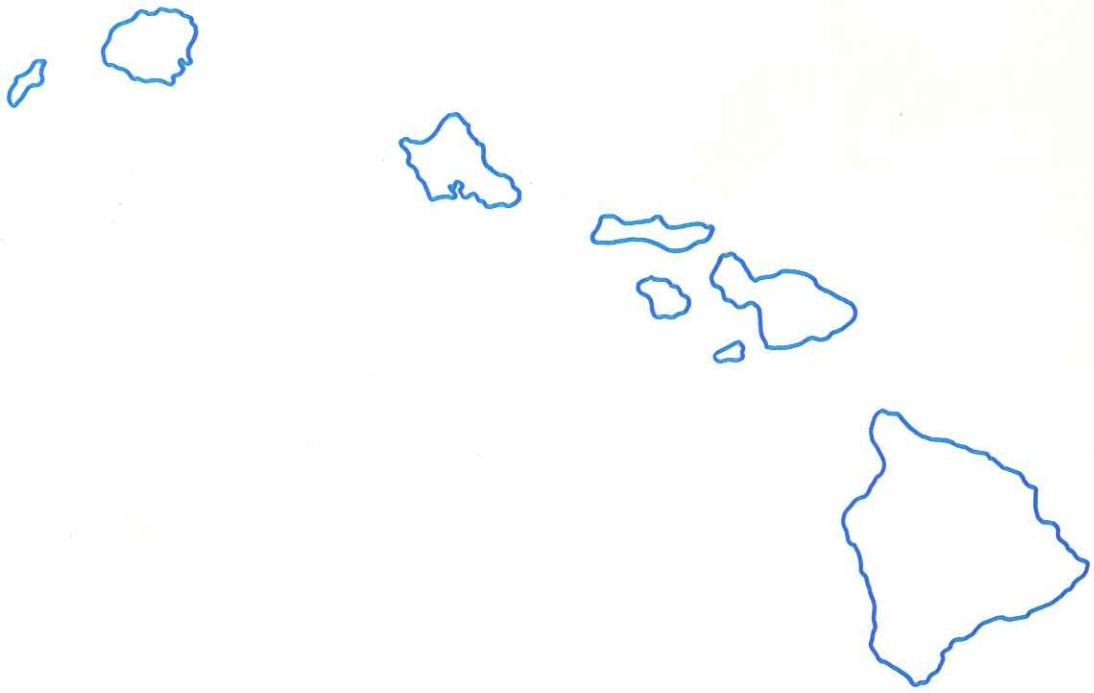
Water Resources Data Hawaii and other Pacific Areas Water Year 1983

Volume 1. Hawaii



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT HI-83-1
Prepared in cooperation with the State of Hawaii Department of Land and Natural Resources, Division of Water and Land Development and with other agencies

CALENDAR FOR WATER YEAR 1983

1982

OCTOBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
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31						

NOVEMBER

S	M	T	W	T	F	S
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14	15	16	17	18	19	20
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DECEMBER

S	M	T	W	T	F	S
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1983

JANUARY

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FEBRUARY

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27	28					

MARCH

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APRIL

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MAY

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JUNE

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JULY

S	M	T	W	T	F	S
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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST

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21	22	23	24	25	26	27
28	29	30	31			

