cations generally are preferentially held in exchange positions on clay minerals, the displacement of Ca^{+2} and Mg^{+2} by Na^{+} is unlikely unless the sodium percentage is considerably larger than 50 or the total concentration of solutes is very large (Hem, 1985, p. 161). The Federal Water Pollution Control Administration (1968, p. 155) reports that SAR values of 4 to 8 may injure sodium-sensitive plants. Waters with an SAR value greater than 10 will present an appreciable sodium hazard in fine-textured soil having a large cation-exchange capacity (McKee and Wolf, 1971, p. 110).

Valley-Fill Aquifers

Water from wells and springs producing from valley-fill aquifers contains relatively small concentrations of dissolved minerals (tables 14 and 15). Water commonly is calcium bicarbonate type in most areas, although sodium bicarbonate water is common in the central and southern parts of the Little Bitterroot River valley.

Dissolved-constituent concentrations in water from most wells and springs sampled (table 16 in the Supplemental Information section) were considerably less than Federal drinking-water standards. Most trace-element concentrations were less than the detection limit for the analytical methods used.

The dissolved-solids concentrations range from 42 to 1,100 mg/L for 71 samples from wells and springs in the valley-fill aquifers. These extremes are also the extremes for wells and springs anywhere on the reservation. Three samples, all from the southwestern part of the Mission Valley, contained dissolved-solids concentrations in excess of the 500 mg/L standard. Water from one well (20N20W30DCD01) contained a sulfate concentration greater than the 250 mg/L standard. The secondary standard of 2.0 mg/L for fluoride was exceeded in samples from two wells in the Mission Valley and three wells in the Little Bitterroot River valley. The primary standard of 4.0 mg/L for fluoride was exceeded in samples from one well in the Mission Valley and three wells and two springs in the Little Bitterroot River valley. Iron and manganese were the only trace elements that exceeded the Federal drinking-water standards (table 17 in the Supplemental Information section). Iron concentrations in excess of the 300 μg/L (micrograms per liter) standard were detected in samples from eight wells in the Mission Valley, three wells in the Little Bitterroot River valley, and one well in the Jocko River valley. Large iron concentrations, however, may be the result of insufficient flushing of steel-cased wells during sampling. Manganese concentrations in excess of the 50-μg/L standard were detected in samples from 11 wells in the Mission Valley, 8 wells in the Little Bitterroot River valley, 1 well in Camas Prairie, and 1 well in the Jocko River valley. All samples collected from valley-fill aquifers meet recommendations for livestock use.

Water from valley-fill aquifers generally is considered to be suitable for irrigation use. Water from three wells and two springs (21N24W03BBC01, 22N23W19DAA01, 22N23W29ACB01, 21N24W03BBA01, and 22N24W34CDC02) all located in the Camas-Hot Springs and Camp Aqua geothermal areas, had sodium-adsorption ratios greater than 10, the maximum value recommended to avoid appreciable sodium hazard in fine-textured soil. Temperature of water from these wells and springs ranged from 24.0 to 49.0 °C, indicating the source is geothermal water. Water derived from or affected by deep circulating geothermal systems may not be suitable for irrigation use.

Bedrock Aquifers

Water samples collected from eight wells and springs producing from the Belt Supergroup (tables 14 and 15) generally were a calcium-sodium bicarbonate type and had a median dissolved-solids concentration of 205 mg/L. However, the samples were collected from depths less than 450 ft and may not be indicative of water quality at greater depths.

Water from the aquifer generally meets Federal drinking-water standards (tables 16 and 17). Fluoride, in a concentration of 2.3 mg/L in water from well 19N24W04AADB01, and manganese, in a concentration of 230 μg/L in water from spring 18N21W09CDA01, were the only constituents that exceeded the standards. All samples from the aquifer also meet recommendations for livestock use.

Water from the aquifer generally is considered to be suitable for irrigation use. Water from one well, 19N24W04AADB01, had a sodium-adsorption ratio (SAR) greater than 10, which is the maximum recommended to avoid appreciable sodium hazard in fine-textured soil. The temperature of water from this well, located near the southwest edge of Camas Prairie basin, was 25.0 °C, implying that water derived from deep-circulating geothermal systems may not be suitable for irrigation.

SUMMARY

The ground-water system in parts of the Flathead Indian Reservation has a large potential as a source of irrigation water for many areas that cannot be served economically by surface canal systems. The geohydrology of the area was studied to provide information that could be used by the Confederated Salish and Kootenai Tribes to formulate ground-water development plans.

The Flathead Indian Reservation encompasses about 1,950 mi^2 in Flathead, Lake, Missoula, and Sanders Counties in northwestern Montana. The area is composed principally of isolated structurally controlled valleys and basins underlain by unconsolidated deposits and separated by mountainous ridges.

The entire reservation is drained by the Flathead River and its tributaries. The Mission Valley, Jocko River valley, and the northern part of the Little Bitterroot River valley are irrigated extensively by a complex system of canals that substantially alters the natural drainage system.

The climate in the area is variable, owing to orographic effects of the mountainous terrain. Mean annual precipitation in the valleys ranges from about 11 to 16 inches, whereas annual precipitation in the Mission Mountains, which form the eastern boundary of the reservation, is almost 100 inches. Mean annual temperature in the valleys is about 45 °F but temperatures at the higher altitudes are much cooler, as indicated by glaciers and permanent snowfields.

Bedrock in the reservation, which forms the surrounding mountains, consists principally of fine-grained clastic and carbonate rocks of the Precambrian Belt Supergroup. Typical rock types include argillite, siltite, quartzite, and limestone that are generally light- to medium-gray, commonly with green and purple tints. The Belt rocks have undergone several episodes of folding and faulting as well as low-grade regional metamorphism since deposition. The result is a sequence of rocks that is commonly but not greatly deformed and is extensively faulted and fractured.

Igneous rocks are present at the surface in two areas within the reservation. In the southwest part of the reservation, linear outcrops of dark, fine- to medium-grained intrusive rocks represent dikes and sills of Precambrian age within the Belt rocks. Near the northwest corner of the area, extrusive rocks are composed primarily of white to light-gray andesitic tuff. These volcanic rocks are regarded to be either late Tertiary or early Pleistocene age because of their relative stratigraphic position with surrounding Tertiary and Quaternary sediments, but generally are regarded as late Tertiary(?) in this report.

Valley-fill deposits consist of boulders, cobbles, gravel, sand, silt, and clay primarily of glacial and glaciolacustrine origin as a result of several advances of the Cordilleran ice sheet and inundation by glacial Lake Missoula. Gravity data indicate that the thickness of valley-fill sediments may be as much as 3,500 feet. Alluvial deposits of Holocene age are present along most streams. The glacially related deposits are underlain by semi-consolidated to well-cemented siltstone, fine-grained sandstone containing plant matter, low-rank coal, and local conglomerate--all of probable Tertiary age in the larger valleys and basins.

The valleys and basins within the Flathead Reservation comprise two principal geologic regions: (1) areas overridden and principally affected by the Cordilleran ice sheet or mountain glaciers and (2) areas only indirectly affected by continental glaciation. Valley-fill deposits along the Mission Valley, Jocko River, and Finley Creek typically consist of a complex assemblage of glacial drift including ground, terminal, and lateral moraines as well as glacial outwash deposits and remnants of glaciolacustrine silt and clay. Deposits in the Little Bitterroot River valley and Camas Prairie basin generally consist of fluvial sand and gravel overlain by large thicknesses of silt and clay resulting from inundation by glacial Lake Missoula.

Reported and measured discharges from wells in valley-fill aquifers range from 0.5 to 1,500 gal/min in the Mission Valley, 2.5 to 1,600 gal/min in the Little Bitterroot River valley, 2.7 to 600 gal/min in Camas Prairie basin, and 2 to 400 gal/min in the Jocko and lower Flathead River valleys. The extreme heterogeneity of the valley-fill deposits is reflected by the large range of specific capacity. Specific-capacity values range from 0.10 to 305 (gal/min)/ft in the Mission Valley, 0.05 to 80 (gal/min)/ft in the Little Bitterroot River valley, 0.56 to 200 (gal/min)/ft in Camas Prairie basin, and 0.03 to 56 (gal/min)/ft in the Jocko and lower Flathead River valleys.

Aquifer tests using wells completed in Quaternary alluvium or glacial deposits indicate transmissivity values of 42 to 45,600 ft^2/d. Tests using wells completed in deposits of probable Tertiary age indicate transmissivity values of 3.2 to 18 ft^2/d.

The principal direction of ground-water flow in the Mission Valley is to the west and southwest from near the front of the Mission Range toward the Flathead River and the gap north of Dixon between Communion Butte and the National Bison Range. Ground-water flow in the Big Draw and Little Bitterroot River valleys primarily is west, south, and southeast, following the trend of the respective valleys. Flow in Camas Prairie basin generally is from the north, east, and west margins toward the center of the basin and then southward toward the Flathead River. Ground-water flow in the Jocko River, Finley Creek, and lower Flathead River valleys generally is downvalley.

Water level in valley-fill aquifers fluctuates seasonally in response to recharge from streams and irrigation canals and discharge from wells. Where irrigation canals are present, such as the Mission Valley and the Jocko River valley in the vicinity of Arlee, water levels generally rise during the summer and decline during the winter. Water levels in other areas generally rise during the winter and spring and decline the rest of the year. Water-level declines during summer are especially pronounced in parts of the Little Bitterroot River valley because of the withdrawal of large volumes of water for irrigation.

Water recharge to valley-fill aquifers occurs by direct infiltration of snowmelt and rainfall, leakage from streams and irrigation canals, subsurface inflow, and irrigation return flow. Water discharge from the valley-fill aquifers occurs through evaporation, transpiration by plants, withdrawals from wells, leakage to streams, and subsurface flow from the area. Discharge of ground water in the Mission Valley includes about 5,800 acre-ft/yr from wells, 240,000 acre-ft/yr leakage to rivers and streams, and 7,400 acre-ft/yr subsurface flow through unconsolidated deposits of the Flathead River north of Dixon. Ground-water discharge from Big Draw and the Little Bitterroot River valley includes about 6,600 acre-ft/yr from wells, 11,400 acre-ft/yr to surface drainages, and 610 acre-ft/yr through subsurface flow near the mouth of the Little Bitterroot River. Discharge from Camas Prairie basin includes about 1,300 acre-ft/yr from wells and about 510 acre-ft/yr to Camas Creek. Discharge from the Jocko and lower Flathead River valleys includes about 670 acre-ft/yr from wells, 33,000 acre-ft/yr to streams, and 5,500 acre-ft/yr subsurface flow through sediments in the Jocko River valley near the mouth.

Primary permeability of the quartzites, argillites, shales, and carbonates that compose the Belt Supergroup is negligible. Water is available, however, from zones of secondary permeability where the rocks are fractured. Discharge of 33 wells in bedrock aquifers ranges from 2.5 to 40 gal/min and averages 9.5 gal/min. Specific capacity of the wells ranges from 0.08 to 3.2 (gal/min)/ft and averages 0.73 (gal/min)/ft.

The principal direction of water flow in aquifers of the Belt Supergroup is from the mountains surrounding the reservation toward the valleys, where the bedrock surface is lower. Recharge to shallow flow systems results from infiltration of rainfall and snowmelt where Belt rocks are exposed. Recharge to deep flow systems may originate outside the area and enter by subsurface flow. The presence of geothermal water in the Hot Springs and Camp Aqua areas provides evidence of deep, and probably regional, circulation of ground water in the Little Bitterroot River valley. Discharge from local flow systems in aquifers of the Belt Supergroup occurs as numerous springs and seeps on hillsides as well as subsurface discharge to valley-fill deposits. Water within the deep regional flow system also flows from the study area through the Belt rocks.

Water from wells and springs in the reservation commonly is of the calcium bicarbonate or sodium bicarbonate type and contains relatively small concentrations of dissolved minerals; dissolved-solids concentrations range from 42 to 1,100 mg/L. All dissolved-constituent concentrations in most samples from wells and springs were considerably less than Federal drinking-water standards. The drinking-water standard for fluoride, sulfate, iron, manganese, or dissolved solids was exceeded only at a few locations. Most trace-element concentrations were less than the detection limit for the analytical methods used.

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SUPPLEMENTAL INFORMATION

Table 11.--*Records of inventoried wells, springs, and test holes*

[-- or -, no data or not applicable]

Local number--numbering system described in text.
Type of site--P, pond; S, spring; W, well; X, test hole.
Altitude of land surface--reported in feet above sea level.
Primary use of water--C, commercial; H, domestic; I, irrigation; N, industrial; P, public supply; R, recreation; S, stock; U, unused.
Depth of well--in feet below land surface.
Type of finish (well completion)--O, open end; P, perforated; S, screen; X, open hole.
Top of open interval--in feet below land surface.
Bottom of open interval--in feet below land surface.
Water level--in feet below or above (+) land surface.
Water-level source--D, driller; L, geophysical log; O, owner; R, reported; S, measured by U.S. Geological Survey.
Discharge--in gallons per minute.
Method of discharge measurement--C, current meter; E, estimated; M, totaling meter; O, orifice; R, reported; V, volumetric.
Water temperature--in degrees Celsius.
Specific conductance--in microsiemens per centimeter at 25 degrees Celsius; onsite measurement.
pH--onsite measurement.

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
15N19W05BBCC01	W	3,840	H	188	O	--	--	115.08	S	07-27-83
15N19W05BCCC01	W	3,880	P	473	S	452	473	244.20	S	07-20-83
15N19W07BCCC01	W	3,680	H	90	S	85	90	21.18	S	07-15-83
15N20W12CAAC01	W	4,080	H	128	P	107	128	--	-	--
15N20W12CAD 01	W	3,960	H	95	-	--	--	25.34	S	06-26-75
15N20W13BABB01	W	4,000	P	431	X	379	431	+156.76	S	07-20-83
15N20W13BCCC01	W	3,920	H	56	P	50	53	3.08	S	07-14-83
15N20W13CADA01	W	3,920	U	122	O	--	--	25.00	L	09-14-83
15N20W13CADA02	W	3,920	H	61	S	43	51	14.83	S	06-26-75
15N20W13CADA03	W	3,920	U	112	P	46	52	30.40	S	10-10-83
15N20W13DCAA01	W	4,000	H	130	O	--	--	68.98	S	07-19-83
15N20W23DCAA01	W	4,040	H	70	P	40	55	4.80	S	07-12-83
15N20W24BCCB01	W	4,000	H	42	O	--	--	19.13	S	07-21-83
15N20W26ABC 01	W	3,960	H	69	-	--	--	24.83	S	06-26-75
16N19W06BBB 01	W	3,160	H	101	-	--	--	78.20	S	06-24-75
16N19W06CCBB01	W	3,200	H	105	P	--	--	92.00	D	06-23-67
16N19W07AAB 01	W	3,240	H	137	-	--	--	117.58	S	06-24-75
16N19W07DBCA01	W	3,200	H	182	O	--	--	125.00	D	05-21-69
16N19W08CADB01	W	3,200	H	70	O	--	--	45.90	S	08-09-83
16N19W08DCD 01	W	3,320	H	155	-	--	--	120.47	S	06-25-75
16N19W09BCAD01	W	3,320	H	98	X	36	98	41.08	S	08-05-83
16N19W09CADB01	W	3,320	H	47	-	--	--	17.55	S	08-03-83
16N19W09CCAB01	W	3,320	H	141	P	135	140	114.37	S	08-02-83
16N19W09CCAB02	W	3,320	U	154	P	135	154	116.95	S	08-16-83
16N19W09CDBA01	W	3,360	H	157	O	--	--	107.20	S	08-03-83
16N19W09DDCC01	W	3,400	H	125	P	85	125	66.67	S	08-05-83
16N19W10DBAC01	W	3,420	H	117	O	--	--	91.95	S	08-04-83
16N19W11BACB01	W	3,560	H	90	O	--	--	58.58	S	08-03-83
16N19W16ABAB01	W	3,400	H	147	O	--	--	112.86	S	07-29-83
16N19W16BABA01	W	3,360	H	173	O	--	--	112.75	S	08-02-83
16N19W16CCA 01	W	3,360	H	--	-	--	--	9.97	S	06-25-75
16N19W16DCCD01	W	3,460	H	230	P	190	230	62.60	S	08-05-83
16N19W16DDCA01	W	3,520	H	122	P	110	122	28.36	S	08-09-83
16N19W18AABD01	W	3,240	H	115	O	--	--	88.00	D	08-07-70
16N19W18BBAA01	W	3,200	H	85	-	--	--	56.01	S	08-04-83
16N19W18BBBC01	W	3,200	H	80	O	--	--	40.51	S	07-26-83
16N19W18BCA 01	W	3,200	H	--	-	--	--	25.41	S	06-25-75
16N19W19DCA 01	W	3,360	H	220	-	--	--	24.79	S	06-25-75
16N19W20CAAD01	W	3,360	H	482	O	--	--	77.46	S	07-22-83
16N19W20DDA 01	W	3,520	H	40	O	--	--	5.45	S	06-25-75
16N19W30BCCD01	W	3,440	H	40	O	--	--	17.70	S	08-05-83
16N19W30CDBC01	W	3,480	H	58	P	42	49	10.00	S	07-22-83
16N19W30DBA 01	W	3,480	H	96	-	--	--	22.46	S	06-25-75
16N19W31BBBB01	W	3,440	H	34	O	--	--	7.64	S	07-21-83
16N19W31CBA 01	W	3,520	H	53	-	--	--	17.32	S	06-26-75
16N19W31DABB01	W	3,670	U	63	-	--	--	41.20	S	08-05-83
16N19W31DDAB01	W	3,640	H	118	O	--	--	73.00	D	10-30-74
16N20W01BCC 01	W	3,080	H	86	-	--	--	62.40	S	06-24-75
16N20W01CABA01	W	3,160	H	104	P	91	104	69.80	S	08-16-83
16N20W02BBDD01	W	3,320	H	207	P	144	186	33.00	S	08-16-83
16N20W02CDD 01	W	3,080	H	--	-	--	--	34.50	S	06-24-75
16N20W10CCBA01	W	3,760	H	180	P	70	180	54.70	S	08-16-83
16N20W11AAC 01	W	3,000	H	80	-	--	--	39.61	S	07-02-75
16N20W11AAD 01	W	3,000	P	93	-	--	--	--	-	--
16N20W11ADDC01	W	3,040	H	68	P	63	68	41.15	S	08-10-83
16N20W11DAAA01	W	3,120	H	75	O	--	--	--	-	--
16N20W11DAAB01	W	3,120	H	75	P	--	--	21.70	S	08-10-83
16N20W11DBBD01	W	3,040	H	66	P	63	65	34.73	S	08-10-83
16N20W12BBBD01	W	3,120	H	87	O	--	--	67.00	D	02-22-63
16N20W12CBB 01	W	3,120	U	68	-	--	--	32.54	S	06-26-75

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
7.2	V	9.0	110	6.5	07-27-83	Glacial drift	15N19W05BBCC01
33	M	10.5	170	7.2	07-20-83	Belt rocks	15N19W05BCCC01
4.1	V	9.5	264	7.4	07-15-83	Glacial drift	15N19W07BCCC01
--	-	--	--	--	--	Belt rocks	15N20W12CAAC01
--	-	--	--	--	--	Glacial drift	15N20W12CAD 01
30	V	10.0	106	8.3	07-20-83	Belt rocks	15N20W13BABB01
11	V	8.0	98	7.3	07-14-83	Glacial drift	15N20W13BCCC01
7.0	R	--	--	--	--	Glacial drift	15N20W13CADA01
60	R	7.5	40	--	06-26-75	Glacial drift	15N20W13CADA02
30	R	--	--	--	--	Glacial drift	15N20W13CADA03
11	V	9.0	278	7.7	07-19-83	Glacial drift	15N20W13DCAA01
6.9	V	8.0	145	7.3	07-12-83	Belt rocks	15N20W23DCAA01
6.2	V	8.5	174	7.2	07-21-83	Glacial drift	15N20W24BCCB01
--	-	8.5	163	--	06-26-75	Glacial drift	15N20W26ABC 01
--	-	9.0	250	--	06-24-75	Glacial drift	16N19W06BBB 01
12	R	8.5	260	8.3	08-01-83	Alluvium	16N19W06CCBB01
--	-	9.0	237	--	06-24-75	Glacial drift	16N19W07AAB 01
35	R	--	--	--	--	Alluvium	16N19W07DBCA01
9.2	V	7.0	20	8.4	08-05-83	Alluvium	16N19W08CADB01
--	-	8.5	235	--	06-25-75	Glacial drift	16N19W08DCD 01
4.4	V	10.0	255	8.1	08-04-83	Belt rocks	16N19W09BCAD01
8.5	V	9.0	200	8.1	08-03-83	Alluvium	16N19W09CADB01
6.7	V	7.0	245	7.9	08-02-83	Alluvium	16N19W09CCAB01
12	R	--	--	--	--	Alluvium	16N19W09CCAB02
9.0	V	8.0	240	7.9	08-03-83	Alluvium	16N19W09CDBA01
17	V	9.0	195	8.2	08-05-83	Belt rocks	16N19W09DDCC01
7.7	V	8.5	342	8.0	08-04-83	Alluvium	16N19W10DBAC01
6.5	V	9.0	342	7.9	08-02-83	Belt rocks	16N19W11BACB01
5.2	V	11.0	390	7.6	07-29-83	Alluvium	16N19W16ABAB01
6.3	V	11.0	300	7.5	08-02-83	Alluvium	16N19W16BABA01
--	-	9.0	155	--	06-25-75	Glacial drift	16N19W16CCA 01
3.4	V	10.0	362	7.9	08-05-83	Glacial drift	16N19W16DCCD01
5.3	V	10.0	140	7.7	08-09-83	Glacial drift	16N19W16DDCA01
24	R	11.0	230	8.1	07-22-83	Alluvium	16N19W18AABD01
6.0	V	12.0	210	8.2	08-04-83	Alluvium	16N19W18BBAA01
4.9	V	10.5	262	7.7	07-26-83	Alluvium	16N19W18BBBC01
--	-	9.5	235	--	06-25-75	Glacial drift	16N19W18BCA 01
--	-	9.5	--	--	06-25-75	Glacial drift	16N19W19DCA 01
9.8	V	11.0	144	7.5	07-22-83	Glacial drift	16N19W20CAAD01
--	-	7.5	205	--	06-25-75	Glacial drift	16N19W20DDA 01
5.5	V	8.5	258	7.7	08-05-83	Glacial drift	16N19W30BCCD01
11	V	8.0	250	7.3	07-22-83	Glacial drift	16N19W30CDBC01
--	-	9.5	270	--	06-25-75	Glacial drift	16N19W30DBA 01
6.8	V	9.5	166	7.6	07-21-83	Glacial drift	16N19W31BBBB01
--	-	9.5	115	--	06-26-75	Glacial drift	16N19W31CBA 01
--	-	--	--	--	--	Glacial drift	16N19W31DABB01
5.0	R	--	--	--	--	Glacial drift	16N19W31DDAB01
--	-	8.0	265	--	06-24-75	Alluvium	16N20W01BCC 01
5.8	V	8.0	250	8.5	08-16-83	Belt rocks	16N20W01CABA01
7.2	V	11.0	220	8.3	08-16-83	Belt rocks	16N20W02BBDD01
--	-	11.0	230	--	06-24-75	Alluvium	16N20W02CDD 01
5.1	V	11.0	390	8.1	08-16-83	Belt rocks	16N20W10CCBA01
--	-	10.5	218	--	07-02-75	Alluvium	16N20W11AAC 01
--	-	--	--	--	--	Alluvium	16N20W11AAD 01
4.1	V	11.0	260	7.8	08-10-83	Alluvium	16N20W11ADDC01
--	-	7.0	230	8.0	08-03-83	Alluvium	16N20W11DAAA01
7.2	V	11.0	215	7.4	08-10-83	Alluvium	16N20W11DAAB01
6.0	V	10.0	280	8.1	08-10-83	Alluvium	16N20W11DBBD01
12	R	--	--	--	--	Alluvium	16N20W12BBBD01
--	-	--	--	--	--	Alluvium	16N20W12CBB 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
16N20W12CDAB01	W	3,120	H	70	O	--	--	48.00	D	10-16-67
16N20W13ACAC01	W	3,160	H	40	-	--	--	19.40	S	08-10-83
16N20W13CCC 01	W	3,200	H	45	-	--	--	7.24	S	07-02-75
16N20W24ABA 01	W	3,240	H	45	-	--	--	3.59	S	07-02-75
17N18W29CAAC01	W	3,740	H	50	O	--	--	27.38	-	08-02-83
17N19W31BCC 01	W	3,040	H	74	-	--	--	26.99	S	07-10-74
17N20W05BBAA01	W	2,700	H	50	-	--	--	5.53	S	08-11-83
17N20W05DBAD01	W	2,680	H	32	O	--	--	5.50	S	08-17-83
17N20W16CBAA01	W	2,790	U	18	P	8	13	4.68	S	10-03-83
	-	--	-	--	-	13	18	--	-	--
17N20W18CCDA01	W	2,920	H	172	O	167	172	34.05	S	08-18-83
17N20W18DBCD01	W	2,880	H	70	O	--	--	18.76	S	08-18-83
17N20W19ACB 01	W	2,960	H	11	-	--	--	7.49	S	07-07-75
17N20W20ADAA01	W	2,800	H	56	O	--	--	3.60	S	08-26-83
17N20W20BCD 01	W	3,000	U	53	-	--	--	13.10	S	07-07-75
17N20W20CAB 01	W	3,000	H	43	-	--	--	10.57	S	07-03-75
17N20W20CAB 02	W	3,000	U	40	-	--	--	6.52	S	07-03-75
17N20W21ABA 01	W	2,800	H	46	-	--	--	5.39	S	07-03-75
17N20W21BAB 01	W	2,800	H	45	-	--	--	7.06	S	08-13-75
17N20W21BDA 01	W	2,840	U	42	-	--	--	4.52	S	08-13-75
17N20W25CBD 01	W	3,000	H	97	-	--	--	51.72	S	07-02-75
17N20W25CCCA01	W	3,000	H	50	O	--	--	18.87	-	08-12-83
17N20W26DCAA01	W	2,960	H	61	O	--	--	3.75	S	09-01-83
17N20W26DCC 01	W	2,920	H	44	-	--	--	8.74	S	07-07-75
17N20W27ACA 01	W	2,880	H	12	-	--	--	6.86	S	07-07-75
17N20W27ADC 01	W	2,880	H	26	-	--	--	13.07	S	07-07-75
17N20W29ACB 01	W	3,000	U	200	-	--	--	19.57	S	07-03-75
17N20W35BAAA01	W	2,960	H	48	O	--	--	10.70	S	08-12-83
17N20W35BDAD01	W	3,000	H	46	O	--	--	15.11	S	08-11-83
17N20W35DABD01	W	2,960	U	50	O	--	--	15.43	S	10-04-83
17N20W35DBCA01	W	3,000	H	41	O	--	--	--	-	--
17N20W36BBBA01	W	3,880	H	51	O	--	--	11.86	S	08-12-83
18N19W04DDBB01	W	3,300	H	484	X	472	484	239.75	S	08-30-83
18N19W05BBC 01	W	2,970	H	58	-	--	--	25.20	S	09-12-75
18N19W05CCC 01	W	3,050	H	160	P	--	--	109.10	S	07-23-74
18N19W06CBC 01	W	3,085	H	200	-	--	--	165.00	-	07-10-74
18N19W08CBC 01	W	3,090	H	200	-	--	--	165.00	S	07-10-74
18N19W10BCCC01	W	3,320	U	277	O	--	--	273.77	S	10-04-83
18N19W17ADD 01	W	3,240	H	500	-	--	--	284.50	S	09-12-75
18N19W17BBBB01	W	3,080	H	210	O	--	--	174.65	S	08-30-83
18N19W19ADC 01	W	3,090	H	72	-	--	--	37.80	-	--
18N19W19CBAC01	W	3,000	H	55	O	--	--	16.76	S	08-31-83
18N19W19CBCB01	W	3,000	H	85	O	--	--	13.82	S	08-31-83
18N19W19CCB 01	W	3,040	H	35	-	--	--	4.43	S	09-11-75
18N19W20ACA 01	W	3,160	H	30	-	--	--	2.90	S	07-10-74
18N19W21BBD 01	W	3,230	P	135	-	--	--	126.60	S	08-22-74
18N19W22CADD01	W	3,560	H	268	P	200	268	111.15	S	08-31-83
18N19W28CCDB01	W	3,360	U	147	S	142	147	107.63	S	10-14-84
	-	--	-	--	-	--	--	--	-	--
18N19W29DACC01	W	3,280	H	147	O	--	--	108.35	S	09-07-83
18N19W30ADA 01	W	3,190	H	140	-	--	--	59.72	S	09-11-75
18N19W30CCCA01	W	3,120	H	65	O	--	--	4.52	S	08-30-83
18N19W30DCBB01	W	3,160	U	160	O	--	--	16.64	S	10-04-83
18N20W01CCAC01	W	2,840	H	78	O	--	--	.48	S	08-23-83
18N20W02AAAD01	W	2,840	H	74	O	--	--	34.35	S	08-26-83
18N20W02CDD 01	W	2,820	H	75	-	--	--	11.00	S	09-11-75
18N20W03BAAB01	W	2,760	U	47	O	--	--	17.73	S	10-04-83
18N20W04AABB01	W	2,720	H	53	O	--	--	27.40	-	08-25-83
18N20W07BDA 01	W	--	-	--	-	--	--	--	-	--
18N20W10ADD 01	W	2,800	H	53	-	--	--	28.70	S	09-11-75

Discharge (gal/min)	Method of discharge measurement	Water temperature (°C)	Specific conductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
12	R	--	--	--	--	Alluvium	16N20W12CDAB01
8.3	V	11.0	190	8.2	08-10-83	Alluvium	16N20W13ACAC01
--	-	9.5	590	--	07-02-75	Alluvium	16N20W13CCC 01
--	-	7.5	140	--	07-02-75	Alluvium	16N20W24ABA 01
3.9	V	9.0	240	7.5	08-02-83	Alluvium	17N18W29CAAC01
400	R	10.0	260	--	07-10-74	Alluvium	17N19W31BCC 01
11	V	10.0	280	8.4	08-11-83	Alluvium	17N20W05BBAA01
10	V	9.0	300	8.0	08-17-83	Alluvium	17N20W05DBAD01
--	-	--	--	--	--	Alluvium	17N20W16CBAA01
--	-	--	--	--	--	--	
7.0	V	12.0	340	8.2	08-18-83	Belt rocks	17N20W18CCDA01
3.3	V	12.0	700	18.1	08-18-83	Glacial drift	17N20W18DBCD01
--	-	--	--	--	--	Alluvium	17N20W19ACB 01
9.2	V	11.0	400	7.6	08-26-83	Glacial drift	17N20W20ADAA01
--	-	10.0	365	--	07-07-75	Alluvium	17N20W20BCD 01
--	-	--	--	--	--	Alluvium	17N20W20CAB 01
--	-	--	--	--	--	Alluvium	17N20W20CAB 02
--	-	9.5	354	--	07-03-75	Alluvium	17N20W21ABA 01
--	-	10.5	383	--	08-13-75	Alluvium	17N20W21BAB 01
--	-	--	--	--	--	Alluvium	17N20W21BDA 01
--	-	10.0	500	--	07-02-75	Alluvium	17N20W25CBD 01
4.6	V	11.0	275	8.2	08-12-83	Alluvium	17N20W25CCCA01
8.5	V	9.0	240	8.6	09-01-83	Alluvium	17N20W26DCAA01
--	-	9.5	275	--	07-07-75	Alluvium	17N20W26DCC 01
--	-	10.5	305	--	07-07-75	Alluvium	17N20W27ACA 01
--	-	10.5	280	--	07-07-75	Alluvium	17N20W27ADC 01
--	-	9.0	570	--	07-03-75	Alluvium	17N20W29ACB 01
6.1	V	9.0	250	8.4	08-12-83	Alluvium	17N20W35BAAA01
10	V	9.0	255	8.5	08-11-83	Alluvium	17N20W35BDAD01
60	R	--	--	--	--	Alluvium	17N20W35DABD01
10	R	9.0	250	8.4	08-11-83	Alluvium	17N20W35DBCA01
13	V	9.0	255	8.4	08-12-83	Alluvium	17N20W36BBBA01
7.9	V	9.0	295	8.1	08-30-83	Belt rocks	18N19W04DDBB01
--	-	14.5	295	--	09-12-75	Glacial drift	18N19W05BBC 01
--	-	11.0	330	--	07-23-74	Glacial drift	18N19W05CCC 01
--	-	11.5	370	--	07-10-74	Glacial drift	18N19W06CBC 01
1,200	R	11.5	370	--	07-10-74	Glacial drift	18N19W08CBC 01
5.0	R	--	--	--	--	Glacial drift	18N19W10BCCC01
--	-	11.0	255	--	09-12-75	Glacial drift	18N19W17ADD 01
5.7	V	15.0	320	8.2	08-30-83	Glacial outwash	18N19W17BBBB01
--	-	10.5	255	--	09-09-69	Glacial drift	18N19W19ADC 01
11	V	11.0	190	8.6	08-31-83	Glacial outwash	18N19W19CBAC01
6.3	V	12.5	--	--	09-09-69	Glacial outwash	18N19W19CBCB01
--	-	11.5	215	--	09-18-75	Glacial drift	18N19W19CCB 01
--	-	13.0	90	--	07-10-74	Glacial drift	18N19W20ACA 01
--	-	12.0	235	--	08-22-74	Glacial drift	18N19W21BBD 01
4.2	V	11.0	200	8.7	08-31-83	Belt rocks	18N19W22CADD01
40	V	8.0	182	8.8	10-14-84	Glacial outwash	18N19W28CCDB01
161	V	--	--	--	--	--	
8.8	V	9.0	178	8.5	09-07-83	Glacial outwash	18N19W29DACC01
--	-	9.5	180	--	09-11-75	Glacial drift	18N19W30ADA 01
8.9	V	11.0	900	7.8	08-30-83	Glacial drift	18N19W30CCCA01
--	-	--	--	--	--	Glacial drift	18N19W30DCBB01
5.0	V	11.0	370	8.2	08-23-83	Glacial drift	18N20W01CCAC01
7.5	V	11.0	370	8.1	08-26-83	Glacial outwash	18N20W02AAAD01
--	-	13.0	330	--	09-11-75	Glacial drift	18N20W02CDD 01
25	R	--	--	--	--	Glacial drift	18N20W03BAAB01
9.2	V	11.0	430	8.1	08-25-83	Glacial outwash	18N20W04AABB01
--	-	--	--	--	--	--	18N20W07BDA 01
--	-	11.5	515	--	09-11-75	Glacial drift	18N20W10ADD 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
18N20W11DDA 01	W	2,910	H	44	-	--	--	27.15	S	09-11-75
18N20W12CCC 01	W	2,915	P	53	-	--	--	23.40	-	09-08-69
18N20W12DDD 01	W	2,990	H	90	-	--	--	70.75	S	09-11-75
18N20W13DCCD01	W	2,960	H	74	O	--	--	21.25	S	08-24-83
18N20W14DBD 01	W	2,895	I	30	-	--	--	--	-	--
18N20W14DBD 02	W	2,900	P	47	-	--	--	11.00	R	07-10-74
18N20W14DBDC01	W	2,900	I	30	-	--	--	11.10	S	07-10-74
18N20W14DCA 01	W	2,910	H	40	-	--	--	9.10	S	07-10-74
18N20W15DCAD01	W	2,880	H	52	O	--	--	27.90	S	08-23-83
18N20W23DADA01	W	2,960	H	162	P	150	160	9.80	S	08-25-83
18N20W25ADA 01	W	3,050	H	92	-	--	--	18.20	S	09-11-75
18N20W25DBDD01	W	3,120	H	320	X	244	320	+1.13	S	08-23-83
18N20W32BCC 01	W	2,700	H	88	-	--	--	18.30	S	08-16-74
18N20W32CBDA01	W	2,720	H	57	O	--	--	10.20	S	08-25-83
18N21W01BAD 01	W	--	-	--	-	--	--	--	-	--
18N21W04BCDA01	W	2,520	U	124	S	103	124	7.03	S	09-10-84
	-	--	-	--	-	--	--	--	-	--
18N21W05ADCB01	W	2,560	U	320	P	175	187	+6.93	S	11-03-84
	-	--	-	--	-	190	202	--	-	--
	-	--	-	--	-	205	217	--	-	--
18N21W08DDB 01	W	2,540	P	430	-	--	--	.37	S	09-10-75
18N21W09CDA 01	S	--	-	--	-	--	--	--	-	--
18N21W11DAA 01	W	--	-	--	-	--	--	--	-	--
18N21W21BCBB01	W	2,580	U	160	P	110	140	+11.88	S	09-10-84
18N21W26DDCA01	W	2,640	R	49	O	--	--	15.59	S	09-02-83
18N22W21BADC01	W	2,680	H	59	O	--	--	44.66	S	09-02-83
18N23W03CDD 01	W	3,045	H	160	P	--	--	109.10	-	07-23-74
19N19W05DAA 01	W	3,150	H	98	-	--	--	51.23	S	08-25-75
19N19W06CCCB01	W	3,020	H	220	O	--	--	166.40	S	11-01-83
19N19W07CCA 01	W	2,850	H	200	-	--	--	5.61	S	08-25-75
19N19W09DBBD01	W	3,400	H	642	P	563	606	380.00	D	07-11-73
19N19W20BBA 01	W	2,890	H	50	-	--	--	15.40	S	07-23-74
19N19W20BBAA01	W	2,880	U	90	-	--	--	37.02	S	08-11-83
19N19W20CCC 01	W	2,910	H	80	-	--	--	63.30	S	07-23-74
19N19W21CBCD01	W	3,060	H	172	O	--	--	+1.00	S	10-31-83
19N19W28CDD 01	W	3,250	H	88	-	--	--	84.50	S	07-23-74
19N19W29CDC 01	W	3,010	H	145	-	--	--	59.37	S	09-10-75
19N20W01BBC 01	W	3,020	H	274	-	--	--	68.40	S	08-26-74
19N20W01DAA 01	W	3,060	H	52	-	--	--	13.59	S	08-25-75
19N20W05BAD 01	W	2,940	P	480	-	--	--	--	-	--
19N20W05CDD 01	W	2,920	H	--	-	--	--	86.00	S	07-15-74
19N20W06AAA 01	W	2,920	I	18	-	--	--	4.30	S	07-15-74
19N20W10CBB 01	W	2,930	U	443	-	--	--	105.10	S	07-23-74
19N20W13CCA 01	W	2,780	-	64	-	--	--	--	S	--
19N20W14BBA 01	W	2,975	H	302	-	--	--	140.10	-	09-11-69
19N20W14BBB 01	W	2,970	H	340	-	--	--	220.00	R	07-11-74
19N20W14CDD 01	W	2,790	H	162	-	--	--	13.80	S	07-11-74
19N20W15DAAA01	W	2,940	H	331	O	--	--	147.04	S	11-01-83
19N20W18AAA 01	W	2,900	H	500	-	--	--	140.80	S	08-16-74
19N20W19BABD01	W	2,880	H	453	O	--	--	178.03	S	11-07-83
19N20W22AAAB01	W	2,820	H	228	O	--	--	106.57	S	11-07-83
19N20W22ABB 01	W	2,850	H	270	-	--	--	113.70	S	07-11-74
19N20W24CDDA01	W	2,760	H	40	O	--	--	.06	S	10-31-83
19N20W25DDD 01	W	2,840	H	56	-	--	--	26.68	S	09-10-75
19N20W26ADD 01	W	2,770	H	35	-	--	--	13.90	S	07-10-74
19N20W26BAB 01	W	2,730	H	52	-	--	--	9.40	S	08-09-74
19N20W27DDD 01	W	2,740	H	50	-	--	--	.90	S	09-10-75
19N20W29ABA 01	W	2,800	H	266	-	--	--	108.50	S	09-25-69
19N20W29CBB 01	W	2,750	H	140	-	--	--	71.15	S	09-10-75
19N20W33BBC 01	W	2,720	H	140	-	--	--	60.00	S	07-23-74

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	11.5	345	--	09-11-75	Glacial drift	18N20W11DDA 01
--	-	11.5	515	--	09-08-69	Glacial drift	18N20W12CCC 01
--	-	11.0	400	--	09-11-75	Glacial drift	18N20W12DDD 01
11	V	11.0	175	8.0	08-24-83	Glacial drift	18N20W13DCCD01
--	-	--	--	--	--	--	18N20W14DBD 01
400	-	11.0	260	--	07-10-74	Glacial drift	18N20W14DBD 02
500	-	11.0	340	--	07-10-74	Glacial drift	18N20W14DBDC01
500	-	11.5	215	--	07-10-74	Glacial drift	18N20W14DCA 01
4.4	V	12.0	480	7.7	08-23-83	Glacial drift	18N20W15DCAD01
3.9	V	11.0	550	7.6	08-25-83	Belt rocks	18N20W23DADA01
--	-	9.5	200	--	09-11-75	Glacial drift	18N20W25ADA 01
5.2	V	13.0	380	8.1	08-23-83	Belt rocks	18N20W25DBDD01
--	-	11.0	380	--	08-16-74	Glacial drift	18N20W32BCC 01
7.2	V	18.0	320	8.1	08-25-83	Alluvium	18N20W32CBDA01
--	-	--	--	--	--	--	18N21W01BAD 01
74	V	11.0	575	8.1	10-14-84	Alluvium	18N21W04BCDA01
230	C	--	--	--	--	--	
65	M	13.0	860	7.9	10-13-84	Glacial outwash	18N21W05ADCB01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	
--	-	14.0	605	--	09-10-75	Glacial drift	18N21W08DDB 01
--	-	--	--	--	--	--	18N21W09CDA 01
--	-	--	--	--	--	--	18N21W11DAA 01
--	-	10.0	385	8.6	10-13-84	Alluvium	18N21W21BCBB01
5.5	V	11.0	370	8.2	09-02-83	Alluvium	18N21W26DDCA01
6.3	V	12.0	370	7.8	09-02-83	Alluvium	18N22W21BADC01
436	E	11.0	330	--	07-23-74	--	18N23W03CDD 01
--	-	10.5	270	--	08-25-75	--	19N19W05DAA 01
8.6	V	9.0	240	8.6	11-01-83	Glacial outwash	19N19W06CCCB01
--	-	9.5	303	--	08-25-75	Glacial drift	19N19W07CCA 01
25	R	12.0	245	8.5	10-27-83	Glacial drift	19N19W09DBBD01
450	R	12.0	190	--	07-23-74	Glacial drift	19N19W20BBA 01
--	-	--	--	--	--	Glacial drift	19N19W20BBAA01
--	-	11.5	370	--	07-23-74	Glacial drift	19N19W20CCC 01
6.7	V	10.0	85	8.5	10-31-83	Glacial outwash	19N19W21CBCD01
450	-	10.0	230	--	07-23-74	Glacial drift	19N19W28CDD 01
--	-	11.5	307	--	09-10-75	Glacial drift	19N19W29CDC 01
350	-	9.5	300	--	08-26-74	Glacial drift	19N20W01BBC 01
--	-	9.5	858	--	08-25-75	Glacial drift	19N20W01DAA 01
444	-	12.5	265	--	07-23-74	Glacial drift	19N20W05BAD 01
700	-	14.0	290	--	07-15-74	Glacial drift	19N20W05CDD 01
600	-	12.5	185	--	07-15-74	Glacial drift	19N20W06AAA 01
300	-	11.0	370	--	07-23-74	Glacial drift	19N20W10CBB 01
120	R	9.5	290	--	08-09-74	Glacial drift	19N20W13CCA 01
--	-	--	--	--	--	Glacial drift	19N20W14BBA 01
700	-	--	--	--	--	--	19N20W14BBB 01
500	-	11.5	330	--	07-11-74	Glacial drift	19N20W14CDD 01
6.3	V	11.0	265	8.7	11-01-83	Glacial outwash	19N20W15DAAA01
--	-	--	--	--	--	--	19N20W18AAA 01
10	V	10.0	340	8.5	11-07-83	Glacial outwash	19N20W19BABD01
8.3	V	9.0	300	8.8	11-07-83	Glacial drift	19N20W22AAAB01
450	-	11.0	330	--	07-11-74	--	19N20W22ABB 01
8.9	V	10.0	310	8.2	10-31-83	Alluvium	19N20W24CDDA01
--	-	10.5	290	--	09-10-75	Glacial drift	19N20W25DDD 01
--	-	12.5	290	--	07-10-74	Glacial drift	19N20W26ADD 01
--	-	12.5	320	--	08-09-74	Glacial drift	19N20W26BAB 01
--	-	10.0	250	--	09-10-75	Glacial drift	19N20W27DDD 01
--	-	13.0	270	--	09-25-69	Glacial drift	19N20W29ABA 01
--	-	14.5	270	--	09-10-75	Glacial drift	19N20W29CBB 01
--	-	--	--	--	--	Glacial drift	19N20W33BBC 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
19N20W34BDA 01	W	2,720	H	50	-	--	--	8.18	S	09-10-75
19N20W35AAA 01	W	2,805	H	54	O	--	--	35.23	S	11-29-67
19N20W36ABB 01	W	--	U	49	-	--	--	33.10	-	09-11-69
19N21W02ADA 01	W	2,920	H	500	-	--	--	88.30	S	09-09-75
19N21W02BAD 01	W	2,925	R	783	-	--	--	134.00	-	09-24-69
19N21W03DDA 01	W	--	-	291	-	--	--	+8.00	-	09-23-69
19N21W06ADDB01	W	2,650	U	135	-	--	--	99.60	S	08-10-83
19N21W06BBB 01	W	2,640	U	130	-	--	--	67.00	S	07-17-74
19N21W06BDD 01	W	2,640	H	--	-	--	--	100.80	-	07-17-74
19N21W06CCBC01	W	2,640	H	309	O	--	--	48.10	S	11-09-83
19N21W06DBCC01	W	2,640	H	147	P	--	--	101.89	S	11-09-83
19N21W10ADA 01	W	2,880	H	44	-	--	--	9.30	S	07-17-74
19N21W12BCB 01	W	2,940	H	512	-	--	--	120.96	S	09-09-75
19N21W13ADA 01	W	2,890	H	475	-	--	--	145.80	S	08-16-74
19N21W14BAAA01	W	2,780	H	371	O	--	--	20.92	S	11-14-83
19N21W14DAA 01	W	2,870	S	480	-	--	--	165.90	S	09-09-75
19N21W17BCBB01	W	2,640	U	--	-	--	--	51.90	S	10-11-83
19N21W18BBDA01	W	2,600	H	258	O	--	--	--	-	--
19N21W19ABA 01	W	2,610	H	108	-	--	--	89.60	S	07-15-74
19N21W23DDDD01	W	2,660	H	275	O	--	--	7.14	S	11-08-83
19N21W25BBA 01	W	2,750	H	380	-	--	--	79.90	S	07-15-74
19N21W25BCB 01	W	2,720	H	268	-	--	--	42.40	S	07-15-74
19N21W25DDDD01	W	2,720	H	167	O	--	--	40.28	S	11-07-83
19N21W27CCD 02	W	2,620	P	160	-	--	--	+50.60	S	10-23-74
19N21W28CCA 01	W	2,660	H	300	-	--	--	110.60	S	07-15-74
19N21W30ADCD01	W	2,560	H	117	P	112	117	63.20	S	11-09-83
19N21W31ADC 01	W	2,530	U	165	O	--	--	+31.90	S	04-11-78
19N21W31DAB 01	W	2,525	U	189	-	169	189	+29.20	-	04-11-78
19N21W34AAB 01	W	2,590	H	128	-	--	--	+34.60	S	08-16-74
19N23W32BCBA01	W	2,560	H	124	O	--	--	75.20	S	09-14-83
19N24W01CBB 01	W	2,840	H	44	-	--	--	33.93	S	07-08-75
19N24W02AAA 01	W	2,840	H	45	-	--	--	35.14	S	07-08-75
19N24W02CCD 01	W	2,840	S	45	-	--	--	29.05	S	07-08-75
19N24W02DCDD01	W	2,800	U	41	P	33	36	13.62	S	09-30-83
	-	--	-	--	-	36	41	--	-	--
19N24W02DDCD01	W	2,800	U	24	P	17	24	4.62	S	09-30-83
19N24W03CCDD01	W	2,840	H	100	O	--	--	--	-	--
19N24W03CDC 01	W	2,920	H	100	-	--	--	--	-	07-09-75
19N24W04AADB01	W	2,880	H	332	O	--	--	+2.00	S	09-13-83
19N24W04CACA01	W	3,160	H	160	P	25	30	13.70	S	09-09-83
	-	--	-	--	-	155	160	--	-	--
19N24W10BBAB01	W	2,960	H	440	O	--	--	+2.60	S	09-13-83
19N24W10BCBC01	W	3,000	H	75	O	--	--	+2.00	S	09-14-83
19N24W10BCC 01	W	3,000	H	135	-	--	--	--	S	09-12-74
20N19W04BBA 01	W	3,350	H	148	-	--	--	31.40	-	08-30-76
20N19W04DCBA01	W	3,430	U	525	-	--	--	75.12	S	08-04-83
20N19W05DDA 01	W	3,250	H	60	-	--	--	29.90	S	08-20-74
20N19W06CDBC01	W	3,110	H	93	S	93	98	30.00	S	12-29-83
20N19W07DBB 01	W	3,080	H	158	-	--	--	10.30	S	08-26-74
20N19W16BDCB01	W	3,120	H	295	P	285	295	74.90	-	10-28-83
20N19W19DAA 01	W	3,120	H	401	-	--	--	132.20	S	08-09-74
20N19W19DAD 01	W	3,120	H	400	P	--	--	5.20	S	08-09-74
20N19W19DDA 01	W	3,120	U	1,182	X	1,080	1,180	157.20	S	08-27-74
20N19W20ADDD01	W	3,180	H	46	O	--	--	26.90	S	11-21-83
20N19W21BDA 01	W	3,270	H	58	-	--	--	--	-	08-22-74
20N19W21BDD 01	W	3,270	H	63	O	--	--	--	S	08-22-74
20N19W31ACD 01	W	3,080	H	171	-	--	--	154.04	S	08-25-75
20N19W32DCC 01	W	3,100	H	75	-	--	--	30.10	S	08-25-75
20N20W02AAC 01	W	3,040	P	550	-	--	--	--	S	07-26-74
20N20W02BAB 01	W	3,050	P	540	-	--	--	--	S	07-26-74