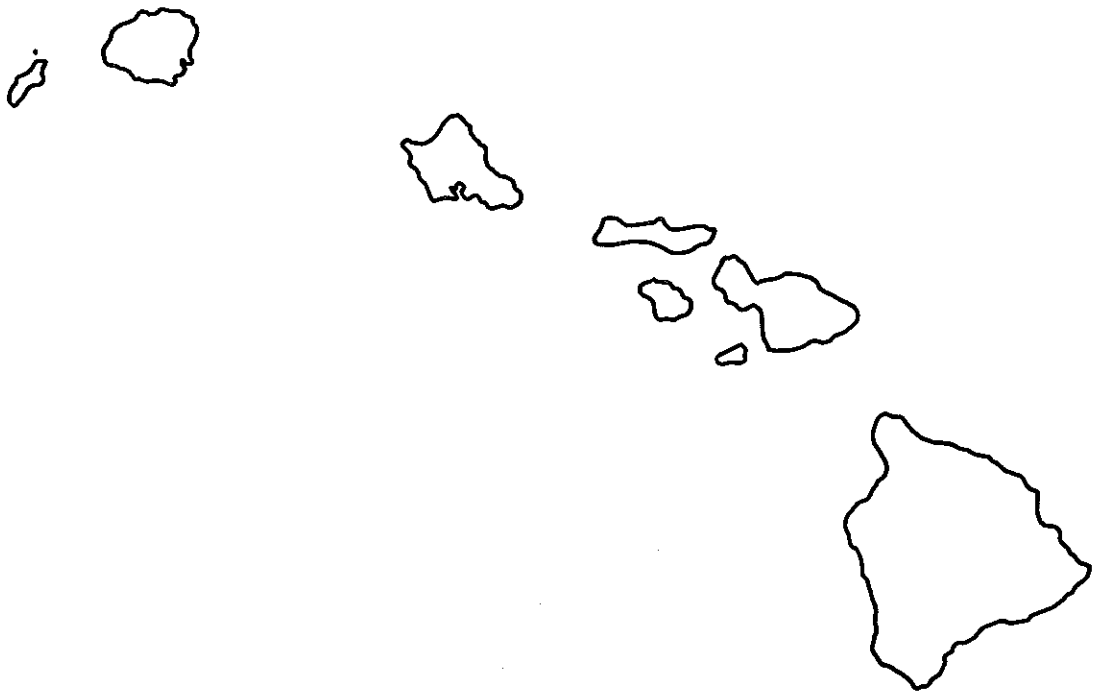
SEPTEMBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Water Resources Data Hawaii and other Pacific Areas Water Year 1983

Volume 1. Hawaii

by Salwyn S. Chinn, Grace A. Tateishi, and Johnson J.S. Yee



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Water resources data for the 1983 water year for Hawaii and other Pacific Areas consist of records of stage, discharge, and water quality of streams and springs; and water levels and water quality in wells. This report, volume 1, contains discharge records for 97 gaging stations; water quality for 13 gaging stations, 92 partial-record flow stations, and 159 wells; and water levels for 24 observation wells. Also included are 108 crest-stage partial-record stations and 24 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, Federal, and other agencies in Hawaii.

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SURFACE-WATER AND WATER-QUALITY STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

Letters after station name designate type of data:
(d) discharge, (c) chemical, (m) microbiological,
(t) water temperature, (s) sediment

HAWAII — Page

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Letters after well number designate type of data:
(c) chemical, (t) water temperature, (w) water level

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ISLAND OF KAUAI			
(2-0044-10)	220018159444701	(ct)	219
(2-0044-13)	220018159444702	(ct)	219
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(2-0044-15)	220016159442701	(ct)	219
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(2-0120-02)	220134159205401	(ct)	219
(2-0145-10)	220148159453501	(ct)	219
(2-0320-01)	220354159205601	(w)	208
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(2-0345-04)	220341159453901	(ct)	219
(2-0545-01)	220530159450401	(ct)	219
(2-0623-04)	220621159232101	(c)	230
(2-0818-01)	220827159185401	(ct)	219
(2-0818-02)	220826159185401	(ct)	219
(2-1020-03)	221038159203801	(ct)	219
(2-1125-01)	221141159252501	(ct)	220
(2-1125-02)	221141159252502	(ct)	220
(2-1126-01)	221150159264501	(ct)	220
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(3-1843-01)	211826157434001	(c)	231
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(3-1851-22)	211828157515801	(ct)	232
(3-1948-01)	201959157481801	(c)	233
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(3-2153-02)	212106157533701	(ct)	221
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(3-2809-06)	212828158092001	(ct)	223
(3-2812-01)	212859158124301	(ct)	223
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(3-3213-06)	213224158135901	(ct)	223
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(3-3409-16)	213438158091101	(ct)	224
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(6-4627-14)	204635156270101	(ct)	226
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WATER RESOURCES DATA FOR HAWAII AND OTHER PACIFIC AREAS, 1983

Volume 1

INTRODUCTION

Water resources data for the 1983 water year for Hawaii and other Pacific areas consist of records of stage, discharge, and water quality of streams, ditches, and springs; and water-levels and water quality of wells. This report, Volume 1, contains discharge records for 97 gaging stations; water quality for 13 gaging stations, 92 partial-record flow stations, and 159 wells; and water levels for 24 observation wells. Also included are 108 crest-stage partial-record stations and 19 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, Federal, and other agencies in Hawaii.