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	12.0	403	--	09-10-75	Glacial drift	19N20W34BDA 01
--	-	--	--	--	--	Lakebed deposits	19N20W35AAA 01
--	-	12.0	315	--	09-11-69	Glacial drift	19N20W36ABB 01
--	-	12.5	550	--	09-09-75	Glacial drift	19N21W02ADA 01
--	-	12.0	610	--	09-24-69	Glacial drift	19N21W02BAD 01
--	-	--	--	--	--	Glacial drift	19N21W03DDA 01
--	-	--	--	--	--	Alluvium	19N21W06ADDB01
--	-	14.0	840	--	07-14-74	--	19N21W06BBB 01
--	-	17.5	630	--	07-17-74	--	19N21W06BDD 01
4.3	V	10.0	600	8.1	11-09-83	Alluvium	19N21W06CCBC01
5.1	V	11.0	690	8.1	11-09-83	Alluvium	19N21W06DBCC01
--	-	12.5	1,410	--	07-17-74	--	19N21W10ADA 01
--	-	9.5	780	--	09-09-75	Glacial drift	19N21W12BCB 01
--	-	13.0	280	--	08-16-74	--	19N21W13ADA 01
9.6	V	8.0	640	8.2	11-14-83	Glacial drift	19N21W14BAAA01
--	-	10.5	490	--	09-09-75	Glacial drift	19N21W14DAA 01
--	-	--	--	--	--	Alluvium	19N21W17BCBB01
8.0	R	10.0	910	8.5	11-08-83	Alluvium	19N21W18BBDA01
--	-	16.5	490	--	07-15-74	--	19N21W19ABA 01
6.2	V	11.0	690	7.8	11-08-83	Glacial outwash	19N21W23DDDD01
--	-	14.5	340	--	07-15-74	--	19N21W25BBA 01
--	-	15.5	380	--	07-15-74	--	19N21W25BCB 01
7.3	V	11.0	410	8.5	11-07-83	Glacial drift	19N21W25DDDD01
--	-	12.5	390	--	10-23-74	--	19N21W27CCD 02
--	-	15.0	1,000	--	07-15-74	--	19N21W28CCA 01
5.0	V	11.0	550	8.1	11-09-83	Alluvium	19N21W30ADCD01
397	C	--	--	--	--	Glacial drift	19N21W31ADC 01
250	-	14.5	1,120	--	--	Glacial drift	19N21W31DAB 01
--	-	11.5	380	--	08-16-74	--	19N21W34AAB 01
5.0	V	12.0	420	8.2	09-14-83	Alluvium	19N23W32BCBA01
--	-	13.5	630	--	07-08-75	Alluvium	19N24W01CBB 01
--	-	--	--	--	--	Alluvium	19N24W02AAA 01
--	-	13.0	510	--	07-08-75	Alluvium	19N24W02CCD 01
--	-	--	--	--	--	Alluvium	19N24W02DCDD01
--	-	--	--	--	--	--	
--	-	--	--	--	--	Alluvium	19N24W02DDCD01
6.6	V	14.0	500-	8.0	09-21-83	Alluvium	19N24W03CCDD01
--	-	12.5	245	--	07-09-75	Alluvium	19N24W03CDC 01
4.7	V	26.0	--	--	09-12-74	Belt rocks	19N24W04AADB01
3.2	V	11.0	--	--	07-10-75	Belt rocks	19N24W04CACA01
--	-	--	225	--	07-10-75	--	
7.2	V	14.0	165	8.5	09-13-83	Belt rocks	19N24W10BBAB01
2.7	V	12.0	260	8.0	09-14-83	Belt rocks	19N24W10BCBC01
35	R	12.0	250	--	09-12-74	Alluvium	19N24W10BCC 01
--	-	--	--	--	--	Glacial drift	20N19W04BBA 01
--	-	--	--	--	--	Glacial drift	20N19W04DCBA01
--	-	10.5	44	--	08-20-74	Glacial drift	20N19W05DDA 01
50	R	--	--	--	--	Glacial drift	20N19W06CDBC01
--	-	8.5	440	--	08-26-74	Glacial drift	20N19W07DBB 01
6.5	V	10.0	280	8.3	10-27-83	Belt rocks	20N19W16BDCB01
100	-	12.5	250	--	08-09-74	Glacial drift	20N19W19DAA 01
--	-	12.0	200	--	08-09-74	Glacial drift	20N19W19DAD 01
--	-	9.0	175	--	04-21-76	Glacial drift	20N19W19DDA 01
20	R	--	--	--	--	Glacial drift	20N19W20ADDD01
--	-	--	--	--	--	Glacial drift	20N19W21BDA 01
--	-	9.5	210	--	08-22-74	Glacial drift	20N19W21BDD 01
--	-	--	--	--	--	Glacial drift	20N19W31ACD 01
--	-	8.5	285	--	08-25-75	Glacial drift	20N19W32DCC 01
80	-	10.5	180	--	07-26-74	Glacial drift	20N20W02AAC 01
40	-	12.0	215	--	07-26-74	Glacial drift	20N20W02BAB 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
20N20W02BBA 01	W	3,040	H	26	-	--	--	21.30	-	08-14-74
20N20W03CCA 01	W	3,040	-	400	-	--	--	--	-	08-01-74
20N20W04BAA 01	W	2,980	P	355	-	--	--	+166.10	S	07-11-74
20N20W05BBA 01	W	3,040	H	26	-	--	--	21.30	S	08-14-74
20N20W05DDD 01	W	2,980	H	371	-	--	--	+38.50	S	07-12-74
20N20W10ADA 01	W	3,040	H	418	-	--	--	+11.80	S	09-13-74
20N20W11CCBD01	W	3,020	H	400	-	--	--	--	S	09-13-74
20N20W12ADD 01	W	3,070	P	--	-	--	--	9.70	S	08-20-74
20N20W14CAD 01	W	3,020	H	385	-	--	--	29.40	S	08-16-74
20N20W15ADDD01	W	3,020	H	419	P	409	414	20.23	S	11-17-83
20N20W16ABDC01	W	3,000	H	175	X	170	175	+38.95	S	11-16-83
20N20W20AADA01	W	3,100	H	160	X	39	160	108.45	S	11-17-83
20N20W20DCD 01	W	2,970	H	285	-	--	--	7.30	S	07-17-74
20N20W22AAD 01	W	3,020	H	518	-	--	--	67.35	S	09-08-75
20N20W25CCC 01	W	3,030	H	350	-	--	--	142.70	S	08-16-74
20N20W26CCBD01	W	3,050	U	200	-	--	--	158.60	S	05-16-67
20N20W27CDB 01	W	3,020	H	444	-	--	--	130.10	S	08-16-74
20N20W28AAA 01	W	3,030	H	73	-	--	--	44.66	S	09-09-75
20N20W30ABB 01	W	2,980	H	28	-	--	--	3.50	S	07-17-74
20N20W30DCD 01	W	2,940	H	35	-	--	--	6.13	S	09-09-75
20N20W32DAA 01	W	2,930	H	500	-	--	--	89.79	S	09-09-75
20N21W01AAA 01	W	3,020	H	28	-	--	--	15.90	-	08-14-74
20N21W02BCD 01	W	3,060	H	252	-	--	--	66.80	S	08-14-74
20N21W10BCB 01	W	2,920	H	656	-	--	--	196.90	S	08-14-74
20N21W13CCC 01	W	2,960	H	27	-	--	--	25.15	S	09-08-75
20N21W13DDD 01	W	3,000	H	380	-	--	--	73.40	S	07-17-74
20N21W16BBA 01	W	--	H	--	-	--	--	--	-	--
20N21W21CAB 01	S	--	-	--	-	--	--	--	-	--
20N21W23ADD 01	W	2,960	H	361	-	--	--	63.34	S	09-08-75
20N21W23ADD 02	W	2,960	U	22	-	--	--	10.20	S	09-08-75
20N21W25BBCC01	W	2,940	H	410	P	395	410	35.12	S	12-30-83
20N21W26ABAB01	W	2,930	U	42	-	--	--	7.44	S	08-11-83
20N21W27DDA 01	W	3,010	S	90	-	--	--	43.25	S	09-09-75
20N21W35CCB 01	W	2,940	H	124	-	--	--	5.55	S	09-09-75
20N21W36CCD 01	W	--	-	498	-	--	--	88.40	-	10-06-69
20N22W21CBDA01	W	2,750	U	331	P	300	310	109.45	S	10-15-84
-	-	--	-	--	-	323	328	--	-	--
20N22W28ABCB01	W	2,740	U	340	P	312	325	97.22	S	09-22-84
-	-	--	-	--	-	--	--	--	-	--
20N22W28ABCB02	W	2,740	U	665	P	602	642	93.10	S	08-15-85
20N22W30AAC 01	W	2,680	U	50	-	--	--	30.30	S	06-27-75
20N22W30DADD01	W	2,680	U	155	O	--	--	+1.43	S	09-04-69
20N23W12AAA 01	W	2,680	S	340	-	--	--	--	S	07-30-74
20N24W01CCB 01	W	2,840	I	13	-	--	--	7.70	S	07-31-74
20N24W01DCCD01	W	2,840	I	10	O	--	--	5.30	S	09-20-83
20N24W02CCD 01	W	2,860	H	15	-	--	--	8.74	S	07-10-75
20N24W03CCCD01	W	2,930	U	68	-	--	--	51.20	S	08-18-83
20N24W03CCD 01	W	2,940	H	110	-	--	--	40.52	S	07-10-75
20N24W11AADC01	W	2,840	I	8.5	O	--	--	4.70	S	09-20-83
20N24W11CCC 01	W	2,820	H	44	-	--	--	6.28	S	07-10-75
20N24W12CCA 01	W	2,830	I	9.0	-	--	--	5.24	S	07-31-74
20N24W14CCA 01	W	2,800	I	10	P	--	--	2.99	S	07-31-74
20N24W15ABB 01	W	2,840	H	41	-	--	--	28.26	S	07-10-75
20N24W15BBBB01	W	2,840	H	465	P	42	46	29.94	S	09-09-83
	-	--	-	--	-	67	77	--	-	--
	-	--	-	--	-	148	165	--	-	--
20N24W15CBB 01	W	2,840	H	19	-	--	--	10.29	S	07-09-75
20N24W18DDAC01	W	3,080	H	285	P	250	255	25.18	S	09-08-83
	-	--	-	--	-	265	270	--	-	--
	-	--	-	--	-	275	285	--	-	--

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	--	--	--	--	Glacial drift	20N20W02BBA 01
200	R	12.5	250	--	07-11-74	Glacial drift	20N20W03CCA 01
--	-	12.5	250	--	07-11-74	Glacial drift	20N20W04BAA 01
--	-	--	--	--	--	Glacial drift	20N20W05BBA 01
--	-	12.0	210	--	07-12-74	Glacial drift	20N20W05DDD 01
5.0	-	12.5	160	--	09-13-74	Glacial drift	20N20W10ADA 01
--	-	12.5	180	--	09-13-74	Glacial drift	20N20W11CCBD01
--	-	--	--	--	--	--	20N20W12ADD 01
--	-	14.0	160	--	08-16-74	Glacial drift	20N20W14CAD 01
10	V	10.0	275	8.1	11-17-83	Glacial drift	20N20W15ADDD01
6.7	V	9.5	310	8.3	11-16-83	Belt rocks	20N20W16ABDC01
2.5	V	11.0	500	8.1	11-17-83	Belt rocks	20N20W20AADA01
300	-	12.5	470	--	07-17-74	Glacial drift	20N20W20DCD 01
--	-	7.5	300	--	09-08-75	--	20N20W22AAD 01
--	-	11.5	240	--	08-16-74	Glacial drift	20N20W25CCC 01
--	-	--	--	--	--	Lakebed deposits	20N20W26CCBD01
13	-	12.5	310	--	08-16-74	Glacial drift	20N20W27CDB 01
--	-	7.5	860	--	09-09-75	Glacial drift	20N20W28AAA 01
--	-	12.0	930	--	07-17-74	Glacial drift	20N20W30ABB 01
--	-	7.5	1,780	--	09-09-75	Glacial drift	20N20W30DCD 01
--	-	9.5	325	--	09-09-75	Glacial drift	20N20W32DAA 01
--	-	9.0	1,000	--	08-14-74	Glacial drift	20N21W01AAA 01
--	-	12.0	640	--	08-14-74	Glacial drift	20N21W02BCD 01
--	-	--	--	--	--	Glacial drift	20N21W10BCB 01
--	-	10.0	870	--	09-08-75	Glacial drift	20N21W13CCC 01
15	-	13.0	590	--	07-17-74	Glacial drift	20N21W13DDD 01
1,500	R	--	--	--	--	--	20N21W16BBA 01
--	-	--	--	--	--	--	20N21W21CAB 01
--	-	9.0	695	--	09-08-75	Glacial drift	20N21W23ADD 01
--	-	7.5	1650	--	09-08-75	Glacial drift	20N21W23ADD 02
12	V	8.0	540	8.0	12-30-83	Glacial drift	20N21W25BBCC01
--	-	--	--	--	--	Glacial drift	20N21W26ABAB01
--	-	8.0	425	--	09-09-75	Glacial drift	20N21W27DDA 01
--	-	9.0	470	--	09-09-75	Glacial drift	20N21W35CCB 01
--	-	--	--	--	--	Glacial drift	20N21W36CCD 01
37	V	18.5	375	8.3	10-15-84	Glacial outwash	20N22W21CBDA01
136	C	--	--	--	--	--	
46	V	13.0	--	--	--	Glacial outwash	20N22W28ABCB01
175	V	--	360	--	10-15-84	--	
11	V	17.0	325	--	08-15-85	--	20N22W28ABCB02
--	-	9.0	720	--	06-27-75	Glacial drift	20N22W30AAC 01
--	-	13.0	540	--	07-30-74	Alluvium	20N22W30DADD01
30	-	13.0	375	--	07-30-74	Glacial drift	20N23W12AAA 01
108	V	10.0	300	--	07-31-74	Alluvium	20N24W01CCB 01
600	R	--	--	--	--	Alluvium	20N24W01DCCD01
--	-	11.5	320	--	07-10-75	Alluvium	20N24W02CCD 01
--	-	--	--	--	--	Alluvium	20N24W03CCCD01
--	-	12.0	190	--	07-10-75	Alluvium	20N24W03CCD 01
500	R	11.0	--	--	07-31-74	Alluvium	20N24W11AADC01
--	-	10.5	160	--	07-10-75	Glacial drift	20N24W11CCC 01
--	-	11.0	330	--	07-31-74	Alluvium	20N24W12CCA 01
--	-	--	--	--	--	Alluvium	20N24W14CCA 01
--	-	10.5	315	--	07-10-75	Alluvium	20N24W15ABB 01
5.4	V	11.0	220	8.0	09-09-83	Alluvium	20N24W15BBBB01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	
--	-	9.0	370	--	07-09-75	Alluvium	20N24W15CBB 01
3.2	V	11.0	215	8.3	09-08-83	Belt rocks	20N24W18DDAC01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
20N24W19AAAA01	W	3,080	H	100	P	55	100	36.20	S	09-08-83
20N24W21AAA 01	W	2,800	U	7.0	-	--	--	+.40	S	07-31-74
20N24W21AAA 02	W	2,840	H	13	-	--	--	.64	S	07-10-75
20N24W22AAB 01	W	2,800	U	66	-	--	--	6.47	S	07-09-75
20N24W23CBAA01	W	2,797	U	99	P	5	18	2.63	S	09-11-84
	-	--	-	--	-	33	42	--	-	--
	-	--	-	--	-	63	94	--	-	--
20N24W23CBAA02	W	2,798	U	98	P	11	22	2.33	S	09-11-84
	-	--	-	--	-	38	62	--	-	--
	-	--	-	--	-	68	98	--	-	--
20N24W24CBBC01	W	2,840	H	74	O	--	--	36.35	S	09-14-83
20N24W26BAA 01	W	2,800	U	8.0	-	--	--	--	-	--
20N24W26DAA 01	W	2,840	H	67	-	--	--	27.20	S	07-08-75
20N24W26DAD 01	W	2,840	H	61	-	--	--	28.18	S	07-08-75
20N24W28DDC 01	W	2,800	H	20	-	--	--	13.80	S	07-09-75
20N24W29CDCD01	W	3,120	H	397	O	392	397	--	L	07-28-83
20N24W29CDDD01	W	3,080	H	105	P	77	78	1.10	S	09-07-83
	-	--	-	--	-	100	105	--	-	--
20N24W29DADD01	W	2,880	U	54	P	20	30	8.24	S	09-30-83
	-	--	-	--	-	45	50	--	-	--
	-	--	-	--	-	50	54	--	-	--
20N24W34AAAB01	W	2,800	I	11	-	--	--	3.17	S	09-15-83
20N24W34AAC 01	W	2,800	S	11	-	--	--	2.00	S	07-09-75
20N24W34BAB 01	W	2,800	H	28	-	--	--	13.09	S	07-09-75
20N24W34DCC 01	W	2,800	H	80	-	--	--	23.58	S	07-08-75
20N24W35AAAA01	W	2,840	U	44	P	35	43	19.92	S	10-05-83
20N24W35AAD 01	W	2,840	H	49	-	--	--	29.00	-	--
20N24W36CBB 01	W	2,840	S	52	-	--	--	33.27	S	07-08-75
20N25W03BCAA01	W	3,600	H	29	P	24	29	10.31	S	10-13-83
21N19W05AABA01	W	3,220	H	66	O	--	--	46.47	S	11-22-83
21N19W05BCD 01	W	3,140	H	205	-	--	--	17.80	-	07-17-74
21N19W06CBC 01	W	3,090	H	29	-	--	--	17.20	-	07-19-74
21N19W07DCDD01	W	3,120	H	195	O	--	--	45.40	-	11-21-83
21N19W16BCDB01	W	3,400	H	400	S	400	405	314.80	S	11-22-83
21N19W18ABA 01	W	3,120	H	99	-	--	--	33.40	-	08-20-74
21N19W19BCB 01	W	3,100	H	150	-	--	--	25.30	-	08-20-74
21N19W20BBB 01	W	3,140	H	120	-	--	--	47.70	-	08-20-74
21N19W20CABB01	W	3,200	H	145	O	--	--	118.56	S	11-22-83
21N19W28DBBB01	W	3,310	H	140	S	130	140	40.54	S	06-22-83
21N19W30CCC 01	W	3,060	H	--	-	--	--	--	-	--
21N19W33BBA 01	W	3,260	H	82	-	--	--	64.80	-	08-20-74
21N20W01BAAD01	W	3,120	H	398	S	392	397	49.00	L	06-02-83
21N20W01DDC 01	W	3,090	I	28	-	18	28	14.90	S	07-18-74
21N20W02AB 02	W	3,110	N	400	-	--	--	78.40	-	08-13-74
21N20W02ABD 01	W	3,110	N	510	-	423	425	131.80	S	08-13-74
	-	--	-	--	-	434	435	--	-	--
	-	--	-	--	-	472	473	--	-	--
21N20W05CBBB01	W	3,140	S	265	O	--	--	137.15	S	08-11-83
	-	--	-	--	-	--	--	--	-	--
21N20W09AAAB01	W	3,120	H	360	O	--	--	66.27	S	11-29-83
21N20W11ACC 01	W	3,080	P	385	-	--	--	114.70	S	07-26-74
21N20W11DAD 01	W	3,090	H	27	-	--	--	24.20	-	09-13-74
21N20W14ACB 01	W	3,050	S	12	-	--	--	3.70	S	07-18-74
21N20W15BAA 01	W	3,100	H	500	-	--	--	50.10	S	07-18-74
21N20W17BCC 01	W	3,080	H	800	-	--	--	149.00	S	08-14-74
21N20W19BCB 01	W	3,080	H	329	-	--	--	75.00	S	07-14-74
21N20W20AADA01	W	3,040	H	303	O	--	--	18.90	S	11-30-83
21N20W21ADD 01	W	3,040	H	326	-	--	--	--	-	07-18-74
21N20W22BABA01	W	3,040	H	427	O	--	--	+13.15	S	11-30-83
21N20W23BDD 01	W	3,020	H	350	-	--	--	+50.70	-	08-26-74

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
5.7	V	10.0	200	8.2	09-08-83	Belt rocks	20N24W19AAAA01
--	-	--	--	--	--	Alluvium	20N24W21AAA 01
--	-	11.0	160	--	07-10-75	Alluvium	20N24W21AAA 02
--	-	9.0	265	--	07-09-75	Alluvium	20N24W22AAB 01
74	V	10.0	312	7.6	10-11-84	Alluvium	20N24W23CBAA01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	
80	V	10.0	325	7.8	10-12-84	Alluvium	20N24W23CBAA02
276	C	--	--	--	--	--	
--	-	--	--	--	--	--	
5.5	V	12.0	560	7.9	09-14-83	Alluvium	20N24W24CBBC01
--	-	12.0	445	--	07-10-75	Alluvium	20N24W26BAA 01
--	-	12.0	465	--	07-08-75	Alluvium	20N24W26DAA 01
--	-	12.5	510	--	07-08-75	Alluvium	20N24W26DAD 01
--	-	12.5	390	--	07-09-75	Alluvium	20N24W28DDC 01
10	R	--	260	7.6	07-28-83	Belt rocks	20N24W29CDCD01
5.7	V	12.0	--	--	07-09-75	Belt rocks	20N24W29CDDD01
--	-	--	170	--	07-09-75	--	
--	-	--	--	--	--	Alluvium	20N24W29DADD01
--	-	--	--	--	--	--	
--	-	--	--	--		--	
--	-	11.0	375	--	07-09-75	Alluvium	20N24W34AAAB01
--	-	10.5	460	--	07-09-75	Alluvium	20N24W34AAC 01
--	-	10.5	615	--	07-09-75	Alluvium	20N24W34BAB 01
--	-	14.0	220	--	07-08-75	Alluvium	20N24W34DCC 01
--	-	--	--	--	--	Alluvium	20N24W35AAAA01
--	-	12.5	490	--	07-08-75	Alluvium	20N24W35AAD 01
--	-	--	--	--	--	Alluvium	20N24W36CBB 01
6.2	V	9.0	158	6.7	10-13-83	Alluvium	20N25W03BCAA01
11	V	8.0	70	8.2	11-22-83	Glacial drift	21N19W05AABA01
1,340	R	--	--	--	--	Glacial drift	21N19W05BCD 01
--	-	8.0	350	--	07-19-74	Glacial drift	21N19W06CBC 01
10	V	9.0	320	8.2	11-21-83	Glacial drift	21N19W07DCDD01
7.5	V	8.0	310	8.5	11-22-83	Glacial drift	21N19W16BCDB01
--	-	10.0	380	--	08-20-74	Glacial drift	21N19W18ABA 01
--	-	12.5	325	--	08-20-74	Glacial drift	21N19W19BCB 01
--	-	12.0	315	--	08-20-74	Glacial drift	21N19W20BBB 01
8.0	V	9.0	460	8.2	11-22-83	Glacial drift	21N19W20CABB01
4.4	V	9.5	240	7.1	06-22-83	Glacial drift	21N19W28DBBB01
--	-	10.5	325	--	07-18-74	Glacial drift	21N19W30CCC 01
--	-	--	--	--	--	Glacial drift	21N19W33BBA 01
10	R	--	255	8.5	06-02-83	Glacial drift	21N20W01BAAD01
100	-	11.0	270	--	07-18-74	Glacial drift	21N20W01DDC 01
--	-	15.0	160	--	08-13-74	Glacial drift	21N20W02AB 02
500	-	14.0	170	--	08-13-74	Glacial drift	21N20W02ABD 01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	
4.0	R	--	--	--	--	Glacial drift	21N20W05CBBB01
--	-	--	--	--	--	Belt rocks	
12	V	10.0	360	8.7	11-29-83	Glacial drift	21N20W09AAAB01
160	-	13.0	160	--	07-26-74	Glacial drift	21N20W11ACC 01
--	-	14.5	205	--	09-13-74	Glacial drift	21N20W11DAD 01
292	-	14.5	400	--	07-18-74	Glacial drift	21N20W14ACB 01
--	-	12.5	220	--	07-18-74	Glacial drift	21N20W15BAA 01
--	-	13.0	500	--	08-14-74	Glacial drift	21N20W17BCC 01
--	-	15.0	580	--	07-14-74	Glacial drift	21N20W19BCB 01
24	V	9.0	370	8.5	11-30-83	Glacial outwash	21N20W20AADA01
10	R	12.5	360	--	07-18-74	Glacial drift	21N20W21ADD 01
2.9	V	9.5	290	7.9	11-30-83	Glacial drift	21N20W22BABA01
55	-	11.0	245	--	08-26-74	Glacial drift	21N20W23BDD 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
21N20W24CAA 01	W	3,070	I	300	-	280	300	6.40	S	07-12-74
21N20W24CAAA02	W	3,070	U	290	-	--	--	23.60	S	08-08-74
21N20W24DDD 01	W	3,080	I	344	-	--	--	16.10	S	07-11-74
21N20W25ADD 01	W	3,080	I	320	-	250	320	14.50	S	07-18-74
21N20W26DCA 01	W	3,030	I	341	-	336	341	+64.60	S	07-11-74
21N20W27BBCC01	W	3,040	H	356	O	--	--	19.90	S	01-04-84
21N20W28BBA 01	W	3,060	H	213	O	--	--	55.90	S	08-14-74
21N20W31AABB01	W	3,080	U	--	-	--	--	59.90	S	10-27-83
21N20W33AAA 01	W	3,000	-	453	-	--	--	1.00	-	03-05-76
21N20W35CDC 01	W	3,050	H	394	-	--	--	+8.50	S	09-13-74
21N20W35DAAB01	W	3,060	H	381	O	--	--	+1.00	S	11-29-83
21N20W36DAD 01	W	3,050	H	164	-	--	--	+11.50	S	07-11-74
21N21W02AAD 01	W	2,960	H	88	-	--	--	--	-	07-16-74
21N21W05BAAA01	W	2,860	H	460	O	--	--	125.08	S	12-05-83
21N21W09AAB 01	W	2,880	H	328	-	--	--	74.90	S	09-03-74
21N21W15CBB 01	W	2,900	H	40	-	--	--	--	S	09-03-74
21N21W22DCC 01	W	3,090	H	270	-	--	--	170.80	S	09-03-74
21N21W25BBB 01	W	3,060	H	371	-	--	--	118.20	S	08-30-74
21N21W26BBA 01	W	3,080	H	280	-	--	--	--	-	--
21N21W26DAD 01	W	3,060	H	390	-	--	--	115.10	S	08-30-74
21N21W35CCC 01	W	3,120	H	600	-	--	--	166.50	S	08-13-74
21N21W36CBA 01	W	3,080	U	420	-	--	--	41.60	S	07-29-74
21N22W07DCAA01	W	2,800	U	186	P	140	170	27.44	S	09-28-84
	-	--	-	--	-	--	--	--	-	--
21N22W30BAD 01	W	2,720	I	254	-	--	--	--	S	07-30-74
21N22W30BDAA01	W	2,720	I	--	-	--	--	+17.16	S	10-12-83
21N22W30CDA 01	W	2,700	U	150	-	--	--	+2.80	S	07-30-74
21N22W36BDCC01	W	2,620	U	103	P	37	44	--	-	--
	-	--	-	--	-	81	84	--	-	--
	-	--	-	--	-	96	100	--	-	--
21N22W36BDCC02	W	2,620	U	99	P	80	99	--	-	--
21N23W02DBB 01	W	2,770	U	70	-	--	--	11.00	S	07-30-74
21N23W03DBAC01	W	2,760	I	256	P	217	256	1.94	S	10-17-83
21N23W03DBB 01	W	2,750	U	208	-	--	--	4.90	S	08-22-75
21N23W04AAD 01	W	2,740	H	250	-	--	--	+1.80	S	07-30-74
21N23W10BDD 01	W	2,760	S	200	-	--	--	+1.50	S	07-30-74
21N23W11CBD 01	W	2,740	I	--	-	--	--	+2.00	S	07-30-74
21N23W13CCBC01	W	2,720	S	271	P	--	--	+4.00	S	09-23-83
21N23W13CCD 01	W	2,740	U	278	-	--	--	+4.50	-	07-31-75
21N23W13CCD 02	W	2,720	S	290	-	--	--	+11.00	S	07-31-75
21N23W14ACB 01	W	2,720	U	276	-	--	--	--	-	--
21N23W14ACD 01	W	2,720	S	238	-	--	--	--	-	--
21N23W24ADC 01	W	2,730	S	260	-	--	--	+4.50	S	08-01-75
21N24W01ABB 01	W	2,760	C	100	-	--	--	.20	S	07-14-75
21N24W01CAD 01	W	2,760	H	300	-	--	--	--	S	07-14-75
21N24W01CCC 01	W	2,765	U	185	-	--	--	1.40	S	05-17-67
21N24W02ADC 01	W	2,780	H	275	-	--	--	6.70	S	07-14-75
21N24W02BDBC01	W	2,800	H	82	P	--	--	+1.20	S	09-22-83
21N24W03BBA 01	S	--	-	--	-	--	--	--	-	--
21N24W03BBC 01	W	--	-	--	-	--	--	--	-	--
21N24W03DBAB01	W	2,800	H	205	O	--	--	25.92	S	09-26-83
21N24W04DBC 01	W	2,900	P	241	-	--	--	236.00	R	07-29-74
21N24W04DBD 01	W	2,780	S	383	-	195	198	10.50	R	01-01-63
	-	--	-	--	-	240	248	--	-	--
21N24W09ACBA01	W	3,040	H	54	P	49	52	33.05	S	09-26-83
21N24W09CABC01	W	3,040	H	44	P	15	19	14.10	S	09-22-83
21N24W10AADD01	W	2,840	I	325	X	104	325	18.00	S	09-22-83
21N24W11DDDD01	W	2,840	H	20	X	--	--	16.65	S	09-23-83
21N24W12ADD 01	W	2,780	S	52	-	--	--	+10.30	S	08-08-74
21N24W12CCC 01	W	2,820	H	10	-	--	--	3.00	S	07-14-75

Discharge (gal/min)	Method of discharge measurement	Water temperature (°C)	Specific conductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
761	-	13.0	260	--	07-12-74	Glacial drift	21N20W24CAA 01
--	-	12.0	260	--	08-26-74	Glacial drift	21N20W24CAAA02
530	-	12.0	285	--	07-11-74	Glacial drift	21N20W24DDD 01
500	-	--	--	--	--	Glacial drift	21N20W25ADD 01
639	-	11.0	235	--	07-11-74	Glacial drift	21N20W26DCA 01
10	V	10.0	390	8.2	01-04-84	Glacial drift	21N20W27BBCC01
--	-	14.5	400	--	08-14-74	Glacial drift	21N20W28BBA 01
--	-	--	--	--	--	Glacial drift	21N20W31AABB01
--	-	15.5	265	--	03-05-76	Glacial drift	21N20W33AAA 01
--	-	11.5	270	--	09-13-74	Glacial drift	21N20W35CDC 01
8.3	V	10.0	235	8.7	11-29-83	Glacial drift	21N20W35DAAB01
800	-	13.0	222	--	07-11-74	Glacial drift	21N20W36DAD 01
--	-	10.0	490	--	07-16-74	Glacial drift	21N21W02AAD 01
13	V	17.0	690	8.1	12-05-83	Glacial drift	21N21W05BAAA01
--	-	15.0	550	--	09-03-74	Glacial drift	21N21W09AAB 01
--	-	11.0	475	--	09-03-74	Glacial drift	21N21W15CBB 01
--	-	12.5	750	--	09-03-74	Glacial drift	21N21W22DCC 01
--	-	14.0	590	--	08-30-74	Glacial drift	21N21W25BBB 01
--	-	--	--	--	--	Glacial drift	21N21W26BBA 01
--	-	14.0	450	--	08-30-74	Glacial drift	21N21W26DAD 01
--	-	--	--	--	--	Glacial drift	21N21W35CCC 01
--	-	16.0	380	--	07-29-69	Glacial drift	21N21W36CBA 01
64	V	10.0	430	7.9	10-12-84	Glacial outwash	21N22W07DCAA01
256	C	--	--	--	--	--	
72	-	14.5	345	--	07-30-74	Glacial drift	21N22W30BAD 01
5.6	V	13.5	348	8.3	10-12-83	Alluvium	21N22W30BDAA01
--	-	15.0	350	--	07-30-74	Glacial drift	21N22W30CDA 01
--	-	--	--	--	--	Alluvium	21N22W36BDCC01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	
25	V	--	--	--	--	Alluvium	21N22W36BDCC02
--	-	12.0	190	--	07-30-74	--	21N23W02DBB 01
--	-	--	--	--	--	Glacial outwash	21N23W03DBAC01
--	-	11.0	553	--	07-30-74	Glacial drift	21N23W03DBB 01
69	C	15.5	500	--	07-30-74	Glacial drift	21N23W04AAD 01
--	-	16.0	690	--	07-30-74	Glacial drift	21N23W10BDD 01
268	C	13.0	395	--	07-30-74	Glacial drift	21N23W11CBD 01
40	R	11.0	380	8.3	09-23-83	Alluvium	21N23W13CCBC01
--	-	10.5	350	--	07-31-75	Glacial drift	21N23W13CCD 01
--	-	14.5	365	--	07-31-75	Glacial drift	21N23W13CCD 02
--	-	13.0	330	--	07-31-75	Glacial drift	21N23W14ACB 01
--	-	13.0	378	--	07-31-76	Glacial drift	21N23W14ACD 01
--	-	12.5	390	--	08-01-75	Glacial drift	21N23W24ADC 01
--	-	12.5	730	--	07-14-75	Glacial drift	21N24W01ABB 01
--	-	15.0	530	--	07-14-75	Glacial drift	21N24W01CAD 01
--	-	--	--	--	--	Alluvium	21N24W01CCC 01
--	-	13.0	640	--	07-14-75	Glacial drift	21N24W02ADC 01
2.7	V	11.0	370	8.6	09-22-83	Alluvium	21N24W02BDBC01
--	-	--	--	--	--	--	21N24W03BBA 01
--	-	--	--	--	--	--	21N24W03BBC 01
4.6	V	15.0	390	8.8	09-26-83	Alluvium	21N24W03DBAB01
250	-	13.5	210	--	07-29-74	Glacial drift	21N24W04DBC 01
340	-	22.5	280	--	07-29-74	Glacial drift	21N24W04DBD 01
--	-	--	--	--	--	--	
5.7	V	10.0	205	7.8	09-26-83	Alluvium	21N24W09ACBA01
9.6	V	8.0	180	7.5	09-22-83	Alluvium	21N24W09CABC01
40	V	12.0	280	7.8	09-22-83	Belt rocks	21N24W10AADD01
12	V	11.0	270	8.2	09-23-83	Belt rocks	21N24W11DDDD01
2.5	-	15.0	320	--	08-08-74	Glacial drift	21N24W12ADD 01
--	-	11.0	320	--	07-14-75	Glacial drift	21N24W12CCC 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
21N24W12CCC 02	W	2,820	S	425	-	--	--	+1.40	S	07-14-75
21N24W24BAC 01	W	2,920	H	57	-	--	--	5.80	-	07-14-75
22N19W04CCCC01	W	3,040	H	107	O	--	--	59.04	S	12-06-83
22N19W05CCA 01	W	2,910	H	168	-	--	--	+25.00	O	09-16-74
22N19W08AAB 01	W	2,940	H	103	-	--	--	5.20	S	08-28-74
22N19W09BCB 01	W	3,060	H	85	-	--	--	44.90	S	08-28-74
22N19W17CBA 01	W	3,130	H	25	-	--	--	3.50	S	07-19-74
22N19W18DAA 01	W	3,130	H	25	-	--	--	6.70	S	07-19-74
22N19W20ADAA01	W	3,300	H	167	S	156	161	139.10	S	12-06-83
22N19W20ADAA02	W	3,300	H	163	S	158	163	138.00	L	04-22-83
22N19W20BBDD01	W	3,320	H	519	S	--	--	353.40	S	12-07-83
22N19W29CBC 01	W	3,220	H	15	-	--	--	10.30	S	07-19-74
22N19W32BCAD01	W	3,200	H	320	S	315	320	123.40	S	12-06-83
22N19W32BCDD01	W	3,200	H	300	O	--	--	144.63	S	12-07-83
22N19W33BBBD01	W	3,260	H	163	S	153	163	49.00	L	02-07-84
22N20W02CBD 01	W	2,990	P	525	O	251	261	54.00	S	01-14-76
	-	--	-	--	-	287	292	--	-	--
	-	--	-	--	-	490	525	--	-	--
22N20W05AAB 01	W	2,900	H	370	-	--	--	--	S	08-30-74
22N20W09ACD 01	W	2,980	I	--	-	--	--	--	-	--
22N20W09CBB 01	W	2,980	H	53	-	--	--	+3.20	S	07-22-74
22N20W10CAA 01	W	3,120	P	165	-	145	155	114.00	-	01-14-76
22N20W11CADB01	W	3,340	H	577	O	--	--	291.50	S	12-02-83
22N20W12CCC 01	W	3,300	H	462	-	--	--	355.90	S	08-15-74
22N20W13ADDD01	W	3,100	H	302	P	284	294	228.40	S	12-08-83
22N20W14DDC 01	W	3,220	H	640	-	--	--	300.00	S	--
22N20W17ABAC01	W	3,110	H	495	X	495	640	176.80	S	12-21-83
22N20W17DCAB01	W	3,220	H	440	X	316	440	264.50	S	12-12-83
22N20W22BAA 01	W	3,200	H	403	-	--	--	232.60	S	08-26-74
22N20W23DAD 01	W	3,220	U	500	-	--	--	200.00	S	08-15-74
22N20W24CDD 01	W	3,220	H	327	-	--	--	238.60	S	08-15-74
22N20W25ABA 01	W	3,230	H	1,000	-	450	530	262.85	S	09-08-75
	-	--	-	--	-	800	1,000	--	-	--
22N20W25BABD01	W	3,200	H	300	P	94	97	86.36	-	12-07-83
22N20W26AAAA01	W	3,200	H	113	S	98	103	77.80	S	12-05-83
22N20W29DCDC01	W	3,090	H	170	-	--	--	--	-	--
22N20W31CDD 01	W	3,100	H	150	X	23	--	53.00	S	09-03-74
22N20W35ADCC01	W	3,140	C	451	S	451	456	86.62	L	12-05-83
22N20W36BBAB01	W	3,140	H	74	S	62	69	51.10	S	12-01-83
22N21W02ADAC01	W	3,160	S	--	-	--	--	137.39	S	10-05-83
22N21W07ABC 01	W	2,920	S	95	-	--	--	--	S	01-01-75
22N21W09BCB 01	W	2,970	U	69	-	--	--	51.80	S	09-17-74
22N21W09BCBC01	W	2,960	U	21	O	20	72	--	-	12-13-83
22N21W17AAC 01	W	2,750	S	77	-	--	--	3.10	S	08-04-75
22N21W23DAA 01	W	3,100	H	267	-	--	--	232.20	S	09-05-74
22N21W24BAB 01	W	3,250	H	800	-	--	--	337.50	S	09-05-74
22N21W24DDC 01	W	3,090	H	307	-	--	--	140.90	S	09-05-74
22N21W25CCC 01	W	2,960	H	250	-	--	--	6.90	S	09-05-74
22N21W25DDCB01	W	2,990	H	135	O	--	--	66.60	S	12-09-83
22N21W26ABB 01	W	3,010	H	290	-	--	--	154.50	S	09-05-74
22N21W28ACD 01	W	2,940	H	144	-	--	--	105.50	S	07-16-74
22N21W28DDDC01	W	2,920	U	--	-	--	--	9.17	S	10-05-83
22N21W28DDDD01	W	2,935	U	600	-	--	--	96.48	S	08-25-83
22N21W29ADD 01	W	2,920	H	639	-	--	--	126.30	S	09-05-74
22N21W30CBBA01	W	2,680	U	200	P	171	180	--	-	--
22N21W32ABAB01	W	2,900	H	515	O	--	--	170.60	S	12-09-83
22N21W35ABB 01	W	2,950	H	218	-	--	--	--	-	--
22N21W36ABB 01	W	2,960	H	125	-	--	--	7.70	S	09-03-74
22N22W01CAAA01	W	2,910	S	147	-	--	--	+21.10	S	09-28-83
	-	--	-	--	-	--	--	--	-	--

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	11.5	335	--	07-14-75	Glacial drift	21N24W12CCC 02
--	-	11.5	225	--	07-14-75	Glacial drift	21N24W24BAC 01
6.0	V	8.5	330	8.3	12-08-83	Glacial drift	22N19W04CCCC01
220	R	11.5	300	--	09-16-74	Glacial drift	22N19W05CCA 01
--	-	9.5	290	--	08-28-74	Glacial drift	22N19W08AAB 01
--	-	10.0	270	--	08-28-74	Glacial drift	22N19W09BCB 01
--	-	11.0	160	--	07-19-74	Glacial drift	22N19W17CBA 01
449	-	9.5	170	--	07-19-74	Glacial drift	22N19W18DAA 01
10	V	8.0	180	8.9	12-06-83	Glacial outwash	22N19W20ADAA01
10	R	--	228	8.0	04-22-83	Glacial drift	22N19W20ADAA02
4.5	V	8.5	215	8.7	12-07-83	Glacial outwash	22N19W20BBDD01
--	-	16.0	400	--	07-19-74	Glacial drift	22N19W29CBC 01
10	V	8.0	245	8.6	12-06-83	Glacial outwash	22N19W32BCAD01
10	V	8.0	205	8.5	12-06-77	Glacial outwash	22N19W32BCDD01
10	R	--	138	8.1	04-19-83	Glacial drift	22N19W33BBBD01
435	-	12.0	356	--	01-14-76	Glacial drift	22N20W02CBD 01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	22N20W05AAB 01
--	-	10.0	380	--	07-22-74	Glacial drift	22N20W09ACD 01
18	-	10.0	445	--	07-22-74	Glacial drift	22N20W09CBB 01
425	-	10.5	279	--	01-14-76	Glacial drift	22N20W10CAA 01
5.0	R	8.5	422	8.3	12-02-83	Glacial drift	22N20W11CADB01
50	R	20.0	125	--	08-15-74	Glacial drift	22N20W12CCC 01
5.2	V	8.5	335	8.5	12-08-83	Glacial drift	22N20W13ADDD01
.50	R	--	--	--	--	--	22N20W14DDC 01
3.8	V	7.5	370	8.3	12-12-83	Belt rocks	22N20W17ABAC01
7.5	V	9.5	400	8.4	12-12-83	Belt rocks	22N20W17DCAB01
--	-	12.5	300	--	08-26-74	Glacial drift	22N20W22BAA 01
--	-	--	--	--	--	Glacial drift	22N20W23DAD 01
12	-	11.5	260	--	08-15-74	Glacial drift	22N20W24CDD 01
--	-	14.0	270	--	09-18-75	Glacial drift	22N20W25ABA 01
--	-	--	--	--	--	--	
6.7	V	8.0	350	8.5	12-07-83	Glacial drift	22N20W25BABD01
2.0	V	9.0	565	8.2	12-05-83	Glacial drift	22N20W26AAAA01
--	-	9.0	355	8.3	12-09-83	Belt rocks	22N20W29DCDC01
--	-	11.0	800	--	09-03-74	Glacial drift	22N20W31CDD 01
6.1	V	8.0	321	8.0	12-05-83	Glacial drift	22N20W35ADCC01
6.0	V	8.0	440	8.2	12-01-83	Glacial drift	22N20W36BBAB01
--	-	10.0	500	8.3	10-05-83	Glacial drift	22N21W02ADAC01
--	-	--	--	--	--	--	22N21W07ABC 01
--	-	--	--	--	--	--	22N21W09BCB 01
--	-	--	--	--	--	Belt rocks	22N21W09BCBC01
--	-	14.5	345	--	08-04-75	Glacial drift	22N21W17AAC 01
24	-	13.0	420	--	09-05-75	Glacial drift	22N21W23DAA 01
--	-	12.0	620	--	09-05-74	Glacial drift	22N21W24BAB 01
40	-	11.0	490	--	09-05-74	Glacial drift	22N21W24DDC 01
--	-	10.5	560	--	09-05-74	Glacial drift	22N21W25CCC 01
10	V	8.5	350	8.4	12-09-83	Glacial drift	22N21W25DDCB01
--	-	11.0	400	--	09-05-74	Glacial drift	22N21W26ABB 01
--	-	13.5	650	--	07-16-74	Glacial drift	22N21W28ACD 01
--	-	--	--	--	--	Glacial drift	22N21W28DDDC01
--	-	--	--	--	--	Belt rocks	22N21W28DDDD01
60	R	14.0	695	--	09-05-74	Glacial drift	22N21W29ADD 01
--	-	--	--	--	--	Tertiary(?) sediments	22N21W30CBBA01
11	V	13.0	650	8.4	12-09-83	Glacial drift	22N21W32ABAB01
15	R	13.5	440	--	09-03-74	Glacial drift	22N21W35ABB 01
20	-	11.0	610	--	09-03-74	Glacial drift	22N21W36ABB 01
--	-	--	--	--	--	Lakebed deposits	22N22W01CAAA01
--	-	--	--	--	--	Glacial drift	

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
22N22W02DCD 01	W	2,860	H	248	-	--	--	+3.00	S	08-04-75
22N22W04ABA 01	W	3,040	U	440	-	--	--	2.38	S	08-07-75
22N22W12ACD 01	W	2,890	S	287	-	--	--	+1.60	S	08-04-75
22N22W13AAD 01	W	2,880	I	350	-	--	--	+14.00	R	07-16-74
22N22W13ABD 01	W	2,880	U	343	-	--	--	26.60	S	07-16-74
22N22W22BABC01	W	2,940	U	440	-	--	--	.01	S	08-10-83
22N22W24DAAA01	W	2,680	U	198	P	150	163	+22.24	S	11-05-84
22N22W26DDDD01	W	2,650	U	50	P	20	35	18.97	S	10-25-84
22N23W07BBD 01	W	2,760	U	145	-	--	--	--	-	--
22N23W07BBD 02	W	2,760	I	195	-	--	--	+1.50	S	07-15-75
22N23W07DBD 01	W	2,740	I	229	-	--	--	+52.00	S	08-08-74
22N23W15CDDD01	X	2,830	U	--	-	--	--	--	-	--
22N23W15DCDC01	W	2,840	U	92	P	60	80	47.82	S	10-11-84
	-	--	-	--	-	--	--	--	-	--
22N23W17BBC 01	W	2,760	I	226	-	--	--	--	-	--
22N23W17BBDD01	W	2,760	H	140	S	135	140	2.00	L	06-27-83
22N23W17BCB 01	W	2,760	I	235	-	--	--	--	-	--
22N23W17CBB 01	W	2,740	I	230	-	--	--	--	S	--
22N23W17CDB 01	W	2,740	I	233	-	--	--	--	-	--
22N23W18ACA 01	W	2,740	I	230	-	--	--	--	-	--
22N23W18BBB 01	W	2,820	H	280	-	--	--	45.46	S	07-15-75
22N23W18DDA 01	W	2,740	I	232	-	--	--	--	-	--
22N23W19CBD 01	W	2,800	U	310	-	--	--	36.66	S	07-15-75
22N23W19DAA 01	W	2,760	S	240	-	--	--	--	-	08-07-74
22N23W20DCD 01	W	2,740	I	--	-	--	--	--	-	--
22N23W20DDC 01	W	2,740	I	--	-	--	--	--	-	--
22N23W28BADD01	W	2,800	S	339	X	207	339	30.00	S	12-13-83
22N23W28CAC 01	W	2,760	S	237	-	--	--	+11.00	S	08-01-75
22N23W28CBB 01	W	2,740	I	230	-	--	--	--	-	--
22N23W28CBD 01	W	2,750	I	230	-	--	--	+23.00	S	09-17-74
22N23W29AAD 01	W	2,740	I	240	-	--	--	--	-	--
22N23W29ACB 01	W	2,740	H	244	-	--	--	+16.00	S	09-12-74
22N23W29BAA 01	W	2,740	I	230	-	--	--	+22.00	S	09-17-74
22N23W32BCB 01	W	2,800	H	319	-	--	--	35.30	S	08-01-75
22N23W33BAB 01	W	2,740	I	240	-	--	--	--	-	--
22N23W33BDA 01	W	2,740	U	239	-	--	--	+18.00	S	08-01-75
22N23W33DAD 01	W	2,740	S	242	-	--	--	--	-	--
22N23W33DDA 01	W	2,740	U	--	-	--	--	+2.50	-	07-31-75
22N23W33DDC 01	W	2,720	H	248	-	--	--	+18.50	S	07-31-75
22N23W34AAA 01	W	2,800	S	97	-	--	--	45.20	S	08-01-75
22N24W01BDCC01	W	2,840	H	309	O	--	--	67.54	S	10-17-83
22N24W01CBD 01	W	2,840	H	309	-	--	--	70.90	R	07-18-75
22N24W02ABB 01	W	2,860	H	328	-	--	--	81.90	-	07-16-75
22N24W03DAAB01	W	2,840	H	330	O	--	--	71.90	S	10-25-83
22N24W10ABA 01	W	2,840	H	300	-	--	--	65.93	S	07-21-75
22N24W10DDA 01	W	2,820	U	316	-	--	--	53.88	S	07-17-75
22N24W11ADC 01	W	2,820	U	--	-	--	--	54.50	-	07-17-75
22N24W11CBB 01	W	2,820	H	312	-	--	--	61.05	-	07-17-75
22N24W11DAD 01	W	2,820	H	340	-	--	--	52.57	-	07-17-75
22N24W11DAD 02	W	2,820	H	350	-	--	--	59.27	-	07-17-75
22N24W12ACCC01	W	2,840	H	309	O	--	--	--	-	--
22N24W13BCB 01	W	2,820	H	--	-	--	--	47.82	S	07-17-75
22N24W13DAD 01	W	2,800	H	300	-	--	--	45.14	S	07-15-75
22N24W14CDD 01	W	2,820	S	300	-	--	--	40.00	R	--
22N24W15CAB 01	W	2,820	H	156	-	--	--	18.40	S	07-17-75
22N24W21ACD 01	W	2,840	H	328	-	--	--	37.64	S	07-18-75
22N24W21DAA 01	W	2,825	H	158	-	--	--	36.90	-	07-16-76
22N24W22CAB 01	W	2,820	H	324	-	--	--	34.57	S	07-18-75
22N24W23AAA 01	W	2,820	H	270	-	--	--	46.05	S	07-22-75
22N24W23CDC 01	W	2,800	U	55	-	--	--	+.50	S	07-22-75