Through September 30, 1960 (June 30, 1960, for Hawaii and other Pacific areas), the records of discharge (or stage) of streams, and contents (or stage) of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." The records in Hawaii were contained in the series as "Surface Water Supply of Hawaii." Records for other Pacific areas were contained in one volume entitled, "Surface Water Supply of Mariana, Caroline, and Samoa Islands." Through water year 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202.

Beginning with the 1961 water year (fiscal year for Hawaii) and continuing through water year 1974, streamflow data have been released by the Geological Survey in annual reports on a state-boundary bases. Water-quality records beginning with the 1964 water year, and ground-water data since the 1971 water year have been similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published as an official Survey report on a state-boundary basis. These official Survey reports carry an identification number consisting of the two-letter state abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report HI-83-1." For archiving and general distribution, the reports for water years 1971-74 are also indentified as water-data reports. These water-data reports are for sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information including current prices, for ordering specific reports may be obtained from the district chief at the address given on the back of the title page or by telephone (808) 546-8331.

COOPERATION

The U.S. Geological Survey and organizations of the State of Hawaii have had cooperative agreements for the systematic collection of streamflow records since 1909, and for water-quality records since 1967. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Hawaii Department of Land and Natural Resources, Division of Water and Land Development, R. T. Chuck, manager-chief engineer.

Hawaii Department of Health, C. G. Clark, Director.

City and County of Honolulu, Board of Water Supply, Kazu Hayashida, manager and chief engineer.

City and County of Honolulu, Department of Public Works, M. J. Chun, director and chief engineer.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army and the Public Works, U.S. Navy.

The following organizations aided in collecting records:

Maui County Board of Water Supply; East Kauai Water Co., Ltd.; McBryde Sugar Co., Ltd.; East Maui Irrigation Co., Ltd.; and B. P. Bishop Estate.

SUMMARY OF HYDROLOGIC CONDITIONS

Runoff during the 1983 water year was below normal at the index stations on the islands of Oahu, Maui, and Hawaii; and normal on the island of Kauai. The annual mean runoff in relation to the median of yearly mean discharge for the period 1951-80 for the index stations ranged between 49 and 89 percent. Monthly mean flow was in the deficient range (lower 25 percent of record) at all the index stations during the months February through April.

At East Branch of North Fork Wailua River near Lihue, Kauai, streamflow was excessive (upper 25 percent of record) for October, November, and August; and deficient for the period January through May. Annual mean discharge was normal and was 89 percent of the annual median. Streamflow at Kalihi Stream near Honolulu, Oahu, was deficient for the period February through May and excessive for the months of October and September. The yearly mean was deficient at 58 percent of the annual median. Monthly mean discharge at the index station Honopou Stream near Huelo, Maui, was deficient for the period January through April and excessive for the months of May, June, and September. Annual mean was deficient at 68 percent of the annual median. Monthly mean flow at station Waiakea Stream near Mountain View, Hawaii, was deficient for the period November through April and excessive for the month of September. The annual mean was deficient and was 49 percent of the annual median.

Monthly and yearly mean discharges of the four index stations are compared with their medians in figure 1.

The chemical quality of surface waters statewide showed little change from previous years. Specific conductance values increased slightly from the 1982 water year. The average values determined at 93 gaging stations ranged from 18 to 678 µmho/cm (micromhos per centimeter). By comparison, the range for the previous year was 18 to 529 µmho/cm. Specific conductance values of streams by island are:

Island	Number of Streams	Specific Conductance (µmho/cm) Minimum	Maximum	Median
Kauai	27	33	125	92
Oahu	25	46	678	131
Molokai	6	96	138	114
Maui	19	18	80	45
Hawaii	16	24	54	32

Dissolved-solids concentrations at the six NASQAN (National Stream Quality Accounting Network) stations increased slightly during the 1983 water year from the previous year. Samples collected every other month showed dissolved-solids concentrations ranged from 35 to 306 mg/L (milligrams per liter) during 1983 compared to 33 to 188 during 1982. Waikele Stream at Waipahu, Oahu, had the highest concentration values of the NASQAN stations monitored in the State of Hawaii.

Dissolved-oxygen concentrations were near saturation, between 88 to 106 percent, at all NASQAN stations.

Concentrations of trace metals were less than the minimum contaminant levels established by EPA (Environmental Protection Agency).

Except for Waikele station, all other NASQAN and benchmark stations showed a decrease in fecal coliform densities. The Waikele station had an increase of 48 percent over 1982 density. Kalihi Stream at Kalihi, Oahu had the highest fecal coliform densities. The geometric-mean values for fecal coliform at bimonthly-monitored stations are:

	Fecal Coliform (colonies per 100 milliliters) 1982	1983
NASQAN Station		
Waimea River at Waimea, Kauai	274	225
Waikele Stream at Waipahu, Oahu	3810	5650
Kalihi Stream at Kalihi, Oahu	19200	8340
Halawa Stream near Halawa, Molokai	342	81
Kahakuloa Stream at Kahakuloa, Maui	105	20
Wailuku River at Hilo, Hawaii	116	52
Benchmark Station		
Honolii Stream near Papaikou, Hawaii	62	24

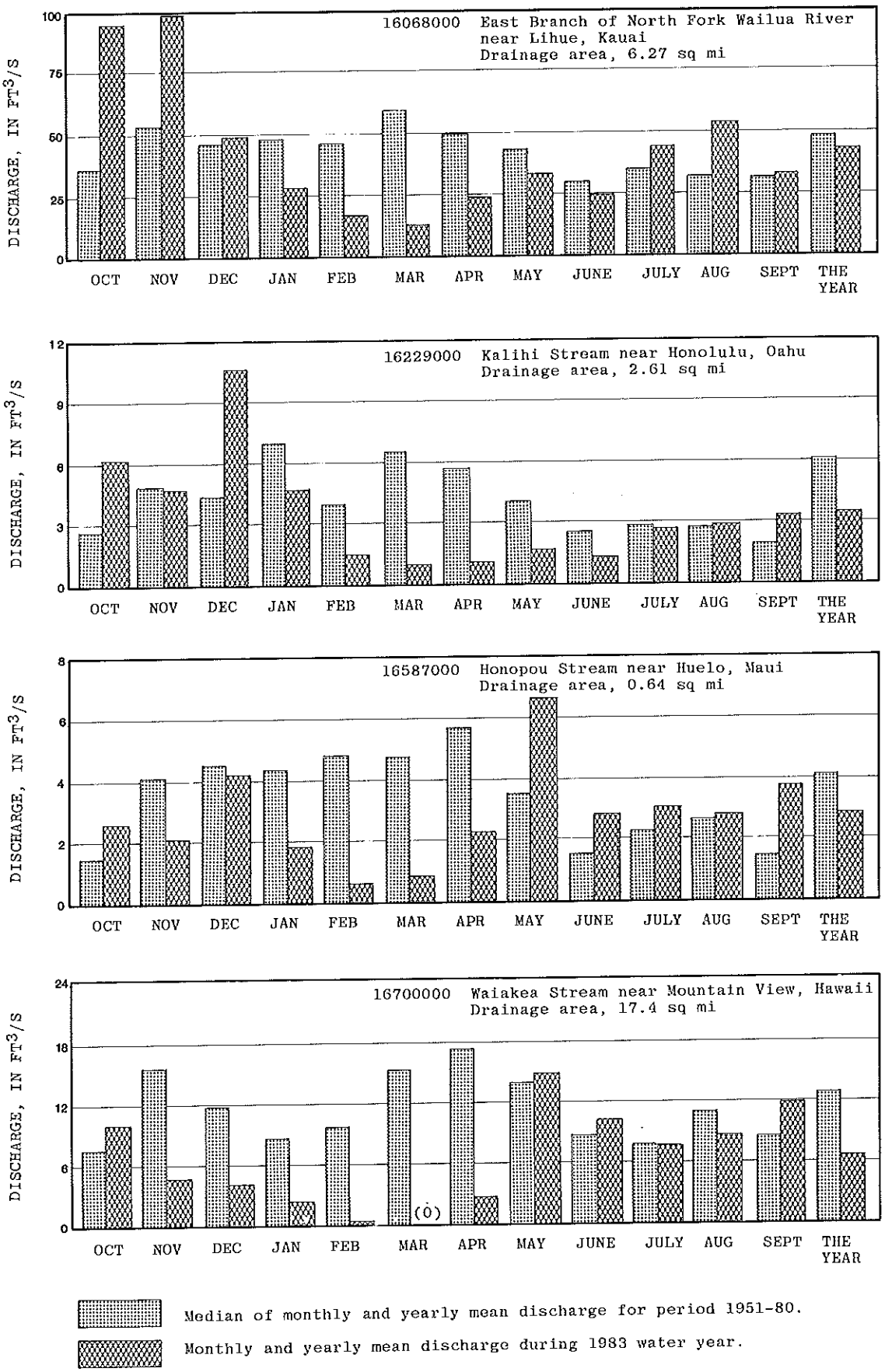

FIGURE 1. DISCHARGE DURING 1983 WATER YEAR COMPARED WITH MEDIAN DISCHARGE FOR PERIOD 1951-80 FOR FOUR REPRESENTATIVE GAGING STATIONS.