Discharge (gal/min)	Method of discharge measurement	Water temperature (°C)	Specific conductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	14.0	345	--	08-04-75	Glacial drift	22N22W02DCD 01
--	-	11.0	605	--	08-07-75	Glacial drift	22N22W04ABA 01
--	-	13.0	355	--	08-04-75	Glacial drift	22N22W12ACD 01
300	-	14.5	360	--	07-16-74	Glacial drift	22N22W13AAD 01
--	-	14.0	355	--	07-16-74	Glacial drift	22N22W13ABD 01
--	-	--	--	--	--	Glacial drift	22N22W22BABC01
43	M	--	--	--	--	Glacial outwash	22N22W24DAAA01
75	V	--	--	--	--	Alluvium	22N22W26DDDD01
--	-	15.0	625	--	07-15-75	Glacial drift	22N23W07BBD 01
140	-	16.0	470	--	07-15-75	Glacial drift	22N23W07BBD 02
665	-	17.0	570	--	08-08-74	Glacial drift	22N23W07DBD 01
--	-	--	--	--	--	--	22N23W15CDDD01
24	V	10.0	285	7.9	10-11-84	Glacial outwash	22N23W15DCDC01
65	-	--	--	--	--	--	
179	-	15.5	580	--	08-06-74	Glacial drift	22N23W17BBC 01
15	R	--	910	7.8	06-27-83	Glacial drift	22N23W17BBDD01
122	C	17.5	520	--	08-06-74	Glacial drift	22N23W17BCB 01
170	-	17.5	555	--	08-06-74	Glacial drift	22N23W17CBB 01
238	-	18.0	560	--	08-06-74	Glacial drift	22N23W17CDB 01
168	-	22.0	450	--	08-06-74	Glacial drift	22N23W18ACA 01
--	-	20.0	470	--	07-15-75	Glacial drift	22N23W18BBB 01
307	-	25.0	550	--	08-06-74	Glacial drift	22N23W18DDA 01
--	-	15.0	480	--	07-15-75	Glacial drift	22N23W19CBD 01
2.6	-	--	--	--	--	--	22N23W19DAA 01
223	C	31.5	605	--	08-07-74	Glacial drift	22N23W20DCD 01
156	-	28.0	640	--	08-07-74	Glacial drift	22N23W20DDC 01
8.0	V	12.0	350	8.5	12-13-83	Belt rocks	22N23W28BADD01
--	-	14.0	390	--	08-01-75	Glacial drift	22N23W28CAC 01
183	C	27.0	670	--	08-07-74	Glacial drift	22N23W28CBB 01
96	-	16.0	580	--	09-17-74	Glacial drift	22N23W28CBD 01
96	-	32.0	650	--	08-07-74	Glacial drift	22N23W29AAD 01
300	R	47.0	630	--	09-12-74	Glacial drift	22N23W29ACB 01
115	-	37.5	580	--	09-17-74	Glacial drift	22N23W29BAA 01
--	-	15.5	500	--	08-01-75	Glacial drift	22N23W32BCB 01
--	-	18.0	605	--	08-01-75	Glacial drift	22N23W33BAB 01
--	-	13.5	510	--	08-01-75	Glacial drift	22N23W33BDA 01
75	R	12.5	480	--	07-14-74	Glacial drift	22N23W33DAD 01
--	-	12.5	470	--	07-31-75	Glacial drift	22N23W33DDA 01
--	-	12.5	570	--	07-31-75	Glacial drift	22N23W33DDC 01
--	-	13.0	240	--	08-01-75	Glacial drift	22N23W34AAA 01
8.8	V	15.0	450	8.2	10-17-83	Alluvium	22N24W01BDCC01
--	-	19.0	425	--	07-18-75	Glacial drift	22N24W01CBD 01
--	-	19.0	425	--	07-18-75	Glacial dirft	22N24W02ABB 01
9.2	V	12.0	335	8.4	10-25-83	Alluvium	22N24W03DAAB01
--	-	16.5	310	--	07-21-75	Glacial drift	22N24W10A[illegible]A 01
--	-	--	--	--	--	Glacial drift	22N24W10DDA 01
--	-	--	--	--	--	--	22N24W11ADC 01
--	-	15.0	320	--	07-17-75	--	22N24W11CBB 01
--	-	13.5	405	--	07-17-75	Glacial drift	22N24W11DAD 01
--	-	14.0	--	--	07-17-75	Glacial drift	22N24W11DAD 02
--	-	--	--	--	--	Alluvium	22N24W12ACCC01
--	-	14.5	405	--	07-17-75	Glacial drift	22N24W13BCB 01
--	-	26.5	470	--	07-15-75	Glacial drift	22N24W13DAD 01
800	R	11.5	315	--	07-15-75	Glacial drift	22N24W14CDD 01
--	-	13.0	230	--	07-17-75	Glacial drift	22N24W15CAB 01
--	-	11.5	275	--	07-18-75	Glacial drift	22N24W21ACD 01
--	-	--	--	--	--	Alluvium	22N24W21DAA 01
--	-	11.0	305	--	07-18-75	Glacial drift	22N24W22CAB 01
--	-	13.0	355	--	07-22-75	Glacial drift	22N24W23AAA 01
--	-	--	--	--	--	Glacial drift	22N24W23CDC 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
22N24W23DDA 01	W	2,780	H	--	-	--	--	22.99	S	07-21-75
22N24W24ADA 01	W	2,810	H	298	-	--	--	44.53	S	07-15-75
22N24W26AAD 01	W	2,800	H	290	-	--	--	28.10	S	08-08-74
22N24W26BCC 01	W	2,800	H	77	-	--	--	--	-	--
22N24W27ADD 01	W	2,820	U	45	-	--	--	--	-	--
22N24W34CDC 01	W	--	-	--	-	--	--	--	-	--
22N24W34CDC 02	S	--	-	--	-	--	--	--	-	--
22N24W34DCC 01	W	2,820	U	75	O	--	--	--	-	--
22N24W36BBB 01	W	2,780	H	229	-	--	--	--	-	--
23N19W07BAAA01	W	3,000	H	466	O	--	--	123.20	S	01-03-84
23N19W07BDAC01	W	2,880	H	390	X	224	390	26.90	S	01-03-84
23N19W15CCA 01	W	2,950	H	540	-	--	--	108.50	S	08-28-74
23N19W15CCC 01	W	2,950	H	61	-	--	--	44.60	S	08-28-74
23N19W18ABB 01	W	2,940	I	129	-	129	--	43.90	S	08-15-74
23N19W18BDAC01	W	2,950	R	203	O	--	--	11.40	S	01-04-84
23N19W19ADB 01	W	3,010	I	208	-	188	208	126.40	S	07-19-74
23N19W28BCC 01	W	2,980	I	249	O	--	--	29.80	S	08-15-74
23N19W29ADAD01	W	2,940	H	256	O	--	--	36.20	S	01-04-84
23N20W04BBA 01	W	2,910	H	255	-	--	--	23.50	S	09-04-74
23N20W10DCDC01	W	2,920	H	150	P	135	150	28.90	S	12-20-83
23N20W16BDCA01	W	2,960	H	225	X	190	225	117.90	S	12-29-83
23N20W16CBC 01	W	3,140	U	125	-	--	--	86.20	S	08-29-74
23N20W20DCC 01	W	2,940	S	80	-	--	--	+2.10	S	09-10-74
23N20W21CBC 01	W	2,940	H	337	-	60	--	+.10	S	09-10-74
	-	--	-	--	-	90	--	--	-	--
	-	--	-	--	-	195	--	--	-	--
23N20W21CCB 01	W	2,920	U	127	X	127	--	6.80	S	09-09-74
23N20W29BAB 01	W	2,970	U	156	O	--	--	6.50	S	08-30-74
23N20W29BAB 02	W	2,960	S	50	-	--	--	+2.00	S	09-04-74
23N20W29CBCB01	W	2,960	U	182	-	--	--	60.28	S	07-27-83
23N21W04CBD 01	W	3,100	S	150	-	--	--	+.96	S	08-12-75
23N21W04CCD 01	W	3,160	H	235	-	--	--	157.50	S	07-12-75
23N21W05CDD 01	W	3,180	U	308	-	--	--	--	-	--
23N21W09CCD 01	W	3,780	U	401	-	--	--	290.00	S	08-06-75
23N21W09CCDA01	W	3,800	U	800	X	251	800	284.73	S	12-19-83
23N21W13BBD 01	W	3,570	P	285	-	205	280	31.30	S	09-19-74
23N21W14BBB 01	W	3,640	P	300	-	100	300	193.70	S	09-19-74
23N21W18DBB 01	W	3,620	U	10	-	--	--	6.24	S	08-06-75
23N21W19CBC 01	W	3,680	U	225	-	--	--	170.23	S	08-07-75
23N21W20BCB 01	W	3,500	S	160	-	--	--	3.35	S	08-06-75
23N21W23BCAA01	W	3,440	U	300	P	180	240	130.03	S	07-28-83
23N21W23CDC 01	W	3,410	I	301	P	--	--	123.20	S	07-16-74
23N21W24ABC 01	W	3,420	S	700	O	--	--	458.10	S	08-15-74
23N21W25ADDD01	W	3,080	H	180	O	--	--	54.40	S	12-13-83
23N21W25DAAA01	W	3,060	H	138	-	--	--	44.34	S	07-28-83
23N21W26BAC 01	W	3,340	U	118	-	--	--	72.90	S	06-26-75
23N21W34AAAA01	W	3,320	H	342	O	--	--	63.59	S	09-15-83
23N21W34ADD 01	W	--	-	--	-	--	--	--	-	--
23N21W35BBA 01	W	3,320	I	355	-	297	300	--	-	--
	-	--	-	--	-	345	355	--	-	--
23N22W12DDC 01	W	3,510	S	10	-	--	--	4.36	S	08-12-75
23N22W25DBC 01	W	3,060	U	29	-	--	--	7.68	S	08-07-75
23N22W26BDCC01	W	2,960	U	80	P	40	65	29.75	S	10-18-84
23N22W35CDB 01	W	--	-	250	-	--	--	--	-	--
23N22W36CAA 01	W	2,930	S	50	-	--	--	--	S	08-04-75
23N23W20BCBB01	X	2,830	U	--	-	--	--	--	-	--
23N24W02CABA01	W	2,800	I	108	-	--	--	41.80	S	10-14-83
23N24W02CABA02	P	2,780	S	22	-	--	--	5.00	S	10-14-83
23N24W02CCD 01	W	2,800	H	9.0	-	--	--	6.30	S	07-23-75
23N24W03BAB 01	W	2,860	U	--	-	--	--	63.76	S	07-22-75

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	11.5	355	--	07-21-75	Glacial drift	22N24W23DDA 01
--	-	15.5	535	--	07-15-75	Glacial drift	22N24W24ADA 01
1,000	-	12.5	310	--	08-08-74	Glacial drift	22N24W26AAD 01
--	-	9.5	290	--	07-22-75	Glacial drift	22N24W26BCC 01
--	-	9.5	303	--	07-18-75	Glacial drift	22N24W27ADD 01
--	-	--	--	--	--	Glacial drift	22N24W34CDC 01
--	-	--	--	--	--	Glacial drift	22N24W34CDC 02
--	-	12.5	320	--	07-29-74	Glacial drift	22N24W34DCC 01
--	-	15.0	570	--	07-15-75	Glacial drift	22N24W36BBB 01
6.0	V	8.5	565	7.3	01-03-84	Belt rocks	23N19W07BAAA01
7.5	V	10.0	300	7.4	01-03-84	Belt rocks	23N19W07BDAC01
--	-	12.0	290	--	08-28-74	Glacial drift	23N19W15CCA 01
--	-	8.5	490	--	08-28-74	Glacial drift	23N19W15CCC 01
--	-	12.0	270	--	08-15-74	Glacial drift	23N19W18ABB 01
70	R	--	--	--	--	Glacial drift	23N19W18BDAC01
400	-	10.0	260	--	07-19-74	Glacial drift	23N19W19ADB 01
90	-	10.5	260	--	08-15-74	Glacial drift	23N19W28BCC 01
6.0	V	9.0	260	8.0	01-04-84	Glacial drift	23N19W29ADAD01
18	-	9.5	710	--	09-04-74	Glacial drift	23N20W04BBA 01
5.9	V	9.0	850	7.3	12-20-83	Belt rocks	23N20W10DCDC01
8.0	V	10.0	370	7.9	12-29-83	Belt rocks	23N20W16BDCA01
--	-	14.0	350	--	08-29-74	Glacial drift	23N20W16CBC 01
--	-	12.0	450	--	09-09-74	Glacial drift	23N20W20DCC 01
--	-	12.5	415	--	09-10-74	Glacial drift	23N20W21CBC 01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	
--	-	11.0	360	--	09-09-74	Glacial drift	23N20W21CCB 01
4.7	-	12.0	320	--	08-30-74	Glacial drift	23N20W29BAB 01
--	-	11.0	380	--	09-04-74	Glacial drift	23N20W29BAB 02
--	-	--	--	--	--	Glacial drift	23N20W29CBCB01
--	-	--	--	--	--	Glacial drift	23N21W04CBD 01
--	-	12.0	490	--	07-12-75	Glacial drift	23N21W04CCD 01
--	-	11.0	400	--	08-12-75	Glacial drift	23N21W05CDD 01
--	-	12.5	205	--	08-06-75	Glacial drift	23N21W09CCD 01
3.0	R	--	--	--	--	Belt rocks	23N21W09CCDA01
10	R	12.0	390	--	09-19-74	Glacial drift	23N21W13BBD 01
90	-	13.0	180	--	09-19-74	Glacial drift	23N21W14BBB 01
--	-	11.5	305	--	08-06-75	Alluvium	23N21W18DBB 01
--	-	--	--	--	--	Belt rocks	23N21W19CBC 01
--	-	10.5	--	--	08-06-75	Glacial drift	23N21W20BCB 01
35	R	--	--	--	--	Belt rocks	23N21W23BCAA01
500	R	--	--	--	--	Glacial drift	23N21W23CDC 01
--	-	--	--	--	--	Glacial drift	23N21W24ABC 01
10	V	9.5	390	8.3	12-13-83	Glacial drift	23N21W25ADDD01
9.0	V	12.0	344	7.7	07-28-83	Glacial drift	23N21W25DAAA01
--	-	--	--	--	--	Glacial drift	23N21W26BAC 01
20	R	--	--	--	--	Glacial drift	23N21W34AAAA01
--	-	--	--	--	--	--	23N21W34ADD 01
800	R	12.5	330	--	07-22-74	Glacial drift	23N21W35BBA 01
--	-	--	--	--	--	--	
--	-	--	--	--	--	--	23N22W12DDC 01
--	-	9.0	480	--	08-07-75	Glacial drift	23N22W25DBC 01
234	C	--	--	--	--	Glacial outwash	23N22W26BDCC01
--	-	--	--	--	--	--	23N22W35CDB 01
--	-	10.5	465	--	08-04-75	Glacial drift	23N22W36CAA 01
--	-	--	--	--	--	--	23N23W20BCBB01
--	-	14.5	428	7.7	10-14-83	Alluvium	23N24W02CABA01
--	-	12.5	780	7.8	10-14-83	Alluvium	23N24W02CABA02
--	-	13.0	355	--	07-23-75	Glacial drift	23N24W02CCD 01
--	-	10.5	315	--	07-22-75	Glacial drift	23N24W03BAB 01

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
23N24W03BAB 02	S	--	-	--	-	--	--	--	-	--
23N24W10ADA 01	W	2,840	U	240	-	--	--	63.57	-	07-23-75
23N24W10BCDD01	W	2,800	H	37	O	--	--	10.26	S	10-24-83
23N24W10CBC 01	W	2,800	U	--	-	--	--	33.94	S	07-22-75
23N24W11CAC 01	W	2,840	U	240	-	--	--	52.27	S	07-23-75
23N24W13DBBA01	W	2,880	S	178	O	--	--	52.55	S	10-24-83
23N24W15AAA 01	W	2,860	H	270	-	--	--	61.34	S	07-23-75
23N24W15BBA 01	W	2,780	H	220	-	--	--	13.30	S	07-22-75
23N24W15CBC 01	W	2,800	H	252	-	--	--	13.90	S	09-04-74
23N24W15CCBB01	W	2,800	H	252	O	--	--	24.25	S	10-25-83
23N24W15DCA 01	W	2,790	H	258	-	--	--	28.73	S	07-24-75
23N24W22DACA01	W	2,800	S	174	O	--	--	23.03	S	10-25-83
23N24W24CAC 01	W	2,820	U	--	-	--	--	48.20	S	09-04-74
23N24W25DAD 01	W	2,800	U	88	-	--	--	10.73	S	09-04-74
23N24W27CDDD01	W	2,800	U	--	-	--	--	21.60	S	05-18-67
23N24W34ADA 01	W	--	-	--	-	--	--	--	-	--
23N24W34ADAA01	W	2,879	H	377	P	312	370	108.66	S	03-02-43
23N24W34CAC 01	W	2,860	H	365	-	--	--	103.90	-	09-04-74
23N24W34DCD 01	W	2,860	H	360	-	--	--	94.46	-	07-21-75
23N24W35BAA 01	W	2,800	H	22	-	--	--	10.00	-	07-16-75
23N24W35BAA 02	W	2,790	H	22	-	--	--	10.00	-	07-16-75
23N24W35CDD 01	W	2,860	P	348	-	--	--	--	-	--
23N24W35DCCC01	W	2,860	H	297	O	--	--	86.21	S	10-14-83
23N24W35DDC 01	W	2,860	H	315	-	--	--	79.59	-	09-16-75
23N24W35DDD 01	W	2,860	U	330	-	--	--	74.10	S	07-16-75
23N24W36CAA 01	W	2,840	H	330	-	--	--	81.70	S	07-16-75
24N19W16DCA 01	W	3,000	-	37	-	--	--	5.20	-	08-26-74
24N19W21ACAA01	W	2,980	H	90	P	25	90	22.25	L	07-27-83
24N19W22CBAA01	W	2,920	H	102	X	84	102	+.31	S	12-15-83
24N21W03CDB 01	W	2,910	H	160	-	--	--	12.50	S	09-06-74
24N21W04CDDC01	W	2,960	P	301	O	--	--	25.80	S	12-20-83
24N21W10BDCA01	W	2,940	H	469	X	83	469	50.86	S	12-16-83
24N21W16DAB 01	W	2,970	S	106	-	--	--	43.10	S	09-06-74
24N21W19BBD 01	W	2,910	P	105	-	--	--	+4.50	S	08-12-74
24N21W19BCB 01	W	2,910	P	314	S	299	304	--	S	08-12-74
24N21W19BCCB01	W	2,900	P	185	P	--	--	+.70	S	12-19-83
24N21W25DDD 01	W	3,020	H	202	-	21	--	129.50	S	09-09-74
24N21W26CBB 01	W	2,930	H	287	-	--	--	23.41	S	08-22-75
24N21W29ABB 01	W	2,930	H	95	-	--	--	8.70	S	09-09-74
24N21W30CABB01	W	3,080	U	220	X	137	220	+15.50	S	12-19-83
24N21W32DDDD01	W	3,040	H	803	X	206	803	31.60	S	12-20-83
24N21W33ACC 01	W	2,940	H	359	-	--	--	4.90	S	09-06-74
24N21W33DBD 01	W	3,000	U	126	-	--	--	--	-	--
24N21W36AAA 01	W	3,050	U	420	-	104	--	130.30	S	09-09-74
24N21W36DBCA01	W	3,140	H	767	X	191	767	117.36	S	12-27-83
24N22W13DDB 01	W	2,990	S	--	-	--	--	19.67	S	07-25-75
24N22W14BDC 01	W	3,440	S	490	-	--	--	315.00	-	08-12-75
24N22W14DDD 01	W	3,120	S	233	-	--	--	163.40	S	09-06-74
24N22W20CAC 01	W	3,240	U	335	-	--	--	6.00	S	07-01-75
24N22W30	-	3,153	-	460	-	--	--	--	-	--
24N22W30BCCC01	W	3,153	U	460	P	436	445	245.84	S	11-06-84
24N23W09BAA 01	W	3,960	U	170	-	--	--	22.40	-	07-25-75
24N23W16BCC 01	W	2,920	H	230	-	--	--	29.44	-	07-24-75
24N23W17DAC 01	W	2,920	H	250	-	--	--	41.65	S	07-24-75
24N23W20AAB 01	W	2,980	S	250	-	--	--	--	-	--
24N23W21BCDA01	W	2,930	U	250	-	--	--	32.52	-	07-24-75
24N23W32ADCC01	X	2,900	U	--	-	--	--	--	-	--
24N24W14DDD 01	W	2,920	S	50	-	--	--	21.70	S	07-24-75
24N24W24ABBB01	W	2,880	U	69	P	37	42	6.54	S	10-05-83
	-	--	-	--	-	50	55	--	-	--

Discharge (gal/min)	Method of discharge measure-ment	Water temper-ature (°C)	Specific con-ductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	--	--	--	--	--	23N24W03BAB 02
--	-	12.0	400	--	07-23-75	Glacial drift	23N24W10ADA 01
11	V	9.0	350	8.0	10-24-83	Alluvium	23N24W10BCDD01
--	-	--	--	--	--	Glacial drift	23N24W10CBC 01
--	-	13.0	390	--	07-23-75	Glacial drift	23N24W11CAC 01
50	R	--	--	--	--	Alluvium	23N24W13DBBA01
--	-	15.0	410	--	07-23-75	Glacial drift	23N24W15AAA 01
--	-	13.0	270	--	07-22-75	Glacial drift	23N24W15BBA 01
--	-	17.0	370	--	09-04-74	Glacial drift	23N24W15CBC 01
1.9	V	12.0	325	7.5	10-25-83	Alluvium	23N24W15CCBB01
--	-	14.0	400	--	07-24-75	Glacial drift	23N24W15DCA 01
30	R	--	--	--	--	Alluvium	23N24W22DACA01
--	-	13.0	390	--	09-04-74	Glacial drift	23N24W24CAC 01
--	-	9.5	420	--	09-04-74	Glacial drift	23N24W25DAD 01
--	-	--	--	--	--	Alluvium	23N24W27CDDD01
--	-	--	--	--	--	--	23N24W34ADA 01
1,600	-	--	--	--	--	Alluvium	23N24W34ADAA01
--	-	14.5	300	--	09-04-74	Glacial drift	23N24W34CAC 01
--	-	14.0	400	--	07-21-75	Glacial drift	23N24W34DCD 01
--	-	14.0	405	--	07-16-75	Alluvium	23N24W35BAA 01
--	-	14.0	405	--	07-16-75	Alluvium	23N24W35BAA 02
--	-	--	--	--	--	--	23N24W35CDD 01
5.5	V	14.0	434	8.1	10-14-83	Alluvium	23N24W35DCCC01
--	-	17.0	610	--	07-16-75	Glacial drift	23N24W35DDC 01
--	-	15.5	390	--	07-16-75	Glacial drift	23N24W35DDD 01
--	-	16.0	375	--	07-16-75	Glacial drift	23N24W36CAA 01
--	-	--	--	--	--	Glacial drift	24N19W16DCA 01
25	R	--	585	7.2	07-27-83	Belt rocks	24N19W21ACAA01
11	V	7.0	600	7.9	12-15-83	Belt rocks	24N19W22CBAA01
--	-	11.0	590	--	09-06-74	Glacial drift	24N21W03CDB 01
8.0	V	9.0	500	8.0	12-20-83	Glacial drift	24N21W04CDDC01
15	V	6.0	500	8.4	12-16-83	Belt rocks	24N21W10BDCA01
--	-	--	--	--	--	Glacial drift	24N21W16DAB 01
30	R	11.5	370	--	08-12-74	Glacial drift	24N21W19BBD 01
70	R	12.5	--	--	08-12-74	Glacial drift	24N21W19BCB 01
17	V	8.0	300	8.3	12-19-83	Glacial drift	24N21W19BCCB01
20	-	11.5	340	--	09-09-74	Glacial drift	24N21W25DDD 01
--	-	11.0	263	--	08-22-75	Glacial drift	24N21W26CBB 01
28	-	10.0	595	--	09-09-74	Glacial drift	24N21W29ABB 01
1.0	R	9.0	460	8.3	12-19-83	Belt rocks	24N21W30CABB01
6.3	V	9.0	400	7.4	12-20-83	Belt rocks	24N21W32DDDD01
--	-	11.0	400	--	09-06-74	Glacial drift	24N21W33ACC 01
--	-	12.5	420	--	09-06-74	Glacial drift	24N21W33DBD 01
20	-	--	--	--	--	Glacial drift	24N21W36AAA 01
4.6	V	7.0	650	7.4	12-27-83	Belt rocks	24N21W36DBCA01
--	-	12.5	420	--	07-25-75	Glacial drift	24N22W13DDB 01
--	-	--	--	--	--	Glacial drift	24N22W14BDC 01
25	R	11.0	430	--	09-06-74	Glacial drift	24N22W14DDD 01
--	-	13.5	250	--	07-01-75	Glacial drift	24N22W20CAC 01
--	-	--	--	--	--	--	24N22W30
6.7	V	--	--	--	--	Glacial outwash	24N22W30BCCC01
--	-	8.5	300	--	07-25-75	Glacial drift	24N23W09BAA 01
--	-	11.5	340	--	07-24-75	Glacial drift	24N23W16BCC 01
--	-	12.0	355	--	07-24-75	Glacial drift	24N23W17DAC 01
--	-	13.5	305	--	07-25-75	Glacial drift	24N23W20AAB 01
--	-	--	--	--	--	Glacial drift	24N23W21BCDA01
--	-	--	--	--	--	--	24N23W32ADCC01
--	-	14.0	300	--	07-24-75	Glacial drift	24N24W14DDD 01
--	-	--	--	--	--	Alluvium	24N24W24ABBB01
--	-	--	--	--	--	--	

Table 11.--*Records of inventoried wells, springs, and test holes*--Continued

Local number	Type of site	Altitude of land surface (feet)	Primary use of water	Depth of well (feet)	Type of finish	Top of open interval (feet)	Bottom of open interval (feet)	Water level (feet)	Water-level source	Date water level measured
24N24W24ABBB01	W	2,880	U	69	-	58	65	6.54	S	10-05-83
24N24W24ABBB02	W	2,880	U	14	S	9	14	7.07	S	10-05-83
24N24W25DDBB01	W	2,859	U	328	P	319	326	78.35	S	10-10-84
	-	--	-	--	-	--	--	--	-	--
24N24W27ABDB01	W	2,840	U	217	S	157	177	30.73	S	10-10-84
24N24W27BDBB01	W	2,960	S	150	S	--	--	121.00	S	10-13-83
24N24W32DAA 01	W	3,040	H	170	-	--	--	72.20	-	08-28-74
24N24W34ACD 01	W	2,840	H	86	-	--	--	8.80	S	07-23-75

Discharge (gal/min)	Method of discharge measurement	Water temperature (°C)	Specific conductance (µS/cm)	pH (units)	Date quality parameter measured	Geologic unit	Local number
--	-	--	--	--	--	--	24N24W24ABBB01
--	-	--	--	--	--	Alluvium	24N24W24ABBB02
51	V	13.0	335	8.2	10-10-84	Glacial outwash	24N24W25DDBB01
183	C	--	--	--	--	--	
8.5	V	11.0	380	7.8	10-10-84	Tertiary(?) sediments	24N24W27ABDB01
6.1	V	11.0	242	7.2	10-13-83	Alluvium	24N24W27BDBB01
--	-	--	--	--	--	Belt rocks	24N24W32DAA 01
--	-	12.5	240	--	07-23-75	Glacial drift	24N24W34ACD 01

Table 12.--*Records of water level in monitoring wells*

[Water level--in feet below or above (+) land surface. MS, conditions of measurement. First column (M) is method of measurement--B, analog; G, pressure gage; S, steel tape. Second column (S) is site status--F, flowing; P, pumping. No symbol, static water level]

15N20W13CADA03

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	30.55	S	APR 17, 1984	25.07	S	JAN 07, 1985	31.76	S	JUL 08, 1985	28.08	S
JAN 05, 1984	30.46	S	SEP 25, 1984	30.94	S	APR 08, 1985	30.04	S	OCT 21, 1985	30.19	S

HIGHEST 25.07 APR 17, 1984
LOWEST 31.76 JAN 07, 1985

16N19W09CCAB02

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	128.87	S	APR 17, 1984	149.80	S	JAN 07, 1985	137.67	S	JUL 08, 1985	116.02	S
JAN 05, 1984	142.42	S	SEP 25, 1984	122.04	S	APR 08, 1985	144.96	S	OCT 21, 1985	131.77	S

HIGHEST 116.02 JUL 08, 1985
LOWEST 149.80 APR 17, 1984

16N19W31DABB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	48.18	S	APR 17, 1984	48.36	S	JAN 07, 1985	49.08	S	JUL 08, 1985	41.49	S
JAN 05, 1984	48.05	S	SEP 25, 1984	42.43	S	APR 08, 1985	48.60	S	OCT 21, 1985	48.19	S

HIGHEST 41.49 JUL 08, 1985
LOWEST 49.08 JAN 07, 1985

17N20W16CBAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	4.82	S	APR 17, 1984	4.81	S	JAN 07, 1985	4.88	S	JUL 08, 1985	4.58	S
JAN 05, 1984	4.52	S	SEP 25, 1984	3.81	S	APR 08, 1985	4.83	S	OCT 21, 1985	4.78	S

HIGHEST 3.81 SEP 25, 1984
LOWEST 4.88 JAN 07, 1985

17N20W35DABD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	16.01	S	APR 17, 1984	18.45	S	JAN 07, 1985	18.71	S	JUL 08, 1985	15.52	S
JAN 05, 1984	18.84	S	SEP 25, 1984	15.65	S	APR 08, 1985	19.28	S	OCT 21, 1985	16.90	S

HIGHEST 15.52 JUL 08, 1985
LOWEST 19.28 APR 08, 1985

18N19W10BCCC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	270.99	S	APR 17, 1984	283.40	S	JAN 09, 1985	267.64	S			
JAN 05, 1984	273.00	S	SEP 25, 1984	271.73	S	OCT 22, 1985	275.88	S			

HIGHEST 267.64 JAN 09, 1985
LOWEST 283.40 APR 17, 1984

18N19W28CCDB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 09, 1985	116.52	S	APR 08, 1985	118.41	S	JUL 08, 1985	99.76	S	OCT 22, 1985	111.53	S

HIGHEST 99.76 JUL 08, 1985
LOWEST 118.41 APR 08, 1985

Table 12.--*Records of water level in monitoring wells*--Continued

18N19W30DCBB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	19.12	S	APR 17, 1984	19.04	S	JAN 09, 1985	21.23	S	JUL 08, 1985	16.82	S
JAN 05, 1984	20.23	S	SEP 25, 1984	15.59	S	APR 08, 1985	18.48	S	OCT 22, 1985	18.62	S

HIGHEST 15.59 SEP 25, 1984
LOWEST 21.23 JAN 09, 1985

18N20W03BAAB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	17.97	S	SEP 25, 1984	17.50	S	APR 08, 1985	18.97	S	OCT 22, 1985	18.03	S
JAN 05, 1984	18.72	S	JAN 09, 1985	8.24	S	JUL 08, 1985	17.80	S			

HIGHEST 8.24 JAN 09, 1985
LOWEST 18.97 APR 08, 1985

18N20W14DBDC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 10, 1974	11.10		DEC 08, 1975	12.10		APR 20, 1977	12.70		NOV 17, 1982	12.57	S
OCT 23, 1974	11.50		JAN 13, 1976	12.50		JUL 13, 1977	12.10		OCT 18, 1983	11.82	S
NOV 12, 1974	11.70		MAR 02, 1976	13.20		AUG 29, 1977	11.30		NOV 17, 1983	12.57	S
DEC 16, 1974	12.20		APR 20, 1976	13.40		DEC 07, 1977	12.80		JAN 05, 1984	12.68	S
JAN 29, 1975	13.20		MAY 26, 1976	13.30		JAN 11, 1978	13.40		APR 17, 1984	13.88	S
FEB 25, 1975	14.10		JUN 30, 1976	11.40		FEB 17, 1978	13.90		SEP 25, 1984	11.42	S
APR 16, 1975	14.30		JUL 27, 1976	11.30		MAR 15, 1978	13.60		JAN 09, 1985	13.44	S
MAY 15, 1975	13.70		SEP 20, 1976	11.30		MAY 03, 1978	13.37	S	APR 08, 1985	15.36	S
JUN 26, 1975	11.90		NOV 02, 1976	11.80		APR 08, 1981	14.99	S	JUL 08, 1985	13.43	S
JUL 17, 1975	12.20		DEC 08, 1976	12.20		JUL 15, 1981	13.04	S	OCT 21, 1985	12.43	S
AUG 14, 1975	11.80		JAN 04, 1977	12.60		NOV 18, 1981	12.80	S			
SEP 15, 1975	11.60		FEB 03, 1977	13.40		MAY 19, 1982	13.54	S			
NOV 03, 1975	11.80		MAR 11, 1977	13.70		AUG 25, 1982	12.32	S			

HIGHEST 11.10 JUL 10, 1974
LOWEST 15.36 APR 08, 1985

18N21W04BCDA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 08, 1985	8.17	S	APR 09, 1985	10.13	S	JUL 08, 1985	6.10	S	OCT 21, 1985	7.91	S

HIGHEST 6.10 JUL 08, 1985
LOWEST 10.13 APR 09, 1985

18N21W05ADCB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 11, 1985	+7.40	G	APR 18, 1985	+6.11	G	JUL 17, 1985	+8.55	G	OCT 31, 1985	+8.65	G

HIGHEST +8.65 OCT 31, 1985
LOWEST +6.11 APR 18, 1985

18N21W21BCBB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 08, 1985	+12.07	G	APR 09, 1985	+12.50	G	JUL 09, 1985	+12.81	G	OCT 21, 1985	+11.74	G

HIGHEST +12.81 JUL 09, 1985
LOWEST +11.74 OCT 21, 1985

Table 12.--*Records of water level in monitoring wells*--Continued

19N19W20BBAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	33.95	S	APR 17, 1984	41.30	S	JAN 09, 1985	37.61	S	JUL 08, 1985	38.69	S
JAN 05, 1984	38.60	S	SEP 25, 1984	29.14	S	APR 08, 1985	42.37	S	OCT 22, 1985	31.23	S

HIGHEST 29.14 SEP 25, 1984
LOWEST 42.37 APR 08, 1985

19N20W06AAA 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	7.22	S	APR 18, 1984	8.24	S	JAN 09, 1985	8.89	S	JUL 08, 1985	6.40	S
JAN 05, 1984	5.51	S	SEP 26, 1984	6.60	S	APR 08, 1985	8.08	S	OCT 22, 1985	8.24	S

HIGHEST 5.51 JAN 05, 1984
LOWEST 8.89 JAN 09, 1985

19N20W10CBB 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1983	74.65	S	JAN 05, 1984	74.50	S	APR 17, 1984	74.56	S	JAN 09, 1985		P

HIGHEST .00 JAN 09, 1985
LOWEST 74.65 OCT 18, 1983

19N20W35AAA 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV 29, 1967	35.23		SEP 21, 1972	37.26		MAY 27, 1976	39.42	S	MAR 12, 1980	36.61	S
DEC 12, 1968	36.10		DEC 20, 1972	34.36		AUG 30, 1976	38.89	S	JUN 10, 1980	41.02	S
MAR 05, 1969	36.70		MAR 30, 1973	36.19	S	NOV 11, 1976	37.30	S	OCT 09, 1980	39.21	S
JUN 11, 1969	37.37		JUN 25, 1973	39.01	S	FEB 15, 1977	36.31	S	JAN 14, 1981	38.14	S
SEP 04, 1969	35.39		SEP 19, 1973	39.67	S	JUN 21, 1977	40.03	S	JUL 15, 1981	42.74	S
DEC 17, 1969	33.66		MAR 20, 1974	40.03	S	SEP 22, 1977	40.91	S	NOV 18, 1981	39.87	S
MAR 12, 1970	34.62		JUN 27, 1974	36.28	S	DEC 21, 1977	39.62	S	MAY 19, 1982	40.57	S
SEP 11, 1970	36.69		OCT 09, 1974	38.88	S	FEB 16, 1978	39.30	S	AUG 25, 1982	41.04	S
NOV 13, 1970	34.79		JAN 15, 1975	36.12	S	MAY 11, 1978	40.47	S	NOV 17, 1982	38.42	S
FEB 16, 1971	32.94		APR 16, 1975	38.16	S	AUG 24, 1978	41.66	S	SEP 25, 1984	39.49	S
JUN 03, 1971	37.80		JUL 01, 1975	39.92	S	NOV 30, 1978	39.98	S	JAN 09, 1985	38.03	S
SEP 14, 1971	37.10		AUG 27, 1975	40.49	S	FEB 22, 1979	38.54		MAY 14, 1985	40.27	S
DEC 22, 1971	34.51		NOV 25, 1975	38.57	S	MAY 22, 1979	41.95	S	JUL 08, 1985	29.97	S
JUN 27, 1972	38.80		FEB 11, 1976	37.10	S	SEP 20, 1979	37.08	S	OCT 21, 1985	39.30	S

HIGHEST 29.97 JUL 08, 1985
LOWEST 42.74 JUL 15, 1981

19N21W06ADDB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	101.86	S	APR 25, 1984	110.00	S	JAN 08, 1985	104.32	S	JUL 09, 1985	100.31	S
JAN 05, 1984	105.53	S	SEP 26, 1984	99.40	S	APR 08, 1985	107.60	S	OCT 22, 1985	102.20	S

HIGHEST 99.40 SEP 26, 1984
LOWEST 110.00 APR 25, 1984

19N21W17BCBB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	36.71	S	APR 18, 1984	68.65	S	JAN 08, 1985	55.42	S	JUL 09, 1985	45.29	S
JAN 05, 1984	62.80	S	SEP 26, 1984	42.19	S	APR 08, 1985	64.95	S	OCT 22, 1985	55.42	S

HIGHEST 36.71 OCT 19, 1983
LOWEST 68.65 APR 18, 1984

Table 12.--*Records of water level in monitoring wells*--Continued

19N21W27CCD 02

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	+39.4	G	APR 18, 1984	+39.22	S	JAN 08, 1985	+37.37	G	JUL 08, 1985	+36.45	G
JAN 05, 1984	+43.40	G	SEP 26, 1984	+38.06	G	APR 08, 1985	+35.76	G	OCT 21, 1985	+36.45	G

HIGHEST +43.40 JAN 05, 1984
LOWEST +35.76 APR 08, 1985

19N24W02DCDD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	13.24	S	APR 19, 1984	10.55	S	JAN 08, 1985	10.51	S	JUL 15, 1985	10.05	S
JAN 09, 1984	11.68	S	OCT 01, 1984	10.35	S	APR 18, 1985	10.31	S	OCT 28, 1985	9.93	S

HIGHEST 9.93 OCT 28, 1985
LOWEST 13.24 OCT 19, 1983

19N24W02DDCD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	4.45	S	APR 19, 1984	2.90	S	JAN 08, 1985	4.44	S	JUL 15, 1985	5.05	S
JAN 09, 1984	3.42	S	SEP 26, 1984	5.17	S	APR 18, 1985	3.54	S	OCT 28, 1985	4.67	S

HIGHEST 2.90 APR 19, 1984
LOWEST 5.17 SEP 26, 1984

20N19W04DCBA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	74.60	S	APR 18, 1984	72.85	S	JAN 14, 1985	76.93	S	JUL 08, 1985	74.00	S
JAN 06, 1984	74.94	S	SEP 26, 1984	73.59	S	APR 08, 1985	74.33	S	OCT 22, 1985	74.56	S

HIGHEST 72.85 APR 18, 1984
LOWEST 76.93 JAN 14, 1985

20N20W26CCBD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 16, 1967	167.20		MAR 14, 1972	152.83		MAY 27, 1976	158.17		JAN 14, 1981	145.69	S
NOV 29, 1967	149.60		JUN 27, 1972	160.68		AUG 30, 1976	150.56		APR 08, 1981	153.11	S
MAY 28, 1968	162.00		SEP 21, 1972	147.03		NOV 11, 1976	144.02		JUL 15, 1981	155.74	S
AUG 22, 1968	156.22		DEC 20, 1972	148.42		FEB 15, 1977	150.56		NOV 18, 1981	142.62	S
DEC 12, 1968	145.77		MAR 30, 1973	157.77		JUN 21, 1977	159.25		MAY 19, 1982	155.96	S
MAR 05, 1969	150.23		JUN 25, 1973	159.50		SEP 22, 1977	155.42		AUG 25, 1982	156.15	S
JUN 11, 1969	154.54		SEP 19, 1973	153.22		DEC 21, 1977	156.22		OCT 12, 1983	148.06	S
SEP 04, 1969	145.31		DEC 04, 1973	151.84		FEB 16, 1978	159.62		OCT 18, 1983	148.47	S
DEC 17, 1969	143.19		MAR 20, 1974	158.84		MAY 11, 1978	163.38		JAN 05, 1984	148.95	S
MAR 12, 1970	150.96		JUN 27, 1974	161.53		AUG 24, 1978	157.43		APR 17, 1984	157.34	S
JUN 25, 1970	156.98		OCT 09, 1974	146.24		NOV 30, 1978	147.37		SEP 26, 1984	164.12	S
SEP 11, 1970	146.92		JAN 15, 1975	146.62		FEB 22, 1979	151.66		JAN 09, 1985	150.09	S
NOV 13, 1970	142.76		APR 16, 1975	155.66		MAY 22, 1979	159.85	S	APR 08, 1985	159.70	S
FEB 16, 1971	148.16		JUL 01, 1975	160.22		SEP 20, 1979	142.99	S	JUL 08, 1985	159.33	S
JUN 03, 1971	156.15		AUG 27, 1975	157.67		MAR 12, 1980	151.90	S	OCT 22, 1985	150.13	S
SEP 14, 1971	147.18		NOV 25, 1975	145.98		JUN 10, 1980	158.71	S			
DEC 22, 1971	144.57		FEB 11, 1976	149.26		OCT 09, 1980	144.64	S			

HIGHEST 142.62 NOV 18, 1981
LOWEST 167.20 MAY 16, 1967

20N21W26ABAB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	8.02	S	APR 18, 1984	7.70	S	JAN 09, 1985	8.76	S	JUL 08, 1985	7.87	S
JAN 05, 1984	8.01	S	SEP 26, 1984	8.86	S	APR 08, 1985	7.34	S	OCT 22, 1985	7.89	S

HIGHEST 7.34 APR 08, 1985
LOWEST 8.86 SEP 26, 1984

Table 12.--*Records of water level in monitoring wells*--Continued

20N22W21CBDA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 11, 1985	106.80	S	APR 18, 1985	108.98	S	JUL 17, 1985	109.30	S	OCT 24, 1985	109.60	S

HIGHEST 106.80 JAN 11, 1985
LOWEST 109.60 OCT 24, 1985

20N22W28ABCB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 11, 1985	104.54	S	APR 18, 1985	96.02	S	JUL 17, 1985	95.67	S	OCT 24, 1985	96.19	S

HIGHEST 95.67 JUL 17, 1985
LOWEST 104.54 JAN 11, 1985

20N22W28ABCB02

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 15, 1985	93.10	S	OCT 24, 1985	85.87	S

HIGHEST 85.87 OCT 24, 1985
LOWEST 93.10 AUG 15, 1985

20N22W30DADD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 04, 1969	+1.43	S	JUN 25, 1973	+.29	S	NOV 11, 1976	1.33	S	APR 08, 1981	+1.74	S
DEC 17, 1969	1.17	S	SEP 19, 1973	1.44	S	JUN 21, 1977	3.82	S	JUL 17, 1981	+1.88	S
MAR 12, 1970	1.74	S	DEC 04, 1973	2.80	S	SEP 22, 1977	4.21	S	MAY 19, 1982	+.51	S
JUN 25, 1970	+1.13	S	MAR 20, 1974	3.20	S	DEC 21, 1977	3.89	S	AUG 26, 1982	+1.90	S
SEP 11, 1970	+1.26	S	JUN 28, 1974	+.94	S	FEB 16, 1978	5.04	S	NOV 17, 1982	+1.87	S
NOV 13, 1970	.04	S	JUL 30, 1974	+1.48	S	MAY 11, 1978	.26	S	OCT 19, 1983	+.23	S
FEB 16, 1971	1.19	S	OCT 09, 1974	+.62	S	AUG 24, 1978	+1.90	S	JAN 06, 1984	+.15	S
JUN 03, 1971	+1.00	S	JAN 15, 1975	1.18	S	NOV 30, 1978	+.78	S	APR 20, 1984	1.20	S
SEP 14, 1971	+.62	S	APR 16, 1975	2.12	S	FEB 22, 1979	+.99	S	SEP 26, 1984	1.37	S
DEC 22, 1971	1.35	S	JUL 01, 1975	.64	S	MAY 22, 1979	+1.90	S	JAN 11, 1985	1.97	S
MAR 14, 1972	1.63	S	AUG 27, 1975	+.05	S	SEP 20, 1979	+1.90	S	APR 18, 1985	2.47	S
JUN 27, 1972	+1.90	S	NOV 25, 1975	1.53	S	MAR 12, 1980	+1.02	S	JUL 17, 1985	2.83	S
SEP 21, 1972	+1.07	S	FEB 11, 1976	2.59	S	JUN 10, 1980	+.88	S	OCT 24, 1985	3.29	S
DEC 20, 1972	.26	S	MAY 27, 1976	1.39	S	OCT 09, 1980	+1.90	S			
MAR 30, 1973	.04	S	AUG 30, 1976	+.10	S	JAN 15, 1981		F			

HIGHEST +1.90 JUN 27, 1972 AUG 24, 1978 MAY 22, 1979 SEP 20, 1979 OCT 09, 1980
AUG 26, 1982
LOWEST 5.04 FEB 16, 1978

20N24W03CCCD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	51.9	S	APR 19, 1984	52.61	S	JAN 08, 1985	53.16	S	JUL 15, 1985	52.59	S
JAN 09, 1984	53.00	S	OCT 01, 1984	52.82	S	APR 18, 1985	51.38	S	OCT 28, 1985	53.55	S

HIGHEST 51.38 APR 18, 1985
LOWEST 53.55 OCT 28, 1985

20N24W23CBAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 08, 1985	1.78	S	APR 18, 1985	1.05	S	JUL 15, 1985	2.35	S	OCT 28, 1985	2.21	S

HIGHEST 1.05 APR 18, 1985
LOWEST 2.35 JUL 15, 1985

Table 12.--*Records of water level in monitoring wells*--Continued

20N24W23CBAA02

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 08, 1985	1.58	S	APR 18, 1985	0.89	S	JUL 15, 1985	2.17	S	OCT 28, 1985	2.00	S

HIGHEST 0.89 APR 18, 1985
LOWEST 2.17 JUL 15, 1985

20N24W29DADD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	8.70	S	APR 19, 1984	10.60	S	JAN 08, 1985	13.85	S	JUL 15, 1985	8.66	S
JAN 09, 1984	10.48	S	OCT 01, 1984	12.58	S	APR 18, 1985	12.38	S	OCT 28, 1985	10.35	S

HIGHEST 8.66 JUL 15, 1985
LOWEST 13.85 JAN 08, 1985

20N24W34AAAB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 09, 1975	2.3	S	APR 19, 1984	2.20	S	APR 18, 1985	2.55	S			
OCT 19, 1983	3.05	S	OCT 01, 1984	3.49	S	JUL 15, 1985	3.34	S			
JAN 09, 1984	2.52	S	JAN 08, 1985	3.04	S	OCT 28, 1985	3.33	S			

HIGHEST 2.20 APR 19, 1984
LOWEST 3.49 OCT 01, 1984

20N24W35AAAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	18.79	S	APR 19, 1984	20.11	S	JAN 08, 1985	20.83	S			
JAN 09, 1984	20.07	S	OCT 01, 1984	20.67	S	APR 18, 1985	20.60	S			

HIGHEST 18.79 OCT 19, 1983
LOWEST 20.83 JAN 08, 1985

21N20W05CBBB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	138.85	S	APR 19, 1984	155.02	S	APR 11, 1985	163.09	S			
OCT 21, 1983	138.85	S	SEP 28, 1984	124.29	S	JUL 10, 1985	140.72	S			
JAN 06, 1984	148.79	S	JAN 17, 1985	147.34	S	NOV 01, 1985	146.91	S			

HIGHEST 124.29 SEP 28, 1984
LOWEST 163.09 APR 11, 1985

21N20W14ACB 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 18, 1974	3.70		SEP 15, 1975	3.89		NOV 01, 1976	5.11		FEB 17, 1978	5.99	
NOV 14, 1974	3.48		NOV 03, 1975	4.85		DEC 08, 1976	5.19		MAY 03, 1978	4.58	
DEC 16, 1974	3.64		DEC 08, 1975	4.46		JAN 02, 1977	5.47		OCT 20, 1983	4.72	S
JAN 29, 1975	4.11		JAN 13, 1976	4.68		FEB 03, 1977	5.89		JAN 06, 1984	4.23	S
FEB 25, 1975	4.27		MAR 02, 1976	5.09		MAR 11, 1977	5.78		APR 18, 1984	5.51	S
APR 16, 1975	4.96		APR 20, 1976	5.71		MAY 20, 1977	6.67		SEP 26, 1984	4.77	S
MAY 15, 1975	5.33		MAY 25, 1976	6.05		JUL 14, 1977	4.86	P	JAN 17, 1985	5.53	S
JUN 26, 1975	4.08		JUN 30, 1976	4.55		AUG 29, 1977	3.03		APR 09, 1985	5.25	S
JUL 17, 1975	3.72		JUL 27, 1976	3.76		DEC 06, 1977	6.46		JUL 09, 1985	4.95	S
AUG 14, 1975	2.57		SEP 20, 1976	3.93		JAN 11, 1978	6.02		OCT 22, 1985	5.69	S

HIGHEST 2.57 AUG 14, 1975
LOWEST 6.67 MAY 20, 1977

Table 12.--*Records of water level in monitoring wells*--Continued

21N20W24CAAA02

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 14, 1974	23.60	S	SEP 15, 1975	1.40		MAR 11, 1977	6.30		MAY 19, 1982	6.43	S
AUG 26, 1974	1.30		NOV 03, 1975	.60		APR 04, 1977	7.20		AUG 25, 1982	7.79	S
SEP 15, 1974	+.90		DEC 08, 1975	1.80		MAY 20, 1977	8.20		NOV 17, 1982	1.20	S
OCT 22, 1974	+1.00		JAN 13, 1976	3.10		AUG 29, 1977	9.41	S	OCT 20, 1983	2.96	S
NOV 12, 1974	+.4		MAR 02, 1976	4.80		DEC 06, 1977	5.00	S	JAN 06, 1984	4.83	S
DEC 26, 1974	1.0		APR 20, 1976	6.20		JAN 11, 1978	5.82	S	APR 18, 1984	6.95	S
JAN 29, 1975	2.90		MAY 26, 1976	7.10		FEB 17, 1978	6.46	S	SEP 26, 1984	4.13	S
FEB 25, 1975	4.10		JUN 20, 1976	6.40		MAR 15, 1978	7.03	S	JAN 17, 1985	5.98	S
APR 16, 1975	5.50		SEP 21, 1976	1.80		MAY 03, 1978	6.17	S	APR 09, 1985	7.95	S
MAY 15, 1975	6.10		NOV 01, 1976	1.80		DEC 16, 1980	1.85		JUL 09, 1985	56.08	S
JUN 26, 1975	7.10		DEC 08, 1976	2.50		APR 08, 1981	5.03	S	OCT 22, 1985	5.18	S
JUL 17, 1975	7.80		JAN 02, 1977	3.40		JUL 15, 1981	5.42	S			
AUG 14, 1975	10.10		FEB 03, 1977	5.10		NOV 18, 1981	.76	S			

HIGHEST +1.00 OCT 22, 1974
LOWEST 56.08 JUL 09, 1985

21N20W31AABB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 27, 1983	59.90	S	APR 18, 1984	64.19	S	JAN 11, 1985	61.79	S	JUL 09, 1985	60.69	S
JAN 06, 1984	61.77	S	SEP 26, 1984	58.30	S	APR 09, 1985	64.34	S	OCT 24, 1985	61.12	S