Ground-water levels at two index well sites on Oahu showed that while remaining in the normal range, the water level dropped steadily from December 1982 to September 1983. The water level on the other islands also showed normal ground-water levels for the year.

Analyses of water samples taken at more than 150 basal water-table wells generally did not show significant changes in chloride concentration. Routine sampling by State Department of Health for DBCP (Dibromochloroprane) and EDB (Ethylene Dibromide) in drinking water sources resulted in closing of six wells where concentration levels of DBCP or EDB exceeded 0.05 µg/L (microgram per liter). The wells are located in central Oahu.

DEFINITION OF TERMS

Definition of terms related to streamflow, water-quality, and other hydrologic data are defined as follows:

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or 325,851 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies withing 24 hours when incubated at 35°C ± 1.0°C on M-Endomedium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliter of of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacterial which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any time, expressed as the weight per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in g/m³ (grams per cubic meter), and periphyton and benthic organisms in g/m² (grams per square meter).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash, and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters of liters (L).

CFS-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.9835 acre-feet, or 646,317 gallons or 2,447 cubic meters.

Chlorophyll refers to the green pigments of plants. Chlorophyll *a* and *b* are the two most common pigments in plants.

Coliform organisms are a group of bacteria used as an indicator of the sanitary quality of the water. The number of coliform colonies per 100 milliliters is determined by the immediate or delayed incubation membrane filter method.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Continuing record station is a specified site which meets one or all conditions listed:

1. When chemical samples are collected daily or monthly for 10 or more months during the water year.
2. When water temperature records include observations taken one or more times daily.
3. When sediment discharge records include those periods for which sediment loads are computed and are considered to be representative of the runoff for the water year.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (FT^3/S, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic average of individual daily mean discharges during a specified period.

Instantaneous discharge is the discharge at a particular instant of time. If this discharge is reported instead of the daily mean, the heading of the discharge column in the table is "DISCHARGE (CFS)."

Dissolved is that material in a representative water sample which passes through a 0.45 micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded water.

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

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

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

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Microgram per gram (µg/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Microgram per liter (µG/L, µg/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligram per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.0	Sedimentation or sieve.
Gravel.....	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass, or volume.

Pesticides are chemical compounds used to control the growth of undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (Pc,pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radio-active disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

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

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times milligrams per liter times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total-sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weight concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Suspended recoverable is the amount of a given constituent that is insolution after the part of a respresentative water-suspended sediment sample that is retained on a 0.45 micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparibility of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituents.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Turbidity of a sample is the reduction of transparency due to the presence of particulate matter. In this report it is expressed Nephelometric turbidity units (NTU).

WDR is used as an abbreviation for "Water-Data Reports" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

Records are listed in a downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all main-stream stations are listed before the first main-stream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each gaging station, partial-record station, and water-quality station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 16200000 which appears just

to the left of the station name includes the 2-digit number "16" plus the 6-digit downstream order number "200000." In this report, the records are listed in downstream order by islands. Locations of the stations are shown in figures 2, 4, 6, 8, and 10.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

Miscellaneous downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits is a sequential number for wells within a 1-second grid. In the event that the latitude-longitude coordinates for a well and a miscellaneous site are the same, assign sequential numbers "01," "02," etc. as one would for wells. See figure 12.

Beginning in 1971, the local well-numbering system for Hawaii was restructured to contain seven digits based on a non-arbitrary, unique one-minute grid system. One-minute parallel lines for both latitude and longitude are drawn on the map resulting in one-minute grids. Each grid is designated by a four-digit number. The first two digits represent minutes of latitude for the grid and the second two digits represent minutes of longitude for that grid. This establishes unique minute-grid numbers within each of the islands in the state except for the island of Hawaii where it encompasses an area more than one degree (60 minutes) of latitude and longitude. To establish unique minute-grid numbers for this island, 30 was added to the minutes of latitude in areas less than 19°00" of latitude, and 60 was added to the minutes of latitude in areas more than 20°00" of latitude. For the same reason, 30 was added to the minutes of longitude in areas less than 155°00" of longitude, and 60 was added to the minutes of longitudes more than 156°00" longitude. See figures 13 and 14.