HIGHEST 58.30 SEP 26, 1984
LOWEST 64.34 APR 09, 1985

21N21W35CCC 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	165.10	S	APR 18, 1984	185.13	S	JAN 11, 1985	176.08	S	JUL 09, 1985	176.47	S
JAN 06, 1984	182.48	S	SEP 26, 1984	169.86	S	APR 09, 1985	181.09	S	OCT 24, 1985	170.69	S

HIGHEST 165.10 OCT 19, 1983
LOWEST 185.13 APR 18, 1984

21N21W36CBA 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 21, 1983	44.75	S	APR 18, 1984	71.60	S	JAN 11, 1985	71.03	S	JUL 09, 1985	77.40	S
JAN 06, 1984	64.02	S	SEP 26, 1984	67.49	S	APR 09, 1985	75.23	S	OCT 24, 1985	65.33	S

HIGHEST 44.75 OCT 21, 1983
LOWEST 77.40 JUL 09, 1985

21N22W07DCAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 11, 1985	28.47	S	APR 18, 1985	23.74	S	JUL 17, 1985	29.51	S	OCT 28, 1985	32.08	S

HIGHEST 23.74 APR 18, 1985
LOWEST 32.08 OCT 28, 1985

21N22W30BDAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 19, 1983	+19.86	G	APR 24, 1984	+26.99	S	APR 18, 1985	+21.79	G	OCT 28, 1985	+13.60	G
JAN 10, 1984	+24.00	G	JAN 11, 1985	+19.86	G	JUL 17, 1985		F			

HIGHEST +26.99 APR 24, 1984
LOWEST +13.60 OCT 28, 1985

Table 12.--*Records of water level in monitoring wells*--Continued

21N22W36BDCC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 11, 1985	37.09	S	APR 09, 1985	37.92	S	JUL 09, 1985	38.73	S	OCT 25, 1985	39.23	S

HIGHEST 37.09 JAN 11, 1985
LOWEST 39.23 OCT 25, 1985

21N22W36BDCC02

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 11, 1985	38.93	S	APR 09, 1985	39.89	S	JUL 09, 1985	36.90	S	OCT 24, 1985	37.39	S

HIGHEST 36.90 JUL 09, 1985
LOWEST 39.89 APR 09, 1985

22N20W23DAD 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 20, 1983	194.57	S	APR 18, 1984	196.70	S	JAN 17, 1985	193.14	S	JUL 09, 1985	196.36	S
JAN 06, 1984	193.16	S	SEP 26, 1984	198.59	S	APR 09, 1985	196.03	S	OCT 25, 1985	189.43	S

HIGHEST 189.43 OCT 25, 1985
LOWEST 198.59 SEP 26, 1984

22N21W02ADAC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 20, 1983	137.55	S	APR 18, 1984	139.68	S	JAN 14, 1985	144.68	S	JUL 09, 1985	140.97	S
JAN 06, 1984	138.91	S	OCT 02, 1984	147.61	S	APR 10, 1985	154.73	S	NOV 01, 1985	144.14	S

HIGHEST 137.55 OCT 20, 1983
LOWEST 154.73 APR 10, 1985

22N21W28DDDC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 20, 1983	9.63	S	APR 19, 1984	13.86	S	JAN 14, 1985	9.95	S	JUL 10, 1985	6.30	S
JAN 06, 1984	9.87	S	SEP 28, 1984	7.77	S	APR 09, 1985	8.41	S	OCT 29, 1985	8.83	S

HIGHEST 6.30 JUL 10, 1985
LOWEST 13.86 APR 19, 1984

22N21W28DDDD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 20, 1983	95.44	S	APR 19, 1984	97.26	S	JAN 14, 1985	96.60	S	JUL 10, 1985	98.56	S
JAN 06, 1984	95.60	S	SEP 28, 1984	96.87	S	APR 09, 1985	97.73	S	OCT 29, 1985	97.40	S

HIGHEST 95.44 OCT 20, 1983
LOWEST 98.56 JUL 10, 1985

22N21W30CBBA01

DATE	WATER LEVEL	MS
NOV 01, 1985	2.22	S

22N22W01CAAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 24, 1983	+29.56	G	SEP 28, 1984	+30.43	G	APR 11, 1985	+33.14	G			
APR 24, 1984	+34.04	S	JAN 14, 1985	+30.32	G	JUL 10, 1985	+30.21	G			

HIGHEST +34.04 APR 24, 1984
LOWEST +29.56 OCT 24, 1983

Table 12.--*Records of water level in monitoring wells*--Continued

22N22W04ABA 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 21, 1983	3.67	S	APR 19, 1984	1.88	S	JAN 14, 1985	4.30	S	JUL 10, 1985	2.27	S
JAN 09, 1984	2.90	S	SEP 28, 1984	2.74	S	APR 11, 1985	1.46	S	OCT 25, 1985	3.79	S

HIGHEST 1.46 APR 11, 1985
LOWEST 4.30 JAN 14, 1985

22N22W24DAAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 14, 1985	+27.19	G	APR 11, 1985	+27.19	G	JUL 10, 1985	+27.65	G	OCT 29, 1985	+26.23	G

HIGHEST +27.65 JUL 10, 1985
LOWEST +26.23 OCT 29, 1985

22N22W26DDDD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 14, 1985	18.35	S	APR 11, 1985	43.69	F	OCT 29, 1985	18.65	S			
APR 10, 1985	20.18	S	JUL 10, 1985	18.24	S						

HIGHEST 18.24 JUL 10, 1985
LOWEST 43.69 APR 11, 1985

22N23W15DCDC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 15, 1985	47.68	S	APR 11, 1985	43.69	S	JUL 15, 1985	37.51	S	OCT 28, 1985	52.36	S

HIGHEST 37.51 JUL 15, 1985
LOWEST 52.36 OCT 28, 1985

23N21W19CBC 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 21, 1983	168.97	S	APR 19, 1984	175.34	S	JAN 14, 1985	180.29	S	JUL 10, 1985	183.03	S
JAN 09, 1984	171.20	S	SEP 28, 1984	180.20	S	APR 11, 1985	182.03	S	OCT 25, 1985	180.65	S

HIGHEST 168.97 OCT 21, 1983
LOWEST 183.03 JUL 10, 1985

23N21W23BCAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 21, 1983	130.44	S	APR 18, 1984	133.42	S	JAN 16, 1985	140.53	S	JUL 09, 1985	141.54	S
JAN 06, 1984	131.55	S	OCT 02, 1984	137.45	S	APR 10, 1985	139.77	S	NOV 01, 1985	142.29	S

HIGHEST 130.44 OCT 21, 1983
LOWEST 142.29 NOV 01, 1985

23N21W25DAAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 31, 1983	45.02	S	APR 19, 1984	47.90	S	JAN 17, 1985	33.47	S	JUL 11, 1985	80.56	S
JAN 06, 1984	33.86	S	OCT 04, 1984	33.47	S	APR 11, 1985	28.86	S	NOV 01, 1985	46.48	S

HIGHEST 28.86 APR 11, 1985
LOWEST 80.56 JUL 11, 1985

23N21W34AAAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 21, 1983	64.47	S	APR 19, 1984	68.32	S	JAN 17, 1985	79.93	S	JUL 09, 1985	97.14	S
JAN 06, 1984	66.16	S	OCT 02, 1984	81.81	S	MAY 13, 1985	86.02	S	NOV 01, 1985	90.78	S

HIGHEST 64.47 OCT 21, 1983
LOWEST 97.14 JUL 09, 1985

23N22W26BDCC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 14, 1985	29.80	S	APR 11, 1985	29.42	S	JUL 10, 1985	26.27	S	OCT 25, 1985	28.71	S

HIGHEST 26.27 JUL 10, 1985
LOWEST 29.80 JAN 14, 1985

23N24W27CDDD01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 18, 1967	21.60		SEP 14, 1971	25.63	S	NOV 25, 1975	26.75	S	JUN 10, 1980	24.82	S
AUG 17, 1967	25.28		DEC 22, 1971	24.44	S	FEB 11, 1976	26.66	S	OCT 09, 1980	23.47	S
NOV 29, 1967	24.14		MAR 14, 1972	24.28	S	MAY 27, 1976	27.69	S	JAN 15, 1981	23.44	S
MAR 06, 1968	24.00		JUN 27, 1972	24.96	S	AUG 30, 1976	28.31	S	APR 10, 1981	22.40	S
MAY 28, 1968	27.17		SEP 21, 1972	25.16	S	NOV 11, 1976	27.49	S	JUL 15, 1981	23.22	S
AUG 22, 1968	27.48		DEC 20, 1972	24.82	S	FEB 15, 1977	27.32	S	JAN 06, 1982	24.40	S
DEC 12, 1968	25.24	S	MAR 30, 1973	25.55	S	JUN 21, 1977	29.06	S	MAY 19, 1982	23.85	S
MAR 05, 1969	25.21	S	JUN 25, 1973	27.05	S	SEP 22, 1977	30.14	S	AUG 26, 1982	27.13	S
JUN 11, 1969	25.47	S	SEP 19, 1973	28.55	S	DEC 21, 1977	29.17	S	NOV 17, 1982	25.73	S
SEP 05, 1969	25.40	S	DEC 04, 1973	26.95	S	FEB 16, 1978	28.31	S	SEP 28, 1984	30.92	S
DEC 17, 1969	23.51	S	MAR 20, 1974	25.84	S	MAY 11, 1978	24.59	S	JAN 15, 1985	30.11	S
MAR 12, 1970	23.67	S	JUN 28, 1974	26.64	S	AUG 24, 1978	26.66	S	APR 11, 1985	28.89	S
JUN 25, 1970	24.34	S	OCT 09, 1974	26.61	S	NOV 30, 1978	24.03	S	JUL 15, 1985	34.55	S
SEP 11, 1970	25.49	S	JAN 15, 1975	25.96	S	FEB 22, 1979	24.84	S	OCT 28, 1985	30.19	S
NOV 13, 1970	24.30	S	APR 16, 1975	26.02	S	MAY 22, 1979	24.70	S			
FEB 16, 1971	23.69	S	JUL 01, 1975	27.15	S	SEP 20, 1979	28.85	S			
JUN 03, 1971	24.64	S	AUG 27, 1975	27.40	S	MAR 12, 1980	25.77	S			

HIGHEST 21.60 MAY 18, 1967
LOWEST 34.55 JUL 15, 1985

23N24W34ADAA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 02, 1943	108.66		APR 24, 1972	105.11		SEP 19, 1973	111.10	S	OCT 18, 1974	107.51	B
MAR 31, 1943	107.87		MAY 16, 1972	105.67		OCT 11, 1973	110.63		OCT 19, 1974	107.40	B
APR 13, 1943	107.53		JUN 27, 1972	106.03	S	NOV 01, 1973	109.93		OCT 20, 1974	107.38	B
APR 30, 1943	106.98		JUL 01, 1972	106.68		NOV 25, 1973	108.96		OCT 21, 1974	107.45	B
MAY 08, 1943	106.68		JUL 20, 1972	106.08		DEC 04, 1973	108.90		OCT 22, 1974	107.40	B
MAY 31, 1943	106.12		AUG 01, 1972	106.64		DEC 29, 1973	108.36		OCT 23, 1974	107.43	B
OCT 07, 1970	106.06		AUG 31, 1972	108.30		JAN 31, 1974	107.71		OCT 24, 1974	107.36	B
NOV 13, 1970	104.32	S	SEP 21, 1972	106.59	S	FEB 28, 1974	107.10		OCT 25, 1974	107.31	B
NOV 25, 1970	104.18	S	OCT 05, 1972	107.16		MAR 08, 1974	107.10		OCT 26, 1974	107.27	B
JAN 05, 1971	104.54	S	OCT 25, 1972	106.35		MAR 20, 1974	105.81	S	OCT 27, 1974	107.23	B
JAN 31, 1971	105.28		NOV 17, 1972	106.24		APR 16, 1974	106.35		OCT 28, 1974	107.17	B
FEB 16, 1971	104.05	S	NOV 21, 1972	106.37		MAY 08, 1974	106.00		OCT 29, 1974	107.17	B
FEB 27, 1971	104.82		DEC 01, 1972	106.12		JUN 13, 1974	108.97		OCT 30, 1974	107.16	B
MAR 30, 1971	104.35		DEC 15, 1972	106.37		JUN 28, 1974	107.74	S	OCT 31, 1974	107.16	B
APR 20, 1971	104.15		DEC 21, 1972	106.16		OCT 02, 1974	108.46	B	NOV 01, 1974	107.17	B
MAY 28, 1971	106.45		DEC 31, 1972	106.46		OCT 03, 1974	108.34	B	NOV 02, 1974	107.19	B
JUN 30, 1971	105.34		JAN 31, 1973	106.81		OCT 04, 1974	108.27	B	NOV 03, 1974	107.15	B
JUL 15, 1971	104.97		FEB 10, 1973	106.63		OCT 05, 1974	108.24	B	NOV 04, 1974	107.09	B
AUG 26, 1971	108.15		FEB 20, 1973	106.87		OCT 06, 1974	108.15	B	NOV 05, 1974	107.04	B
SEP 14, 1971	106.44	S	MAR 04, 1973	106.76		OCT 07, 1974	108.06	B	NOV 06, 1974	106.99	B
OCT 26, 1971	106.17		MAR 30, 1973	105.95	S	OCT 08, 1974	107.95	B	NOV 07, 1974	106.93	B
NOV 02, 1971	106.30		APR 16, 1973	106.64		OCT 09, 1974	107.86	S	NOV 08, 1974	106.98	B
NOV 28, 1971	106.10		APR 30, 1973	107.30		OCT 10, 1974	107.84	B	NOV 09, 1974	106.95	B
DEC 22, 1971	105.12	S	MAY 28, 1973	110.21		OCT 11, 1974	107.87	B	NOV 10, 1974	107.02	B
JAN 08, 1972	106.21		JUN 03, 1973	110.40		OCT 12, 1974	107.76	B	NOV 11, 1974	106.96	B
JAN 29, 1972	106.57		JUN 24, 1973	109.73		OCT 13, 1974	107.77	B	NOV 12, 1974	106.92	B
FEB 09, 1972	106.62		JUN 25, 1973	108.81	S	OCT 14, 1974	107.70	B	NOV 13, 1974	106.90	B
FEB 28, 1972	106.15		JUL 05, 1973	110.76		OCT 15, 1974	107.65	B	NOV 14, 1974	106.86	B
MAR 14, 1972	104.87	S	AUG 02, 1973	109.94		OCT 16, 1974	107.59	B	NOV 15, 1974	106.85	B
APR 02, 1972	105.42		SEP 11, 1973	113.19		OCT 17, 1974	107.58	B	NOV 16, 1974	106.76	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV 17, 1974	106.66	B	FEB 02, 1975	106.35	B	APR 20, 1975	106.37	B	JUL 06, 1975	109.67	B
NOV 18, 1974	106.71	B	FEB 03, 1975	106.43	B	APR 21, 1975	106.28	B	JUL 07, 1975	109.84	B
NOV 19, 1974	106.73	B	FEB 04, 1975	106.49	B	APR 22, 1975	106.27	B	JUL 08, 1975	109.92	B
NOV 20, 1974	106.66	B	FEB 05, 1975	106.54	B	APR 23, 1975	106.28	B	JUL 09, 1975	110.10	B
NOV 21, 1974	106.61	B	FEB 06, 1975	106.48	B	APR 24, 1975	106.18	B	JUL 10, 1975	110.20	B
NOV 22, 1974	106.74	B	FEB 07, 1975	106.50	B	APR 25, 1975	106.25	B	JUL 11, 1975	110.22	B
NOV 23, 1974	106.75	B	FEB 08, 1975	106.50	B	APR 26, 1975	106.23	B	JUL 12, 1975	110.35	B
NOV 24, 1974	106.62	B	FEB 09, 1975	106.38	B	APR 27, 1975	106.28	B	JUL 13, 1975	110.50	B
NOV 25, 1974	106.67	B	FEB 10, 1975	106.42	B	APR 28, 1975	106.34	B	JUL 14, 1975	110.61	B
NOV 26, 1974	106.63	B	FEB 11, 1975	106.48	B	APR 29, 1975	106.34	B	JUL 15, 1975	110.67	B
NOV 27, 1974	106.64	B	FEB 12, 1975	106.45	B	APR 30, 1975	106.28	B	JUL 16, 1975	110.73	B
NOV 28, 1974	106.62	B	FEB 13, 1975	106.52	B	MAY 01, 1975	106.26	B	JUL 17, 1975	110.80	B
NOV 29, 1974	106.55	B	FEB 14, 1975	106.59	B	MAY 02, 1975	106.19	B	JUL 18, 1975	110.87	B
NOV 30, 1974	106.51	B	FEB 15, 1975	106.51	B	MAY 03, 1975	106.19	B	JUL 19, 1975	110.93	B
DEC 01, 1974	106.50	B	FEB 16, 1975	106.59	B	MAY 04, 1975	106.22	B	JUL 20, 1975	111.00	B
DEC 02, 1974	106.38	B	FEB 17, 1975	106.62	B	MAY 05, 1975	106.27	B	JUL 21, 1975	110.92	B
DEC 03, 1974	106.31	B	FEB 18, 1975	106.58	B	MAY 06, 1975	106.28	B	JUL 22, 1975	110.89	B
DEC 04, 1974	106.32	B	FEB 19, 1975	106.57	B	MAY 07, 1975	106.32	B	JUL 23, 1975	110.87	B
DEC 05, 1974	106.30	B	FEB 20, 1975	106.41	B	MAY 08, 1975	106.33	B	JUL 24, 1975	110.85	B
DEC 06, 1974	106.35	B	FEB 21, 1975	106.29	B	MAY 09, 1975	106.36	B	JUL 25, 1975	110.88	B
DEC 07, 1974	106.27	B	FEB 22, 1975	106.28	B	MAY 10, 1975	106.44	B	JUL 26, 1975	110.92	B
DEC 08, 1974	106.24	B	FEB 23, 1975	106.37	B	MAY 11, 1975	106.63	B	JUL 27, 1975	110.92	B
DEC 09, 1974	106.16	B	FEB 24, 1975	106.37	B	MAY 12, 1975	106.83	B	JUL 28, 1975	110.95	B
DEC 10, 1974	106.12	B	FEB 25, 1975	106.39	B	MAY 13, 1975	107.03	B	JUL 29, 1975	111.01	B
DEC 11, 1974	106.09	B	FEB 26, 1975	106.42	B	MAY 14, 1975	107.15	B	JUL 30, 1975	111.05	B
DEC 12, 1974	106.16	B	FEB 27, 1975	106.45	B	MAY 15, 1975	107.30	B	JUL 31, 1975	111.10	B
DEC 13, 1974	106.06	B	FEB 28, 1975	106.45	B	MAY 16, 1975	107.43	B	AUG 01, 1975	111.16	B
DEC 14, 1974	106.13	B	MAR 01, 1975	106.51	B	MAY 17, 1975	107.52	B	AUG 02, 1975	111.15	B
DEC 15, 1974	106.10	B	MAR 02, 1975	106.45	B	MAY 18, 1975	107.55	B	AUG 03, 1975	111.18	B
DEC 16, 1974	106.12	B	MAR 03, 1975	106.45	B	MAY 19, 1975	107.62	B	AUG 04, 1975	111.15	B
DEC 17, 1974	106.06	B	MAR 04, 1975	106.53	B	MAY 20, 1975	107.70	B	AUG 05, 1975	111.13	B
DEC 18, 1974	106.16	B	MAR 05, 1975	106.51	B	MAY 21, 1975	107.73	B	AUG 06, 1975	111.05	B
DEC 19, 1974	106.15	B	MAR 06, 1975	106.42	B	MAY 22, 1975	107.87	B	AUG 07, 1975	110.98	B
DEC 20, 1974	107.99	B	MAR 07, 1975	106.44	B	MAY 23, 1975	107.94	B	AUG 08, 1975	110.92	B
DEC 21, 1974	106.13	B	MAR 08, 1975	106.49	B	MAY 24, 1975	108.13	B	AUG 09, 1975	110.80	B
DEC 22, 1974	106.28	B	MAR 09, 1975	106.50	B	MAY 25, 1975	108.27	B	AUG 10, 1975	110.64	B
DEC 23, 1974	106.28	B	MAR 10, 1975	106.51	B	MAY 26, 1975	108.45	B	AUG 11, 1975	110.55	B
DEC 24, 1974	106.25	B	MAR 11, 1975	106.48	B	MAY 27, 1975	108.91	B	AUG 12, 1975	110.47	B
DEC 25, 1974	106.21	B	MAR 12, 1975	106.50	B	MAY 28, 1975	109.39	B	AUG 13, 1975	110.45	B
DEC 26, 1974	106.07	B	MAR 13, 1975	106.49	B	MAY 29, 1975	109.87	B	AUG 14, 1975	110.53	B
DEC 27, 1974	106.25	B	MAR 14, 1975	106.42	B	MAY 30, 1975	110.21	B	AUG 15, 1975	110.74	B
DEC 28, 1974	106.32	B	MAR 15, 1975	106.38	B	MAY 31, 1975	110.42	B	AUG 16, 1975	110.77	B
DEC 29, 1974	106.26	B	MAR 16, 1975	106.36	B	JUN 01, 1975	110.56	B	AUG 17, 1975	110.69	B
DEC 30, 1974	106.42	B	MAR 17, 1975	106.38	B	JUN 02, 1975	110.57	B	AUG 18, 1975	110.66	B
DEC 31, 1974	106.35	B	MAR 18, 1975	106.40	B	JUN 03, 1975	110.72	B	AUG 19, 1975	110.82	B
JAN 01, 1975	106.36	B	MAR 19, 1975	106.31	B	JUN 04, 1975	110.57	B	AUG 20, 1975	111.02	B
JAN 02, 1975	106.30	B	MAR 20, 1975	106.31	B	JUN 05, 1975	110.42	B	AUG 21, 1975	110.76	B
JAN 03, 1975	106.22	B	MAR 21, 1975	106.38	B	JUN 06, 1975	110.23	B	AUG 22, 1975	110.62	B
JAN 04, 1975	106.32	B	MAR 22, 1975	106.40	B	JUN 07, 1975	110.38	B	AUG 23, 1975	110.45	B
JAN 05, 1975	106.19	B	MAR 23, 1975	106.33	B	JUN 08, 1975	110.53	B	AUG 24, 1975	110.43	B
JAN 06, 1975	106.23	B	MAR 24, 1975	106.41	B	JUN 09, 1975	110.57	B	AUG 25, 1975	110.52	B
JAN 07, 1975	106.13	B	MAR 25, 1975	106.49	B	JUN 10, 1975	110.46	B	AUG 26, 1975	110.61	B
JAN 08, 1975	106.27	B	MAR 26, 1975	106.52	B	JUN 11, 1975	110.38	B	AUG 27, 1975	110.58	S
JAN 09, 1975	106.27	B	MAR 27, 1975	106.46	B	JUN 12, 1975	110.34	B	AUG 28, 1975	110.93	B
JAN 10, 1975	106.37	B	MAR 28, 1975	106.43	B	JUN 13, 1975	110.27	B	AUG 29, 1975	111.02	B
JAN 11, 1975	106.48	B	MAR 29, 1975	106.33	B	JUN 14, 1975	110.23	B	AUG 30, 1975	111.05	B
JAN 12, 1975	106.39	B	MAR 30, 1975	106.37	B	JUN 15, 1975	110.26	B	AUG 31, 1975	111.10	B
JAN 13, 1975	106.33	B	MAR 31, 1975	106.42	B	JUN 16, 1975	110.37	B	SEP 01, 1975	110.98	B
JAN 14, 1975	106.36	B	APR 01, 1975	106.36	B	JUN 17, 1975	110.48	B	SEP 02, 1975	110.88	B
JAN 15, 1975	106.38	S	APR 02, 1975	106.32	B	JUN 18, 1975	110.51	B	SEP 03, 1975	110.85	B
JAN 16, 1975	106.36	B	APR 03, 1975	106.28	B	JUN 19, 1975	110.37	B	SEP 04, 1975	110.83	B
JAN 17, 1975	106.28	B	APR 04, 1975	106.34	B	JUN 20, 1975	110.32	B	SEP 05, 1975	110.71	B
JAN 18, 1975	106.37	B	APR 05, 1975	106.34	B	JUN 21, 1975	110.17	B	SEP 06, 1975	110.57	B
JAN 19, 1975	106.26	B	APR 06, 1975	106.28	B	JUN 22, 1975	110.03	B	SEP 07, 1975	110.61	B
JAN 20, 1975	106.35	B	APR 07, 1975	106.26	B	JUN 23, 1975	109.93	B	SEP 08, 1975	110.74	B
JAN 21, 1975	106.38	B	APR 08, 1975	106.30	B	JUN 24, 1975	109.86	B	SEP 09, 1975	110.88	B
JAN 22, 1975	106.33	B	APR 09, 1975	106.37	B	JUN 25, 1975	109.84	B	SEP 10, 1975	111.03	B
JAN 23, 1975	106.32	B	APR 10, 1975	106.40	B	JUN 26, 1975	109.75	B	SEP 11, 1975	111.11	B
JAN 24, 1975	106.30	B	APR 11, 1975	106.39	B	JUN 27, 1975	109.70	B	SEP 12, 1975	111.10	B
JAN 25, 1975	106.22	B	APR 12, 1975	106.33	B	JUN 28, 1975	109.70	B	SEP 13, 1975	111.05	B
JAN 26, 1975	106.32	B	APR 13, 1975	106.30	B	JUN 29, 1975	109.70	B	SEP 14, 1975	111.02	B
JAN 27, 1975	106.27	B	APR 14, 1975	106.31	B	JUN 30, 1975	109.67	B	SEP 15, 1975	110.98	B
JAN 28, 1975	106.27	B	APR 15, 1975	106.30	B	JUL 01, 1975	109.73	S	SEP 16, 1975	110.92	B
JAN 29, 1975	106.28	B	APR 16, 1975	106.34	B	JUL 02, 1975	109.55	B	SEP 17, 1975	110.95	B
JAN 30, 1975	106.30	B	APR 17, 1975	106.32	B	JUL 03, 1975	109.52	B	SEP 18, 1975	110.97	B
JAN 31, 1975	106.27	B	APR 18, 1975	106.32	B	JUL 04, 1975	109.48	B	SEP 19, 1975	110.98	B
FEB 01, 1975	106.28	B	APR 19, 1975	106.35	B	JUL 05, 1975	109.50	B	SEP 20, 1975	111.01	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 21, 1975	110.87	B	DEC 07, 1975	107.82	B	FEB 22, 1976	107.23	B	MAY 09, 1976	108.15	B
SEP 22, 1975	110.67	B	DEC 08, 1975	107.73	B	FEB 23, 1976	107.17	B	MAY 10, 1976	108.23	B
SEP 23, 1975	110.50	B	DEC 09, 1975	107.66	B	FEB 24, 1976	107.18	B	MAY 11, 1976	108.40	B
SEP 24, 1975	110.35	B	DEC 10, 1975	107.70	B	FEB 25, 1976	107.22	B	MAY 12, 1976	108.39	B
SEP 25, 1975	110.24	B	DEC 11, 1975	107.64	B	FEB 26, 1976	107.20	B	MAY 13, 1976	108.35	B
SEP 26, 1975	110.18	B	DEC 12, 1975	107.66	B	FEB 27, 1976	107.12	B	MAY 14, 1976	108.56	B
SEP 27, 1975	110.08	B	DEC 13, 1975	107.75	B	FEB 28, 1976	107.13	B	MAY 15, 1976	108.68	B
SEP 28, 1975	110.02	B	DEC 14, 1975	107.72	B	FEB 29, 1976	107.07	B	MAY 16, 1976	108.87	B
SEP 29, 1975	109.97	B	DEC 15, 1975	107.76	B	MAR 01, 1976	107.17	B	MAY 17, 1976	109.26	B
SEP 30, 1975	109.85	B	DEC 16, 1975	107.81	B	MAR 02, 1976	107.18	B	MAY 18, 1976	109.47	B
OCT 01, 1975	109.72	B	DEC 17, 1975	107.83	B	MAR 03, 1976	107.17	B	MAY 19, 1976	109.68	B
OCT 02, 1975	109.60	B	DEC 18, 1975	107.80	B	MAR 04, 1976	107.22	B	MAY 20, 1976	110.00	B
OCT 03, 1975	109.48	B	DEC 19, 1975	107.78	B	MAR 05, 1976	107.27	B	MAY 21, 1976	110.19	B
OCT 04, 1975	109.42	B	DEC 20, 1975	107.72	B	MAR 06, 1976	107.21	B	MAY 22, 1976	110.39	B
OCT 05, 1975	109.26	B	DEC 21, 1975	107.72	B	MAR 07, 1976	107.19	B	MAY 23, 1976	110.57	B
OCT 06, 1975	109.14	B	DEC 22, 1975	107.70	B	MAR 08, 1976	107.17	B	MAY 24, 1976	110.71	B
OCT 07, 1975	109.07	B	DEC 23, 1975	107.70	B	MAR 09, 1976	107.16	B	MAY 25, 1976	110.94	B
OCT 08, 1975	108.93	B	DEC 24, 1975	107.67	B	MAR 10, 1976	107.09	B	MAY 26, 1976	111.14	B
OCT 09, 1975	108.83	B	DEC 25, 1975	107.64	B	MAR 11, 1976	107.31	B	MAY 27, 1976	111.20	S
OCT 10, 1975	108.77	B	DEC 26, 1975	107.60	B	MAR 12, 1976	107.20	B	MAY 28, 1976	111.23	B
OCT 11, 1975	108.68	B	DEC 27, 1975	107.72	B	MAR 13, 1976	107.21	B	MAY 29, 1976	111.22	B
OCT 12, 1975	108.64	B	DEC 28, 1975	107.70	B	MAR 14, 1976	107.20	B	MAY 30, 1976	111.22	B
OCT 13, 1975	108.61	B	DEC 29, 1975	107.70	B	MAR 15, 1976	107.24	B	MAY 31, 1976	111.30	B
OCT 14, 1975	108.58	B	DEC 30, 1975	107.62	B	MAR 16, 1976	107.19	B	JUN 01, 1976	111.31	B
OCT 15, 1975	108.53	B	DEC 31, 1975	107.73	B	MAR 17, 1976	107.12	B	JUN 02, 1976	111.32	B
OCT 16, 1975	108.57	B	JAN 01, 1976	107.70	B	MAR 18, 1976	107.10	B	JUN 03, 1976	111.38	B
OCT 17, 1975	108.37	B	JAN 02, 1976	107.67	B	MAR 19, 1976	107.20	B	JUN 04, 1976	111.52	B
OCT 18, 1975	108.41	B	JAN 03, 1976	107.61	B	MAR 20, 1976	107.22	B	JUN 05, 1976	111.59	B
OCT 19, 1975	108.34	B	JAN 04, 1976	107.45	B	MAR 21, 1976	107.23	B	JUN 06, 1976	111.53	B
OCT 20, 1975	108.30	B	JAN 05, 1976	107.54	B	MAR 22, 1976	107.12	B	JUN 07, 1976	111.55	B
OCT 21, 1975	108.18	B	JAN 06, 1976	107.60	B	MAR 23, 1976	107.15	B	JUN 08, 1976	111.45	B
OCT 22, 1975	108.19	B	JAN 07, 1976	107.56	B	MAR 24, 1976	107.05	B	JUN 09, 1976	111.27	B
OCT 23, 1975	108.20	B	JAN 08, 1976	107.51	B	MAR 25, 1976	107.22	B	JUN 10, 1976	111.15	B
OCT 24, 1975	108.13	B	JAN 09, 1976	107.55	B	MAR 26, 1976	107.10	B	JUN 11, 1976	111.15	B
OCT 25, 1975	107.97	B	JAN 10, 1976	107.51	B	MAR 27, 1976	107.07	B	JUN 12, 1976	111.40	B
OCT 26, 1975	108.02	B	JAN 11, 1976	107.51	B	MAR 28, 1976	107.08	B	JUN 13, 1976	111.65	B
OCT 27, 1975	108.03	B	JAN 12, 1976	107.56	B	MAR 29, 1976	107.16	B	JUN 14, 1976	111.67	B
OCT 28, 1975	108.06	B	JAN 13, 1976	107.60	B	MAR 30, 1976	107.09	B	JUN 15, 1976	111.60	B
OCT 29, 1975	107.96	B	JAN 14, 1976	107.52	B	MAR 31, 1976	107.01	B	JUN 16, 1976	111.71	B
OCT 30, 1975	107.98	B	JAN 15, 1976	107.60	B	APR 01, 1976	107.07	B	JUN 17, 1976	111.81	B
OCT 31, 1975	108.00	B	JAN 16, 1976	107.58	B	APR 02, 1976	107.07	B	JUN 18, 1976	111.70	B
NOV 01, 1975	107.94	B	JAN 17, 1976	107.47	B	APR 03, 1976	107.04	B	JUN 19, 1976	111.67	B
NOV 02, 1975	107.93	B	JAN 18, 1976	107.57	B	APR 04, 1976	107.01	B	JUN 20, 1976	111.76	B
NOV 03, 1975	107.93	B	JAN 19, 1976	107.55	B	APR 05, 1976	106.92	B	JUN 21, 1976	111.87	B
NOV 04, 1975	107.86	B	JAN 20, 1976	107.57	B	APR 06, 1976	107.00	B	JUN 22, 1976	111.95	B
NOV 05, 1975	107.77	B	JAN 21, 1976	107.48	B	APR 07, 1976	106.97	B	JUN 23, 1976	111.95	B
NOV 06, 1975	107.75	B	JAN 22, 1976	107.40	B	APR 08, 1976	106.90	B	JUN 24, 1976	111.81	B
NOV 07, 1975	107.76	B	JAN 23, 1976	107.42	B	APR 09, 1976	107.02	B	JUN 25, 1976	111.67	B
NOV 08, 1975	107.71	B	JAN 24, 1976	107.43	B	APR 10, 1976	106.98	B	JUN 26, 1976	111.72	B
NOV 09, 1975	107.66	B	JAN 25, 1976	107.48	B	APR 11, 1976	106.95	B	JUN 27, 1976	111.58	B
NOV 10, 1975	107.68	B	JAN 26, 1976	107.45	B	APR 12, 1976	106.92	B	JUN 28, 1976	111.38	B
NOV 11, 1975	107.78	B	JAN 27, 1976	107.48	B	APR 13, 1976	106.95	B	JUN 29, 1976	111.20	B
NOV 12, 1975	107.72	B	JAN 28, 1976	107.45	B	APR 14, 1976	106.82	B	JUN 30, 1976	111.15	B
NOV 13, 1975	107.65	B	JAN 29, 1976	107.43	B	APR 15, 1976	106.90	B	JUL 01, 1976	111.15	B
NOV 14, 1975	107.63	B	JAN 30, 1976	107.48	B	APR 16, 1976	106.95	B	JUL 02, 1976	111.08	B
NOV 15, 1975	107.65	B	JAN 31, 1976	107.42	B	APR 17, 1976	106.95	B	JUL 03, 1976	111.00	B
NOV 16, 1975	107.70	B	FEB 01, 1976	107.37	B	APR 18, 1976	107.00	B	JUL 04, 1976	110.96	B
NOV 17, 1975	107.80	B	FEB 02, 1976	107.27	B	APR 19, 1976	106.98	B	JUL 05, 1976	110.85	B
NOV 18, 1975	107.85	B	FEB 03, 1976	107.33	B	APR 20, 1976	106.93	B	JUL 06, 1976	110.76	B
NOV 19, 1975	107.82	B	FEB 04, 1976	107.36	B	APR 21, 1976	106.91	B	JUL 07, 1976	110.71	B
NOV 20, 1975	107.80	B	FEB 05, 1976	107.38	B	APR 22, 1976	106.95	B	JUL 08, 1976	110.67	B
NOV 21, 1975	107.77	B	FEB 06, 1976	107.33	B	APR 23, 1976	106.98	B	JUL 09, 1976	110.72	B
NOV 22, 1975	107.74	B	FEB 07, 1976	107.28	B	APR 24, 1976	106.97	B	JUL 10, 1976	111.00	B
NOV 23, 1975	107.77	B	FEB 08, 1976	107.17	B	APR 25, 1976	106.98	B	JUL 11, 1976	111.12	B
NOV 24, 1975	107.78	B	FEB 09, 1976	107.27	B	APR 26, 1976	107.01	B	JUL 12, 1976	111.25	B
NOV 25, 1975	107.84	S	FEB 10, 1976	107.34	B	APR 27, 1976	107.03	B	JUL 13, 1976	111.35	B
NOV 26, 1975	107.65	B	FEB 11, 1976	107.32	S	APR 28, 1976	107.05	B	JUL 14, 1976	111.47	B
NOV 27, 1975	107.66	B	FEB 12, 1976	107.32	B	APR 29, 1976	107.08	B	JUL 15, 1976	111.52	B
NOV 28, 1975	107.68	B	FEB 13, 1976	107.27	B	APR 30, 1976	107.08	B	JUL 16, 1976	111.54	B
NOV 29, 1975	107.78	B	FEB 14, 1976	107.30	B	MAY 01, 1976	107.09	B	JUL 17, 1976	111.57	B
NOV 30, 1975	107.67	B	FEB 15, 1976	107.28	B	MAY 02, 1976	107.25	B	JUL 18, 1976	111.62	B
DEC 01, 1975	107.72	B	FEB 16, 1976	107.22	B	MAY 03, 1976	107.36	B	JUL 19, 1976	111.70	B
DEC 02, 1975	107.70	B	FEB 17, 1976	107.18	B	MAY 04, 1976	107.53	B	JUL 20, 1976	111.76	B
DEC 03, 1975	107.65	B	FEB 18, 1976	107.23	B	MAY 05, 1976	107.71	B	JUL 21, 1976	111.79	B
DEC 04, 1975	107.76	B	FEB 19, 1976	107.26	B	MAY 06, 1976	107.87	B	JUL 22, 1976	111.87	B
DEC 05, 1975	107.80	B	FEB 20, 1976	107.33	B	MAY 07, 1976	107.95	B	JUL 23, 1976	111.94	B
DEC 06, 1975	107.81	B	FEB 21, 1976	107.30	B	MAY 08, 1976	108.03	B	JUL 24, 1976	111.96	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 25, 1976	112.15	B	OCT 10, 1976	109.93	B	DEC 26, 1976	108.11	B	MAR 13, 1977	107.67	B
JUL 26, 1976	112.44	B	OCT 11, 1976	109.95	B	DEC 27, 1976	108.23	B	MAR 14, 1977	107.73	B
JUL 27, 1976	112.55	B	OCT 12, 1976	109.93	B	DEC 28, 1976	108.17	B	MAR 15, 1977	107.73	B
JUL 28, 1976	112.62	B	OCT 13, 1976	109.79	B	DEC 29, 1976	108.15	B	MAR 16, 1977	107.66	B
JUL 29, 1976	112.88	B	OCT 14, 1976	109.80	B	DEC 30, 1976	108.15	B	MAR 17, 1977	107.72	B
JUL 30, 1976	113.12	B	OCT 15, 1976	109.78	B	DEC 31, 1976	108.15	B	MAR 18, 1977	107.70	B
JUL 31, 1976	113.32	B	OCT 16, 1976	109.70	B	JAN 01, 1977	108.11	B	MAR 19, 1977	107.72	B
AUG 01, 1976	113.57	B	OCT 17, 1976	109.77	B	JAN 02, 1977	108.08	B	MAR 20, 1977	107.73	B
AUG 02, 1976	113.72	B	OCT 18, 1976	109.71	B	JAN 03, 1977	108.13	B	MAR 21, 1977	107.69	B
AUG 03, 1976	113.83	B	OCT 19, 1976	109.68	B	JAN 04, 1977	108.18	B	MAR 22, 1977	107.65	B
AUG 04, 1976	113.98	B	OCT 20, 1976	109.63	B	JAN 05, 1977	108.19	B	MAR 23, 1977	107.62	B
AUG 05, 1976	114.10	B	OCT 21, 1976	109.55	B	JAN 06, 1977	108.11	B	MAR 24, 1977	107.68	B
AUG 06, 1976	114.22	B	OCT 22, 1976	109.52	B	JAN 07, 1977	108.15	B	MAR 25, 1977	107.67	B
AUG 07, 1976	114.34	B	OCT 23, 1976	109.52	B	JAN 08, 1977	108.12	B	MAR 26, 1977	107.58	B
AUG 08, 1976	114.44	B	OCT 24, 1976	109.45	B	JAN 09, 1977	108.06	B	MAR 27, 1977	107.62	B
AUG 09, 1976	114.51	B	OCT 25, 1976	109.50	B	JAN 10, 1977	108.08	B	MAR 28, 1977	107.68	B
AUG 10, 1976	114.44	B	OCT 26, 1976	109.50	B	JAN 11, 1977	108.02	B	MAR 29, 1977	107.72	B
AUG 11, 1976	114.14	B	OCT 27, 1976	109.42	B	JAN 12, 1977	108.03	B	MAR 30, 1977	107.64	B
AUG 12, 1976	113.93	B	OCT 28, 1976	109.37	B	JAN 13, 1977	108.08	B	MAR 31, 1977	107.58	B
AUG 13, 1976	113.77	B	OCT 29, 1976	109.37	B	JAN 14, 1977	108.04	B	APR 01, 1977	107.63	B
AUG 14, 1976	113.60	B	OCT 30, 1976	109.34	B	JAN 15, 1977	108.08	B	APR 02, 1977	107.64	B
AUG 15, 1976	113.38	B	OCT 31, 1976	109.28	B	JAN 16, 1977	108.10	B	APR 03, 1977	107.66	B
AUG 16, 1976	113.30	B	NOV 01, 1976	109.35	B	JAN 17, 1977	108.10	B	APR 04, 1977	107.67	B
AUG 17, 1976	113.19	B	NOV 02, 1976	109.35	B	JAN 18, 1977	108.07	B	APR 05, 1977	107.67	B
AUG 18, 1976	113.10	B	NOV 03, 1976	109.30	B	JAN 19, 1977	108.03	B	APR 06, 1977	107.68	B
AUG 19, 1976	112.97	B	NOV 04, 1976	109.20	B	JAN 20, 1977	108.02	B	APR 07, 1977	107.63	B
AUG 20, 1976	112.94	B	NOV 05, 1976	109.20	B	JAN 21, 1977	108.00	B	APR 08, 1977	107.72	B
AUG 21, 1976	112.87	B	NOV 06, 1976	109.20	B	JAN 22, 1977	108.01	B	APR 09, 1977	107.84	B
AUG 22, 1976	112.81	B	NOV 07, 1976	109.12	B	JAN 23, 1977	108.03	B	APR 10, 1977	107.92	B
AUG 23, 1976	112.80	B	NOV 08, 1976	109.10	B	JAN 24, 1977	108.00	B	APR 11, 1977	108.03	B
AUG 24, 1976	112.68	B	NOV 09, 1976	109.05	B	JAN 25, 1977	107.95	B	APR 12, 1977	108.01	B
AUG 25, 1976	112.57	B	NOV 10, 1976	109.04	B	JAN 26, 1977	107.91	B	APR 13, 1977	108.02	B
AUG 26, 1976	112.45	B	NOV 11, 1976	109.02	S	JAN 27, 1977	107.92	B	APR 14, 1977	108.12	B
AUG 27, 1976	112.27	B	NOV 12, 1976	108.93	B	JAN 28, 1977	107.94	B	APR 15, 1977	108.12	B
AUG 28, 1976	112.11	B	NOV 13, 1976	108.86	B	JAN 29, 1977	107.97	B	APR 16, 1977	108.23	B
AUG 29, 1976	112.01	B	NOV 14, 1976	108.87	B	JAN 30, 1977	107.94	B	APR 17, 1977	108.29	B
AUG 30, 1976	111.97	B	NOV 15, 1976	108.88	B	JAN 31, 1977	107.93	B	APR 18, 1977	108.30	B
AUG 31, 1976	111.82	B	NOV 16, 1976	108.83	B	FEB 01, 1977	107.93	B	APR 19, 1977	108.44	B
SEP 01, 1976	111.63	B	NOV 17, 1976	108.80	B	FEB 02, 1977	107.93	B	APR 20, 1977	108.57	B
SEP 02, 1976	111.65	B	NOV 18, 1976	108.77	B	FEB 03, 1977	107.95	B	APR 21, 1977	108.73	B
SEP 03, 1976	111.60	B	NOV 19, 1976	108.78	B	FEB 04, 1977	107.91	B	APR 22, 1977	108.86	B
SEP 04, 1976	111.50	B	NOV 20, 1976	108.79	B	FEB 05, 1977	107.88	B	APR 23, 1977	108.97	B
SEP 05, 1976	111.41	B	NOV 21, 1976	108.72	B	FEB 06, 1977	107.91	B	APR 24, 1977	109.12	B
SEP 06, 1976	111.43	B	NOV 22, 1976	108.73	B	FEB 07, 1977	107.86	B	APR 25, 1977	109.12	B
SEP 07, 1976	111.50	B	NOV 23, 1976	108.64	B	FEB 08, 1977	107.81	B	APR 26, 1977	109.27	B
SEP 08, 1976	111.55	B	NOV 24, 1976	108.54	B	FEB 09, 1977	107.83	B	APR 27, 1977	109.39	B
SEP 09, 1976	111.49	B	NOV 25, 1976	108.57	B	FEB 10, 1977	107.78	B	APR 28, 1977	109.63	B
SEP 10, 1976	111.43	B	NOV 26, 1976	108.64	B	FEB 11, 1977	107.81	B	APR 29, 1977	109.99	B
SEP 11, 1976	111.44	B	NOV 27, 1976	108.60	B	FEB 12, 1977	107.82	B	APR 30, 1977	110.26	B
SEP 12, 1976	111.52	B	NOV 28, 1976	108.60	B	FEB 13, 1977	107.88	B	MAY 01, 1977	110.45	B
SEP 13, 1976	111.49	B	NOV 29, 1976	108.58	B	FEB 14, 1977	107.85	B	MAY 02, 1977	110.48	B
SEP 14, 1976	111.48	B	NOV 30, 1976	108.60	B	FEB 15, 1977	107.81	S	MAY 03, 1977	110.71	B
SEP 15, 1976	111.45	B	DEC 01, 1976	108.56	B	FEB 16, 1977	107.80	B	MAY 04, 1977	110.91	B
SEP 16, 1976	111.42	B	DEC 02, 1976	108.53	B	FEB 17, 1977	107.81	B	MAY 05, 1977	111.15	B
SEP 17, 1976	111.45	B	DEC 03, 1976	108.50	B	FEB 18, 1977	107.83	B	MAY 06, 1977	111.36	B
SEP 18, 1976	111.51	B	DEC 04, 1976	108.48	B	FEB 19, 1977	107.79	B	MAY 07, 1977	111.54	B
SEP 19, 1976	111.41	B	DEC 05, 1976	108.47	B	FEB 20, 1977	107.69	B	MAY 08, 1977	111.72	B
SEP 20, 1976	111.30	B	DEC 06, 1976	108.43	B	FEB 21, 1977	107.63	B	MAY 09, 1977	111.81	B
SEP 21, 1976	111.19	B	DEC 07, 1976	108.38	B	FEB 22, 1977	107.69	B	MAY 10, 1977	111.90	B
SEP 22, 1976	111.12	B	DEC 08, 1976	108.32	B	FEB 23, 1977	107.70	B	MAY 11, 1977	112.05	B
SEP 23, 1976	111.00	B	DEC 09, 1976	108.45	B	FEB 24, 1977	107.76	B	MAY 12, 1977	111.92	B
SEP 24, 1976	110.90	B	DEC 10, 1976	108.40	B	FEB 25, 1977	107.72	B	MAY 13, 1977	111.73	B
SEP 25, 1976	110.88	B	DEC 11, 1976	108.41	B	FEB 26, 1977	107.81	B	MAY 14, 1977	111.67	B
SEP 26, 1976	110.68	B	DEC 12, 1976	108.35	B	FEB 27, 1977	107.78	B	MAY 15, 1977	111.74	B
SEP 27, 1976	110.58	B	DEC 13, 1976	108.36	B	FEB 28, 1977	107.68	B	MAY 16, 1977	112.03	B
SEP 28, 1976	110.50	B	DEC 14, 1976	108.37	B	MAR 01, 1977	107.68	B	MAY 17, 1977	112.31	B
SEP 29, 1976	110.42	B	DEC 15, 1976	108.35	B	MAR 02, 1977	107.70	B	MAY 18, 1977	112.50	B
SEP 30, 1976	110.35	B	DEC 16, 1976	108.31	B	MAR 03, 1977	107.76	B	MAY 19, 1977	112.65	B
OCT 01, 1976	110.25	B	DEC 17, 1976	108.28	B	MAR 04, 1977	107.78	B	MAY 20, 1977	112.67	B
OCT 02, 1976	110.23	B	DEC 18, 1976	108.37	B	MAR 05, 1977	107.73	B	MAY 21, 1977	112.74	B
OCT 03, 1976	110.27	B	DEC 19, 1976	108.38	B	MAR 06, 1977	107.66	B	MAY 22, 1977	112.75	B
OCT 04, 1976	110.24	B	DEC 20, 1976	108.32	B	MAR 07, 1977	107.62	B	MAY 23, 1977	112.86	B
OCT 05, 1976	110.18	B	DEC 21, 1976	108.29	B	MAR 08, 1977	107.71	B	MAY 24, 1977	112.96	B
OCT 06, 1976	110.17	B	DEC 22, 1976	108.24	B	MAR 09, 1977	107.65	B	MAY 25, 1977	113.05	B
OCT 07, 1976	110.10	B	DEC 23, 1976	108.20	B	MAR 10, 1977	107.81	B	MAY 26, 1977	113.15	B
OCT 08, 1976	110.03	B	DEC 24, 1976	108.21	B	MAR 11, 1977	107.70	B	MAY 27, 1977	113.34	B
OCT 09, 1976	109.95	B	DEC 25, 1976	108.19	B	MAR 12, 1977	107.63	B	MAY 28, 1977	113.29	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 29, 1977	113.22	B	AUG 18, 1977	115.93	B	NOV 16, 1977	110.88	B	MAR 18, 1978	107.26	B
MAY 30, 1977	113.14	B	AUG 19, 1977	116.00	B	NOV 17, 1977	110.78	B	MAR 19, 1978	107.22	B
MAY 31, 1977	113.16	B	AUG 20, 1977	116.10	B	NOV 18, 1977	110.76	B	MAR 20, 1978	107.16	B
JUN 01, 1977	113.25	B	AUG 22, 1977	116.14	B	NOV 19, 1977	110.79	B	MAR 21, 1978	107.05	B
JUN 02, 1977	113.27	B	AUG 23, 1977	116.15	B	NOV 20, 1977	110.75	B	MAR 22, 1978	106.95	B
JUN 03, 1977	113.27	B	AUG 24, 1977	116.20	B	NOV 21, 1977	110.67	B	MAR 23, 1978	106.86	B
JUN 04, 1977	113.34	B	AUG 25, 1977	116.21	B	NOV 22, 1977	110.67	B	MAR 24, 1978	106.88	B
JUN 05, 1977	113.32	B	AUG 26, 1977	116.30	B	NOV 23, 1977	110.62	B	MAR 25, 1978	106.79	B
JUN 06, 1977	113.35	B	AUG 27, 1977	116.37	B	NOV 24, 1977	110.68	B	MAR 26, 1978	106.67	B
JUN 07, 1977	113.37	B	AUG 28, 1977	116.34	B	NOV 25, 1977	110.50	B	MAR 27, 1978	106.63	B
JUN 08, 1977	113.35	B	AUG 29, 1977	116.36	B	NOV 26, 1977	110.55	B	MAR 28, 1978	106.59	B
JUN 09, 1977	113.22	B	AUG 30, 1977	116.40	B	NOV 27, 1977	110.49	B	APR 25, 1978	105.33	B
JUN 10, 1977	113.15	B	AUG 31, 1977	116.40	B	NOV 28, 1977	110.50	B	APR 26, 1978	105.32	B
JUN 11, 1977	113.04	B	SEP 01, 1977	116.36	B	NOV 29, 1977	110.52	B	APR 27, 1978	105.31	B
JUN 12, 1977	112.94	B	SEP 02, 1977	116.25	B	NOV 30, 1977	110.49	B	APR 28, 1978	105.31	B
JUN 13, 1977	112.87	B	SEP 03, 1977	116.18	B	DEC 01, 1977	110.30	B	APR 29, 1978	105.26	B
JUN 14, 1977	112.78	B	SEP 04, 1977	115.94	B	DEC 02, 1977	110.26	B	APR 30, 1978	105.23	B
JUN 15, 1977	112.72	B	SEP 05, 1977	115.84	B	DEC 03, 1977	110.28	B	MAY 01, 1978	105.24	B
JUN 16, 1977	112.68	B	SEP 06, 1977	115.76	B	DEC 04, 1977	110.31	B	MAY 02, 1978	105.19	B
JUN 17, 1977	112.63	B	SEP 07, 1977	115.59	B	DEC 05, 1977	110.30	B	MAY 03, 1978	105.19	B
JUN 18, 1977	112.63	B	SEP 08, 1977	115.58	B	DEC 06, 1977	110.10	B	MAY 04, 1978	105.17	B
JUN 19, 1977	112.67	B	SEP 09, 1977	115.48	B	DEC 07, 1977	110.20	B	MAY 05, 1978	105.18	B
JUN 20, 1977	112.73	B	SEP 10, 1977	115.41	B	DEC 08, 1977	110.24	B	MAY 06, 1978	105.12	B
JUN 21, 1977	112.83	S	SEP 11, 1977	115.36	B	DEC 09, 1977	110.20	B	MAY 07, 1978	105.10	B
JUN 22, 1977	113.04	B	SEP 12, 1977	115.37	B	DEC 10, 1977	110.10	B	MAY 08, 1978	105.05	B
JUN 23, 1977	113.18	B	SEP 13, 1977	115.28	B	DEC 11, 1977	110.05	B	MAY 09, 1978	104.98	B
JUN 24, 1977	113.30	B	SEP 14, 1977	115.20	B	DEC 12, 1977	110.07	B	MAY 10, 1978	104.97	B
JUN 25, 1977	113.45	B	SEP 15, 1977	115.17	B	DEC 13, 1977	109.95	B	MAY 11, 1978	105.02	S
JUN 26, 1977	113.57	B	SEP 16, 1977	115.06	B	DEC 14, 1977	109.89	B	MAY 12, 1978	105.21	B
JUN 27, 1977	113.73	B	SEP 17, 1977	114.94	B	DEC 15, 1977	109.88	B	MAY 13, 1978	105.20	B
JUN 28, 1977	113.75	B	SEP 18, 1977	114.79	B	DEC 16, 1977	109.96	B	MAY 14, 1978	105.27	B
JUN 29, 1977	113.90	B	SEP 19, 1977	114.63	B	DEC 17, 1977	109.84	B	MAY 15, 1978	105.44	B
JUN 30, 1977	113.99	B	SEP 20, 1977	114.54	B	DEC 18, 1977	109.92	B	MAY 16, 1978	105.52	B
JUL 01, 1977	114.01	B	SEP 21, 1977	114.44	B	DEC 19, 1977	110.03	B	MAY 17, 1978	105.65	B
JUL 02, 1977	114.07	B	SEP 22, 1977	114.36	S	DEC 20, 1977	109.99	B	MAY 18, 1978	105.72	B
JUL 03, 1977	114.01	B	SEP 23, 1977	114.12	B	DEC 21, 1977	109.83	S	MAY 19, 1978	105.74	B
JUL 04, 1977	114.15	B	SEP 24, 1977	114.07	B	DEC 22, 1977	109.75	B	MAY 20, 1978	105.72	B
JUL 05, 1977	114.38	B	SEP 25, 1977	113.98	B	DEC 23, 1977	109.79	B	MAY 21, 1978	105.75	B
JUL 06, 1977	114.59	B	SEP 26, 1977	113.92	B	DEC 24, 1977	109.87	B	MAY 22, 1978	105.83	B
JUL 07, 1977	114.72	B	SEP 27, 1977	113.82	B	DEC 25, 1977	109.83	B	MAY 23, 1978	105.97	B
JUL 08, 1977	114.72	B	SEP 28, 1977	113.67	B	DEC 26, 1977	109.78	B	MAY 24, 1978	106.07	B
JUL 09, 1977	114.73	B	SEP 29, 1977	113.58	B	DEC 27, 1977	109.75	B	MAY 25, 1978	106.14	B
JUL 10, 1977	114.80	B	SEP 30, 1977	113.48	B	DEC 28, 1977	109.68	B	MAY 26, 1978	106.07	B
JUL 11, 1977	114.83	B	OCT 01, 1977	113.37	B	DEC 29, 1977	109.57	B	MAY 27, 1978	105.99	B
JUL 12, 1977	114.86	B	OCT 02, 1977	113.22	B	DEC 30, 1977	109.65	B	MAY 28, 1978	105.98	B
JUL 13, 1977	114.90	B	OCT 03, 1977	113.07	B	DEC 31, 1977	109.72	B	MAY 29, 1978	106.05	B
JUL 14, 1977	114.85	B	OCT 04, 1977	112.97	B	JAN 01, 1978	109.66	B	MAY 30, 1978	106.08	B
JUL 15, 1977	114.75	B	OCT 05, 1977	112.84	B	FEB 16, 1978	108.42	S	MAY 31, 1978	106.07	B
JUL 16, 1977	114.67	B	OCT 06, 1977	112.73	B	FEB 17, 1978	108.42	B	JUN 01, 1978	106.15	B
JUL 17, 1977	114.68	B	OCT 07, 1977	112.70	B	FEB 18, 1978	108.40	B	JUN 02, 1978	106.17	B
JUL 18, 1977	114.73	B	OCT 08, 1977	112.57	B	FEB 19, 1978	108.38	B	JUN 03, 1978	106.10	B
JUL 19, 1977	114.84	B	OCT 09, 1977	112.55	B	FEB 20, 1978	108.33	B	JUN 04, 1978	106.03	B
JUL 20, 1977	114.92	B	OCT 10, 1977	112.53	B	FEB 21, 1978	108.33	B	JUN 05, 1978	105.99	B
JUL 21, 1977	115.01	B	OCT 11, 1977	112.45	B	FEB 22, 1978	108.25	B	JUN 06, 1978	105.96	B
JUL 22, 1977	115.05	B	OCT 12, 1977	112.30	B	FEB 23, 1978	108.22	B	JUN 07, 1978	105.94	B
JUL 23, 1977	115.10	B	OCT 13, 1977	112.28	B	FEB 24, 1978	108.22	B	JUN 08, 1978	105.85	B
JUL 24, 1977	115.25	B	OCT 14, 1977	112.26	B	FEB 25, 1978	108.17	B	JUN 09, 1978	105.83	B
JUL 25, 1977	115.32	B	OCT 15, 1977	112.12	B	FEB 26, 1978	108.07	B	JUN 10, 1978	105.86	B
JUL 26, 1977	115.42	B	OCT 16, 1977	112.09	B	FEB 27, 1978	108.04	B	JUN 11, 1978	105.97	B
JUL 27, 1977	115.44	B	OCT 17, 1977	112.00	B	FEB 28, 1978	107.94	B	JUN 12, 1978	106.02	B
JUL 28, 1977	115.42	B	OCT 18, 1977	111.87	B	MAR 01, 1978	108.03	B	JUN 13, 1978	106.12	B
AUG 02, 1977	115.79	B	OCT 19, 1977	111.85	B	MAR 02, 1978	108.00	B	JUN 14, 1978	106.12	B
AUG 03, 1977	115.80	B	OCT 20, 1977	111.82	B	MAR 03, 1978	107.93	B	JUN 15, 1978	106.13	B
AUG 04, 1977	115.77	B	OCT 21, 1977	111.82	B	MAR 04, 1978	107.82	B	JUN 16, 1978	106.27	B
AUG 05, 1977	115.73	B	OCT 22, 1977	111.72	B	MAR 05, 1978	107.83	B	JUN 17, 1978	106.38	B
AUG 06, 1977	115.70	B	OCT 23, 1977	111.67	B	MAR 06, 1978	107.84	B	JUN 18, 1978	106.38	B
AUG 07, 1977	115.68	B	OCT 24, 1977	111.58	B	MAR 07, 1978	107.82	B	JUN 19, 1978	106.59	B
AUG 08, 1977	115.62	B	OCT 25, 1977	111.59	B	MAR 08, 1978	107.75	B	JUN 20, 1978	106.59	B
AUG 09, 1977	115.71	B	OCT 26, 1977	111.55	B	MAR 09, 1978	107.70	B	JUN 21, 1978	106.69	B
AUG 10, 1977	115.70	B	NOV 08, 1977	111.15	B	MAR 10, 1978	107.62	B	JUN 22, 1978	106.78	B
AUG 11, 1977	115.72	B	NOV 09, 1977	111.11	B	MAR 11, 1978	107.53	B	JUN 23, 1978	106.90	B
AUG 12, 1977	115.77	B	NOV 10, 1977	111.10	B	MAR 12, 1978	107.51	B	JUN 24, 1978	106.95	B
AUG 13, 1977	115.58	B	NOV 11, 1977	110.99	B	MAR 13, 1978	107.47	B	JUN 25, 1978	107.01	B
AUG 14, 1977	115.41	B	NOV 12, 1977	110.98	B	MAR 14, 1978	107.52	B	JUN 26, 1978	106.89	B
AUG 15, 1977	115.51	B	NOV 13, 1977	110.95	B	MAR 15, 1978	107.54	B	JUN 27, 1978	106.76	B
AUG 16, 1977	115.74	B	NOV 14, 1977	110.88	B	MAR 16, 1978	107.45	B	JUN 28, 1978	106.65	B
AUG 17, 1977	115.86	B	NOV 15, 1977	110.85	B	MAR 17, 1978	107.31	B	JUN 29, 1978	106.57	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 30, 1978	106.55	B	SEP 15, 1978	105.44	B	DEC 03, 1978	104.35	B	FEB 18, 1979	105.23	B
JUL 01, 1978	106.56	B	SEP 16, 1978	105.37	B	DEC 04, 1978	104.34	B	FEB 19, 1979	105.25	B
JUL 02, 1978	106.56	B	SEP 17, 1978	105.26	B	DEC 05, 1978	104.40	B	FEB 20, 1979	105.17	B
JUL 03, 1978	106.57	B	SEP 18, 1978	105.29	B	DEC 06, 1978	104.47	B	FEB 21, 1979	105.19	B
JUL 04, 1978	106.60	B	SEP 19, 1978	105.27	B	DEC 07, 1978	104.50	B	FEB 22, 1979	105.19	
JUL 05, 1978	106.65	B	SEP 20, 1978	105.18	B	DEC 08, 1978	104.55	B	FEB 23, 1979	105.26	B
JUL 06, 1978	106.68	B	SEP 21, 1978	105.10	B	DEC 09, 1978	104.53	B	FEB 24, 1979	105.30	B
JUL 07, 1978	106.59	B	SEP 22, 1978	105.10	B	DEC 10, 1978	104.51	B	FEB 25, 1979	105.23	B
JUL 08, 1978	106.57	B	SEP 23, 1978	105.10	B	DEC 11, 1978	104.50	B	FEB 26, 1979	105.23	B
JUL 09, 1978	106.47	B	SEP 24, 1978	105.03	B	DEC 12, 1978	104.65	B	FEB 27, 1979	105.15	B
JUL 10, 1978	106.40	B	SEP 25, 1978	104.97	B	DEC 13, 1978	104.55	B	FEB 28, 1979	105.12	B
JUL 11, 1978	106.36	B	SEP 26, 1978	104.93	B	DEC 14, 1978	104.46	B	MAR 01, 1979	105.10	B
JUL 12, 1978	106.32	B	SEP 27, 1978	104.94	B	DEC 15, 1978	104.55	B	MAR 02, 1979	105.16	B
JUL 13, 1978	106.23	B	SEP 28, 1978	104.93	B	DEC 16, 1978	104.45	B	MAR 03, 1979	105.19	B
JUL 14, 1978	106.13	B	SEP 29, 1978	104.91	B	DEC 17, 1978	104.42	B	MAR 04, 1979	105.15	B
JUL 15, 1978	106.05	B	OCT 02, 1978	104.78	B	DEC 18, 1978	104.46	B	MAR 05, 1979	105.16	B
JUL 16, 1978	106.00	B	OCT 03, 1978	104.69	B	DEC 19, 1978	104.52	B	MAR 06, 1979	105.12	B
JUL 17, 1978	105.93	B	OCT 04, 1978	104.72	B	DEC 20, 1978	104.52	B	MAR 07, 1979	105.07	B
JUL 18, 1978	105.87	B	OCT 05, 1978	104.68	B	DEC 21, 1978	104.53	B	MAR 08, 1979	105.10	B
JUL 19, 1978	105.90	B	OCT 06, 1978	104.65	B	DEC 22, 1978	104.48	B	MAR 09, 1979	105.12	B
JUL 20, 1978	105.75	B	OCT 07, 1978	104.62	B	DEC 23, 1978	104.50	B	MAR 10, 1979	105.08	B
JUL 21, 1978	105.73	B	OCT 08, 1978	104.61	B	DEC 24, 1978	104.58	B	MAR 11, 1979	104.99	B
JUL 22, 1978	105.70	B	OCT 09, 1978	104.58	B	DEC 25, 1978	104.63	B	MAR 12, 1979	105.00	B
JUL 23, 1978	105.83	B	OCT 10, 1978	104.57	B	DEC 26, 1978	104.55	B	MAR 13, 1979	105.03	B
JUL 24, 1978	106.12	B	OCT 11, 1978	104.59	B	DEC 27, 1978	104.55	B	MAR 14, 1979	104.94	B
JUL 25, 1978	106.25	B	OCT 12, 1978	104.65	B	DEC 28, 1978	104.63	B	MAR 15, 1979	104.80	B
JUL 26, 1978	106.32	B	OCT 13, 1978	104.64	B	DEC 29, 1978	104.65	B	MAR 16, 1979	104.81	B
JUL 27, 1978	106.38	B	OCT 14, 1978	104.58	B	DEC 30, 1978	104.65	B	MAR 17, 1979	104.87	B
JUL 28, 1978	106.42	B	OCT 15, 1978	104.49	B	DEC 31, 1978	104.77	B	MAR 18, 1979	104.86	B
JUL 29, 1978	106.47	B	OCT 16, 1978	104.48	B	JAN 01, 1979	104.77	B	MAR 19, 1979	104.86	B
JUL 30, 1978	106.33	B	OCT 17, 1978	104.52	B	JAN 02, 1979	104.76	B	MAR 20, 1979	104.80	B
JUL 31, 1978	106.22	B	OCT 18, 1978	104.49	B	JAN 03, 1979	104.79	B	MAR 21, 1979	104.83	B
AUG 01, 1978	106.41	B	OCT 19, 1978	104.39	B	JAN 04, 1979	104.87	B	MAR 22, 1979	104.87	B
AUG 02, 1978	106.60	B	OCT 20, 1978	104.36	B	JAN 05, 1979	104.86	B	MAR 23, 1979	104.83	B
AUG 03, 1978	106.68	B	OCT 21, 1978	104.43	B	JAN 06, 1979	104.93	B	MAR 24, 1979	104.73	B
AUG 04, 1978	106.72	B	OCT 22, 1978	104.41	B	JAN 07, 1979	104.95	B	MAR 25, 1979	104.72	B
AUG 05, 1978	106.80	B	OCT 23, 1978	104.27	B	JAN 08, 1979	104.97	B	MAR 26, 1979	104.65	B
AUG 06, 1978	106.87	B	OCT 24, 1978	104.34	B	JAN 09, 1979	105.02	B	MAR 27, 1979	104.60	B
AUG 07, 1978	106.95	B	OCT 25, 1978	104.30	B	JAN 10, 1979	104.95	B	MAR 28, 1979	104.56	B
AUG 08, 1978	106.99	B	OCT 26, 1978	104.29	B	JAN 11, 1979	104.94	B	MAR 29, 1979	104.64	B
AUG 09, 1978	107.05	B	OCT 27, 1978	104.28	B	JAN 12, 1979	105.05	B	MAR 30, 1979	104.65	B
AUG 10, 1978	107.14	B	OCT 28, 1978	104.22	B	JAN 13, 1979	105.08	B	MAR 31, 1979	104.65	B
AUG 11, 1978	107.37	B	OCT 29, 1978	104.32	B	JAN 14, 1979	104.98	B	APR 01, 1979	104.64	B
AUG 12, 1978	107.52	B	OCT 30, 1978	104.38	B	JAN 15, 1979	105.03	B	APR 02, 1979	104.63	B
AUG 13, 1978	107.63	B	OCT 31, 1978	104.36	B	JAN 16, 1979	105.11	B	APR 03, 1979	104.62	B
AUG 14, 1978	107.70	B	NOV 01, 1978	104.30	B	JAN 17, 1979	105.11	B	APR 04, 1979	104.60	B
AUG 15, 1978	107.74	B	NOV 02, 1978	104.29	B	JAN 18, 1979	105.12	B	APR 05, 1979	104.58	B
AUG 16, 1978	107.83	B	NOV 03, 1978	104.21	B	JAN 19, 1979	105.12	B	APR 06, 1979	104.55	B
AUG 17, 1978	107.92	B	NOV 04, 1978	104.25	B	JAN 20, 1979	105.15	B	APR 07, 1979	104.65	B
AUG 18, 1978	107.88	B	NOV 05, 1978	104.25	B	JAN 21, 1979	105.15	B	APR 08, 1979	104.56	B
AUG 19, 1978	107.80	B	NOV 06, 1978	104.23	B	JAN 22, 1979	105.21	B	APR 09, 1979	104.53	B
AUG 20, 1978	107.77	B	NOV 07, 1978	104.14	B	JAN 23, 1979	105.16	B	APR 10, 1979	104.53	B
AUG 21, 1978	107.70	B	NOV 08, 1978	104.06	B	JAN 24, 1979	105.18	B	APR 11, 1979	104.58	B
AUG 22, 1978	107.62	B	NOV 09, 1978	104.27	B	JAN 25, 1979	105.29	B	APR 12, 1979	104.55	B
AUG 23, 1978	107.48	B	NOV 10, 1978	104.38	B	JAN 26, 1979	105.30	B	APR 13, 1979	104.61	B
AUG 24, 1978	107.45	S	NOV 11, 1978	104.30	B	JAN 27, 1979	105.32	B	APR 14, 1979	104.60	B
AUG 25, 1978	107.31	B	NOV 12, 1978	104.36	B	JAN 28, 1979	105.32	B	APR 15, 1979	104.61	B
AUG 26, 1978	107.15	B	NOV 13, 1978	104.43	B	JAN 29, 1979	105.35	B	APR 16, 1979	104.51	B
AUG 27, 1978	107.01	B	NOV 14, 1978	104.44	B	JAN 30, 1979	105.33	B	APR 17, 1979	104.58	B
AUG 28, 1978	106.91	B	NOV 15, 1978	104.41	B	JAN 31, 1979	105.28	B	APR 18, 1979	104.62	B
AUG 29, 1978	106.75	B	NOV 16, 1978	104.41	B	FEB 01, 1979	105.34	B	APR 19, 1979	104.69	B
AUG 30, 1978	106.60	B	NOV 17, 1978	104.40	B	FEB 02, 1979	105.39	B	APR 20, 1979	104.71	B
AUG 31, 1978	106.50	B	NOV 18, 1978	104.43	B	FEB 03, 1979	105.45	B	APR 21, 1979	104.69	B
SEP 01, 1978	106.45	B	NOV 19, 1978	104.46	B	FEB 04, 1979	105.43	B	APR 22, 1979	104.67	B
SEP 02, 1978	106.36	B	NOV 20, 1978	104.44	B	FEB 05, 1979	105.49	B	APR 23, 1979	104.67	B
SEP 03, 1978	106.28	B	NOV 21, 1978	104.37	B	FEB 06, 1979	105.40	B	APR 24, 1979	104.70	B
SEP 04, 1978	106.25	B	NOV 22, 1978	104.40	B	FEB 07, 1979	105.60	B	APR 25, 1979	104.72	B
SEP 05, 1978	106.20	B	NOV 23, 1978	104.44	B	FEB 08, 1979	105.57	B	APR 26, 1979	104.72	B
SEP 06, 1978	106.16	B	NOV 24, 1978	104.45	B	FEB 09, 1979	105.56	B	APR 27, 1979	104.73	B
SEP 07, 1978	106.06	B	NOV 25, 1978	104.46	B	FEB 10, 1979	105.48	B	APR 28, 1979	104.76	B
SEP 08, 1978	106.05	B	NOV 26, 1978	104.50	B	FEB 11, 1979	105.44	B	APR 29, 1979	104.75	B
SEP 09, 1978	105.87	B	NOV 27, 1978	104.40	B	FEB 12, 1979	105.33	B	APR 30, 1979	104.72	B
SEP 10, 1978	105.83	B	NOV 28, 1978	104.44	B	FEB 13, 1979	105.28	B	MAY 01, 1979	104.78	B
SEP 11, 1978	105.75	B	NOV 29, 1978	104.43	B	FEB 14, 1979	105.37	B	MAY 02, 1979	104.80	B
SEP 12, 1978	105.67	B	NOV 30, 1978	104.35	S	FEB 15, 1979	105.35	B	MAY 03, 1979	104.80	B
SEP 13, 1978	105.58	B	DEC 01, 1978	104.39	B	FEB 16, 1979	105.30	B	MAY 04, 1979	104.80	B
SEP 14, 1978	105.52	B	DEC 02, 1978	104.43	B	FEB 17, 1979	105.27	B	MAY 05, 1979	104.70	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 06, 1979	104.76	B	JUL 22, 1979	110.44	B	NOV 24, 1979	107.80	B	FEB 09, 1980	106.54	B
MAY 07, 1979	104.80	B	SEP 09, 1979	110.45	B	NOV 25, 1979	107.75	B	FEB 10, 1980	106.52	B
MAY 08, 1979	104.90	B	SEP 10, 1979	110.35	B	NOV 26, 1979	107.82	B	FEB 11, 1980	106.47	B
MAY 09, 1979	104.97	B	SEP 11, 1979	110.23	B	NOV 27, 1979	107.98	B	FEB 12, 1980	106.42	B
MAY 10, 1979	105.05	B	SEP 12, 1979	110.11	B	NOV 28, 1979	107.96	B	FEB 13, 1980	106.46	B
MAY 11, 1979	105.14	B	SEP 13, 1979	110.00	B	NOV 29, 1979	107.90	B	FEB 14, 1980	106.45	B
MAY 12, 1979	105.16	B	SEP 14, 1979	109.88	B	NOV 30, 1979	107.85	B	FEB 15, 1980	106.48	B
MAY 13, 1979	105.23	B	SEP 15, 1979	109.79	B	DEC 01, 1979	107.68	B	FEB 16, 1980	106.26	B
MAY 14, 1979	105.25	B	SEP 16, 1979	109.80	B	DEC 02, 1979	107.70	B	FEB 17, 1980	106.26	B
MAY 15, 1979	105.24	B	SEP 17, 1979	109.80	B	DEC 03, 1979	107.68	B	FEB 18, 1980	106.22	B
MAY 16, 1979	105.21	B	SEP 18, 1979	109.75	B	DEC 04, 1979	107.65	B	FEB 19, 1980	106.21	B
MAY 17, 1979	105.21	B	SEP 19, 1979	109.74	B	DEC 05, 1979	107.60	B	FEB 20, 1980	106.27	B
MAY 18, 1979	105.20	B	SEP 20, 1979	109.75	S	DEC 06, 1979	107.57	B	FEB 21, 1980	106.30	B
MAY 19, 1979	105.25	B	SEP 21, 1979	109.67	B	DEC 07, 1979	107.58	B	FEB 22, 1980	106.35	B
MAY 20, 1979	105.22	B	SEP 22, 1979	109.68	B	DEC 08, 1979	107.56	B	FEB 23, 1980	106.40	B
MAY 21, 1979	105.25	B	SEP 23, 1979	109.88	B	DEC 09, 1979	107.41	B	FEB 24, 1980	106.38	B
MAY 22, 1979	105.30	S	SEP 24, 1979	110.15	B	DEC 10, 1979	107.55	B	FEB 25, 1980	106.34	B
MAY 23, 1979	105.24	B	SEP 25, 1979	110.22	B	DEC 11, 1979	107.47	B	FEB 26, 1980	106.27	B
MAY 24, 1979	105.25	B	SEP 26, 1979	110.25	B	DEC 12, 1979	107.52	B	FEB 27, 1980	106.21	B
MAY 25, 1979	105.23	B	SEP 27, 1979	110.03	B	DEC 13, 1979	107.45	B	FEB 28, 1980	106.20	B
MAY 26, 1979	105.20	B	SEP 28, 1979	110.01	B	DEC 14, 1979	107.37	B	MAR 01, 1980	106.22	B
MAY 27, 1979	105.53	B	SEP 29, 1979	109.95	B	DEC 15, 1979	107.53	B	MAR 02, 1980	106.13	B
MAY 28, 1979	105.88	B	SEP 30, 1979	109.96	B	DEC 16, 1979	107.47	B	MAR 03, 1980	105.97	B
MAY 29, 1979	106.11	B	OCT 01, 1979	109.88	B	DEC 17, 1979	107.41	B	MAR 04, 1980	105.99	B
MAY 30, 1979	106.25	B	OCT 02, 1979	109.99	B	DEC 18, 1979	107.38	B	MAR 05, 1980	105.94	B
MAY 31, 1979	106.32	B	OCT 03, 1979	110.21	B	DEC 19, 1979	107.35	B	MAR 06, 1980	106.07	B
JUN 01, 1979	106.02	B	OCT 04, 1979	110.28	B	DEC 20, 1979	107.31	B	MAR 07, 1980	106.08	B
JUN 02, 1979	105.88	B	OCT 05, 1979	110.34	B	DEC 21, 1979	107.26	B	MAR 08, 1980	105.96	B
JUN 03, 1979	105.98	B	OCT 06, 1979	110.35	B	DEC 22, 1979	107.32	B	MAR 09, 1980	106.05	B
JUN 04, 1979	106.24	B	OCT 07, 1979	110.38	B	DEC 23, 1979	107.20	B	MAR 10, 1980	106.17	B
JUN 05, 1979	106.33	B	OCT 08, 1979	110.45	B	DEC 24, 1979	107.20	B	MAR 11, 1980	106.17	B
JUN 06, 1979	106.47	B	OCT 09, 1979	110.43	B	DEC 25, 1979	107.27	B	MAR 12, 1980	106.06	S
JUN 07, 1979	106.60	B	OCT 10, 1979	110.35	B	DEC 26, 1979	107.30	B	MAR 13, 1980	106.20	B
JUN 08, 1979	106.61	B	OCT 11, 1979	110.28	B	DEC 27, 1979	107.30	B	MAR 14, 1980	106.27	B
JUN 09, 1979	106.65	B	OCT 12, 1979	110.16	B	DEC 28, 1979	107.29	B	MAR 15, 1980	106.20	B
JUN 10, 1979	106.68	B	OCT 13, 1979	109.87	B	DEC 29, 1979	107.25	B	MAR 16, 1980	106.18	B
JUN 11, 1979	106.70	B	OCT 14, 1979	109.76	B	DEC 30, 1979	107.22	B	MAR 17, 1980	106.32	B
JUN 12, 1979	106.74	B	OCT 15, 1979	109.72	B	DEC 31, 1979	107.20	B	MAR 18, 1980	106.33	B
JUN 13, 1979	106.86	B	OCT 16, 1979	109.62	B	JAN 01, 1980	107.21	B	MAR 19, 1980	106.30	B
JUN 14, 1979	106.94	B	OCT 17, 1979	109.55	B	JAN 02, 1980	107.11	B	MAR 20, 1980	106.35	B
JUN 15, 1979	106.60	B	OCT 18, 1979	109.34	B	JAN 03, 1980	107.15	B	MAR 21, 1980	106.38	B
JUN 16, 1979	106.60	B	OCT 19, 1979	109.27	B	JAN 04, 1980	107.03	B	MAR 22, 1980	106.39	B
JUN 17, 1979	106.82	B	OCT 20, 1979	109.29	B	JAN 05, 1980	107.10	B	MAR 23, 1980	106.35	B
JUN 18, 1979	106.95	B	OCT 21, 1979	109.31	B	JAN 06, 1980	107.05	B	MAR 24, 1980	106.37	B
JUN 19, 1979	107.04	B	OCT 22, 1979	109.25	B	JAN 07, 1980	106.97	B	MAR 25, 1980	106.40	B
JUN 20, 1979	107.03	B	OCT 23, 1979	109.24	B	JAN 08, 1980	106.95	B	MAR 26, 1980	106.39	B
JUN 21, 1979	106.90	B	OCT 24, 1979	109.14	B	JAN 09, 1980	106.79	B	MAR 27, 1980	106.21	B
JUN 22, 1979	107.05	B	OCT 25, 1979	109.08	B	JAN 10, 1980	106.95	B	MAR 28, 1980	106.23	B
JUN 23, 1979	107.10	B	OCT 26, 1979	109.13	B	JAN 11, 1980	106.82	B	MAR 29, 1980	106.37	B
JUN 24, 1979	107.17	B	OCT 27, 1979	109.07	B	JAN 12, 1980	106.81	B	MAR 30, 1980	106.33	B
JUN 25, 1979	107.26	B	OCT 28, 1979	109.05	B	JAN 13, 1980	106.80	B	MAR 31, 1980	106.40	B
JUN 26, 1979	107.35	B	OCT 29, 1979	109.05	B	JAN 14, 1980	106.86	B	APR 01, 1980	106.40	B
JUN 27, 1979	107.45	B	OCT 30, 1979	108.94	B	JAN 15, 1980	106.90	B	APR 02, 1980	106.42	B
JUN 28, 1979	107.53	B	OCT 31, 1979	108.89	B	JAN 16, 1980	106.82	B	APR 03, 1980	106.46	B
JUN 29, 1979	107.12	B	NOV 01, 1979	108.84	B	JAN 17, 1980	106.87	B	APR 04, 1980	106.54	B
JUN 30, 1979	107.08	B	NOV 02, 1979	108.75	B	JAN 18, 1980	106.96	B	APR 05, 1980	106.59	B
JUL 01, 1979	107.37	B	NOV 03, 1979	108.66	B	JAN 19, 1980	106.95	B	APR 06, 1980	106.53	B
JUL 02, 1979	107.69	B	NOV 04, 1979	108.65	B	JAN 20, 1980	106.89	B	APR 07, 1980	106.45	B
JUL 03, 1979	107.96	B	NOV 05, 1979	108.63	B	JAN 21, 1980	106.91	B	APR 08, 1980	106.50	B
JUL 04, 1979	108.14	B	NOV 06, 1979	108.56	B	JAN 22, 1980	106.88	B	APR 09, 1980	106.56	B
JUL 05, 1979	108.35	B	NOV 07, 1979	108.42	B	JAN 23, 1980	106.75	B	APR 10, 1980	106.49	B
JUL 06, 1979	108.46	B	NOV 08, 1979	108.38	B	JAN 24, 1980	106.70	B	APR 11, 1980	106.47	B
JUL 07, 1979	108.62	B	NOV 09, 1979	108.35	B	JAN 25, 1980	106.78	B	APR 12, 1980	106.54	B
JUL 08, 1979	108.78	B	NOV 10, 1979	108.34	B	JAN 26, 1980	106.75	B	APR 13, 1980	106.62	B
JUL 09, 1979	108.86	B	NOV 11, 1979	108.35	B	JAN 27, 1980	106.74	B	APR 14, 1980	106.65	B
JUL 10, 1979	109.10	B	NOV 12, 1979	108.30	B	JAN 28, 1980	106.68	B	APR 15, 1980	106.59	B
JUL 11, 1979	109.35	B	NOV 13, 1979	108.28	B	JAN 29, 1980	106.73	B	APR 16, 1980	106.63	B
JUL 12, 1979	109.75	B	NOV 14, 1979	108.25	B	JAN 30, 1980	106.75	B	APR 17, 1980	106.65	B
JUL 13, 1979	110.02	B	NOV 15, 1979	108.18	B	JAN 31, 1980	106.68	B	APR 18, 1980	106.65	B
JUL 14, 1979	110.19	B	NOV 16, 1979	108.05	B	FEB 01, 1980	106.67	B	APR 19, 1980	106.54	B
JUL 15, 1979	110.09	B	NOV 17, 1979	107.99	B	FEB 02, 1980	106.62	B	APR 20, 1980	106.41	B
JUL 16, 1979	110.16	B	NOV 18, 1979	108.05	B	FEB 03, 1980	106.62	B	APR 21, 1980	106.23	B
JUL 17, 1979	110.12	B	NOV 19, 1979	108.10	B	FEB 04, 1980	106.66	B	APR 22, 1980	106.18	B
JUL 18, 1979	110.16	B	NOV 20, 1979	108.10	B	FEB 05, 1980	106.57	B	APR 23, 1980	106.17	B
JUL 19, 1979	110.21	B	NOV 21, 1979	108.04	B	FEB 06, 1980	106.57	B	APR 24, 1980	105.93	B
JUL 20, 1979	110.18	B	NOV 22, 1979	107.89	B	FEB 07, 1980	106.59	B	APR 25, 1980	105.67	B
JUL 21, 1979	110.29	B	NOV 23, 1979	107.89	B	FEB 08, 1980	106.55	B	APR 26, 1980	105.56	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 27, 1980	105.41	B	JUL 31, 1980	104.64	B	OCT 16, 1980	103.58	B	JAN 01, 1981	102.81	B
APR 28, 1980	105.31	B	AUG 01, 1980	104.75	B	OCT 17, 1980	103.69	B	JAN 02, 1981	102.83	B
APR 29, 1980	105.32	B	AUG 02, 1980	104.88	B	OCT 18, 1980	103.85	B	JAN 03, 1981	102.84	B
APR 30, 1980	105.38	B	AUG 03, 1980	105.06	B	OCT 19, 1980	103.84	B	JAN 04, 1981	102.85	B
MAY 01, 1980	105.35	B	AUG 04, 1980	105.08	B	OCT 20, 1980	103.84	B	JAN 05, 1981	102.85	B
MAY 02, 1980	105.30	B	AUG 05, 1980	105.28	B	OCT 21, 1980	103.75	B	JAN 06, 1981	102.81	B
MAY 03, 1980	105.27	B	AUG 06, 1980	105.47	B	OCT 22, 1980	103.86	B	JAN 07, 1981	102.81	B
MAY 04, 1980	105.23	B	AUG 07, 1980	105.66	B	OCT 23, 1980	103.81	B	JAN 08, 1981	102.86	B
MAY 05, 1980	105.34	B	AUG 08, 1980	105.72	B	OCT 24, 1980	103.67	B	JAN 09, 1981	102.92	B
MAY 06, 1980	105.42	B	AUG 09, 1980	105.73	B	OCT 25, 1980	103.55	B	JAN 10, 1981	102.98	B
MAY 07, 1980	105.57	B	AUG 10, 1980	105.77	B	OCT 26, 1980	103.55	B	JAN 11, 1981	102.99	B
MAY 08, 1980	105.70	B	AUG 11, 1980	105.81	B	OCT 27, 1980	103.61	B	JAN 12, 1981	102.97	B
MAY 09, 1980	105.80	B	AUG 12, 1980	105.88	B	OCT 28, 1980	103.57	B	JAN 13, 1981	102.96	B
MAY 10, 1980	105.78	B	AUG 13, 1980	105.94	B	OCT 29, 1980	103.48	B	JAN 14, 1981	102.92	B
MAY 11, 1980	105.82	B	AUG 14, 1980	106.06	B	OCT 30, 1980	103.41	B	JAN 15, 1981	103.21	S
MAY 30, 1980	105.70	B	AUG 15, 1980	106.27	B	OCT 31, 1980	103.37	B	JAN 16, 1981	102.87	B
MAY 31, 1980	105.60	B	AUG 16, 1980	106.34	B	NOV 01, 1980	103.33	B	JAN 17, 1981	102.86	B
JUN 01, 1980	105.52	B	AUG 17, 1980	106.30	B	NOV 02, 1980	103.38	B	JAN 18, 1981	102.86	B
JUN 02, 1980	105.51	B	AUG 18, 1980	106.31	B	NOV 03, 1980	103.37	B	JAN 19, 1981	102.82	B
JUN 03, 1980	105.49	B	AUG 19, 1980	106.28	B	NOV 04, 1980	103.34	B	JAN 20, 1981	102.83	B
JUN 04, 1980	105.44	B	AUG 20, 1980	106.27	B	NOV 05, 1980	103.24	B	JAN 21, 1981	102.80	B
JUN 05, 1980	105.38	B	AUG 21, 1980	106.26	B	NOV 06, 1980	103.22	B	JAN 22, 1981	102.73	B
JUN 06, 1980	105.35	B	AUG 22, 1980	106.21	B	NOV 07, 1980	103.12	B	JAN 23, 1981	102.65	B
JUN 07, 1980	105.35	B	AUG 23, 1980	106.15	B	NOV 08, 1980	103.19	B	JAN 24, 1981	102.67	B
JUN 08, 1980	105.27	B	AUG 24, 1980	106.08	B	NOV 09, 1980	103.18	B	JAN 25, 1981	102.67	B
JUN 09, 1980	105.15	B	AUG 25, 1980	105.99	B	NOV 10, 1980	103.20	B	JAN 26, 1981	102.64	B
JUN 10, 1980	105.08	B	AUG 26, 1980	105.80	B	NOV 11, 1980	103.16	B	JAN 27, 1981	102.61	B
JUN 11, 1980	105.05	B	AUG 27, 1980	105.67	B	NOV 12, 1980	103.20	B	JAN 28, 1981	102.61	B
JUN 12, 1980	104.98	B	AUG 28, 1980	105.55	B	NOV 13, 1980	103.18	B	JAN 29, 1981	102.68	B
JUN 13, 1980	104.96	B	AUG 29, 1980	105.44	B	NOV 14, 1980	103.14	B	JAN 30, 1981	102.72	B
JUN 14, 1980	104.91	B	AUG 30, 1980	105.31	B	NOV 15, 1980	103.18	B	JAN 31, 1981	102.76	B
JUN 15, 1980	104.90	B	AUG 31, 1980	105.25	B	NOV 16, 1980	103.09	B	FEB 01, 1981	102.80	B
JUN 16, 1980	104.82	B	SEP 01, 1980	105.14	B	NOV 17, 1980	103.08	B	FEB 02, 1981	102.80	B
JUN 17, 1980	104.79	B	SEP 02, 1980	105.03	B	NOV 18, 1980	103.07	B	FEB 03, 1981	102.77	B
JUN 18, 1980	104.73	B	SEP 03, 1980	105.02	B	NOV 19, 1980	103.08	B	FEB 04, 1981	102.74	B
JUN 19, 1980	104.70	B	SEP 04, 1980	104.97	B	NOV 20, 1980	102.99	B	FEB 05, 1981	102.68	B
JUN 20, 1980	104.64	B	SEP 05, 1980	104.92	B	NOV 21, 1980	102.90	B	FEB 06, 1981	102.69	B
JUN 21, 1980	104.59	B	SEP 06, 1980	104.83	B	NOV 22, 1980	103.10	B	FEB 07, 1981	102.62	B
JUN 22, 1980	104.53	B	SEP 07, 1980	104.85	B	NOV 23, 1980	103.07	B	FEB 08, 1981	102.56	B
JUN 23, 1980	104.50	B	SEP 08, 1980	104.94	B	NOV 24, 1980	103.11	B	FEB 09, 1981	102.68	B
JUN 24, 1980	104.46	B	SEP 09, 1980	104.85	B	NOV 25, 1980	103.07	B	FEB 10, 1981	102.67	B
JUN 25, 1980	104.42	B	SEP 10, 1980	104.72	B	NOV 26, 1980	103.05	B	FEB 11, 1981	102.65	B
JUN 26, 1980	104.35	B	SEP 11, 1980	104.69	B	NOV 27, 1980	102.96	B	FEB 12, 1981	102.68	B
JUN 27, 1980	104.35	B	SEP 12, 1980	104.64	B	NOV 28, 1980	102.92	B	FEB 13, 1981	102.65	B
JUN 28, 1980	104.27	B	SEP 13, 1980	104.61	B	NOV 29, 1980	102.86	B	FEB 14, 1981	102.65	B
JUN 29, 1980	104.20	B	SEP 14, 1980	104.56	B	NOV 30, 1980	102.94	B	FEB 15, 1981	102.60	B
JUN 30, 1980	104.18	B	SEP 15, 1980	104.56	B	DEC 01, 1980	102.93	B	FEB 16, 1981	102.54	B
JUL 01, 1980	104.17	B	SEP 16, 1980	104.50	B	DEC 02, 1980	102.80	B	FEB 17, 1981	102.63	B
JUL 02, 1980	104.15	B	SEP 17, 1980	104.47	B	DEC 03, 1980	102.75	B	FEB 18, 1981	102.61	B
JUL 03, 1980	104.14	B	SEP 18, 1980	104.42	B	DEC 04, 1980	102.86	B	FEB 19, 1981	102.51	B
JUL 04, 1980	104.14	B	SEP 19, 1980	104.44	B	DEC 05, 1980	102.88	B	FEB 20, 1981	102.64	B
JUL 05, 1980	104.10	B	SEP 20, 1980	104.41	B	DEC 06, 1980	102.94	B	FEB 21, 1981	102.65	B
JUL 06, 1980	104.09	B	SEP 21, 1980	104.48	B	DEC 07, 1980	103.00	B	FEB 22, 1981	102.55	B
JUL 07, 1980	104.02	B	SEP 22, 1980	104.46	B	DEC 08, 1980	102.99	B	FEB 23, 1981	102.45	B
JUL 08, 1980	104.24	B	SEP 23, 1980	104.41	B	DEC 09, 1980	102.92	B	FEB 24, 1981	102.45	B
JUL 09, 1980	104.48	B	SEP 24, 1980	104.36	B	DEC 10, 1980	102.88	B	FEB 25, 1981	102.48	B
JUL 10, 1980	104.67	B	SEP 25, 1980	104.30	B	DEC 11, 1980	102.87	B	FEB 26, 1981	102.54	B
JUL 11, 1980	104.75	B	SEP 26, 1980	104.24	B	DEC 12, 1980	102.88	B	FEB 27, 1981	102.58	B
JUL 12, 1980	104.83	B	SEP 27, 1980	104.13	B	DEC 13, 1980	102.89	B	FEB 28, 1981	102.57	B
JUL 13, 1980	104.85	B	SEP 28, 1980	104.16	B	DEC 14, 1980	102.88	B	MAR 01, 1981	102.55	B
JUL 14, 1980	104.86	S	SEP 29, 1980	104.02	B	DEC 15, 1980	102.88	B	MAR 02, 1981	102.50	B
JUL 15, 1980	104.94	B	SEP 30, 1980	104.09	B	DEC 16, 1980	102.80	B	MAR 03, 1981	102.45	B
JUL 16, 1980	104.97	B	OCT 01, 1980	104.10	B	DEC 17, 1980	102.80	B	MAR 04, 1981	102.47	B
JUL 17, 1980	105.03	B	OCT 02, 1980	104.02	B	DEC 18, 1980	102.95	B	MAR 05, 1981	102.52	B
JUL 18, 1980	105.03	B	OCT 03, 1980	103.92	B	DEC 19, 1980	102.95	B	MAR 06, 1981	102.53	B
JUL 19, 1980	104.87	B	OCT 04, 1980	103.94	B	DEC 20, 1980	102.90	B	MAR 07, 1981	102.56	B
JUL 20, 1980	104.64	B	OCT 05, 1980	103.96	B	DEC 21, 1980	102.79	B	MAR 08, 1981	102.60	B
JUL 21, 1980	104.50	B	OCT 06, 1980	103.95	B	DEC 22, 1980	102.83	B	MAR 09, 1981	102.53	B
JUL 22, 1980	104.42	B	OCT 07, 1980	103.91	B	DEC 23, 1980	102.88	B	MAR 10, 1981	102.57	B
JUL 23, 1980	104.37	B	OCT 08, 1980	103.89	B	DEC 24, 1980	102.80	B	MAR 11, 1981	102.53	B
JUL 24, 1980	104.34	B	OCT 09, 1980	103.94	S	DEC 25, 1980	102.79	B	MAR 12, 1981	102.50	B
JUL 25, 1980	104.30	B	OCT 10, 1980	103.86	B	DEC 26, 1980	102.77	B	MAR 13, 1981	102.50	B
JUL 26, 1980	104.32	B	OCT 11, 1980	103.78	B	DEC 27, 1980	102.83	B	MAR 14, 1981	102.54	B
JUL 27, 1980	104.35	B	OCT 12, 1980	103.72	B	DEC 28, 1980	102.86	B	MAR 15, 1981	102.52	B
JUL 28, 1980	104.40	B	OCT 13, 1980	103.68	B	DEC 29, 1980	102.82	B	MAR 16, 1981	102.53	B
JUL 29, 1980	104.54	B	OCT 14, 1980	103.65	B	DEC 30, 1980	102.80	B	MAR 17, 1981	102.60	B
JUL 30, 1980	104.60	B	OCT 15, 1980	103.64	B	DEC 31, 1980	102.83	B	MAR 18, 1981	102.57	B