To distinguish wells within a minute grid, two grids are added following the 4-digit minute-grid numbers with a dash separator. These two-digit numbers are assigned with the oldest well dug within the grid as 01 and increase chronologically, with few exceptions, to the latest dug.

Since it is possible to have a same 6-digit number for wells on different islands, another digit distinguishing each of the islands, is added in front of the 6-digit number with a dash separator.

Well locations on the islands of Kauai, Oahu, Molokai, Maui, and Hawaii are shown in figures 3, 5, 7, 9, and 11, respectively.

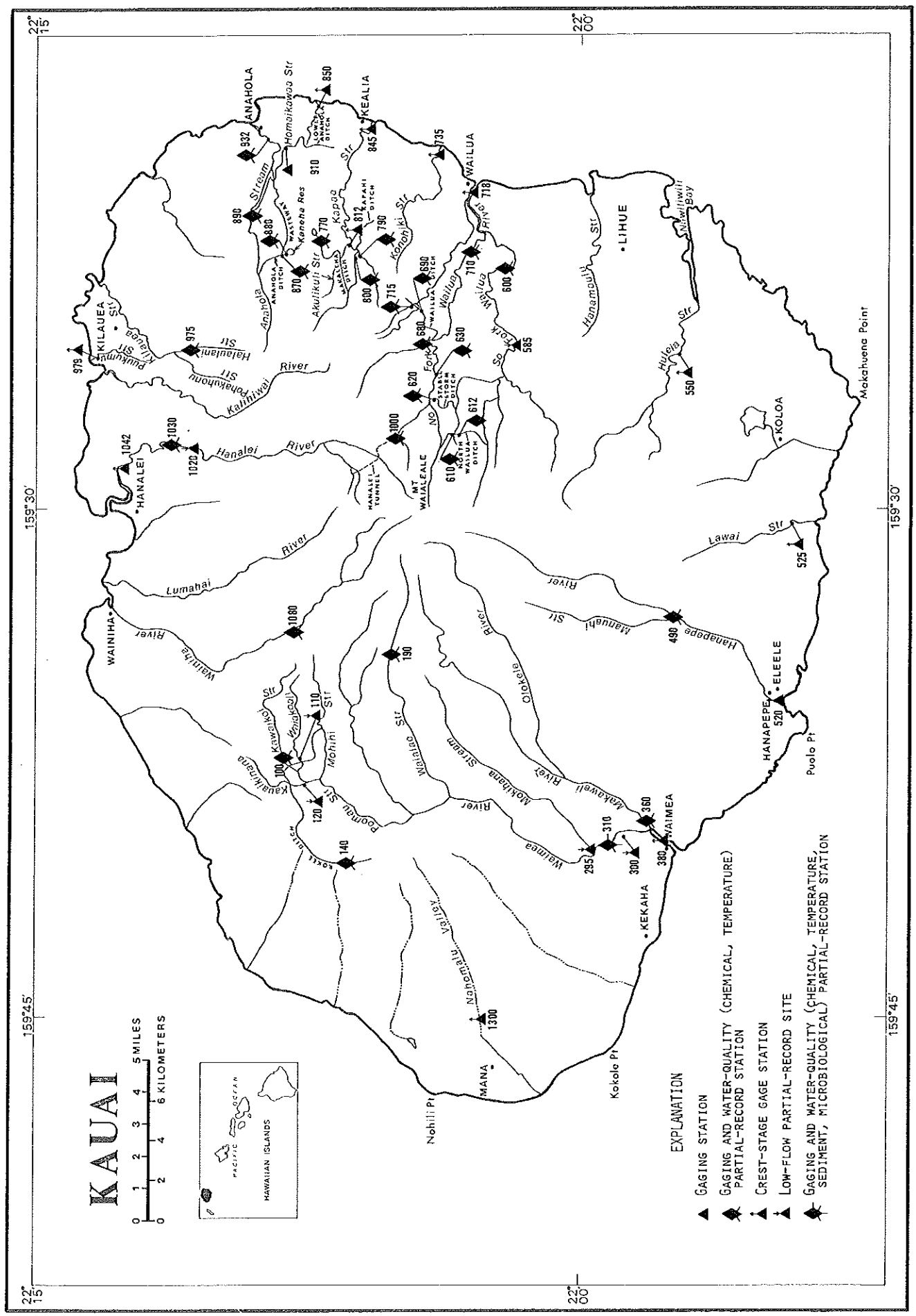

FIGURE 2.--LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS ON KAUAI.