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 19, 1981	102.45	B	JUN 04, 1981	103.40	B	AUG 20, 1981	106.95	B	NOV 05, 1981	105.40	B
MAR 20, 1981	102.43	B	JUN 05, 1981	103.34	B	AUG 21, 1981	106.99	B	NOV 06, 1981	105.35	B
MAR 21, 1981	102.54	B	JUN 06, 1981	103.35	B	AUG 22, 1981	107.04	B	NOV 07, 1981	105.39	B
MAR 22, 1981	102.59	B	JUN 07, 1981	103.31	B	AUG 23, 1981	106.93	B	NOV 08, 1981	105.39	B
MAR 23, 1981	102.55	B	JUN 08, 1981	103.29	B	AUG 24, 1981	106.94	B	NOV 09, 1981	105.36	B
MAR 24, 1981	102.60	B	JUN 09, 1981	103.30	B	AUG 25, 1981	106.97	B	NOV 10, 1981	105.33	B
MAR 25, 1981	102.47	B	JUN 10, 1981	103.27	B	AUG 26, 1981	106.99	B	NOV 11, 1981	105.23	B
MAR 26, 1981	102.53	B	JUN 11, 1981	103.22	B	AUG 27, 1981	107.00	B	NOV 12, 1981	105.22	B
MAR 27, 1981	102.56	B	JUN 12, 1981	103.20	B	AUG 28, 1981	106.99	B	NOV 13, 1981	105.14	B
MAR 28, 1981	102.55	B	JUN 13, 1981	103.21	B	AUG 29, 1981	106.98	B	NOV 14, 1981	105.20	B
MAR 29, 1981	102.55	B	JUN 14, 1981	103.25	B	AUG 30, 1981	107.04	B	NOV 15, 1981	105.17	B
MAR 30, 1981	102.59	B	JUN 15, 1981	103.20	B	AUG 31, 1981	106.97	B	NOV 16, 1981	105.13	B
MAR 31, 1981	102.57	B	JUN 16, 1981	103.15	B	SEP 01, 1981	106.88	B	NOV 17, 1981	105.13	B
APR 01, 1981	102.62	B	JUN 17, 1981	103.19	B	SEP 02, 1981	106.89	B	NOV 18, 1981	105.22	B
APR 02, 1981	102.58	B	JUN 18, 1981	103.11	B	SEP 03, 1981	106.76	B	NOV 19, 1981	105.12	B
APR 03, 1981	102.64	B	JUN 19, 1981	103.08	B	SEP 04, 1981	106.71	B	NOV 20, 1981	105.11	B
APR 04, 1981	102.73	B	JUN 20, 1981	103.08	B	SEP 05, 1981	106.70	B	NOV 21, 1981	105.06	B
APR 05, 1981	102.62	B	JUN 21, 1981	103.10	B	SEP 06, 1981	106.70	B	NOV 22, 1981	105.12	B
APR 06, 1981	102.64	B	JUN 22, 1981	103.04	B	SEP 07, 1981	106.71	B	NOV 23, 1981	105.07	B
APR 07, 1981	102.63	B	JUN 23, 1981	103.12	B	SEP 08, 1981	106.73	B	NOV 24, 1981	105.06	B
APR 08, 1981	102.58	B	JUN 24, 1981	103.14	B	SEP 09, 1981	106.67	B	NOV 25, 1981	105.06	B
APR 09, 1981	102.65	B	JUN 25, 1981	103.10	B	SEP 10, 1981	106.78	B	NOV 26, 1981	105.05	B
APR 10, 1981	102.72	S	JUN 26, 1981	103.08	B	SEP 11, 1981	106.80	B	NOV 27, 1981	105.11	B
APR 11, 1981	102.64	B	JUN 27, 1981	103.10	B	SEP 12, 1981	106.83	B	NOV 28, 1981	105.10	B
APR 12, 1981	102.73	B	JUN 28, 1981	103.10	B	SEP 13, 1981	106.87	B	NOV 29, 1981	105.06	B
APR 13, 1981	102.81	B	JUN 29, 1981	103.08	B	SEP 14, 1981	106.93	B	NOV 30, 1981	105.05	B
APR 14, 1981	102.76	B	JUN 30, 1981	103.06	B	SEP 15, 1981	106.95	B	DEC 01, 1981	105.01	B
APR 15, 1981	102.80	B	JUL 01, 1981	103.16	B	SEP 16, 1981	106.97	B	DEC 02, 1981	105.08	B
APR 16, 1981	102.94	B	JUL 02, 1981	103.16	B	SEP 17, 1981	106.98	B	DEC 03, 1981	105.10	B
APR 17, 1981	102.94	B	JUL 03, 1981	103.17	B	SEP 18, 1981	106.80	B	DEC 04, 1981	105.02	B
APR 18, 1981	102.92	B	JUL 04, 1981	103.19	B	SEP 19, 1981	106.92	B	DEC 05, 1981	104.91	B
APR 19, 1981	102.89	B	JUL 05, 1981	103.19	B	SEP 20, 1981	106.81	B	DEC 06, 1981	105.00	B
APR 20, 1981	102.90	B	JUL 06, 1981	103.18	B	SEP 21, 1981	106.80	B	DEC 07, 1981	105.10	B
APR 21, 1981	102.94	B	JUL 07, 1981	103.30	B	SEP 22, 1981	106.80	B	DEC 08, 1981	105.08	B
APR 22, 1981	102.96	B	JUL 08, 1981	103.31	B	SEP 23, 1981	106.71	B	DEC 09, 1981	104.96	B
APR 23, 1981	102.91	B	JUL 09, 1981	103.30	B	SEP 24, 1981	106.64	B	DEC 10, 1981	105.06	B
APR 24, 1981	102.98	B	JUL 10, 1981	103.38	B	SEP 25, 1981	106.65	B	DEC 11, 1981	105.06	B
APR 25, 1981	103.00	B	JUL 11, 1981	103.47	B	SEP 26, 1981	106.61	B	DEC 12, 1981	105.04	B
APR 26, 1981	103.13	B	JUL 12, 1981	103.52	B	SEP 27, 1981	106.53	B	DEC 13, 1981	105.00	B
APR 27, 1981	103.33	B	JUL 13, 1981	103.62	B	SEP 28, 1981	106.50	B	DEC 14, 1981	105.00	B
APR 28, 1981	103.39	B	JUL 14, 1981	103.66	B	SEP 29, 1981	106.49	B	DEC 15, 1981	104.95	B
APR 29, 1981	103.50	B	JUL 15, 1981	103.69	B	SEP 30, 1981	106.45	B	DEC 16, 1981	105.08	B
APR 30, 1981	103.53	B	JUL 16, 1981	103.72	B	OCT 01, 1981	106.28	B	DEC 17, 1981	105.06	B
MAY 01, 1981	103.50	B	JUL 17, 1981	103.80	S	OCT 02, 1981	106.24	B	DEC 18, 1981	104.95	B
MAY 02, 1981	103.56	B	JUL 18, 1981	104.05	B	OCT 03, 1981	106.23	B	DEC 19, 1981	104.88	B
MAY 03, 1981	103.58	B	JUL 19, 1981	104.41	B	OCT 04, 1981	106.25	B	DEC 20, 1981	104.91	B
MAY 04, 1981	103.63	B	JUL 20, 1981	104.68	B	OCT 05, 1981	106.23	B	DEC 21, 1981	105.01	B
MAY 05, 1981	103.62	B	JUL 21, 1981	104.79	B	OCT 06, 1981	106.11	B	DEC 22, 1981	105.05	B
MAY 06, 1981	103.65	B	JUL 22, 1981	104.92	B	OCT 07, 1981	106.07	B	DEC 23, 1981	105.03	B
MAY 07, 1981	103.67	B	JUL 23, 1981	105.07	B	OCT 08, 1981	106.05	B	DEC 24, 1981	104.94	B
MAY 08, 1981	103.83	B	JUL 24, 1981	105.22	B	OCT 09, 1981	106.05	B	DEC 25, 1981	104.98	B
MAY 09, 1981	103.78	B	JUL 25, 1981	105.34	B	OCT 10, 1981	105.94	B	DEC 26, 1981	104.90	B
MAY 10, 1981	103.76	B	JUL 26, 1981	105.43	B	OCT 11, 1981	105.97	B	DEC 27, 1981	104.95	B
MAY 11, 1981	103.76	B	JUL 27, 1981	105.50	B	OCT 12, 1981	105.98	B	DEC 28, 1981	104.97	B
MAY 12, 1981	103.79	B	JUL 28, 1981	105.48	B	OCT 13, 1981	105.96	B	DEC 29, 1981	104.91	B
MAY 13, 1981	103.77	B	JUL 29, 1981	105.31	B	OCT 14, 1981	105.97	B	DEC 30, 1981	104.94	B
MAY 14, 1981	103.69	B	JUL 30, 1981	105.19	B	OCT 15, 1981	105.91	B	DEC 31, 1981	104.85	B
MAY 15, 1981	103.64	B	JUL 31, 1981	105.12	B	OCT 16, 1981	105.92	B	JAN 01, 1982	104.88	B
MAY 16, 1981	103.70	B	AUG 01, 1981	105.14	B	OCT 17, 1981	105.89	B	JAN 02, 1982	104.90	B
MAY 17, 1981	103.69	B	AUG 02, 1981	105.15	B	OCT 18, 1981	105.80	B	JAN 03, 1982	104.92	B
MAY 18, 1981	103.64	B	AUG 03, 1981	105.17	B	OCT 19, 1981	105.82	B	JAN 04, 1982	104.93	B
MAY 19, 1981	103.62	B	AUG 04, 1981	105.30	B	OCT 20, 1981	105.79	B	JAN 05, 1982	105.04	B
MAY 20, 1981	103.68	B	AUG 05, 1981	105.40	B	OCT 21, 1981	105.76	B	JAN 06, 1982	105.05	S
MAY 21, 1981	103.61	B	AUG 06, 1981	105.50	B	OCT 22, 1981	105.74	B	JAN 07, 1982	105.15	B
MAY 22, 1981	103.66	B	AUG 07, 1981	105.75	B	OCT 23, 1981	105.64	B	JAN 08, 1982	105.17	B
MAY 23, 1981	103.62	B	AUG 08, 1981	106.21	B	OCT 24, 1981	105.59	B	JAN 09, 1982	105.13	B
MAY 24, 1981	103.57	B	AUG 09, 1981	106.46	B	OCT 25, 1981	105.49	B	JAN 10, 1982	105.04	B
MAY 25, 1981	103.56	B	AUG 10, 1981	106.70	B	OCT 26, 1981	105.53	B	JAN 11, 1982	105.04	B
MAY 26, 1981	103.54	B	AUG 11, 1981	106.92	B	OCT 27, 1981	105.49	B	JAN 12, 1982	105.05	B
MAY 27, 1981	103.53	B	AUG 12, 1981	107.06	B	OCT 28, 1981	105.43	B	JAN 13, 1982	105.02	B
MAY 28, 1981	103.54	B	AUG 13, 1981	107.19	B	OCT 29, 1981	105.49	B	JAN 14, 1982	104.93	B
MAY 29, 1981	103.47	B	AUG 14, 1981	107.39	B	OCT 30, 1981	105.57	B	JAN 15, 1982	105.08	B
MAY 30, 1981	103.45	B	AUG 15, 1981	107.44	B	OCT 31, 1981	105.57	B	JAN 16, 1982	104.86	B
MAY 31, 1981	103.42	B	AUG 16, 1981	107.42	B	NOV 01, 1981	105.52	B	JAN 17, 1982	104.87	B
JUN 01, 1981	103.40	B	AUG 17, 1981	107.26	B	NOV 02, 1981	105.43	B	JAN 18, 1982	104.93	B
JUN 02, 1981	103.38	B	AUG 18, 1981	107.10	B	NOV 03, 1981	105.39	B	JAN 19, 1982	104.95	B
JUN 03, 1981	103.38	B	AUG 19, 1981	106.99	B	NOV 04, 1981	105.34	B	JAN 20, 1982	104.96	B

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 21, 1982	104.89	S	JUN 09, 1982	105.78	B	OCT 17, 1982	107.15	B	JAN 10, 1983	106.16	B
JAN 22, 1982	104.99	B	JUN 10, 1982	106.06	B	OCT 18, 1982	107.18	B	JAN 11, 1983	106.15	B
JAN 23, 1982	104.89	B	JUN 11, 1982	106.29	B	OCT 19, 1982	107.11	B	JAN 12, 1983	106.06	B
JAN 24, 1982	105.03	B	JUN 12, 1982	106.51	B	OCT 20, 1982	107.04	B	JAN 13, 1983	106.20	B
JAN 25, 1982	104.87	B	JUN 13, 1982	106.73	B	OCT 21, 1982	106.98	B	JAN 14, 1983	106.17	B
JAN 26, 1982	104.84	B	JUN 14, 1982	106.98	B	OCT 22, 1982	106.93	B	JAN 15, 1983	106.12	B
JAN 27, 1982	104.95	B	JUN 15, 1982	107.06	B	OCT 23, 1982	106.95	B	JAN 16, 1983	106.03	B
JAN 28, 1982	104.97	B	JUN 16, 1982	107.13	B	OCT 24, 1982	106.89	B	JAN 17, 1983	106.03	S
JAN 29, 1982	104.98	B	JUN 17, 1982	107.15	B	OCT 25, 1982	106.84	B	JAN 18, 1983	105.95	B
JAN 30, 1982	104.95	B	JUN 18, 1982	107.14	B	OCT 26, 1982	106.87	B	JAN 19, 1983	105.94	B
JAN 31, 1982	104.99	B	JUN 19, 1982	107.10	B	OCT 27, 1982	106.94	B	JAN 20, 1983	105.95	B
FEB 01, 1982	105.01	B	JUN 20, 1982	107.07	B	OCT 28, 1982	106.84	B	JAN 21, 1983	105.95	B
FEB 02, 1982	105.00	S	JUN 21, 1982	107.19	B	OCT 29, 1982	106.83	B	JAN 22, 1983	105.88	B
FEB 03, 1982	105.09	B	JUN 22, 1982	107.30	B	OCT 30, 1982	106.86	B	JAN 23, 1983	105.94	B
FEB 04, 1982	105.09	B	JUN 23, 1982	107.33	B	OCT 31, 1982	106.87	B	JAN 24, 1983	105.94	B
FEB 05, 1982	105.12	B	AUG 04, 1982	107.30	B	NOV 01, 1982	106.93	B	JAN 25, 1983	105.94	B
FEB 06, 1982	105.05	B	AUG 05, 1982	107.48	B	NOV 02, 1982	106.92	B	JAN 26, 1983	105.82	B
FEB 07, 1982	105.02	B	AUG 06, 1982	107.58	B	NOV 03, 1982	106.86	B	JAN 27, 1983	105.83	B
FEB 08, 1982	105.03	B	AUG 07, 1982	107.60	B	NOV 04, 1982	106.84	B	JAN 28, 1983	105.90	B
FEB 09, 1982	104.97	B	AUG 08, 1982	107.62	B	NOV 05, 1982	106.74	B	JAN 29, 1983	105.86	B
FEB 10, 1982	104.95	B	AUG 09, 1982	107.62	B	NOV 06, 1982	106.77	B	JAN 30, 1983	105.89	B
FEB 11, 1982	104.99	B	AUG 10, 1982	107.62	B	NOV 07, 1982	106.76	B	JAN 31, 1983	105.87	B
FEB 12, 1982	104.98	B	AUG 11, 1982	107.73	B	NOV 08, 1982	106.75	B	FEB 01, 1983	105.87	B
FEB 13, 1982	104.85	B	AUG 12, 1982	107.80	B	NOV 09, 1982	106.77	B	FEB 02, 1983	105.86	B
FEB 14, 1982	104.86	B	AUG 13, 1982	107.80	B	NOV 10, 1982	106.75	B	FEB 03, 1983	105.84	B
FEB 15, 1982	104.90	B	AUG 14, 1982	107.86	B	NOV 11, 1982	106.86	B	FEB 04, 1983	105.83	B
FEB 16, 1982	104.97	B	AUG 27, 1982	108.16	S	NOV 12, 1982	106.84	B	FEB 05, 1983	105.84	B
FEB 17, 1982	105.04	B	AUG 28, 1982	108.20	B	NOV 13, 1982	106.88	B	FEB 06, 1983	105.77	B
FEB 18, 1982	104.97	B	AUG 29, 1982	108.22	B	NOV 17, 1982	106.63	S	FEB 07, 1983	105.79	B
FEB 19, 1982	105.00	B	AUG 30, 1982	108.24	B	NOV 23, 1982	106.71	S	FEB 08, 1983	105.75	B
FEB 20, 1982	104.92	B	AUG 31, 1982	108.22	B	NOV 24, 1982	106.63	B	FEB 09, 1983	105.77	B
FEB 21, 1982	104.94	B	SEP 01, 1982	108.24	B	NOV 25, 1982	106.64	B	FEB 10, 1983	105.82	B
FEB 22, 1982	104.93	B	SEP 02, 1982	108.24	B	NOV 26, 1982	106.57	B	FEB 11, 1983	105.76	B
FEB 23, 1982	104.98	B	SEP 03, 1982	108.21	B	NOV 27, 1982	106.49	B	FEB 12, 1983	105.75	B
FEB 24, 1982	104.96	B	SEP 04, 1982	108.31	B	NOV 28, 1982	106.41	B	FEB 13, 1983	105.80	B
FEB 25, 1982	104.89	B	SEP 05, 1982	108.36	B	NOV 29, 1982	106.35	B	FEB 14, 1983	105.80	B
FEB 26, 1982	104.85	B	SEP 06, 1982	108.33	B	NOV 30, 1982	106.35	B	FEB 15, 1983	105.72	B
FEB 27, 1982	104.90	B	SEP 07, 1982	108.17	B	DEC 01, 1982	106.45	B	FEB 16, 1983	105.74	B
FEB 28, 1982	104.85	B	SEP 08, 1982	108.07	B	DEC 02, 1982	106.41	B	FEB 17, 1983	105.64	B
MAR 17, 1982	104.54	S	SEP 09, 1982	108.03	B	DEC 03, 1982	106.38	B	FEB 18, 1983	105.64	B
APR 27, 1982	103.71	B	SEP 10, 1982	108.16	B	DEC 04, 1982	106.45	B	FEB 19, 1983	105.75	B
APR 28, 1982	103.68	B	SEP 11, 1982	108.07	B	DEC 05, 1982	106.39	B	FEB 20, 1983	105.73	B
APR 29, 1982	103.70	B	SEP 12, 1982	108.07	B	DEC 06, 1982	106.45	B	FEB 21, 1983	105.71	B
APR 30, 1982	103.64	B	SEP 13, 1982	108.12	B	DEC 07, 1982	106.51	B	FEB 22, 1983	105.69	B
MAY 01, 1982	103.62	B	SEP 14, 1982	108.10	B	DEC 08, 1982	106.42	B	FEB 23, 1983	105.64	S
MAY 02, 1982	103.58	B	SEP 15, 1982	108.08	B	DEC 09, 1982	106.41	B	FEB 24, 1983	105.60	B
MAY 03, 1982	103.61	B	SEP 16, 1982	108.16	B	DEC 10, 1982	106.41	B	FEB 25, 1983	105.57	B
MAY 04, 1982	103.68	B	SEP 17, 1982	108.14	B	DEC 11, 1982	106.37	B	FEB 26, 1983	105.64	B
MAY 05, 1982	103.68	B	SEP 18, 1982	108.08	B	DEC 12, 1982	106.33	B	FEB 27, 1983	105.62	B
MAY 06, 1982	103.69	B	SEP 19, 1982	108.03	B	DEC 13, 1982	106.32	B	FEB 28, 1983	105.61	B
MAY 07, 1982	103.80	B	SEP 20, 1982	108.10	B	DEC 14, 1982	106.28	B	MAR 01, 1983	105.58	B
MAY 08, 1982	103.89	B	SEP 21, 1982	108.15	B	DEC 15, 1982	106.25	B	MAR 02, 1983	105.56	B
MAY 09, 1982	103.92	B	SEP 22, 1982	108.19	B	DEC 16, 1982	106.20	B	MAR 03, 1983	105.53	B
MAY 10, 1982	103.97	B	SEP 23, 1982	108.24	B	DEC 17, 1982	106.25	B	MAR 04, 1983	105.60	B
MAY 11, 1982	103.97	B	SEP 24, 1982	108.21	B	DEC 18, 1982	106.24	B	MAR 05, 1983	105.62	B
MAY 12, 1982	104.05	B	SEP 25, 1982	108.16	B	DEC 19, 1982	106.23	B	MAR 06, 1983	105.63	B
MAY 13, 1982	104.10	B	SEP 26, 1982	108.10	B	DEC 20, 1982	106.12	B	MAR 07, 1983	105.63	B
MAY 14, 1982	104.18	B	SEP 27, 1982	108.04	B	DEC 21, 1982	106.06	B	MAR 08, 1983	105.68	B
MAY 15, 1982	104.29	B	SEP 28, 1982	107.93	B	DEC 22, 1982	106.07	B	MAR 09, 1983	105.63	B
MAY 16, 1982	104.27	B	SEP 29, 1982	108.03	B	DEC 23, 1982	106.23	B	MAR 10, 1983	105.61	B
MAY 17, 1982	104.26	B	SEP 30, 1982	107.94	B	DEC 24, 1982	106.30	B	MAR 11, 1983	105.73	B
MAY 18, 1982	104.37	B	OCT 01, 1982	107.82	B	DEC 25, 1982	106.20	B	MAR 12, 1983	105.92	B
MAY 19, 1982	104.43	S	OCT 02, 1982	107.72	B	DEC 26, 1982	106.25	B	MAR 13, 1983	106.01	B
MAY 20, 1982	104.52	B	OCT 03, 1982	107.66	B	DEC 27, 1982	106.28	B	MAR 14, 1983	106.06	B
MAY 21, 1982	104.60	B	OCT 04, 1982	107.60	B	DEC 28, 1982	106.26	B	MAR 15, 1983	106.08	B
MAY 22, 1982	104.65	B	OCT 05, 1982	107.56	B	DEC 29, 1982	106.25	B	MAR 16, 1983	105.92	B
MAY 23, 1982	104.75	B	OCT 06, 1982	107.42	B	DEC 30, 1982	106.25	B	MAR 17, 1983	105.83	B
MAY 24, 1982	104.78	B	OCT 07, 1982	107.45	B	DEC 31, 1982	106.25	B	MAR 18, 1983	105.83	S
MAY 25, 1982	104.78	S	OCT 08, 1982	107.50	S	JAN 01, 1983	106.25	B	MAR 19, 1983	105.80	B
JUN 01, 1982	104.93	B	OCT 09, 1982	107.48	B	JAN 02, 1983	106.15	B	MAR 20, 1983	105.73	B
JUN 02, 1982	104.96	B	OCT 10, 1982	107.39	B	JAN 03, 1983	106.15	B	MAR 21, 1983	105.67	B
JUN 03, 1982	105.05	B	OCT 11, 1982	107.35	B	JAN 04, 1983	106.10	B	MAR 22, 1983	105.64	B
JUN 04, 1982	105.17	B	OCT 12, 1982	107.34	B	JAN 05, 1983	106.10	B	MAR 23, 1983	105.64	B
JUN 05, 1982	105.18	B	OCT 13, 1982	107.30	B	JAN 06, 1983	106.10	B	MAR 24, 1983	105.59	B
JUN 06, 1982	105.30	B	OCT 14, 1982	107.27	B	JAN 07, 1983	106.04	B	MAR 25, 1983	105.65	B
JUN 07, 1982	105.41	B	OCT 15, 1982	107.20	B	JAN 08, 1983	106.10	B	MAR 26, 1983	105.62	B
JUN 08, 1982	105.53	B	OCT 16, 1982	107.14	B	JAN 09, 1983	106.06	B	MAR 27, 1983	105.67	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 28, 1983	105.66	B	JUN 13, 1983	110.04	B	AUG 29, 1983	109.91	B	NOV 14, 1983	107.38	B
MAR 29, 1983	105.45	B	JUN 14, 1983	110.01	B	AUG 30, 1983	109.92	B	NOV 15, 1983	107.31	B
MAR 30, 1983	105.50	B	JUN 15, 1983	110.05	B	AUG 31, 1983	109.95	B	NOV 16, 1983	107.23	B
MAR 31, 1983	105.55	B	JUN 16, 1983	110.03	B	SEP 01, 1983	109.98	B	NOV 17, 1983	107.12	S
APR 01, 1983	105.48	B	JUN 17, 1983	110.01	B	SEP 02, 1983	110.05	B	NOV 18, 1983	107.22	B
APR 02, 1983	105.44	B	JUN 18, 1983	110.06	B	SEP 03, 1983	110.05	B	NOV 19, 1983	107.06	B
APR 03, 1983	105.52	B	JUN 19, 1983	110.03	B	SEP 04, 1983	110.04	B	NOV 20, 1983	107.08	B
APR 04, 1983	105.57	B	JUN 20, 1983	110.10	B	SEP 05, 1983	110.10	B	NOV 21, 1983	107.15	B
APR 05, 1983	105.49	B	JUN 21, 1983	110.16	S	SEP 06, 1983	110.06	B	NOV 22, 1983	107.08	B
APR 06, 1983	105.44	B	JUN 22, 1983	110.23	B	SEP 07, 1983	110.14	B	NOV 23, 1983	107.03	B
APR 07, 1983	105.42	B	JUN 23, 1983	110.31	B	SEP 08, 1983	110.20	B	NOV 24, 1983	106.94	B
APR 08, 1983	105.43	B	JUN 24, 1983	110.38	B	SEP 09, 1983	110.37	B	NOV 25, 1983	107.05	B
APR 09, 1983	105.37	B	JUN 25, 1983	110.36	B	SEP 10, 1983	110.40	B	NOV 26, 1983	107.08	B
APR 10, 1983	105.38	B	JUN 26, 1983	110.32	B	SEP 11, 1983	110.51	B	NOV 27, 1983	107.04	B
APR 11, 1983	105.38	B	JUN 27, 1983	110.20	B	SEP 12, 1983	110.60	B	NOV 28, 1983	107.00	B
APR 12, 1983	105.39	B	JUN 28, 1983	110.15	B	SEP 13, 1983	110.65	B	NOV 29, 1983	107.01	B
APR 13, 1983	105.38	B	JUN 29, 1983	110.06	B	SEP 14, 1983	110.75	B	NOV 30, 1983	106.97	B
APR 14, 1983	105.37	B	JUN 30, 1983	110.02	B	SEP 15, 1983	110.76	B	DEC 01, 1983	106.98	B
APR 15, 1983	105.35	B	JUL 01, 1983	109.82	B	SEP 16, 1983	110.75	B	DEC 02, 1983	106.92	B
APR 16, 1983	105.30	B	JUL 02, 1983	109.60	B	SEP 17, 1983	110.80	B	DEC 03, 1983	106.95	B
APR 17, 1983	105.24	B	JUL 03, 1983	109.45	B	SEP 18, 1983	110.79	B	DEC 04, 1983	107.08	B
APR 18, 1983	105.22	B	JUL 04, 1983	109.25	B	SEP 19, 1983	110.90	B	DEC 05, 1983	107.05	B
APR 19, 1983	105.27	B	JUL 05, 1983	109.17	B	SEP 20, 1983	110.81	B	DEC 06, 1983	107.05	B
APR 20, 1983	105.36	B	JUL 06, 1983	109.34	B	SEP 21, 1983	110.71	B	DEC 07, 1983	106.97	B
APR 21, 1983	105.41	B	JUL 07, 1983	109.42	B	SEP 22, 1983	110.65	B	DEC 08, 1983	106.99	B
APR 22, 1983	105.43	B	JUL 08, 1983	109.52	B	SEP 23, 1983	110.66	B	DEC 09, 1983	106.96	B
APR 23, 1983	105.36	B	JUL 09, 1983	109.36	B	SEP 24, 1983	110.70	B	DEC 10, 1983	107.04	B
APR 24, 1983	105.34	B	JUL 10, 1983	109.17	B	SEP 25, 1983	110.64	B	DEC 11, 1983	106.97	B
APR 25, 1983	105.34	B	JUL 11, 1983	109.04	B	SEP 26, 1983	110.51	B	DEC 12, 1983	107.02	B
APR 26, 1983	105.35	B	JUL 12, 1983	109.06	B	SEP 27, 1983	110.52	B	DEC 13, 1983	107.03	B
APR 27, 1983	105.34	B	JUL 13, 1983	109.02	B	SEP 28, 1983	110.52	B	DEC 14, 1983	107.02	B
APR 28, 1983	105.32	B	JUL 14, 1983	109.04	B	SEP 29, 1983	110.55	B	DEC 15, 1983	107.04	B
APR 29, 1983	105.27	B	JUL 15, 1983	108.98	B	SEP 30, 1983	110.55	B	DEC 16, 1983	107.14	B
APR 30, 1983	105.28	B	JUL 16, 1983	108.91	B	OCT 01, 1983	110.46	B	DEC 17, 1983	107.17	B
MAY 01, 1983	105.38	B	JUL 17, 1983	108.87	B	OCT 02, 1983	110.48	B	DEC 18, 1983	107.09	B
MAY 02, 1983	105.63	B	JUL 18, 1983	108.85	B	OCT 03, 1983	110.48	B	DEC 19, 1983	107.09	B
MAY 03, 1983	105.75	B	JUL 19, 1983	108.80	B	OCT 04, 1983	110.48	S	DEC 20, 1983	107.10	B
MAY 04, 1983	105.75	S	JUL 20, 1983	108.80	B	OCT 05, 1983	110.42	B	DEC 21, 1983	107.11	B
MAY 05, 1983	105.78	B	JUL 21, 1983	108.85	B	OCT 06, 1983	110.40	B	DEC 22, 1983	107.11	B
MAY 06, 1983	105.86	B	JUL 22, 1983	108.80	B	OCT 07, 1983	110.36	B	DEC 23, 1983	107.23	B
MAY 07, 1983	105.83	B	JUL 23, 1983	108.85	B	OCT 08, 1983	110.27	B	JAN 06, 1984	106.13	S
MAY 08, 1983	105.74	B	JUL 24, 1983	108.81	B	OCT 09, 1983	110.20	B	JAN 10, 1984	107.12	S
MAY 09, 1983	105.79	B	JUL 25, 1983	108.71	B	OCT 10, 1983	110.14	B	JAN 11, 1984	107.19	B
MAY 10, 1983	105.87	B	JUL 26, 1983	108.68	B	OCT 11, 1983	110.06	B	JAN 12, 1984	107.18	B
MAY 11, 1983	105.92	B	JUL 27, 1983	108.65	B	OCT 12, 1983	109.90	B	JAN 13, 1984	107.22	B
MAY 12, 1983	105.97	B	JUL 28, 1983	108.62	B	OCT 13, 1983	109.76	B	JAN 14, 1984	107.22	B
MAY 13, 1983	106.06	B	JUL 29, 1983	108.61	B	OCT 14, 1983	109.72	B	JAN 15, 1984	107.22	B
MAY 14, 1983	106.09	B	JUL 30, 1983	108.57	B	OCT 15, 1983	109.70	B	JAN 16, 1984	107.23	B
MAY 15, 1983	106.20	B	JUL 31, 1983	108.48	B	OCT 16, 1983	109.59	B	JAN 17, 1984	107.25	B
MAY 16, 1983	106.33	B	AUG 01, 1983	108.47	B	OCT 17, 1983	109.46	B	JAN 18, 1984	107.23	B
MAY 17, 1983	106.52	B	AUG 02, 1983	108.51	S	OCT 18, 1983	109.42	B	JAN 19, 1984	107.25	B
MAY 18, 1983	106.88	B	AUG 03, 1983	108.63	B	OCT 19, 1983	109.30	B	JAN 20, 1984	107.18	B
MAY 19, 1983	107.10	B	AUG 04, 1983	108.82	B	OCT 20, 1983	109.24	B	JAN 21, 1984	107.17	B
MAY 20, 1983	107.26	B	AUG 05, 1983	108.99	B	OCT 21, 1983	109.16	B	JAN 22, 1984	107.17	B
MAY 21, 1983	107.64	B	AUG 06, 1983	109.17	B	OCT 22, 1983	109.07	B	JAN 23, 1984	107.17	B
MAY 22, 1983	107.77	B	AUG 07, 1983	109.33	B	OCT 23, 1983	109.05	B	JAN 24, 1984	107.16	B
MAY 23, 1983	107.90	B	AUG 08, 1983	109.55	B	OCT 24, 1983	108.99	B	JAN 25, 1984	107.21	B
MAY 24, 1983	108.17	B	AUG 09, 1983	109.81	B	OCT 25, 1983	108.89	B	JAN 26, 1984	107.26	B
MAY 25, 1983	108.37	B	AUG 10, 1983	109.95	B	OCT 26, 1983	108.76	B	JAN 27, 1984	107.28	B
MAY 26, 1983	108.59	B	AUG 11, 1983	109.97	B	OCT 27, 1983	108.72	B	JAN 28, 1984	107.25	B
MAY 27, 1983	108.94	B	AUG 12, 1983	110.15	B	OCT 28, 1983	108.55	B	JAN 29, 1984	107.31	B
MAY 28, 1983	109.22	B	AUG 13, 1983	110.20	B	OCT 29, 1983	108.38	B	JAN 30, 1984	107.28	B
MAY 29, 1983	109.42	B	AUG 14, 1983	110.31	B	OCT 30, 1983	108.24	B	JAN 31, 1984	107.21	B
MAY 30, 1983	109.60	B	AUG 15, 1983	110.18	B	OCT 31, 1983	108.17	B	FEB 01, 1984	107.32	B
MAY 31, 1983	109.63	B	AUG 16, 1983	110.19	B	NOV 01, 1983	108.07	B	FEB 02, 1984	107.29	B
JUN 01, 1983	109.62	B	AUG 17, 1983	110.19	B	NOV 02, 1983	108.03	B	FEB 03, 1984	107.33	B
JUN 02, 1983	109.61	B	AUG 18, 1983	110.05	B	NOV 03, 1983	107.90	B	FEB 04, 1984	107.32	B
JUN 03, 1983	109.58	B	AUG 19, 1983	109.94	B	NOV 04, 1983	107.89	B	FEB 05, 1984	107.27	B
JUN 04, 1983	109.55	B	AUG 20, 1983	110.02	B	NOV 05, 1983	107.80	B	FEB 06, 1984	107.31	B
JUN 05, 1983	109.61	B	AUG 21, 1983	110.07	B	NOV 06, 1983	107.72	B	FEB 07, 1984	107.28	B
JUN 06, 1983	109.65	B	AUG 22, 1983	109.97	B	NOV 07, 1983	107.72	B	FEB 08, 1984	107.23	B
JUN 07, 1983	109.65	B	AUG 23, 1983	109.91	B	NOV 08, 1983	107.67	B	FEB 09, 1984	107.20	B
JUN 08, 1983	109.69	B	AUG 24, 1983	109.89	B	NOV 09, 1983	107.60	B	FEB 10, 1984	107.27	B
JUN 09, 1983	109.82	B	AUG 25, 1983	109.85	B	NOV 10, 1983	107.43	B	FEB 11, 1984	107.25	B
JUN 10, 1983	109.90	B	AUG 26, 1983	109.84	B	NOV 11, 1983	107.43	B	FEB 12, 1984	107.21	B
JUN 11, 1983	109.90	B	AUG 27, 1983	109.85	B	NOV 12, 1983	107.32	B	FEB 13, 1984	107.27	B
JUN 12, 1983	109.96	B	AUG 28, 1983	109.88	B	NOV 13, 1983	107.32	B	FEB 14, 1984	107.34	B

Table 12.--*Records of water level in monitoring wells*--Continued

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 15, 1984	107.29	B	MAY 02, 1984	107.07	B	JUL 18, 1984	111.06	B	OCT 05, 1984	112.08	B
FEB 16, 1984	107.33	B	MAY 03, 1984	107.09	B	JUL 19, 1984	111.05	B	OCT 06, 1984	112.21	B
FEB 17, 1984	107.36	B	MAY 04, 1984	107.10	B	JUL 20, 1984	111.06	B	OCT 07, 1984	112.23	B
FEB 18, 1984	107.35	B	MAY 05, 1984	107.25	B	JUL 21, 1984	111.12	B	OCT 08, 1984	112.13	B
FEB 19, 1984	107.34	B	MAY 06, 1984	107.39	B	JUL 22, 1984	111.17	B	OCT 09, 1984	112.11	B
FEB 20, 1984	107.25	B	MAY 07, 1984	107.44	B	JUL 23, 1984	111.29	B	OCT 10, 1984	112.05	B
FEB 21, 1984	107.23	B	MAY 08, 1984	107.38	B	JUL 24, 1984	111.29	B	OCT 11, 1984	112.05	B
FEB 22, 1984	107.30	B	MAY 09, 1984	107.45	B	JUL 25, 1984	111.38	B	OCT 12, 1984	111.90	B
FEB 23, 1984	107.28	B	MAY 10, 1984	107.53	B	JUL 26, 1984	111.55	B	OCT 13, 1984	111.84	B
FEB 24, 1984	107.25	B	MAY 11, 1984	107.55	B	JUL 27, 1984	111.64	B	OCT 14, 1984	111.78	B
FEB 25, 1984	107.36	B	MAY 12, 1984	107.67	B	JUL 28, 1984	111.80	B	OCT 15, 1984	111.76	B
FEB 26, 1984	107.42	B	MAY 13, 1984	107.63	B	JUL 29, 1984	111.92	B	OCT 16, 1984	111.62	B
FEB 27, 1984	107.38	B	MAY 14, 1984	107.63	B	JUL 30, 1984	112.02	B	OCT 17, 1984	111.61	B
FEB 28, 1984	107.34	B	MAY 15, 1984	107.58	B	JUL 31, 1984	112.08	B	OCT 18, 1984	111.57	B
FEB 29, 1984	107.32	B	MAY 16, 1984	107.65	B	AUG 01, 1984	112.26	B	OCT 19, 1984	111.51	B
MAR 01, 1984	107.30	B	MAY 17, 1984	107.71	B	AUG 02, 1984	112.44	B	OCT 20, 1984	111.48	B
MAR 02, 1984	107.33	B	MAY 18, 1984	107.88	B	AUG 03, 1984	112.37	B	OCT 21, 1984	111.49	B
MAR 03, 1984	107.38	B	MAY 19, 1984	107.99	B	AUG 04, 1984	112.25	B	OCT 22, 1984	111.49	B
MAR 04, 1984	107.36	B	MAY 20, 1984	108.08	B	AUG 05, 1984	112.22	B	OCT 23, 1984	111.41	B
MAR 05, 1984	107.31	B	MAY 21, 1984	108.13	B	AUG 06, 1984	112.20	B	OCT 24, 1984	111.38	B
MAR 06, 1984	107.31	S	MAY 22, 1984	108.10	B	AUG 07, 1984	112.23	B	OCT 25, 1984	111.29	B
MAR 07, 1984	107.30	S	MAY 23, 1984	108.14	S	AUG 08, 1984	112.20	B	OCT 26, 1984	111.27	B
MAR 08, 1984	107.28	S	MAY 24, 1984	108.17	B	AUG 09, 1984	112.12	B	OCT 27, 1984	111.24	B
MAR 09, 1984	107.31	S	MAY 25, 1984	108.17	B	AUG 10, 1984	112.02	B	OCT 28, 1984	111.20	B
MAR 10, 1984	107.26	S	MAY 26, 1984	108.24	B	AUG 11, 1984	112.01	B	OCT 29, 1984	111.24	B
MAR 11, 1984	107.19	S	MAY 27, 1984	108.38	B	AUG 12, 1984	111.95	B	OCT 30, 1984	111.10	B
MAR 12, 1984	107.20	S	MAY 28, 1984	108.46	B	AUG 13, 1984	111.95	B	OCT 31, 1984	111.20	B
MAR 13, 1984	107.14	S	MAY 29, 1984	108.58	B	AUG 14, 1984	112.00	B	NOV 01, 1984	111.08	B
MAR 14, 1984	107.20	B	MAY 30, 1984	108.87	B	AUG 15, 1984	112.15	B	NOV 02, 1984	110.95	B
MAR 15, 1984	107.20	B	MAY 31, 1984	109.18	B	AUG 16, 1984	112.35	B	NOV 03, 1984	111.03	B
MAR 16, 1984	107.19	B	JUN 01, 1984	109.27	B	AUG 17, 1984	112.46	B	NOV 04, 1984	111.10	B
MAR 17, 1984	107.25	B	JUN 02, 1984	109.30	B	AUG 18, 1984	112.47	B	NOV 05, 1984	110.99	B
MAR 18, 1984	107.25	B	JUN 03, 1984	109.33	B	AUG 19, 1984	112.58	B	NOV 06, 1984	110.95	B
MAR 19, 1984	107.23	B	JUN 04, 1984	109.35	B	AUG 20, 1984	112.69	B	NOV 07, 1984	110.97	B
MAR 20, 1984	107.12	B	JUN 05, 1984	109.55	B	AUG 21, 1984	112.85	B	NOV 08, 1984	110.93	B
MAR 21, 1984	107.16	B	JUN 06, 1984	109.80	B	AUG 22, 1984	112.99	B	NOV 09, 1984	110.98	B
MAR 22, 1984	107.23	B	JUN 07, 1984	110.05	B	AUG 23, 1984	113.00	B	NOV 10, 1984	110.87	B
MAR 23, 1984	107.18	B	JUN 08, 1984	110.21	B	AUG 24, 1984	112.97	B	NOV 11, 1984	110.83	B
MAR 24, 1984	107.22	B	JUN 09, 1984	110.15	B	AUG 25, 1984	112.99	B	NOV 12, 1984	110.79	B
MAR 25, 1984	107.10	B	JUN 10, 1984	109.89	B	AUG 26, 1984	112.91	B	NOV 13, 1984	110.77	B
MAR 26, 1984	107.17	B	JUN 11, 1984	110.12	B	AUG 27, 1984	112.91	S	NOV 14, 1984	110.90	B
MAR 27, 1984	107.23	B	JUN 12, 1984	110.32	B	AUG 28, 1984	112.99	B	NOV 15, 1984	110.83	B
MAR 28, 1984	107.18	B	JUN 13, 1984	110.47	B	AUG 29, 1984	113.03	B	NOV 16, 1984	110.81	B
MAR 29, 1984	107.21	B	JUN 14, 1984	110.63	B	AUG 30, 1984	112.99	B	NOV 17, 1984	110.76	B
MAR 30, 1984	107.15	B	JUN 15, 1984	110.65	B	AUG 31, 1984	113.16	B	NOV 18, 1984	110.79	B
MAR 31, 1984	107.12	B	JUN 16, 1984	110.77	B	SEP 01, 1984	113.36	B	NOV 19, 1984	110.79	B
APR 01, 1984	107.11	B	JUN 17, 1984	110.88	B	SEP 02, 1984	113.44	B	NOV 20, 1984	110.75	B
APR 02, 1984	107.13	B	JUN 18, 1984	111.02	B	SEP 03, 1984	113.51	B	NOV 21, 1984	110.81	B
APR 03, 1984	107.13	B	JUN 19, 1984	111.11	B	SEP 04, 1984	113.49	B	NOV 22, 1984	110.76	B
APR 04, 1984	107.03	B	JUN 20, 1984	111.19	B	SEP 05, 1984	113.47	B	NOV 23, 1984	110.61	B
APR 05, 1984	106.91	B	JUN 21, 1984	111.16	B	SEP 06, 1984	113.32	B	NOV 24, 1984	110.63	B
APR 06, 1984	106.91	B	JUN 22, 1984	111.08	S	SEP 07, 1984	113.30	B	NOV 25, 1984	110.70	B
APR 07, 1984	106.85	B	JUN 23, 1984	110.88	B	SEP 08, 1984	113.15	B	NOV 26, 1984	110.70	B
APR 08, 1984	106.84	B	JUN 24, 1984	110.76	B	SEP 09, 1984	113.05	B	NOV 27, 1984	110.61	S
APR 09, 1984	106.79	B	JUN 25, 1984	110.73	B	SEP 10, 1984	112.95	B	NOV 28, 1984	110.55	B
APR 10, 1984	106.78	B	JUN 26, 1984	110.49	B	SEP 11, 1984	112.89	B	NOV 29, 1984	110.58	B
APR 11, 1984	106.81	B	JUN 27, 1984	110.32	B	SEP 12, 1984	112.92	B	NOV 30, 1984	110.57	B
APR 12, 1984	106.79	B	JUN 28, 1984	110.17	B	SEP 13, 1984	112.91	B	DEC 01, 1984	110.64	B
APR 13, 1984	106.82	B	JUN 29, 1984	110.20	B	SEP 14, 1984	112.77	B	DEC 02, 1984	110.64	B
APR 14, 1984	106.76	B	JUN 30, 1984	110.17	B	SEP 15, 1984	112.64	B	DEC 03, 1984	110.67	B
APR 15, 1984	106.68	B	JUL 01, 1984	110.14	B	SEP 16, 1984	112.59	B	DEC 04, 1984	110.67	B
APR 16, 1984	106.71	B	JUL 02, 1984	110.16	B	SEP 17, 1984	112.53	B	DEC 05, 1984	110.69	B
APR 17, 1984	106.80	B	JUL 03, 1984	110.17	B	SEP 18, 1984	112.43	B	DEC 06, 1984	110.68	B
APR 18, 1984	106.89	B	JUL 04, 1984	110.25	B	SEP 19, 1984	112.30	B	DEC 07, 1984	110.67	B
APR 19, 1984	106.97	B	JUL 05, 1984	110.30	B	SEP 20, 1984	112.12	B	DEC 08, 1984	110.67	B
APR 20, 1984	107.11	B	JUL 06, 1984	110.41	B	SEP 21, 1984	112.10	B	DEC 09, 1984	110.50	B
APR 21, 1984	107.08	B	JUL 07, 1984	110.45	B	SEP 22, 1984	112.10	B	DEC 10, 1984	110.47	B
APR 22, 1984	107.02	B	JUL 08, 1984	110.49	B	SEP 23, 1984	112.08	B	DEC 11, 1984	110.46	B
APR 23, 1984	107.01	S	JUL 09, 1984	110.58	B	SEP 24, 1984	112.03	B	DEC 12, 1984	110.48	B
APR 24, 1984	106.99	B	JUL 10, 1984	110.74	B	SEP 25, 1984	111.96	B	DEC 13, 1984	110.55	B
APR 25, 1984	107.05	B	JUL 11, 1984	110.91	B	SEP 26, 1984	111.94	B	DEC 14, 1984	110.39	B
APR 26, 1984	107.10	B	JUL 12, 1984	111.02	B	SEP 27, 1984	111.94	B	DEC 15, 1984	110.43	B
APR 27, 1984	107.07	B	JUL 13, 1984	111.08	B	SEP 28, 1984	112.83	S	DEC 16, 1984	110.54	B
APR 28, 1984	107.07	B	JUL 14, 1984	111.23	B	OCT 01, 1984	111.84	S	DEC 17, 1984	110.53	B
APR 29, 1984	107.14	B	JUL 15, 1984	111.29	B	OCT 02, 1984	111.80	B	DEC 18, 1984	110.58	B
APR 30, 1984	107.12	B	JUL 16, 1984	111.22	B	OCT 03, 1984	111.77	B	DEC 19, 1984	110.53	B
MAY 01, 1984	107.03	B	JUL 17, 1984	111.12	B	OCT 04, 1984	111.89	B	DEC 20, 1984	110.48	B

23N24W34ADAA01--Continued

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 21, 1984	110.55	B	JAN 26, 1985	110.34	B	MAR 02, 1985	110.10	B	APR 06, 1985	109.66	B
DEC 22, 1984	110.48	B	JAN 27, 1985	110.30	B	MAR 03, 1985	110.07	B	APR 07, 1985	109.65	B
DEC 23, 1984	110.56	B	JAN 28, 1985	110.29	B	MAR 04, 1985	110.05	B	APR 08, 1985	109.63	B
DEC 24, 1984	110.53	B	JAN 29, 1985	110.36	B	MAR 05, 1985	110.03	B	APR 09, 1985	109.61	B
DEC 25, 1984	110.42	B	JAN 30, 1985	110.38	B	MAR 06, 1985	110.02	B	APR 10, 1985	109.59	B
DEC 26, 1984	110.39	B	JAN 31, 1985	110.35	B	MAR 07, 1985	110.08	B	APR 11, 1985	109.66	B
DEC 27, 1984	110.33	B	FEB 01, 1985	110.30	B	MAR 08, 1985	110.09	B	APR 12, 1985	109.72	B
DEC 28, 1984	110.43	B	FEB 02, 1985	110.30	B	MAR 09, 1985	110.02	B	APR 13, 1985	109.62	B
DEC 29, 1984	110.43	B	FEB 03, 1985	110.37	B	MAR 10, 1985	110.03	B	APR 14, 1985	109.53	B
DEC 30, 1984	110.50	B	FEB 04, 1985	110.29	B	MAR 11, 1985	109.98	B	APR 15, 1985	109.47	B
DEC 31, 1984	110.60	B	FEB 05, 1985	110.26	B	MAR 12, 1985	110.05	B	APR 16, 1985	109.42	B
JAN 01, 1985	110.60	B	FEB 06, 1985	110.23	B	MAR 13, 1985	110.04	B	APR 17, 1985	109.43	B
JAN 02, 1985	110.62	B	FEB 07, 1985	110.04	B	MAR 14, 1985	110.02	B	APR 18, 1985	109.49	B
JAN 03, 1985	110.61	B	FEB 08, 1985	110.12	B	MAR 15, 1985	110.03	B	APR 19, 1985	109.55	B
JAN 04, 1985	110.55	B	FEB 09, 1985	110.16	B	MAR 16, 1985	110.01	B	APR 20, 1985	109.56	B
JAN 05, 1985	110.50	B	FEB 10, 1985	110.22	B	MAR 17, 1985	109.99	B	APR 21, 1985	109.60	B
JAN 06, 1985	110.48	B	FEB 11, 1985	110.13	B	MAR 18, 1985	109.97	B	APR 22, 1985	109.66	B
JAN 07, 1985	110.42	B	FEB 12, 1985	110.26	B	MAR 19, 1985	109.97	B	APR 23, 1985	109.73	B
JAN 08, 1985	110.41	B	FEB 13, 1985	110.27	B	MAR 20, 1985	109.91	S	APR 24, 1985	109.73	B
JAN 09, 1985	110.43	B	FEB 14, 1985	110.16	B	MAR 21, 1985	109.88	B	APR 25, 1985	109.74	B
JAN 10, 1985	110.50	B	FEB 15, 1985	110.17	B	MAR 22, 1985	109.85	B	APR 26, 1985	109.66	B
JAN 11, 1985	110.52	B	FEB 16, 1985	110.15	B	MAR 23, 1985	109.78	B	APR 27, 1985	109.67	B
JAN 12, 1985	110.45	B	FEB 17, 1985	110.17	B	MAR 24, 1985	109.80	B	APR 28, 1985	109.75	B
JAN 13, 1985	110.45	B	FEB 18, 1985	110.12	B	MAR 25, 1985	109.80	B	APR 29, 1985	109.81	B
JAN 14, 1985	110.38	B	FEB 19, 1985	110.12	B	MAR 26, 1985	109.65	B	APR 30, 1985	109.82	B
JAN 15, 1985	110.45	B	FEB 20, 1985	110.32	B	MAR 27, 1985	109.74	B	MAY 01, 1985	109.78	B
JAN 16, 1985	110.43	B	FEB 21, 1985	110.17	B	MAR 28, 1985	109.83	B	MAY 02, 1985	109.75	B
JAN 17, 1985	110.40	B	FEB 22, 1985	110.24	B	MAR 29, 1985	109.85	B	MAY 03, 1985	109.82	B
JAN 18, 1985	110.32	S	FEB 23, 1985	110.16	B	MAR 30, 1985	109.82	B	MAY 04, 1985	109.85	B
JAN 19, 1985	110.41	B	FEB 24, 1985	110.13	B	MAR 31, 1985	109.88	B	MAY 05, 1985	109.84	B
JAN 20, 1985	110.42	B	FEB 25, 1985	110.21	B	APR 01, 1985	109.82	B	MAY 06, 1985	109.87	S
JAN 21, 1985	110.42	B	FEB 26, 1985	110.16	B	APR 02, 1985	109.72	B	JUL 15, 1985	115.65	S
JAN 22, 1985	110.41	B	FEB 27, 1985	110.15	B	APR 03, 1985	109.62	B	AUG 30, 1985	115.58	S
JAN 23, 1985	110.37	S	FEB 28, 1985	110.09	B	APR 04, 1985	109.64	B	OCT 28, 1985	111.26	S
JAN 24, 1985	110.37	S	MAR 01, 1985	110.07	B	APR 05, 1985	109.65	B	DEC 03, 1985	110.26	S
JAN 25, 1985	110.37	B									

HIGHEST 102.43 MAR 20, 1981
LOWEST 116.40 AUG 30, 1977 AUG 31, 1977

24N22W13DDB 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 24, 1983	15.33	S	APR 19, 1984	20.84	S	JAN 15, 1985	21.15	S			
JAN 10, 1984	20.53	S	SEP 28, 1984	22.07	S						

HIGHEST 15.33 OCT 24, 1983
LOWEST 22.07 SEP 28, 1984

24N22W14DDD 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV 08, 1983	179.20	S	APR 19, 1984	172.91	S	JAN 15, 1985	166.63	S	JUL 10, 1985	184.53	S
JAN 09, 1984	166.90	S	SEP 28, 1984	169.93	S	APR 10, 1985	181.57	S	OCT 28, 1985	169.03	S

HIGHEST 166.63 JAN 15, 1985
LOWEST 184.53 JUL 10, 1985

24N22W30BCCC01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 15, 1985	249.29	S	APR 10, 1985	246.67	S	JUL 10, 1985	246.60	S	OCT 28, 1985	246.97	S

HIGHEST 246.60 JUL 10, 1985
LOWEST 249.29 JAN 15, 1985

24N23W09BAA 01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 20, 1983	17.60	S	APR 19, 1984	21.61	S	JAN 15, 1985	34.54	S	JUL 10, 1985	9.98	S
JAN 09, 1984	24.50	S	SEP 28, 1984	25.43	S	APR 10, 1985	32.90	S	OCT 28, 1985	18.83	S

HIGHEST 9.98 JUL 10, 1985
LOWEST 34.54 JAN 15, 1985

24N23W21BCDA01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 25, 1975	32.52		NOV 02, 1976	33.50		MAY 22, 1979	32.62	S	NOV 17, 1982	31.67	S
AUG 13, 1975	32.80		NOV 11, 1976	33.45	S	SEP 20, 1979	32.29	S	OCT 20, 1983	32.27	S
SEP 15, 1975	32.90		FEB 15, 1977	33.87	S	MAR 12, 1980	32.92	S	JAN 09, 1984	32.52	S
NOV 03, 1975	33.50		JUN 21, 1977	34.48	S	JUN 10, 1980	32.93	S	APR 19, 1984	32.98	S
DEC 09, 1975	33.30		SEP 22, 1977	34.89	S	OCT 09, 1980	31.10	S	SEP 28, 1984	34.95	S
JAN 13, 1976	33.50		DEC 21, 1977	35.33	S	JAN 15, 1981	31.57	S	JAN 15, 1985	34.64	S
MAR 02, 1976	33.60		FEB 16, 1978	35.54	S	APR 08, 1981	31.53	S	APR 10, 1985	34.63	S
APR 19, 1976	33.90		MAY 11, 1978	34.14	S	JUL 15, 1981	31.66	S	JUL 10, 1985	34.24	S
JUN 29, 1976	33.50		AUG 24, 1978	32.22	S	JAN 06, 1982	32.24	S	OCT 28, 1985	34.38	S
AUG 17, 1976	33.30		NOV 30, 1978	32.29	S	MAY 19, 1982	32.10	S			
SEP 20, 1976	33.30		FEB 22, 1979	32.72	S	AUG 26, 1982	31.54	S			

HIGHEST 31.10 OCT 09, 1980
LOWEST 35.54 FEB 16, 1978

24N24W24ABBB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 20, 1983	6.53	S	APR 19, 1984	5.94	S	JAN 15, 1985	7.03	S	JUL 10, 1985	6.34	S
JAN 09, 1984	6.64	S	SEP 28, 1984	7.30	S	APR 10, 1985	6.32	S	OCT 28, 1985	7.22	S

HIGHEST 5.94 APR 19, 1984
LOWEST 7.30 SEP 28, 1984

24N24W24ABBB02

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 20, 1983	7.17	S	APR 19, 1984	6.23	S	JAN 15, 1985	7.46	S	JUL 10, 1985	6.78	S
JAN 09, 1984	7.15	S	SEP 28, 1984	7.75	S	APR 10, 1985	6.71	S	OCT 28, 1985	7.66	S

HIGHEST 6.23 APR 19, 1984
LOWEST 7.75 SEP 28, 1984

24N24W25DDBB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 15, 1985	77.05	S	APR 10, 1985	76.29	S	JUL 10, 1985	80.27	S	OCT 28, 1985	78.09	S

HIGHEST 76.29 APR 10, 1985
LOWEST 80.27 JUL 10, 1985

24N24W27ABDB01

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 15, 1985	31.05	S	APR 10, 1985	30.94	S	JUL 15, 1985	30.77	S	OCT 28, 1985	30.78	S

HIGHEST 30.77 JUL 15, 1985
LOWEST 31.05 JAN 15, 1985

Table 13.--*Logs of wells and test holes*

[Thickness is in feet. Bottom of depth interval is in feet below land surface. Particle-size descriptions are based on report of National Research Council, 1947. Abbreviations: ft, feet; gal/min, gallons per minute; in., inches]

Lithology	Thick-ness	Bottom of depth interval
18N19W28CCDB01; drilled Aug. 27-28, 1984.		
Quaternary deposits undivided:		
Soil	4	4
Gravel, cobbles, and boulders, composed of red, green, gray, and tan argillite and quartzite; very silty; dry	41	45
Gravel, fine to medium, composed of red argillite and quartzite; some silt; dry	30	75
Gravel, fine to medium, composed of red, green, tan, and black argillite and quartzite; some silt; lightly cemented; dry	45	120
Gravel, fine, composed of red, green, tan, and black argillite and quartzite; some silt; lightly cemented; saturated	11	131
Sand, coarse, and fine to coarse gravel, composed of red, green, tan and black argillite and quartzite	25	156
Claystone, yellow, and tan sandstone; soft	1	157
Sand and gravel, composed of red, green, tan, and black argillite and quartzite	1	158
Tertiary(?) sedimentary rocks:		
Sandstone, fine-grained, yellow, soft, friable	22	180
18N21W04BCDA01; drilled Sept. 4-5, 1984.		
Quaternary deposits undivided;		
Silt, dark-brown	3	3
Silt, tan	9	12
Silt, tan; contains gravel stringers of fine- to medium-grained, gray and tan angular argillite	6	18
Gravel, fine to medium, composed of gray, grayish-green, and tan angular argillite; contains silt stringers and some coarse sand near base	22	40
Sand, coarse, and fine to medium angular gravel; composed of gray, grayish-green, and tan argillite; silty	18	58
Silt, tan; contains fine to medium angular gravel, composed of greenish-gray argillite	4	62
Silt and clay, tan	5	67
Gravel, fine to medium, and gray argillite; contains large amount of brownish-orange silt	3	70

Table 13.--*Logs of wells and test holes*--Continued

Lithology	Thickness	Bottom of depth interval
18N21W04BCDA01--Continued		
Sand, very coarse; contains medium-gray argillite gravel	10	80
Gravel, fine to medium, and dark-gray angular argillite; contains tan silt	10	90
Sand, coarse, and fine to medium gravel, composed of dark-gray argillite; angular; contains brownish-orange silt	5	95
Gravel, fine to medium, and dark-gray angular argillite; and coarse sand; slightly silty	12	107
Silt, tan; contains gravel	5	112
Argillite boulder, dark-gray	4	116
Gravel, fine to medium, composed of dark-gray and purple argillite; contains some medium to coarse sand and tan, grayish-tan, and brownish-orange silt	26	142
Belt Supergroup undivided:		
Argillite, gray; some weathered to yellow; very hard	13	155
Argillite, gray; very hard	5	160
18N21W05ADCB01; drilled Sept. 24-26, 1984.		
Quaternary deposits undivided:		
Silt, brown	2	2
Silt, tan	2	4
Gravel, fine to coarse, composed of red, green, tan, and gray rounded argillite and quartizite; silty; clayey	21	25
Sand, fine, brown, silty; contains some small to medium gravel	5	30
Clay, light-brown	4	34
Silt, light-brown; contains some fine to medium sand	2	36
Sand, fine to medium, grayish-brown, extremely silty	14	50
Silt and clay, grades from grayish-brown to gray	40	90
Clay, silty; contains stringers of gray, stiff clay	43	133
Clay, gray, stiff	15	148
Silt, brownish-gray, very fluid; contains some brownish-gray clay and extremely fine sand	25	173
Gravel, fine to medium, black, composed of green, gray, and red rounded argillite and quartzite; contains fine to coarse sand; flows about 250 gal/min	49	222
Clay, yellow	1	223
Belt Supergroup undivided:		
Argillite and quartzite, gray, red, and pink, sub-rounded; contains yellow clay	24	247

Lithology	Thick-ness	Bottom of depth interval
18N21W05ADCB01--Continued		
Argillite, gray, greenish-gray, pink and black, and dark-red quartzite; contains hard zones, mostly hard below 298 ft; produces about 30 gal/min, flows about 2 gal/min	73	320
18N21W21BCBB01; drilled Aug. 28-30, 1984.		
Quaternary deposits undivided:		
Silt, tan	3	3
Gravel, fine to coarse, and coarse sand; composed of red, green, tan, and brown argillite and red quartzite	7	10
Silt, tan	7	17
Clay, reddish-brown, and tan silt	13	30
Clay and silt, tan; olive tint	10	40
Sand, very fine, dark-tan; olive tint; very silty	30	70
Sand, very fine, dark-tan, very silty; contains some large gravel	5	75
Clay, gray, slightly sandy	5	80
Silt, gray, very clayey	15	95
Gravel, medium to coarse, composed of black and red argillite and quartzite; very silty	10	105
Gravel, medium to coarse, composed of black and red argillite and quartzite; contains brown silt	5	110
Silt, gray; contains very little sand	5	115
Gravel, medium to coarse, composed of gray and red argillite; clean; flows about 50 gal/min	15	130
Tertiary(?) sedimentary rocks:		
Sandstone, very fine grained, yellow, friable	3	133
Sandstone, yellow and black, very hard	5	138
Sandstone, medium- to coarse-grained; and medium to coarse cemented gravel, composed of gray, black, and yellow argillite and quartzite	4	142
Sandstone, yellow and black, very hard	2	144
Gravel, medium to coarse, composed of gray, black, and yellow argillite and quartzite; cemented; contains dark-brown silt	3	147
Silt, yellow, sandy	1	148
Sandstone, medium to coarse, and cemented gravel, composed of green and gray argillite; some quartzite	11	159
Belt Supergroup undivided:		
Argillite, gray and grayish-green	1	160

Table 13.--*Logs of wells and test holes*--Continued

Lithology	Thick-ness	Bottom of depth interval
20N22W21CBDA01; drilled Sept. 20-24, 1984.		
Quaternary deposits undivided:		
Silt, tan, clayey, and brown clay	15	15
Clay, reddish-brown, very silty, and tan silt	17	32
Silt, tan	2	34
Argillite boulder, gray	1	35
Silt, tan	20	55
Silt, tan, and very fine sand	17	72
Silt, tan; contains a little tannish-brown clay	8	80
Silt, tan; contains very fine sand and a little tannish-brown clay	22	102
Silt, tan, and very fine sand; contains brown clay and a little imbedded fine to medium gravel	8	110
Clay, dark-brown	5	115
Silt, tan; contains a few tannish-brown clay stringers	5	125
Silt, tan; contains a few stringers of imbedded gravel and tannish-brown clay	37	162
Silt, tan	30	192
Silt, tan; contains large quantity of imbedded fine gravel	8	200
Silt, tan	20	220
Silt, tan; contains a few thin stringers of imbedded gravel; color grades to grayish tan below 245 ft to gray below 270 ft	59	279
Sand, fine, gray	17	296
Sand, fine to coarse, brown, and fine to medium gravel	14	310
Sand, fine, and fine to medium gravel; very silty	13	323
Sand, medium, and fine to medium gravel; very silty	8	331
Tertiary(?) sedimentary rocks:		
Clay, yellow; contains yellow sand and some gravel	11	342
Silt, gray, clayey; contains fine sand and hard layers	38	380
Belt Supergroup undivided:		
Argillite, gray to grayish-green; contains some gray clay	20	400
20N22W28ABCB02; drilled Sept. 10-20, 1984.		
Quaternary deposits undivided:		
Silt, tan, very clayey	4	4
Silt, tan to brown, very clayey; contains brown clay stringers	46	50
Silt, tan, very clayey; contains some tan clay	60	110

Table 13.--*Logs of wells and test holes*--Continued

Lithology	Thick-ness	Bottom of depth interval
20N22W28ABCB02--Continued		
Silt, tan, very clayey; contains large amount of tan clay	17	127
Silt, tan, clayey; contains some tan clay, very fine sand, and imbedded fine gravel	56	183
Silt, tan, clayey; contains some tan clay, very fine sand, and imbedded fine and medium gravel	2	185
Silt, tan, clayey; contains a little brown clay and very fine sand	5	190
Silt, tan, clayey; contains a little very fine to medium gravel	77	267
Silt, grayish-tan, very clayey, fluid	8	275
Clay, gray, silty; grades downward to gray silt	35	310
Sand, very fine, gray	9	319
Gravel, composed of red, green, and gray rounded argillite and quartzite; contains coarse sand	7	326
Sandstone, very fine, grayish-brown	1	327
Tertiary(?) sedimentary rocks:		
Silt, grayish-brown, clayey; contains stringers of brown clay	13	340
Clay, brown, stiff	4	344
Silt, tan	2	346
Clay, brown, stiff; contains some imbedded gravel from 358 to 360 ft	14	360
Clay, very dark brown, soft; contains gray clay from 375 to 379 ft and thin stringers of coal	19	379
Clay, light-brown, silty; contains some gray clay and a little coal	18	397
Clay, tan, soft, silty; contains 1- to 3-ft stingers of stiff gray clay	23	420
Clay, grayish-tan, soft, silty; contains stringers of stiff gray clay	20	440
Clay, grayish-brown	15	455
Clay, very dark brown and gray; contains numerous coal stringers	35	490
Clay, brownish-gray and bluish-green, stiff	10	500
Sand, very fine, gray	10	510
Siltstone, brown, hard	10	520
Clay, bluish-green; contains coal	5	525
Clay, gray; contains coal	20	545
Sandstone, fine-grained, gray, soft	15	560
Claystone, gray, green, and brown, soft; contains coal	5	565
Sandstone, fine-grained, gray, soft; contains some gravel	15	580
Siltstone, brown	2	582
Claystone, brown and green, hard, and coal	6	588
Sandstone, gray, soft	9	597
Siltstone, brown	5	602

Table 13.--*Logs of wells and test holes*--Continued

Lithology	Thickness	Bottom of depth interval
20N22W28ABCB02--Continued		
Coal	2	604
Sandstone, fine-grained, gray, silty, fairly hard	16	620
Claystone, gray and brown; contains coal	5	625
Sandstone, fine-grained, gray, silty, fairly hard	18	643
Claystone, gray, green, and brown, soft; contains coal	7	650
Sandstone, fine-grained, gray, silty, soft	15	665
Sandstone, fine- to medium-grained, gray	35	700
Sandstone, fine- to medium-grained, and tan, brown, and green, soft claystone; contains some small gravel and coal	20	720
Sandstone, fine-grained, gray, and brown siltstone and gray and green claystone; soft	10	730
Sandstone, fine-grained, gray, soft; contains a little siltstone and claystone and a few thin coal seams	110	840
20N24W23CBAA01; drilled Sept. 6-8, 1984.		
Quaternary deposits undivided:		
Silt, gray, clayey	2	2
Clay, reddish-brown, silty; contains streaks of gray clay	3	5
Gravel, composed of fine tan and black argillite; rounded; slightly silty; contains some fine to coarse sand and coarse gravel	14	19
Clay, tan, silty	14	33
Sand, medium to coarse, composed of black, red, and brown argillite; very silty; contains dark-brown silt	5	38
Sand, medium to coarse, composed of black, red, and brown argillite; very silty; contains some gravel	5	43
Clay, tan, silty; contains coarse sand	3	46
Silt, tan; contains some fine gravel	17	63
Gravel, fine to medium, composed of black and tan rounded argillite; contains sand and some medium sand	24	87
Sand, medium to coarse; contains some fine to medium gravel; very silty	12	99
Silt, tan, clayey; contains some sand and gravel	20	119
Tertiary(?) sedimentary rocks:		
Sand, fine to medium, reddish-brown, very silty, clayey; contains some gravel stringers; slightly cemented	17	136
Sand, fine to medium, very silty; slightly cemented	4	140
Gravel, fine, very silty; slightly cemented	11	151
Silt, tan, and very fine to fine sand; slightly cemented	28	179

Lithology	Thick-ness	Bottom of depth interval
20N24W23CBAA01--Continued		
Silt, dark-tan; contains very fine silty sand, tan sand, brown and reddish-brown clay, and some fine gravel	321	500
20N24W23CBAA02; drilled Sept. 8-9, 1984.		
Quaternary deposits undivided:		
Silt, grayish-brown	4	4
Clay, reddish-brown, silty	3	7
Clay, tan, silty	4	11
Gravel, fine, composed of red, tan, and black rounded argillite; silty; contains medium to coarse sand	11	22
Silt, tan, and olive-brown clay	8	30
Clay and silt, tan	5	35
Silt, tan	2	37
Gravel, fine, composed of black, brown, reddish-brown, and tan rounded argillite; slightly silty; contains medium to coarse sand	25	62
Silt, tan	3	65
Gravel, fine to medium, composed of black, brown, reddish-brown, and tan argillite; contains some medium sand	24	89
Sand, fine to medium; contains fine to medium gravel	6	95
Silt and clay, tan, sandy	5	100
21N22W07DCAA01; drilled Sept. 27-28, 1984.		
Quaternary deposits undivided:		
Silt, reddish-tan	8	8
Clay, tan, silty	7	15
Clay, reddish-tan, slightly sandy	5	20
Clay, reddish-tan, slightly silty	10	30
Clay, light-tan, slightly silty	45	75
Silt, light-tan; contains small amount of very fine sand	4	79
Sand, fine to coarse, composed of yellow, pink, purple, green, red, black, and gray sub-angular grains	6	85
Gravel, yellow, pink, purple, green, red, black, and gray	15	100
Gravel, very sandy and silty	5	105
Silt; contains fine sand	30	135
Silt; contains gravel	5	140
Gravel, sub angular, to 2 in. diameter, yellow, pink, purple, green, red, black, and gray	30	170

Lithology	Thick-ness	Bottom of depth interval
21N22W07DCAA01--Continued		
Sand, fine to medium; contains some gravel	10	180
Gravel, fine, very angular	6	186
Belt Supergroup undivided:		
Argillite, gray, hard	6	192
21N22W36BDCC01; drilled Oct. 25-27, 1984.		
Quaternary deposits undivided:		
Silt, tan	1	1
Gravel, fine to medium, composed of gray, red, and black argillite; very silty; contains some cobbles	29	30
Silt and clay, brown; contains large amount of imbedded gravel	7	37
Clay, gray; contains some thin stringers of small gravel	19	56
Silt, tan; contains a little small gravel	4	60
Argillite boulder, gray	2	62
Silt, tan; contains some imbedded gravel	19	81
Sand, medium, composed of black, brown, red, and gray argillite and quartzite; contains some small gravel and tan clay; produces about 20 gal/min	4	85
Silt and clay, tan; contains some gravel	11	96
Sand, medium, grayish-brown; contains a little small gravel and tan clay; produces about 20 gal/min	4	100
Silt, tan; contains tan to white and dark-brown clay	22	122
Clay, grayish-brown	3	125
Silt, light-tan; contains medium to coarse sand	5	130
Clay, yellowish-tan	20	150
Tertiary(?) sedimentary rocks:		
Claystone, dark-green, soft; contains some very dark green to greenish-black claystone	110	260
21N22W36BDCC02; drilled Oct. 27-28, 1984.		
Quaternary deposits undivided:		
Silt, dark-tan	1	1
Sand, gravel, cobbles, and boulders, very silty	22	23
Clay, tan	2	25

Lithology	Thick-ness	Bottom of depth interval
21N22W36BDCC02--Continued		
Silt, tan; contains gravel	15	40
Silt, gray	5	45
Gravel and silt, gray	8	53
Silt, tan	7	60
Silt, reddish-tan; contains gravel stringers	20	80
Sand, coarse, and fine to medium gravel; contains reddish-brown silt	18	98
Silt, tan; contains tan to white clay	2	100
22N21W20DBCC01; drilled Nov. 5, 1984.		
Quaternary deposits undivided:		
Silt, brown	1	1
Gravel, fine to medium, and coarse sand; very silty; contains boulders from 10 to 18 ft	17	18
Clay, tan and reddish-brown, and tan silt; interbedded	52	70
Silt, grayish-tan; contains some tan clay and a little gravel	10	80
Silt, tan; contains a little tan clay	20	100
Silt, tan; slight grayish tint from 100-110 ft	20	120
22N21W30CBBA01; drilled Nov. 13-15, 1984.		
Quaternary deposits undivided:		
Silt, tan	4	4
Gravel, fine to medium, composed of green, gray, and red angular argillite	1	5
Clay, light-brown; contains some tan silt stringers	25	30
Silt, tan; contains a few light-brown clay stringers	15	45
Silt, tan; contains very fine sand and light-brown clay stringers	5	50
Silt, tan; contains light-brown clay stringers and small amount of reddish-brown clay	30	80
Silt, tan; contains light-brown and tan clay stringers	70	150
Silt, grayish-tan; contains grayish-tan clay	10	160
Silt, grayish-tan; contains gray clay	5	165
Silt, gray; contains small amount of gray clay	3	168
Tertiary(?) sedimentary rocks:		
Siltstone, tan, and white clay	2	170

Lithology	Thick-ness	Bottom of depth interval
22N21W30CBBA01--Continued		
Siltstone, brown, and light-tan claystone; soft; contains argillite and quartizite sand and gravel; produces about 50 gal/min--	7	177
Siltstone, reddish-brown, soft; contains small amount of white clay--	23	200
22N22W24DAAA01; drilled Oct. 20-24, 1984.		
Quaternary rocks undivided:		
Silt, light-tan---	22	22
Gravel, fine to coarse, angular to rounded, composed of argillite and quartzite; contains some silt--------------------	4	26
Silt, light-tan; contains some light-tan clay--------------------	109	135
Silt, grades from light-tan to tannish-gray; contains some clay---	15	150
Gravel, fine to medium, composed of argillite and altered sandstone; contains some gray silt; flows about 100 gal/min-----	20	170
Silt, tan; contains some gravel---------------------------------	10	180
Clay, brown, and tan silt--	20	200
22N22W26DDDD01; drilled Oct. 19, 1984.		
Quaternary deposits undivided:		
Silt, light-tan---	12	12
Gravel and cobbles, composed of pink, red, brown, black, purple, green, gray, yellow, rust, and clear angular to rounded, poorly sorted argillite and quartzite; contains some silty clay--------	6	18
Gravel and cobbles, multicolored; contains some very coarse sand and silty clay--	25	43
Tertiary(?) sedimentary rocks:		
Claystone, very light gray, silty; contains some sandstone nodules and white clay--	9	52
Claystone, medium-reddish-brown, silty; contains soft white sandstone--	15	67
Claystone, light-greenish-gray to nearly white, silty; contains soft white sandstone---------------------------------------	33	100

Table 13.--*Logs of wells and test holes*--Continued

Lithology	Thickness	Bottom of depth interval
22N23W15CDDD01; drilled Sept. 28-29, 1984.		
Quaternary deposits undivided:		
Silt, light-tan	8	8
Clay, light-tan; contains silt	19	27
Gravel, fine to medium, and silt	29	56
Gravel and clay, light-tan to medium-brown	12	68
Tertiary(?) sedimentary rocks:		
Clay, dark-brown; contains greenish-gray and whitish-tan siltstone and some gravel	9	77
Clay, dark-brown; contains interbedded greenish- and whitish-gray siltstone and soft coal	33	110
Siltstone, greenish-gray, hard; contains small amount of dark-brown clay	6	116
Siltstone, green and brown, and soft dark-brown clay and coal interbedded; contains small amount of sand	28	144
Conglomerate, light-greenish-gray, hard	34	178
Sand and silt, dark-greenish-gray	11	189
Sand and gravel, fine to medium, whitish-green gray	14	203
Sand, dark-greenish-gray	5	208
Sand and gravel; contains some silt	14	222
Argillite boulder, green	8	230
Gravel, fine to coarse	10	240
22N23W15DCDC01; drilled Sept. 29, 1984.		
Quaternary deposits undivided:		
Clay, light-tan, silty	7	7
Clay, medium-brown	38	45
Silt, light-tan, fluid; contains small amount of clay	7	52
Sand, coarse, and gravel to 2 in. diameter, green, pink, purple, gray, and red; sub-angular; silty	6	58
Sand, coarse, and gravel and cobbles to 4 in. diameter, green, pink, purple, gray and red; very little silt	28	86
Tertiary(?) sedimentary rocks:		
Siltstone, white, pink, and tan, soft; contains dark-brown clay and a few coal chips	9	95
Coal, hard	1	96

Lithology	Thickness	Bottom of depth interval
23N22W26BDCC01; drilled Oct. 17-18, 1984.		
Quaternary deposits undivided:		
Sand, very fine to coarse, and medium to coarse gray, sub-rounded gravel; dry	17	17
Clay, medium-brown, and light-tan silt; dry	17	31
Gravel, fine to medium, gray, angular, poorly sorted; contains very little sand; saturated	42	73
Tertiary(?) sedimentary rocks:		
Siltstone, light-tan; contains layers of brown and red siltstone and very small amount of gravel; moderately hard	55	128
Siltstone, brownish-orange to orange, and red claystone; contains small amount of fine to medium gravel; produces 5 to 10 gal/min	72	200
23N23W20BCBB01; drilled Oct. 1-2, 1984.		
Quaternary deposits undivided:		
Silt, light-tan	12	12
Clay, light-brown; contains silt	24	36
Gravel, composed of soft light-gray sandstone; angular to rounded; contains clay	7	43
Sand, composed of pink, red, purple, green, white and black grains, well rounded, moderately well sorted	5	48
Tertiary(?) sedimentary rocks:		
Sandstone, light-gray, gravel, and silt, interbedded	19	67
Siltstone, brownish-orange, and soft sandstone gravel	21	88
Siltstone, brownish-orange; contains sand and gravel	15	103
Siltstone, brownish-orange, and soft light-gray to white sandstone gravel	7	110
Siltstone, light-greenish-gray, and soft light-gray to white sandstone gravel	30	140
Siltstone, light-tan; contains varying amount of gravel; becomes harder with depth; very hard below 500 ft	430	570

Table 13.--*Logs of wells and test holes*--Continued

Lithology	Thick-ness	Bottom of depth interval
24N22W30BCCC01; drilled Oct. 10-17, 1984.		
Quaternary deposits undivided:		
Gravel, cobbles, and boulders, composed of red, pink, rust, brown, yellow, green, purple, gray, black, and clear argillite and quartzite, sub-angular to sub-rounded, silty; dry	46	46
Gravel and silt, multicolored as above; dry	9	55
Gravel and cobbles, multicolored; dry	18	73
Sand, fine to medium, multicolored, well sorted, clean; dry	15	88
Silt, light-tan; contains very fine multicolored sand; dry	14	102
Silt, light-tan; contains multicolored very fine and coarse sand and gravel; dry	11	113
Gravel and sand, coarse, multicolored; contains very little silt; dry	11	124
Sand, coarse, poorly sorted; contains layers of fine gravel; very little silt; dry	14	138
Sand, fine, multicolored, moderately well sorted; silty below 150 ft; dry	15	153
Silt, light-tan; contains sand grading from fine to coarse with depth; dry	29	182
Gravel and sand, coarse, multicolored; contains very little silt; dry	25	207
Sand, grades coarse to fine with depth, very silty; dry	8	215
Silt, light-tan; contains very fine sand; dry	4	219
Gravel and sand, fine, grades from medium-brown to grayish-green; contains a little silt; dry	18	237
Sand, grades from fine to coarse with depth, medium-brown	29	266
Sand, coarse, medium-brown, very clayey; damp	7	273
Gravel and sand, very coarse, greenish-gray; contains some silt	7	280
Sand, very coarse, greenish-gray; contains some silt	17	297
Gravel and sand, very coarse, greenish-gray; contains some silt; dry	51	348
Silt, light-tan; contains very fine sand near top, grading to no sand at 373 ft	25	373
Sand, fine, brownish-greenish-gray, well sorted; contains some silt; saturated but will not produce	27	400
Sand, fine, medium brown; contains gravel; saturated but will not produce	23	423
Silt, light-tan; contains very small amount of fine sand; clayey	6	429
Gravel and sand, medium-brown; saturated; produces 80 to 100 gal/min but water will not clear	11	440
Gravel, medium-brown; saturated, produces 80 to 100 gal/min	4	444
Clay, medium-brown; contains a little silt and gravel	4	448
Silt, light-tan; contains very fine sand	17	465
Sand, fine, medium-brown; fluid ("quicksand")	15	480

Lithology	Thick-ness	Bottom of depth interval
24N23W32ADCC01; drilled Oct. 6, 1984.		
Quaternary deposits undivided:		
Silt, brown	2	2
Silt, brown, clayey; contains imbedded gravel and cobbles	14	16
Clay, tan, and tan silt; interbedded	35	51
Gravel and sand, composed of green and gray argillite and quartz, angular to sub-rounded, cemented, moderately hard; dry	22	73
Tertiary(?) sedimentary rocks:		
Clay, yellowish-tan; contains imbedded gravel, brown, gray, and bright yellowish-green claystone pebbles, and black mica	27	100
24N24W25DDBB01; drilled Oct. 3-5, 1984.		
Quaternary deposits undivided:		
Silt, light-tan; contains small amount of clay	12	12
Silt, tan, and medium-brown clay	10	22
Silt, tan, and medium-brown clay; sandy; green tint	6	28
Clay, light-gray, green tint	22	50
Silt, light-gray, green tint, sandy; sand content increases with depth	30	80
Silt, greenish-gray to tan, extremely sandy	60	140
Silt, tan, very clayey	35	175
Clay, tan, very silty	20	195
Silt, tan	20	215
Silt, tan, extremely sandy	8	223
Silt, tan, and very little sand	20	243
Sand, very fine to fine, silty	7	250
Silt, tan, sandy	33	283
Silt, grayish-brown, slightly sandy; contains a little brown clay	2	285
Sand, yellowish-brown, very fine to fine; contains a little gravel	10	295
Silt, tan, sandy	10	305
Sand, gray, fine to medium; contains some small gravel	14	319
Gravel, composed of red, green, and gray argillite and quartzite and gray sand	7	326
Belt Supergroup undivided:		
Argillite, gray, very hard	2	328

Table 13.--*Logs of wells and test holes*--Continued

Lithology	Thickness	Bottom of depth interval
24N24W27ABDB01; drilled Oct. 6-7, 1984.		
Quaternary deposits undivided:		
Silt, brown	5	5
Silt, tan	2	7
Silt, dark-brown, clayey; moist	6	13
Silt, reddish-brown	2	15
Silt, tan	2	17
Silt, tan; contains imbedded gravel and boulders of gray and black argillite	10	27
Silt, tan; contains stringers of imbedded gravel and small amount of gray clay	11	38
Silt, as above, tannish-gray to gray	10	48
Tertiary(?) sedimentary rocks:		
Silt, gray, very fluid; contains some medium hard brown clay and small amount of gravel	22	70
Silt, gray; contains small amount of brown clay and coarse sand to fine gravel size chips of gray, green, and purple argillite; most most gravel from 86 to 110 ft; very hard from 110 ft to 138 ft; hydrogen sulfide odor at 110 ft	68	138
Silt, tan to gray, composed of angular to sub-rounded argillite chips as above; very hard below 180 ft	79	217

Table 14.--*Physical properties and primary-constituent concentrations in ground water*

[Analyses by Montana Bureau of Mines and Geology. Site type: W, well; S, spring. Depth of well, total: in feet below land surface. Specific conductance and pH are laboratory measurements. Bicarbonate and carbonate were determined by fixed endpoint titration (fet), either onsite (fld) or in the laboratory (lab). Abbreviations: μS/cm, microsiemens per centimeter at 25 °C; °C, degrees Celsius; mg/L, milligrams per liter. Symbols: <, less than; --, no data]

Local number	Site type	Geologic unit	Date (month, day, year)	Depth of well, total (feet)	Specific conductance (μS/cm)	pH (standard units)	Temperature (°C)	Hardness (mg/L as $CaCO_3$)	Hardness, noncarbonate (mg/L $CaCO_3$)
15N19W07BCCC01	W	Glacial drift	07-15-83	90	264	7.4	9.5	110	--
15N20W13BABB01	W	Belt rocks	07-20-83	431	106	8.3	10.0	34	--
15N20W13DCAA01	W	Glacial drift	07-19-83	130	278	7.7	9.0	110	--
15N20W23DCAA01	W	Glacial drift	07-12-83	70	145	7.3	8.0	52	--
15N20W24BCCB01	W	Glacial drift	07-21-83	42	174	7.2	8.5	73	--
16N19W18BBBC01	W	Alluvium	07-26-83	80	262	7.7	10.5	130	--
16N19W30CDBC01	W	Glacial drift	07-22-83	57.5	250	7.3	8.0	120	--
18N19W22CADD01	W	Glacial drift	08-31-83	268	200	8.7	11.0	94	--
18N19W28CCDB01	W	Glacial outwash	10-14-84	147	182	8.8	8.0	90	--
18N20W07BDA 01	W	Belt rocks	11-14-74	--	299	8.1	5.0	140	0
18N20W10ADD 01	W	Glacial drift	03-05-76	53	511	7.8	19.0	260	0
	W	Glacial drift	06-07-84	53	495	8.3	13.0	240	--
18N20W14DBD 02	W	Glacial drift	08-27-75	47	230	6.3	10.5	120	0
	W	Glacial drift	09-16-75	47	269	8.0	11.5	130	2
	W	Glacial drift	06-03-83	47	260	7.4	9.5	130	--
18N20W23DADA01	W	Belt rocks	08-25-83	162	550	7.6	11.0	260	--
18N20W32BCC 01	W	Glacial drift	04-22-76	88	319	7.9	11.0	160	0
	W	Glacial drift	05-31-84	88	390	8.2	10.0	180	--
18N21W01BAD 01	W	Glacial drift	11-14-74	--	290	7.5	7.5	110	0
18N21W04BCDA01	W	Alluvium	10-14-84	124	575	8.1	11.0	190	--
18N21W05ADCB01	W	Glacial outwash	10-13-84	320	860	7.9	13.0	180	--
18N21W08DDB 01	W	Glacial drift	08-26-75	430	302	6.4	14.0	110	0
	W	Glacial drift	06-06-84	430	480	8.2	13.0	140	--
18N21W09CDA 01	S	Belt rocks	08-26-75	--	574	6.7	14.0	180	0
18N21W11DAA 01	W	Belt rocks	11-14-74	--	167	7.5	8.5	51	0
18N21W21BCBB01	W	Alluvium	10-13-84	160	385	8.6	10.0	170	--
18N22W21BADC01	W	Alluvium	09-02-83	59	370	7.8	12.0	120	--
19N20W05BAD 01	W	Glacial drift	08-26-75	480	244	6.3	12.0	98	0
	W	Glacial drift	05-31-84	480	282	8.3	13.0	100	--
19N20W06AAA 01	W	Glacial drift	09-10-75	18	220	7.5	12.5	94	0
19N20W13CCA 01	W	Glacial drift	09-18-75	64	288	8.0	9.5	140	0
19N21W06BBB 01	W	Glacial drift	03-04-76	130	839	8.0	14.0	170	0
19N21W10ADA 01	W	Glacial drift	07-01-76	44	892	7.7	14.0	370	63
19N21W14BAA 01	W	Glacial drift	03-04-76	371	603	8.0	9.5	230	0
19N21W19ABA 01	W	Glacial drift	03-04-76	108	505	8.2	9.5	210	0
	W	Glacial drift	06-08-84	108	440	8.4	12.0	200	--
19N21W27CCD 02	W	Glacial drift	11-14-74	160	400	7.8	7.0	140	0
	W	Glacial drift	06-02-83	160	440	7.2	11.5	150	--
19N21W28CCA 01	W	Glacial drift	07-01-76	300	951	7.6	15.5	150	0
19N21W31DAB 01	W	Glacial drift	04-11-78	--	1,120	7.9	14.5	110	0
19N24W04AADB01	W	Belt rocks	09-13-83	332	260	9.8	25.0	2	--
20N19W07DBB 01	W	Glacial drift	03-04-76	158	84	7.0	8.0	38	2
20N19W19DAA 01	W	Glacial drift	09-17-75	401	189	7.6	10.0	92	2
20N19W19DDA 01	W	Glacial drift	04-21-76	1,182	157	8.4	9.0	6	0
20N20W02AAC 01	W	Glacial drift	08-26-75	550	151	6.2	10.0	70	0

Table 14.--*Physical properties and primary-constituent concentrations in ground water*--Continued

Local number	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 HCO_3)	Bicarbonate, fet-lab (mg/L as HCO_3)	Carbonate, fet-lab (mg/L as CO_3)	Alkalinity, field (mg/L as $CaCO_3$)
15N19W07BCCC01	27	10	8.4	0.4	1.7	--	150	0	--
15N20W13BABB01	8.5	3.1	7.2	.6	.4	--	60	0	--
15N20W13DCAA01	30	7.8	4.9	.2	.4	--	140	0	--
15N20W23DCAA01	17	2.7	7.8	.5	.6	--	81	0	--
15N20W24BCCB01	18	6.6	3.7	.2	.9	--	93	0	--
16N19W18BBBC01	36	9.5	2.2	.1	1.3	--	160	0	--
16N19W30CDBC01	28	12	2.1	.1	1.3	--	150	0	--
18N19W22CADD01	15	14	5.0	.2	.9	--	120	0	--
18N19W28CCDB01	22	8.7	1.2	.1	.4	--	110	--	--
18N20W07BDA 01	37	11	12	.5	1.5	180	--	--	148
18N20W10ADD 01	72	19	12	.3	.7	320	--	--	262
	68	18	13	.4	.6	--	300	0	--
18N20W14DBD 02	32	8.7	1.3		.8	150	--	--	123
	38	9.3	3.5	.1	1.2	160	--	--	131
	37	9.6	1.4	.1	.2	--	150	0	--
18N20W23DADA01	73	18	18	.5	1.2	--	340	0	--
18N20W32BCC 01	44	12	7.2	.3	1.3	200	--	--	164
	51	12	8	.3	1.2	--	230	0	--
18N21W01BAD 01	26	12	21	.9	1.4	170	--	--	139
18N21W04BCDA01	28	29	58	2	2.2	--	350	--	--
18N21W05ADCB01	43	18	120	4	3.8	--	500	--	--
18N21W08DDB 01	29	10	21	.9	1.3	170	--	--	139
	31	14	46	2	2.7	--	260	0	--
18N21W09CDA 01	39	19	61	2	4	350	--	--	287
18N21W11DAA 01	12	5.1	17	1	.9	91	--	--	75
18N21W21BCBB01	45	14	12	.4	.9	--	230	--	--
18N22W21BADC01	30	10	29	1	2.8	--	190	0	--
19N20W05BAD 01	28	6.8	14	.6	1.1	150	--	--	123
	29	7.3	13	.6	.9	--	160	0	--
19N20W06AAA 01	28	5.9	7.9	.4	3.4	120	--	--	98
19N20W13CCA 01	34	14	3.6	.1	1.2	180	--	--	148
19N21W06BBB 01	41	16	130	5	3.8	480	--	--	394
19N21W10ADA 01	79	41	38	.9	3.9	370	--	--	303
19N21W14BAA 01	26	40	53	2	1.9	360	--	--	295
19N21W19ABA 01	31	32	36	1	2.6	300	--	--	246
	31	29	30	1	2.5	--	290	0	--
19N21W27CCD 02	39	11	33	1	1.4	260	--	--	215
	40	11	33	1	1.5	--	270	0	--
19N21W28CCA 01	36	15	170	6	3.8	550	--	--	451
19N21W31DAB 01	28	10	220	9	6.9	580	--	--	474
19N24W04AADB01	.8	.1	51	15	.6	--	3	60	--
20N19W07DBB 01	10	3.2	2.1	.2	1.7	44	--	--	36
20N19W19DAA 01	25	7.2	2.7	.1	.9	110	--	--	90
20N19W19DDA 01	2.	.2	30	6	3.4	85	--	--	71
20N20W02AAC 01	21	4.3	2.9	.2	.8	89	--	--	73

Local number	Sulfate, dis-solved (mg/L SO_4)	Chlo-ride, dis-solved (mg/L as Cl)	Fluo-ride, dis-solved (mg/L as F)	Bromide, dis-solved (mg/L as Br)	Silica, dis-solved (mg/L as SiO_2)	Sum of constit-uents, dis-solved (mg/L)	Nitro-gen, nitrate, dis-solved (mg/L as N)	Phos-phorus, dis-solved (mg/L as P)
15N19W 7BCCC01	5.0	1.8	0.09	--	27	160	0.02	--
15N20W13BABB01	1.6	2.0	.04	--	13	66	.11	--
15N20W13DCAA01	2.6	2.7	.04	--	18	140	.07	--
15N20W23DCAA01	3.1	2.4	.02	--	30	100	.07	--
15N20W24BCCB01	3.6	1.6	.02	--	17	98	.13	--
16N19W18BBBC01	2.5	1.6	.04	--	12	140	.20	--
16N19W30CDBC01	2.6	2.6	.04	--	12	130	.19	--
18N19W22CADD01	2.4	1.	.1	--	19	120	.29	--
18N19W28CCDB01	4	.4	<.1	0.1	6.2	98	.10	<0.10
18N20W07BDA 01	6.6	1.8	.2	--	18	180	.48	--
18N20W10ADD 01	16	3.5	<.1	--	11	290	.60	--
	15	4.5	<.1	<.1	13	280	.92	<.10
18N20W14DBD 02	3.6	.1	<.1	--	6.0	130	.47	--
	5.7	.2	<.1	--	6.6	150	.54	--
	4.8	.6	.06	--	6.3	140	.53	--
18N20W23DADA01	8.3	2.5	.2	--	23	320	.48	--
18N20W32BCC 01	4.1	1.3	.1	--	12	180	.18	--
	5.5	3.4	<.1	<.1	13	210	.44	<.10
18N21W01BAD 01	7.5	2.2	.4	--	23	180	.50	--
18N21W04BCDA01	21	6.4	1.2	<.1	31	350	.35	<.10
18N21W05ADCB01	1.1	33	1.4	.3	12	480	.04	<.10
18N21W08DDB 01	8.9	4.5	.4	--	20	180	.97	--
	8.5	8.6	1.2	.1	12	260	1.67	.50
18N21W09CDA 01	10	14	.6	--	9	330	.16	--
18N21W11DAA 01	4.4	2.3	.3	--	28	120	.70	--
18N21W21BCBB01	8.3	3.3	.1	<.1	12	210	.28	.10
18N22W21BADC01	13	7.9	.3	--	24	210	.63	--
19N20W05BAD 01	2.6	3.2	.1	--	9.4	140	.14	--
	3	2.5	<.1	<.1	14	150	.27	.40
19N20W06AAA 01	7.4	3.4	<.1	--	15	130	.77	--
19N20W13CCA 01	4.8	.3	<.1	--	10	160	.16	--
19N21W06BBB 01	.4	51	1.6	--	17	500	.69	--
19N21W10ADA 01	82	47	.1	--	14	500	2.60	--
19N21W14BAA 01	16	16	1.8	--	37	370	.22	--
19N21W19ABA 01	20	10	.7	--	29	310	.71	--
	16	6.3	.6	.2	33	290	--	<.10
19N21W27CCD 02	.8	2.	.3	--	9.3	230	.11	--
	.1	2.5	.3	--	12	240	.02	--
19N21W28CCA 01	<1	37	2.0	--	17	550	.09	--
19N21W31DAB 01	.2	90	4.8	--	10	660	.025	--
19N24W04AADB01	6.6	2.5	2.3	--	56	240	.02	--
20N19W07DBB 01	4.1	1.7	<.1	--	1.1	46	.04	--
20N19W19DAA 01	4.7	.9	<.1	--	6.4	100	.11	--
20N19W19DDA 01	1.2	.6	2.8	--	1.1	84	.02	--
20N20W02AAC 01	1.9	.6	<.1	--	9.2	86	.27	--

Table 14.--*Physical properties and primary-constituent concentrations in ground water*--Continued

Local number	Site type	Geo-logic unit	Date (month, day, year)	Depth of well, total (feet)	Spe-cific con-duct-ance (µS/cm)	pH (stand-ard units)	Tem-per-ature (°C)	Hard-ness (mg/L as $CaCO_3$)	Hard-ness, noncar-bonate (mg/L $CaCO_3$)
	W	Glacial drift	06-07-84	550	69	8.4	8.0	30	--
20N20W02BAB 01	W	Glacial drift	08-26-75	540	197	6.6	11.5	90	0
20N20W04BAA 01	W	Glacial drift	06-30-76	355	252	7.9	13.5	110	0
	W	Glacial drift	06-03-83	355	260	7.7	13.0	110	--
20N20W20DCD 01	W	Glacial drift	03-04-76	285	479	8.0	6.5	190	0
20N20W28AAA 01	W	Glacial drift	07-01-76	73	757	7.9	9.5	260	0
20N20W30DCD 01	W	Glacial drift	07-01-76	34.5	1,710	7.8	12.5	450	29
20N21W23ADD 01	W	Glacial drift	09-17-75	361	613	8.2	9.0	250	0
20N21W21CAB 01	S	Glacial drift	03-04-76	--	355	8.1	11.0	180	0
20N22W21CBDA01	W	Glacial outwash	10-15-84	331	325	8.3	18.5	52	--
20N22W28ABCB01	W	Glacial outwash	10-15-84	340	360	8.0	13.0	120	--
20N24W19AAAA01	W	Alluvium	09-08-83	100	200	8.2	10.0	70	--
20N24W22AAB 01	W	Glacial drift	09-17-75	66	248	8.0	9.0	100	0
20N24W23CBAA01	W	Alluvium	10-11-84	99	312	7.6	10.0	98	--
20N24W23CBAA02	W	Alluvium	10-12-84	98	325	7.8	10.0	110	--
20N24W29CDDD01	W	Belt rocks	09-07-83	105	175	8.1	11.0	56	--
21N19W28DBBB01	W	Glacial drift	06-22-83	140	240	7.1	9.5	120	--
21N19W30CCC 01	W	Glacial drift	03-04-76	--	264	8.0	9.5	140	3
21N20W11ACC 01	W	Glacial drift	08-26-75	385	160	6.0	13.0	67	0
	W	Glacial drift	06-02-83	385	165	7.6	13.0	60	--
21N20W14ACB 01	W	Glacial drift	09-16-75	12	349	7.9	14.0	170	0
21N20W24CAA 01	W	Glacial drift	09-16-75	300	142	7.8	11.0	52	0
	W	Glacial drift	06-07-84	300	275	8.4	10.5	120	--
21N20W33AAA 01	W	Glacial drift	03-05-76	453	286	7.9	15.5	120	0
21N22W07DCAA01	W	Glacial outwash	10-12-84	186	430	7.9	10.0	170	--
21N23W10BDD 01	W	Glacial drift	08-17-76	200	622	7.8	22.5	89	0
21N23W14ACB 01	W	Glacial drift	03-04-76	276	330	8.0	21.5	130	0
21N24W03BBA 01	S	Glacial drift	09-15-75	--	394	9.1	44.0	4	0
21N24W03BBC 01	W	Glacial drift	04-19-76	--	390	9.0	43.0	3	0
21N24W04DBC 01	W	Glacial drift	08-27-75	241	220	6.7	13.5	67	0
21N24W04DBD 01	W	Glacial drift	08-27-75	383	246	6.7	18.5	53	0
	W	Glacial drift	05-31-84	383	490	8.1	21.0	59	--
22N19W18DAA 01	W	Glacial drift	08-17-76	25	176	8.1	10.5	91	1
	W	Glacial drift	06-08-84	25	210	8.5	9.0	99	--
22N19W32BCDD01	W	Glacial outwash	12-06-83	300	205	8.5	8.0	100	--
22N20W02CBD 01	W	Glacial drift	08-26-75	525	356	6.2	12.0	150	0
22N20W10CAA 01	W	Glacial drift	08-26-75	175	279	6.2	10.5	140	1
22N20W17DCAB01	W	Belt rocks	12-12-83	440	400	8.4	9.5	150	--
22N20W25ABA 01	W	Glacial drift	09-18-75	1,000	276	8.1	10.0	140	1
	W	Glacial drift	06-08-84	1,000	295	8.5	11.0	150	--
22N20W31CDD 01	W	Glacial drift	03-05-76	150	727	8.1	17.5	230	0
	W	Glacial drift	06-08-84	150	750	8.0	11.0	230	--
22N21W28ACD 01	W	Glacial drift	09-16-75	144	616	8.1	13.0	250	0
	W	Glacial drift	06-03-83	144	640	7.4	13.0	260	--
22N22W24DAAA01	W	Tertiary(?) sediments	11-14-84	198	419	7.9	11.5	170	--

Table 14.--*Physical properties and primary-constituent concentrations in ground water*--Continued

Local number	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 HCO_3)	Bicarbonate, fet-lab (mg/L as HCO_3)	Carbonate, fet-lab (mg/L as CO_3)	Alkalinity, field (mg/L as $CaCO_3$)
	9.1	1.8	.9	.1	.3	--	43	0	--
20N20W02BAB 01	29	4.2	6.6	.3	1.1	120	--	--	98
20N20W04BAA 01	31	6.8	12	.5	1.1	160	--	--	131
	31	7.2	12	.5	.6	--	150	0	--
20N20W20DCD 01	45	19	39	1	1.3	280	--	--	230
20N20W28AAA 01	43	36	71	2	4	380	--	--	312
20N20W30DCD 01	80	60	220	5	4.6	510	--	--	418
20N21W23ADD 01	44	34	45	1	1.4	350	--	--	287
20N21W21CAB 01	44	18	6.7	.2	4	230	--	--	189
20N22W21CBDA01	12	5.2	61	4	1.2	--	190	--	--
20N22W28ABCB01	33	8.2	29	1	1.7	--	190	--	--
20N24W19AAAA01	17	6.3	12	.7	.4	--	110	0	--
20N24W22AAB 01	26	9.4	12	.5	.4	140	--	--	115
20N24W23CBAA01	24	9.3	27	1	2.2	--	160	--	--
20N24W23CBAA02	27	9.9	25	1	2.1	--	170	--	--
20N24W29CDDD01	14	5.1	12	.7	.2	--	90	0	--
21N19W28DBBB01	36	6.9	2.4	.1	1.2	--	150	0	--
21N19W30CCC 01	32	15	3.3	.1	1.6	170	--	--	139
21N20W11ACC 01	13	8.3	12	.7	.9	110	--	--	90
	14	6	12	.7	.7	--	99	0	--
21N20W14ACB 01	55	8.4	3.5	.1	2	210	--	--	172
21N20W24CAA 01	11	6	9.4	.6	1.6	87	--	--	71
	31	12	8	.3	1.6	--	180	0	--
21N20W33AAA 01	30	11	18	.7	1	190	--	--	156
21N22W07DCAA01	44	14	24	.8	1.6	--	240	--	--
21N23W10BDD 01	20	9.4	110	5	3.5	370	--	--	303
21N23W14ACB 01	32	13	20	.8	1.4	200	--	--	164
21N24W03BBA 01	1.1	.4	83	18	1.8	110	--	--	122
21N24W03BBC 01	1.1	.1	84	22	1.8	120	--	--	135
21N24W04DBC 01	20	4.2	20	1	3.2	120	--	--	98
21N24W04DBD 01	15	3.7	33	2	3	130	--	--	107
	17	4	32	2	3.1	--	150	0	--
22N19W18DAA 01	28	5	1.7	.1	.8	110	--	--	90
	30	5.7	1.7	.1	1.7	--	120	0	--
22N19W32BCDD01	25	9.7	5.7	.3	1	140	140	0	110
22N20W02CBD 01	39	12	21	.8	2.2	230	--	--	189
22N20W10CAA 01	28	16	6.7	.3	2.	170	--	--	139
22N20W17DCAB01	38	13	29	1	.9	230	230	0	190
22N20W25ABA 01	39	10	2.5	.1	1.2	170	--	--	139
	41	11	2.4	.1	1.	--	170	2	--
22N20W31CDD 01	34	36	89	3	3.1	470	--	--	385
	41	30	86	3	2.7	--	410	25	--
22N21W28ACD 01	43	34	39	1	3.	350	--	--	287
	45	36	40	1	3.1	--	360	0	--
22N22W24DAAA01	43	16	28	1	1.2	--	280	--	--

Table 14.--*Physical properties and primary-constituent concentrations in ground water*--Continued

Local number	Sulfate, dis-solved (mg/L SO_4)	Chlo-ride, dis-solved (mg/L as Cl)	Fluo-ride, dis-solved (mg/L as F)	Bromide, dis-solved (mg/L as Br)	Silica, dis-solved (mg/L as SiO_2)	Sum of constit-uents, dis-solved (mg/L)	Nitro-gen, nitrate, dis-solved (mg/L as N)	Phos-phorus, dis-solved (mg/L as P)
	1.3	.6	<.1	<.1	5.7	42	.24	.50
20N20W02BAB 01	3.1	.1	.1	--	14	120	.18	--
20N20W04BAA 01	3.9	<.1	<.1	--	16	150	.10	--
	4.5	.5	.2	--	17	150	.14	--
20N20W20DCD 01	24	4.4	.5	--	18	290	.25	--
20N20W28AAA 01	72	19	.2	--	12	450	.99	--
20N20W30DCD 01	360	83	.2	--	14	1,100	3.10	--
20N21W23ADD 01	39	11	.6	--	19	370	.38	--
20N21W21CAB 01	4.3	1.9	.2	--	14	210	.19	--
20N22W21CBDA01	5.8	11	3.4	.2	21	220	.07	<.10
20N22W28ABCB01	15	4.2	.4	.1	16	200	.05	.20
20N24W19AAAA01	7.6	1.1	.07	--	20	120	.03	--
20N24W22AAB 01	9.2	5.5	.3	--	19	150	.14	--
20N24W23CBAA01	20	4.9	.5	.2	48	220	.03	<.10
20N24W23CBAA02	18	4.7	.4	<.1	45	220	.02	<.10
20N24W29CDDD01	7.6	1.1	.5	--	32	120	.11	--
21N19W28DBBB01	2.4	1.5	.08	--	20	140	.13	--
21N19W30CCC 01	3	1.7	<.1	--	11	150	.51	--
21N20W11ACC 01	3.1	.5	.2	--	16	110	.14	--
	3.7	.5	.4	--	19	110	.14	--
21N20W14ACB 01	7.1	1.8	<.1	--	12	200	2.10	--
21N20W24CAA 01	2.4	2.1	<.1	--	1.2	77	.02	--
	2.7	.5	.2	<.1	16	160	.39	<.10
21N20W33AAA 01	.5	1.7	.1	--	19	170	.04	--
21N22W07DCAA01	15	9.6	.2	.1	26	250	.74	.10
21N23W10BDD 01	8.6	17	3.5	--	18	370	.53	--
21N23W14ACB 01	8.2	6	.6	--	16	200	.26	--
21N24W03BBA 01	44	5.5	5.7	--	58	290	.27	--
21N24W03BBC 01	20	17	5.7	--	59	290	<.02	--
21N24W04DBC 01	3.6	2.4	1.3	--	23	140	.16	--
21N24W04DBD 01	12	2.2	1.6	--	22	160	.25	--
	11	3.1	.2	<.1	28	170	.11	<.10
22N19W18DAA 01	2.3	.4	<.1	--	8.4	100	.55	--
	2.3	1.3	<.1	<.1	10	120	.71	<.10
22N19W32BCDD01	2.2	1.1	<.04	<.05	17	130	.12	<.05
22N20W02CBD 01	7.8	.2	.2	--	13	210	.16	--
22N20W10CAA 01	4.3	.1	.2	--	11	150	.68	--
22N20W17DCAB01	13	2.8	.4	<.05	19	230	.59	<.05
22N20W25ABA 01	5.3	.6	<.1	--	10	160	1.40	--
	3.4	1.	<.1	<.1	12	170	1.87	<.10
22N20W31CDD 01	18	7.5	.4	--	15	440	1.60	--
	19	7.8	.3	<.1	17	480	4.41	.10
22N21W28ACD 01	32	8.1	.2	--	14	350	1.50	--
	32	10	.4	--	16	370	3.12	--
22N22W24DAAA01	2.3	3.1	.5	.1	25	260	.03	--

Table 14.--*Physical properties and primary-constituent concentrations in ground water*--Continued

Local number	Site type	Geologic unit	Date (month, day, year)	Depth of well, total (feet)	Specific conductance (µS/cm)	pH (standard units)	Temperature (°C)	Hardness (mg/L as $CaCO_3$)	Hardness, noncarbonate (mg/L $CaCO_3$)
22N23W15DCDC01	W	Glacial outwash	10-11-84	92	285	7.9	10.0	110	--
22N23W19DAA 01	W	Glacial drift	07-02-76	240	617	8.2	24.0	17	0
22N23W29ACB 01	W	Glacial drift	09-15-75	244	663	8.3	49.0	8	0
	W	Glacial drift	06-08-84	244	650	8.3	48.0	7	--
22N24W34CDC 01	W	Glacial drift	04-23-76	--	341	7.1	15.0	61	0
22N24W34CDC 02	S	Glacial drift	11-24-64	--	--	--	19.0	0	0
	S	Glacial drift	08-09-72	--	394	8.4	--	4	0
	S	Glacial drift	07-03-75	--	367	9.4	45.0	--	--
	S	Glacial drift	04-23-76	--	341	7.1	15.0	61	0
22N24W36BBB 01	W	Glacial drift	08-17-76	229	472	7.5	19.5	140	0
	W	Glacial drift	06-02-83	229	520	7.1	14.0	150	--
23N20W29BAB 01	W	Glacial drift	09-18-75	156	372	8.1	10.0	160	0
23N21W14BBB 01	W	Glacial drift	03-05-76	300	329	7.6	9.0	160	0
	W	Glacial drift	06-05-84	300	220	8.4	13.0	81	--
23N21W34ADD 01	W	Glacial drift	04-22-76	--	189	8.0	8.0	71	0
23N21W35BBA 01	W	Glacial drift	07-01-76	355	326	7.9	12.0	140	0
23N22W12DDC 01	W	Glacial drift	07-01-76	10	511	7.9	11.5	220	0
23N22W35CDB 01	W	Glacial drift	09-16-75	250	374	8.2	10.0	150	0
23N24W03BAB 01	S	Glacial drift	03-04-76	--	190	6.8	10.0	49	0
23N24W03BAB 02	S	Glacial drift	03-04-76	--	230	7.2	--	93	0
23N24W34ADA 01	W	Glacial drift	03-04-76	377	397	7.9	16.5	150	0
	W	Glacial drift	06-02-83	--	410	7.6	14.0	140	--
24N21W19BBD 01	W	Glacial drift	08-27-75	105	354	6.5	10.5	140	0
	W	Glacial drift	06-05-84	105	370	8.6	11.5	140	--
24N21W19BCB 01	W	Glacial drift	08-27-75	314	303	6.2	12.5	130	0
	W	Glacial drift	06-05-84	314	340	8.3	11.0	150	--
24N21W33ACC 01	W	Glacial drift	09-17-75	359	421	8.1	10.0	180	0
	W	Glacial drift	06-02-83	359	460	7.7	11.5	190	--
24N23W17DAC 01	W	Glacial drift	03-04-76	250	332	7.9	11.5	140	4
	W	Glacial drift	06-02-83	250	355	7.5	14.0	140	--
24N24W25DDBB01	W	Glacial outwash	10-10-84	328	335	8.2	13.0	130	--
24N24W27ABDB01	W	Tertiary(?) sediments	10-10-84	217	380	7.8	11.0	110	--

Table 14.--*Physical properties and primary-constituent concentrations in ground water*--Continued

Local number	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 HCO_3)	Bicarbonate, fet-lab (mg/L as HCO_3)	Carbonate, fet-lab (mg/L as CO_3)	Alkalinity, field (mg/L as $CaCO_3$)
22N23W15DCDC01	27	9.3	17	.8	1.4	--	160	--	--
22N23W19DAA 01	5.7	.6	140	16	3.7	330	--	--	271
22N23W29ACB 01	2.9	.3	150	23	3.4	350	--	--	287
	2.6	.2	160	26	3.4	--	360	0	--
22N24W34CDC 01	16	5.2	43	2	5.6	100	--	--	82
22N24W34CDC 02	.0	.0	--	--	--	10	--	--	28
	1.2	.2	91	21	1.7	140	--	--	142
	<1.	<.1	85	--	1.7	140	--	--	151
	16	5.2	43	2	5.6	100	--	--	83
22N24W36BBB 01	37	12	46	2	3.9	260	--	--	213
	38	12	47	2	3.7	--	270	0	--
23N20W29BAB 01	34	18	21	.7	.6	250	--	--	205
23N21W14BBB 01	28	22	9.4	.3	1.	220	--	--	180
	17	9.6	7.6	.4	.4	--	120	0	--
23N21W34ADD 01	15	8.2	13	.7	.8	120	--	--	97
23N21W35BBA 01	33	14	13	.5	1.5	200	--	--	160
23N22W12DDC 01	54	20	24	.7	7.8	320	--	--	262
23N22W35CDB 01	41	11	22	.8	1.4	230	--	--	189
23N24W03BAB 01	11	5.3	15	1	4.2	100	--	--	82
23N24W03BAB 02	23	8.7	12	.6	2.	130	--	--	107
23N24W34ADA 01	40	12	33	1	1.7	240	--	--	197
	40	10	32	1	1.6	--	230	0	--
24N21W19BBD 01	33	14	21	.8	1.9	200	--	--	164
	31	14	14	.5	.9	--	190	0	--
24N21W19BCB 01	30	14	14	.5	1.1	180	--	--	148
	34	15	20	.8	1.8	--	210	0	--
24N21W33ACC 01	38	20	24	.8	1.	280	--	--	230
	42	22	27	.9	1.	--	290	0	--
24N23W17DAC 01	34	14	18	.7	2.7	170	--	--	139
	35	12	17	.7	2.7	--	170	0	--
24N24W25DDBB01	30	13	20	.8	1.8	200	--	--	--
24N24W27ABDB01	28	10	34	1	5.8	200	--	--	--

Table 14.--*Physical properties and primary-constituent concentrations in ground water*--Continued

Local number	Sulfate, dissolved (mg/L SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Bromide, dissolved (mg/L as Br)	Silica, dissolved (mg/L as SiO_2)	Sum of constituents, dissolved (mg/L)	Nitrogen, nitrate, dissolved (mg/L as N)	Phosphorus, dissolved (mg/L as P)
22N23W15DCDC01	7.8	5.6	.2	.1	27	180	1.06	<.10
22N23W19DAA 01	1.3	28	6.1	--	33	380	<.02	--
22N23W29ACB 01	1.7	34	5.2	--	40	410	.02	--
	1.5	36	2.1	.3	45	420	.08	<.10
22N24W34CDC 01	61	3.6	2.3	--	33	220	.26	--
22N24W34CDC 02	18	5.	2.2	--	--	--	0	--
	40	9.	5.8	--	68	300	0	--
	38	8.5	5.6	--	70	--	--	--
	61	3.6	2.3	--	33	220	.26	--
22N24W36BBB 01	.4	25	.8	--	22	280	.04	--
	4.3	25	.9	--	28	290	.03	--
23N20W29BAB 01	3.2	1.4	.6	--	4.4	210	.02	--
23N21W14BBB 01	.9	2.5	.2	--	23	200	.33	--
	1.5	1.5	.2	.1	27	120	.20	<.10
23N21W34ADD 01	2.7	.9	.1	--	19	120	.21	--
23N21W35BBA 01	10	1.5	.2	--	17	190	.54	--
23N22W12DDC 01	7.9	2.6	.2	--	16	290	<.02	--
23N22W35CDB 01	8.5	5.1	.2	--	29	230	.52	--
23N24W03BAB 01	.7	3.3	.6	--	14	110	.07	--
23N24W03BAB 02	7.4	3.9	.2	--	31	150	.16	--
23N24W34ADA 01	12	6.3	.9	--	18	240	.32	--
	12	4.9	.9	--	19	240	.08	--
24N21W19BBD 01	17	1.3	.2	--	12	200	.16	--
	8.2	1.9	.3	.1	16	190	1.04	.40
24N21W19BCB 01	8.3	.9	.2	--	15	170	.48	--
	17	2.1	.3	.1	14	210	.20	<.10
24N21W33ACC 01	5.2	1.7	.4	--	27	260	.05	--
	4.3	2.1	.6	--	31	270	.03	--
24N23W17DAC 01	23	4.8	.3	--	33	220	.68	--
	28	3.8	.4	--	39	230	.95	--
24N24W25DDBB01	14	2.6	.2	<.1	22	200	.39	<.10
24N24W27ABDB01	21	6.4	.5	.1	8.8	210	.08	<.10

Table 15.--*Trace-element concentrations in ground water*

[Analyses by Montana Bureau of Mines and Geology. Site type: W, well; S, spring. Depth of well, total: in feet below land surface. Abbreviation: μg/L, micrograms per liter. Symbols: <, less than; --, no data]

Local number	Site type	Geo-logic unit	Date (month, day, year)	Depth of well, total (feet)	Alum-inum, dis-solved (μg/L as Al)	Boron, dis-solved (μg/L as B)	Cadmium, dis-solved (μg/L as Cd)
15N19W07BCCC01	W	Glacial drift	07-15-83	90	--	--	--
15N20W13BABB01	W	Belt rocks	07-20-83	431	--	--	--
15N20W13DCAA01	W	Glacial drift	07-19-83	130	--	--	--
15N20W23DCAA01	W	Glacial drift	07-12-83	70	--	--	--
15N20W24BCCB01	W	Glacial drift	07-21-83	42	--	--	--
16N19W18BBBC01	W	Alluvium	07-26-83	80	--	--	--
16N19W30CDBC01	W	Glacial drift	07-22-83	57.5	--	--	--
18N19W22CADD01	W	Glacial drift	08-31-83	268	80	<20	8
18N19W28CCDB01	W	Glacial outwash	10-14-84	147	<30	<20	<2
18N20W07BDA 01	W	Belt rocks	11-14-74	--	--	--	--
18N20W10ADD 01	W	Glacial drift	03-05-76	53	--	--	--
	W	Glacial drift	06-07-84	53	<30	30	<2
18N20W14DBD 02	W	Glacial drift	08-27-75	47	--	--	--
	W	Glacial drift	09-16-75	47	--	--	--
	W	Glacial drift	06-03-83	47	<30	<20	<2
18N20W23DADA01	W	Belt rocks	08-25-83	162	<30	20	<2
18N20W32BCC 01	W	Glacial drift	04-22-76	88	--	--	--
	W	Glacial drift	05-31-84	88	<30	<20	<2
18N21W01BAD 01	W	Glacial drift	11-14-74	--	--	--	--
18N21W04BCDA01	W	Alluvium	10-14-84	124	<30	110	<2
18N21W05ADCB01	W	Glacial outwash	10-13-84	320	<30	590	2
18N21W08DDB 01	W	Glacial drift	08-26-75	430	--	--	--
	W	Glacial drift	06-06-84	430	<30	300	<2
18N21W09CDA 01	S	Belt rocks	08-26-75	--	--	--	--
18N21W11DAA 01	W	Belt rocks	11-14-74	--	--	--	--
18N21W21BCBB01	W	Alluvium	10-13-84	160	<30	130	3
18N22W21BADC01	W	Alluvium	09-02-83	59	<30	<20	<2
19N20W05BAD 01	W	Glacial drift	08-26-75	480	--	--	--
	W	Glacial drift	05-31-84	480	<30	50	<2
19N20W06AAA 01	W	Glacial drift	09-10-75	18	--	--	--
19N20W13CCA 01	W	Glacial drift	09-18-75	64	--	--	--
19N21W06BBB 01	W	Glacial drift	03-04-76	130	--	--	--
19N21W10ADA 01	W	Glacial drift	07-01-76	44	--	--	--
19N21W14BAA 01	W	Glacial drift	03-04-76	371	--	--	--
19N21W19ABA 01	W	Glacial drift	03-04-76	108	--	--	--
	W	Glacial drift	06-08-84	108	<30	110	2
19N21W27CCD 02	W	Glacial drift	11-14-74	160	--	--	--
	W	Glacial drift	06-02-83	160	<30	30	<2
19N21W28CCA 01	W	Glacial drift	07-01-76	300	--	--	--
19N21W31DAB 01	W	Glacial drift	04-11-78	--	--	--	--
19N24W04AADB01	W	Belt rocks	09-13-83	332	<30	120	<2
20N19W07DBB 01	W	Glacial drift	03-04-76	158	--	--	--
20N19W19DAA 01	W	Glacial drift	09-17-75	401	--	--	--
20N19W19DDA 01	W	Glacial drift	04-21-76	1,182	--	--	--
20N20W02AAC 01	W	Glacial drift	08-26-75	550	--	--	--

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Iron, dissolved (µg/L as Fe)	Lead, dissolved (µg/L as Pb)	Lithium, dissolved (µg/L as Li)	Manganese, dissolved (µg/L as Mn)	Molybdenum, dissolved (µg/L as Mo)
15N19W07BCCC01	--	--	2,300	--	--	360	--
15N20W13BABB01	--	--	8	--	--	4	--
15N20W13DCAA01	--	--	8	--	--	21	--
15N20W23DCAA01	--	--	15	--	--	1	--
15N20W24BCCB01	--	--	39	--	--	4	--
16N19W18BBBC01	--	--	5	--	--	1	--
16N19W30CDBC01	--	--	15	--	--	5	--
18N19W22CADD01	7	16	<2	<40	18	<1	40
18N19W28CCDB01	<2	<2	3	--	<2	<1	<20
18N20W07BDA 01	--	--	<10	--	--	<10	--
18N20W10ADD 01	--	--	<10	--	--	<10	--
	<4	6	<2	--	<2	1	<20
18N20W14DBD 02	--	--	50	--	--	<10	--
	--	--	30	--	--	<10	--
	<2	<2	<2	<40	<2	<1	<20
18N20W23DADA01	<2	17	<2	<40	<2	<1	<20
18N20W32BCC 01	--	--	50	--	--	<10	--
	<2	6	<2	--	<2	<1	<20
18N21W01BAD 01	--	--	<10	--	--	<10	--
18N21W04BCDA01	<2	<2	27	--	6	1	20
18N21W05ADCB01	<2	13	1,400	--	32	84	<20
18N21W08DDB 01	--	--	60	--	--	<10	--
	<2	<2	730	--	13	87	<20
18N21W09CDA 01	--	--	<10	--	--	230	--
18N21W11DAA 01	--	--	<10	--	--	<10	--
18N21W21BCBB01	<2	<2	31	--	9	<1	30
18N22W21BADC01	<2	10	<2	<40	3	<1	<20
19N20W05BAD 01	--	--	20	--	--	<10	--
	2	<2	150	--	2	250	<20
19N20W06AAA 01	--	--	90	--	--	<10	--
19N20W13CCA 01	--	--	<10	--	--	<10	--
19N21W06BBB 01	--	--	160	--	--	310	--
19N21W10ADA 01	--	--	30	--	--	<10	--
19N21W14BAA 01	--	--	20	--	--	<10	--
19N21W19ABA 01	--	--	<10	--	--	<10	--
	<2	2	<2	--	3	<1	<20
19N21W27CCD 02	--	--	1,800	--	--	360	--
	<2	7	1,900	<40	4	370	<20
19N21W28CCA 01	--	--	2,000	--	--	100	--
19N21W31DAB 01	--	--	1,000	--	--	50	--
19N24W04AADB01	<2	<2	<2	<40	12	<1	<20
20N19W07DBB 01	--	--	50	--	--	<10	--
20N19W19DAA 01	--	--	<10	--	--	<10	--
20N19W19DDA 01	--	--	40	--	--	<10	--
20N20W02AAC 01	--	--	<10	--	--	<10	--

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Nickel, dis- solved (µg/L as Ni)	Silver, dis- solved (µg/L as Ag)	Stron- tium, dis- solved (µg/L as Sr)	Ti- tanium, dis- solved (µg/L as Ti)	Vana- dium, dis- solved (µg/L as V)	Zinc, dis- solved (µg/L as Zn)	Zir- conium, dis- solved (µg/L as Zr)
15N19W07BCCC01	--	--	--	--	--	--	--
15N20W13BABB01	--	--	--	--	--	--	--
15N20W13DCAA01	--	--	--	--	--	--	--
15N20W23DCAA01	--	--	--	--	--	--	--
15N20W24BCCB01	--	--	--	--	--	--	--
16N19W18BBBC01	--	--	--	--	--	--	--
16N19W30CDBC01	--	--	--	--	--	--	--
18N19W22CADD01	20	<2	49	6	19	56	20
18N19W28CCDB01	<10	<2	30	<1	<1	<3	<4
18N20W07BDA 01	--	--	--	--	--	--	--
18N20W10ADD 01	--	--	--	--	--	--	--
	10	<2	75	30	<1	27	<4
18N20W14DBD 02	--	--	--	--	--	--	--
	--	--	--	--	--	--	--
	<10	<2	45	1	<1	<3	<4
18N20W23DADA01	<10	<2	130	6	<1	180	<4
18N20W32BCC 01	--	--	--	--	--	--	--
	<10	<2	70	4	<1	10	<4
18N21W01BAD 01	--	--	--	--	--	--	--
18N21W04BCDA01	<10	<2	260	<1	<1	5	<4
18N21W05ADCB01	<10	<2	<1	1	4	<3	<4
18N21W08DDB 01	--	--	--	--	--	--	--
	<10	<2	240	2	<1	<3	<4
18N21W09CDA 01	--	--	--	--	--	--	--
18N21W11DAA 01	--	--	--	--	--	--	--
18N21W21BCBB01	40	<2	85	3	<1	8	<4
18N22W21BADC01	<10	<2	250	3	3	320	<4
19N20W05BAD 01	--	--	--	--	--	--	--
	<10	<2	49	<1	<1	14	<4
19N20W06AAA 01	--	--	--	--	--	--	--
19N20W13CCA 01	--	--	--	--	--	--	--
19N21W06BBB 01	--	--	--	--	--	--	--
19N21W10ADA 01	--	--	--	--	--	--	--
19N21W14BAA 01	--	--	--	--	--	--	--
19N21W19ABA 01	--	--	--	--	--	--	--
	<10	<2	220	3	2	180	<4
19N21W27CCD 02	--	--	--	--	--	--	--
	<10	<2	120	<1	<1	17	<4
19N21W28CCA 01	--	--	--	--	--	--	--
19N21W31DAB 01	--	--	--	--	--	--	--
19N24W04AADB01	<10	<2	11	20	3	<3	<4
20N19W07DBB 01	--	--	--	--	--	--	--
20N19W19DAA 01	--	--	--	--	--	--	--
20N19W19DDA 01	--	--	--	--	--	--	--
20N20W02AAC 01	--	--	--	--	--	--	--

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Site type	Geo-logic unit	Date (month, day, year)	Depth of well, total (feet)	Alum-inum, dis-solved (µg/L as Al)	Boron, dis-solved (µg/L as B)	Cadmium, dis-solved (µg/L as Cd)
	W	Glacial drift	06-07-84	550	<30	50	<2
20N20W02BAB 01	W	Glacial drift	08-26-75	540	--	--	--
20N20W04BAA 01	W	Glacial drift	06-30-76	355	--	--	--
	W	Glacial drift	06-03-83	355	<30	<20	<2
20N20W20DCD 01	W	Glacial drift	03-04-76	285	--	--	--
20N20W28AAA 01	W	Glacial drift	07-01-76	73	--	--	--
20N20W30DCD 01	W	Glacial drift	07-01-76	34.5	--	--	--
20N21W23ADD 01	W	Glacial drift	09-17-75	361	--	--	--
20N21W21CAB 01	S	Glacial drift	03-04-76	--	--	--	--
20N22W21CBDA01	W	Glacial outwash	10-15-84	331	<30	160	<2
20N22W28ABCB01	W	Glacial outwash	10-15-84	340	<30	40	<2
20N24W19AAAA01	W	Alluvium	09-08-83	100	<30	20	<2
20N24W22AAB 01	W	Glacial drift	09-17-75	66	--	--	--
20N24W23CBAA01	W	Alluvium	10-11-84	99	<30	20	<2
20N24W23CBAA02	W	Alluvium	10-12-84	98	<30	20	<2
20N24W29CDDD01	W	Belt rocks	09-07-83	105	<30	20	<2
21N19W28DBBB01	W	Glacial drift	06-22-83	140	--	--	--
21N19W30CCC 01	W	Glacial drift	03-04-76	--	--	--	--
21N20W11ACC 01	W	Glacial drift	08-26-75	385	--	--	--
	W	Glacial drift	06-02-83	385	<30	30	<2
21N20W14ACB 01	W	Glacial drift	09-16-75	12	--	--	--
21N20W24CAA 01	W	Glacial drift	09-16-75	300	--	--	--
	W	Glacial drift	06-07-84	300	<30	30	<2
21N20W33AAA 01	W	Glacial drift	03-05-76	453	--	--	--
21N22W07DCAA01	W	Glacial outwash	10-12-84	186	<30	40	<2
21N23W10BDD 01	W	Glacial drift	08-17-76	200	--	--	--
21N23W14ACB 01	W	Glacial drift	03-04-76	276	--	--	--
21N24W03BBA 01	S	Glacial drift	09-15-75	--	--	--	--
21N24W03BBC 01	W	Glacial drift	04-19-76	--	--	--	--
21N24W04DBC 01	W	Glacial drift	08-27-75	241	--	--	--
21N24W04DBD 01	W	Glacial drift	08-27-75	383	--	--	--
	W	Glacial drift	05-31-84	383	<30	70	<2
22N19W18DAA 01	W	Glacial drift	08-17-76	25	--	--	--
	W	Glacial drift	06-08-84	25	<30	<20	<2
22N19W32BCDD01	W	Glacial outwash	12-06-83	300	--	--	--
22N20W02CBD 01	W	Glacial drift	08-26-75	525	--	--	--
22N20W10CAA 01	W	Glacial drift	08-26-75	175	--	--	--
22N20W17DCAB01	W	Belt rocks	12-12-83	440	--	--	--
22N20W25ABA 01	W	Glacial drift	09-18-75	1,000	--	--	--
	W	Glacial drift	06-08-84	1,000	<30	50	<2
22N20W31CDD 01	W	Glacial drift	03-05-76	150	--	--	--
	W	Glacial drift	06-08-84	150	<30	40	<2
22N21W28ACD 01	W	Glacial drift	09-16-75	144	--	--	--
	W	Glacial drift	06-03-83	144	<30	<20	2
22N22W24DAAA01	W	Tertiary(?) sediments	11-14-84	198	<30	<20	<2

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Iron, dissolved (µg/L as Fe)	Lead, dissolved (µg/L as Pb)	Lithium, dissolved (µg/L as Li)	Manganese, dissolved (µg/L as Mn)	Molybdenum, dissolved (µg/L as Mo)
	<2	<2	<2	--	<2	<1	<20
20N20W02BAB 01	--	--	690	--	--	<10	--
20N20W04BAA 01	--	--	20	--	--	<10	--
	<2	<2	<2	<40	<2	2	<20
20N20W20DCD 01	--	--	20	--	--	<10	--
20N20W28AAA 01	--	--	160	--	--	<10	--
20N20W30DCD 01	--	--	<10	--	--	<10	--
20N21W23ADD 01	--	--	<10	--	--	30	--
20N21W21CAB 01	--	--	<10	--	--	<10	--
20N22W21CBDA01	<2	<2	<2	--	12	25	<20
20N22W28ABCB01	<2	<2	100	--	2	140	<20
20N24W19AAAA01	<2	<2	<2	<40	6	3	<20
20N24W22AAB 01	--	--	60	--	--	50	--
20N24W23CBAA01	<2	2	80	--	3	57	<20
20N24W23CBAA02	<2	<2	33	--	3	5	<20
20N24W29CDDD01	<2	8	<2	<40	<2	<1	<20
21N19W28DBBB01	--	--	<2	--	--	19	--
21N19W30CCC 01	--	--	<10	--	--	<10	--
21N20W11ACC 01	--	--	<10	--	--	<10	--
	<2	<2	11	<40	<2	<1	<20
21N20W14ACB 01	--	--	20	--	--	<10	--
21N20W24CAA 01	--	--	30	--	--	<10	--
	<2	3	<2	--	<2	1	<20
21N20W33AAA 01	--	--	30	--	--	20	--
21N22W07DCAA01	<2	<2	23	--	<2	4	<20
21N23W10BDD 01	--	--	20	--	--	380	--
21N23W14ACB 01	--	--	190	--	--	50	--
21N24W03BBA 01	--	--	70	--	--	<10	--
21N24W03BBC 01	--	--	20	--	--	<10	--
21N24W04DBC 01	--	--	530	--	--	60	--
21N24W04DBD 01	--	--	200	--	--	<10	--
	<2	2	70	--	13	19	<20
22N19W18DAA 01	--	--	20	--	--	<10	--
	<2	2	<2	--	<2	<1	<20
22N19W32BCDD01	--	--	<2	--	--	4	--
22N20W02CBD 01	--	--	<10	--	--	<10	--
22N20W10CAA 01	--	--	<10	--	--	<10	--
22N20W17DCAB01	--	--	<2	--	--	<1	--
22N20W25ABA 01	--	--	<10	--	--	<10	--
	<2	3	<2	--	<2	<1	<20
22N20W31CDD 01	--	--	<10	--	--	<10	--
	<2	<2	<2	--	<2	<1	<20
22N21W28ACD 01	--	--	<10	--	--	<10	--
	5	10	<2	<40	4	2	<20
22N22W24DAAA01	<2	<2	590	--	<2	130	<20

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Nickel, dis-solved (µg/L as Ni)	Silver, dis-solved (µg/L as Ag)	Stron-tium, dis-solved (µg/L as Sr)	Ti-tanium, dis-solved (µg/L as Ti)	Vana-dium, dis-solved (µg/L as V)	Zinc, dis-solved (µg/L as Zn)	Zir-conium, dis-solved (µg/L as Zr)
	<10	<2	22	20	<1	<3	<4
20N20W02BAB 01	--	--	--	--	--	--	--
20N20W04BAA 01	--	--	--	--	--	--	--
	<10	<2	82	<2	<2	60	<4
20N20W20DCD 01	--	--	--	--	--	--	--
20N20W28AAA 01	--	--	--	--	--	--	--
20N20W30DCD 01	--	--	--	--	--	--	--
20N21W23ADD 01	--	--	--	--	--	--	--
20N21W21CAB 01	--	--	--	--	--	--	--
20N22W21CBDA01	<10	<2	88	<1	1	<3	<4
20N22W28ABCB01	<10	<2	150	3	<1	<3	<4
20N24W19AAAA01	<10	<2	180	<1	3	<3	<4
20N24W22AAB 01	--	--	--	--	--	--	--
20N24W23CBAA01	<10	<3	130	1	2	6	<4
20N24W23CBAA02	<10	<2	140	2	<1	3	<4
20N24W29CDDD01	<10	<2	110	<1	2	<3	<4
21N19W28DBBB01	--	--	--	--	--	--	--
21N19W30CCC 01	--	--	--	--	--	--	--
21N20W11ACC 01	--	--	--	--	--	--	--
	<10	<2	50	<1	<1	4	<4
21N20W14ACB 01	--	--	--	--	--	--	--
21N20W24CAA 01	--	--	--	--	--	--	--
	<10	<2	100	2	<1	240	<4
21N20W33AAA 01	--	--	--	--	--	--	--
21N22W07DCAA01	<10	<2	160	5	<1	3	<4
21N23W10BDD 01	--	--	--	--	--	--	--
21N23W14ACB 01	--	--	--	--	--	--	--
21N24W03BBA 01	--	--	--	--	--	--	--
21N24W03BBC 01	--	--	--	--	--	--	--
21N24W04DBC 01	--	--	--	--	--	--	--
21N24W04DBD 01	--	--	--	--	--	--	--
	210	<2	46	1	<1	<3	<4
22N19W18DAA 01	--	--	--	--	--	--	--
	<10	<2	38	<1	<1	31	<1
22N19W32BCDD01	--	--	--	--	--	--	--
22N20W02CBD 01	--	--	--	--	--	--	--
22N20W10CAA 01	--	--	--	--	--	--	--
22N20W17DCAB01	--	--	--	--	--	--	--
22N20W25ABA 01	--	--	--	--	--	--	--
	<10	<2	59	<1	<1	99	<4
22N20W31CDD 01	--	--	--	--	--	--	--
	<10	<2	220	<1	<1	89	<4
22N21W28ACD 01	--	--	--	--	--	--	--
	<10	3	260	6	1	320	<4
22N22W24DAAA01	<10	<2	190	6	2	23	<4

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Site type	Geologic unit	Date (month, day, year)	Depth of well, total (feet)	Aluminum, dissolved (µg/L as Al)	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)
22N23W15DCDC01	W	Glacial outwash	10-11-84	92	<30	60	<2
22N23W19DAA 01	W	Glacial drift	07-02-76	240	--	--	--
22N23W29ACB 01	W	Glacial drift	09-15-75	244	--	--	--
	W	Glacial drift	06-08-84	244	<30	660	4
22N24W34CDC 01	W	Glacial drift	04-23-76	--	--	--	--
22N24W34CDC 02	S	Glacial drift	11-24-64	--	--	--	--
	S	Glacial drift	08-09-72	--	--	--	--
	S	Glacial drift	07-03-75	--	20	340	--
	S	Glacial drift	04-23-76	--	--	--	--
22N24W36BBB 01	W	Glacial drift	08-17-76	229	--	--	--
	W	Glacial drift	06-02-83	229	<30	140	<2
23N20W29BAB 01	W	Glacial drift	09-18-75	156	--	--	--
23N21W14BBB 01	W	Glacial drift	03-05-76	300	--	--	--
	W	Glacial drift	06-05-84	300	<30	<20	<2
23N21W34ADD 01	W	Glacial drift	04-22-76	--	--	--	--
23N21W35BBA 01	W	Glacial drift	07-01-76	355	--	--	--
23N22W12DDC 01	W	Glacial drift	07-01-76	10	--	--	--
23N22W35CDB 01	W	Glacial drift	09-16-75	250	--	--	--
23N24W03BAB 01	S	Glacial drift	03-04-76	--	--	--	--
23N24W03BAB 02	S	Glacial drift	03-04-76	--	--	--	--
23N24W34ADA 01	W	Glacial drift	03-04-76	377	--	--	--
	W	Glacial drift	06-02-83	--	<30	60	<2
24N21W19BBD 01	W	Glacial drift	08-27-75	105	--	--	--
	W	Glacial drift	06-05-84	105	<30	<20	<2
24N21W19BCB 01	W	Glacial drift	08-27-75	314	--	--	--
	W	Glacial drift	06-05-84	314	<30	<20	<2
24N21W33ACC 01	W	Glacial drift	09-17-75	359	--	--	--
	W	Glacial drift	06-02-83	359	<30	40	<2
24N23W17DAC 01	W	Glacial drift	03-04-76	250	--	--	--
	W	Glacial drift	06-02-83	250	<30	<20	2
24N24W25DDBB01	W	Glacial outwash	10-10-84	328	<30	50	4
24N24W27ABDB01	W	Tertiary(?) sediments	10-10-84	217	340	70	2

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Iron, dissolved (µg/L as Fe)	Lead, dissolved (µg/L as Pb)	Lithium, dissolved (µg/L as Li)	Manganese, dissolved (µg/L as Mn)	Molybdenum, dissolved (µg/L as Mo)
22N23W15DCDC01	<2	2	44	--	<2	13	20
22N23W19DAA 01	--	--	110	--	--	70	--
22N23W29ACB 01	--	--	50	--	--	<10	--
	<2	<2	<2	--	91	8	<20
22N24W34CDC 01	--	--	70	--	--	40	--
22N24W34CDC 02	--	--	140	--	--	--	--
	--	--	100	--	50	0	--
	--	--	<20	--	40	<20	--
	--	--	70	--	--	40	--
22N24W36BBB 01	--	--	5,800	--	--	100	--
	<2	<2	3,400	<40	24	81	<20
23N20W29BAB 01	--	--	40	--	--	<10	--
23N21W14BBB 01	--	--	<10	--	--	<10	--
	<2	<2	<2	--	2	1	<20
23N21W34ADD 01	--	--	110	--	--	20	--
23N21W35BBA 01	--	--	30	--	--	<10	--
23N22W12DDC 01	--	--	100	--	--	80	--
23N22W35CDB 01	--	--	80	--	--	<10	--
23N24W03BAB 01	--	--	8,200	--	--	350	--
23N24W03BAB 02	--	--	<10	--	--	<10	--
23N24W34ADA 01	--	--	280	--	--	<10	--
	<2	<2	<2	<40	<2	140	<20
24N21W19BBD 01	--	--	<10	--	--	230	--
	4	8	<2	--	4	<1	<20
24N21W19BCB 01	--	--	<10	--	--	<10	--
	<2	3	16	--	3	230	<20
24N21W33ACC 01	--	--	500	--	--	<10	--
	<2	<2	500	<40	<2	160	<20
24N23W17DAC 01	--	--	<10	--	--	<10	--
	<2	<2	<2	<40	<2	<2	<20
24N24W25DDBB01	<2	5	57	--	3	12	<20
24N24W27ABDB01	2	6	74	--	53	58	20

Table 15.--*Trace-element concentrations in ground water*--Continued

Local number	Nickel, dis-solved (µg/L as Ni)	Silver, dis-solved (µg/L as Ag)	Stron-tium, dis-solved (µg/L as Sr)	Ti-tanium, dis-solved (µg/L as Ti)	Vana-dium, dis-solved (µg/L as V)	Zinc, dis-solved (µg/L as Zn)	Zir-conium, dis-solved (µg/L as Zr)
22N23W15DCDC01	<10	<2	120	<1	<1	4	<4
22N23W19DAA 01	--	--	--	--	--	--	--
22N23W29ACB 01	--	--	--	--	--	--	--
	<10	<2	120	<1	<1	<3	<4
22N24W34CDC 01	--	--	--	--	--	--	--
22N24W34CDC 02	--	--	--	--	--	--	--
	--	--	--	--	--	--	--
	--	--	--	--	--	--	--
	--	--	--	--	--	--	--
22N24W36BBB 01	--	--	--	--	--	--	--
	<10	<2	130	<1	<1	11	<4
23N20W29BAB 01	--	--	--	--	--	--	--
23N21W14BBB 01	--	--	--	--	--	--	--
	<10	<2	66	20	<1	65	<4
23N21W34ADD 01	--	--	--	--	--	--	--
23N21W35BBA 01	--	--	--	--	--	--	--
23N22W12DDC 01	--	--	--	--	--	--	--
23N22W35CDB 01	--	--	--	--	--	--	--
23N24W03BAB 01	--	--	--	--	--	--	--
23N24W03BAB 02	--	--	--	--	--	--	--
23N24W34ADA 01	--	--	--	--	--	--	--
	<10	<2	160	20	<1	64	<4
24N21W19BBD 01	--	--	--	--	--	--	--
	20	3	160	<1	<1	<3	<4
24N21W19BCB 01	--	--	--	--	--	--	--
	<10	<2	160	2	<1	6	<4
24N21W33ACC 01	--	--	--	--	--	--	--
	<10	<2	190	4	1	<3	4
24N23W17DAC 01	--	--	--	--	--	--	--
	<10	<2	75	1	10	<3	10
24N24W25DDBB01	20	<2	170	4	<1	<3	<4
24N24W27ABDB01	10	<2	450	20	<1	6	<4

Table 16.--*Summary of selected physical properties and chemical constituents in water from wells and springs*

[Constituents are dissolved and constituent values are reported in milligrams per liter. Microsiemens, microsiemens per centimeter at 25 °C; °C, degrees Celsius. Symbols: <, less than; -, no data; --, no standard established]

Property or constituent	Standard	Maximum	Minimum	Median	Mean	Number of samples
Valley-fill aquifers in the Mission Valley						
Specific conductance (microsiemens)	--	1,710	69	326	402	71
pH, onsite	--	8.8	6.0	7.9	-	71
Temperature (°C)	--	19.0	6.5	11.0	11.0	71
Hardness as $CaCO_3$	--	450	6	140	149	71
Calcium (Ca)	--	80	2.0	32	34	71
Magnesium (Mg)	--	60	.2	12	16	71
Sodium (Na)	--	220	.9	14	30	71
Sodium-adsorption ratio	--	9	.1	.7	1	71
Potassium (K)	--	7.8	.2	1.4	1.8	71
Bicarbonate (HCO_3)	--	580	43	190	231	71
Carbonate (CO_3)	--	25	0	0	1.3	21
Alkalinity ($CaCO_3$)	--	474	36	160	193	47
Sulfate (SO_4)	[1]250	360	.1	4.3	14	71
Chloride (Cl)	[1]250	90	.1	1.9	7.6	71
Fluoride (F)	[1]2.0 [2]4.0	4.8	.04	.2	.4	71
Bromide (Br)	--	.3	<.05	<.1	.1	18
Silica (SiO_2)	--	37	1.1	14	15	71
Dissolved solids (sum of constituents)	[1]500	1,100	42	190	233	71
Nitrate (as N)	[2]10	4.41	<.02	.25	.60	70
Phosphorus (P)	--	.5	<.05	<.1	-	17
Valley-fill aquifers in the Little Bitterroot River valley						
Specific conductance (microsiemens)	--	663	190	374	396	28
pH, onsite	--	9.4	6.7	7.9	-	28
Temperature (°C)	--	49.0	10.0	16.5	21.0	27
Hardness as $CaCO_3$	--	170	3	89	84	27
Calcium (Ca)	--	44	0	20	20	29
Magnesium (Mg)	--	14	0	5.3	6.6	29
Sodium (Na)	--	160	12	34	54	28
Sodium-adsorption ratio	--	26	.6	2	6	27
Potassium (K)	--	5.8	1.2	2.7	2.8	28
Bicarbonate (HCO_3)	--	370	10	170	189	29
Carbonate (CO_3)	--	0	0	0	0	5

Table 16.--*Summary of selected physical properties and chemical constituents in water from wells and springs*--Continued

Property or constituent	Standard	Maximum	Minimum	Median	Mean	Number of samples
Valley-fill aquifers in the Little Bitterroot River valley--Continued						
Alkalinity ($CaCO_3$)	--	303	28	137	151	18
Sulfate (SO_4)	[1]250	61	.4	12	17	29
Chloride (Cl)	[1]250	36	2.2	5.6	10	29
Fluoride (F)	[1]2.0 [2]4.0	6.1	.2	.9	2.1	29
Bromide (Br)	--	.3	<.1	.1	.1	8
Silica (SiO_2)	--	70	8.8	28	31	28
Dissolved solids (sum of constituents)	[1]500	420	109	219	244	27
Nitrate (as N)	[2]10	1.06	.00	.14	.25	28
Phosphorus (P)	--	.2	<.1	<.1	-	8
Valley-fill aquifers in Camas Prairie basin						
Specific conductance (microsiemens)	--	325	200	280	271	4
pH, onsite	--	8.2	7.6	7.9	-	4
Temperature (°C)	--	10.0	9.0	10.0	9.8	4
Hardness as $CaCO_3$	--	109	70	99	94	4
Calcium (Ca)	--	27	17	25	24	4
Magnesium (Mg)	--	9.9	6.3	9.4	8.7	4
Sodium (Na)	--	27	12	18	19	4
Sodium-adsorption ratio	--	1	.5	.8	.8	4
Potassium (K)	--	2.2	.4	1.2	1.3	4
Bicarbonate (HCO_3)	--	170	110	140	145	4
Carbonate (CO_3)	--	0	0	0	0	1
Alkalinity ($CaCO_3$)	--	115	115	115	115	1
Sulfate (SO_4)	[1]250	20	7.6	14	14	4
Chloride (Cl)	[1]250	5.5	1.1	4.8	4.0	4
Fluoride (F)	[1]2.0 [2]4.0	.5	.07	.4	.3	4
Bromide (Br)	--	.2	<.1	.2	.2	2
Silica (SiO_2)	--	48	19	32	33	4
Dissolved solids (sum of constituents)	[1]500	219	120	184	177	4
Nitrate (as N)	[2]10	.14	.02	.03	.05	4
Phosphorus (P)	--	<.1	<.1	<.1	<.1	2
Valley-fill aquifers in the Jocko and lower Flathead River valleys						
Specific conductance (microsiemens)	--	390	145	271	284	10

Table 16.--*Summary of selected physical properties and chemical constituents in water from wells and springs*--Continued

Property or constituent	Standard	Maximum	Minimum	Median	Mean	Number of samples
Valley-fill aquifers in the Jocko and lower Flathead River valleys--Continued						
pH, onsite	--	8.6	7.2	7.7	-	10
Temperature (°C)	--	12.0	8.0	9.8	9.7	10
Hardness as $CaCO_3$	--	180	52	120	122	10
Calcium (Ca)	--	51	17	30	33	10
Magnesium (Mg)	--	14	2.7	10	9.7	10
Sodium (Na)	--	29	2.1	7.5	8.5	10
Sodium-adsorption ratio	--	1	.1	.3	.4	10
Potassium (K)	--	2.8	.4	1.2	1.2	10
Bicarbonate (HCO_3)	--	81	230	155	162	10
Carbonate (CO_3)	--	0	0	0	0	8
Alkalinity ($CaCO_3$)	--	164	164	164	164	1
Sulfate (SO_4)	[1]250	13	2.5	3.8	5.0	10
Chloride (Cl)	[1]250	7.9	1.3	2.5	2.9	10
Fluoride (F)	[1]2.0 [2]4.0	.3	.02	.06	.08	10
Bromide (Br)	--	<.1	<.1	<.1	<.1	2
Silica (SiO_2)	--	30	12	15	18	10
Dissolved solids (sum of constituents)	[1]500	210	98	150	158	10
Nitrate (as N)	[2]10	.63	.02	.18	.22	10
Phosphorus (P)	--	.1	<.1	--	-	2
Belt Supergroup						
Specific conductance (microsiemens)	--	574	106	280	316	8
pH, onsite	--	9.8	6.7	8.1	-	8
Temperature (°C)	--	25.0	5.0	10.5	11.8	8
Hardness as $CaCO_3$	--	260	2	98	109	8
Calcium (Ca)	--	73	.8	26	28	8
Magnesium (Mg)	--	19	.1	8.0	9.3	8
Sodium (Na)	--	61	7.2	17.5	26	8
Sodium-adsorption ratio	--	15	.5	.8	3	8
Potassium (K)	--	4.0	.2	.9	1.2	8
Bicarbonate (HCO_3)	--	360	3	136	169	8
Carbonate (CO_3)	--	60	0	0	12	5
Alkalinity ($CaCO_3$)	--	287	75	169	175	4
Sulfate (SO_4)	[1]250	13	1.6	7.1	7.3	8
Chloride (Cl)	[1]250	14	1.1	2.4	3.6	8
Fluoride (F)	[1]2.0 [2]4.0	2.3	.04	.4	.57	8
Bromide (Br)	--	<.05	<.05	<.05	<.05	1

Table 16.--*Summary of selected physical properties and chemical constituents in water from wells and springs*--Continued

Property or constituent	Standard	Maximum	Minimum	Median	Mean	Number of samples
		Belt Supergroup--Continued				
Silica (SiO_2)	--	56	9.0	21	25	8
Dissolved solids (sum of constituents)	[1]500	330	66	205	201	8
Nitrate (as N)	[2]10	.70	.02	.32	.33	8
Phosphorus (P)	--	<.05	<.05	<.05	-	1

[1]U.S. Environmental Protection Agency (1986a).
[2]U.S. Environmental Protection Agency (1986b).

Table 17.--*Summary of selected trace elements in water from wells and springs*

[Constituents are dissolved and constituent values are reported in micrograms per liter. Symbols: <, less than; --, no standard established]

Trace element	Standard	Maximum	Minimum	Median	Number of samples
		Valley-fill aquifers in the Mission Valley			
Aluminum (Al)	--	80	<30	<30	24
Boron (B)	--	590	<20	30	24
Cadmium (Cd)	[1]10	8	<2	<2	24
Chromium (Cr)	[1]50	7	<2	<2	24
Copper (Cu)	[2]1,000	16	<2	2	24
Iron (Fe)	[2]300	2,000	<2	14	72
Lithium (Li)	--	32	<2	2	24
Manganese (Mn)	[2]50	370	<1	10	72
Molybdenum (Mo)	--	40	<20	<20	24
Nickel (Ni)	--	20	<10	<10	24
Silver (Ag)	[2]50	3	<2	<2	24
Strontium (Sr)	--	260	<1	91	24
Titanium (Ti)	--	30	<1	2	24
Vanadium (V)	--	19	<1	<1	24
Zinc (Zn)	[2]5,000	320	<3	16	24
Zirconium (Zr)	--	20	<1	<4	24
		Valley-fill aquifers in the Little Bitterroot River valley			
Aluminum (Al)	--	340	20	<30	12
Boron (B)	--	660	<20	65	12
Cadmium (Cd)	[1]10	4	<2	<2	11
Chromium (Cr)	[1]50	2	<2	<2	11
Copper (Cu)	[2]1,000	6	<2	<2	11
Iron (Fe)	[2]300	8,200	<2	70	29
Lithium (Li)	--	16	<2	12	13
Manganese (Mn)	[1]50	380	0	20	28
Molybdenum (Mo)	--	20	<20	<20	11
Nickel (Ni)	--	210	<10	<10	11
Silver (Ag)	[2]50	<2	<2	<2	11
Strontium (Sr)	--	450	46	130	11
Titanium (Ti)	--	20	<1	1	11
Vanadium (V)	--	10	<1	<1	11
Zinc (Zn)	[2]5,000	64	<3	<3	11
Zirconium (Zr)	--	10	<4	<4	11
		Valley-fill aquifers in Camas Prairie basin			
Aluminum (Al)	--	<30	<30	<30	3
Boron (B)	--	20	20	20	3

Table 17.--*Summary of selected trace elements in water from wells and springs*--Continued

Trace element	Standard	Maximum	Minimum	Median	Number of samples
		Valley-fill aquifers in Camas Prairie basin--Continued			
Cadmium (Cd)	[1]10	<2	<2	<2	3
Chromium (Cr)	[1]50	<2	<2	<2	3
Copper (Cu)	[2]1,000	2	<2	<2	3
Iron (Fe)	[2]300	80	<2	46	4
Lithium (Li)	--	6	3	3	3
Manganese (Mn)	[2]50	57	3	28	4
Molybdenum (Mo)	--	<20	<20	<20	3
Nickel (Ni)	--	<10	<10	<10	3
Silver (Ag)	[1]50	<3	<2	<2	3
Strontium (Sr)	--	180	130	140	3
Titanium (Ti)	--	2	<1	1	3
Vanadium (V)	--	3	<1	2	3
Zinc (Zn)	[2]5,000	6	<3	3	3
Zirconium (Zr)	--	<4	<4	<4	3
		Valley-fill aquifers in the Jocko and lower Flathead River valleys			
Aluminum (Al)	--	<30	<30	<30	3
Boron (B)	--	130	<20	<20	3
Cadmium (Cd)	[1]10	3	<2	<2	3
Chromium (Cr)	[1]50	<2	<2	<2	3
Copper (Cu)	[2]1,000	10	<2	6	3
Iron (Fe)	[2]300	2,300	<2	15	10
Lithium (Li)	--	9	<2	3	3
Manganese (Mn)	[2]50	360	<1	2	10
Molybdenum (Mo)	--	30	<20	<20	3
Nickel (Ni)	--	40	<10	<10	3
Silver (Ag)	[1]50	<2	<2	<2	3
Strontium (Sr)	--	250	70	85	3
Titanium (Ti)	--	4	3	3	3
Vanadium (V)	--	3	<1	<1	3
Zinc (Zn)	[2]5,000	320	8	10	3
Zirconium (Zr)	--	<4	<4	<4	3
		Belt Supergroup			
Aluminum (Al)	--	<30	<30	<30	3
Boron (B)	--	120	20	20	3
Cadmium (Cd)	[1]10	<2	<2	<2	3
Chromium (Cr)	[1]50	<2	<2	<2	3
Copper (Cu)	[2]1,000	17	<2	8	3

Table 17.--*Summary of selected trace elements in water from wells and springs*--Continued

Trace element	Standard	Maximum	Minimum	Median	Number of samples
		<u>Belt Supergroup</u>--Continued			
Iron (Fe)	[2]300	10	<2	5	8
Lithium (Li)	--	12	<2	<2	3
Manganese (Mn)	[2]50	230	<1	2	3
Molybdenum (Mo)	--	<20	<20	<20	3
Nickel (Ni)	--	<10	<10	<10	3
Silver (Ag)	[1]50	<2	<2	<2	3
Strontium (Sr)	--	130	11	109	3
Titanium (Ti)	--	20	<1	6	3
Vanadium (V)	--	3	<1	2	3
Zinc (Zn)	[2]5,000	180	<3	<3	3
Zirconium (Zr)	--	<4	<4	<4	3

[1]U.S. Environmental Protection Agency (1986b).
[2]U.S. Environmental Protection Agency (1986a).

G.P.O. 595-049 10/88