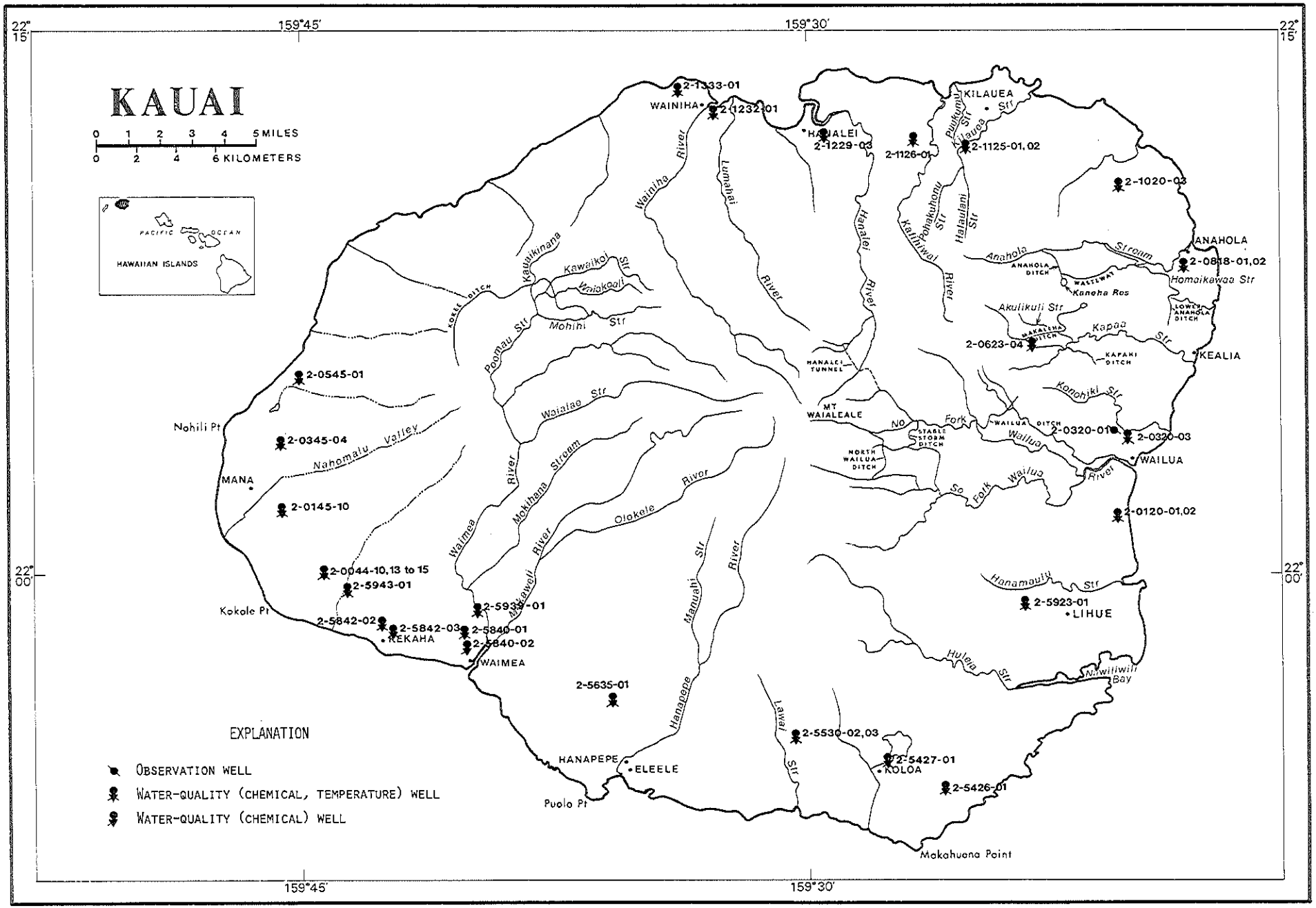

FIGURE 3.--LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES ON KAUAI.

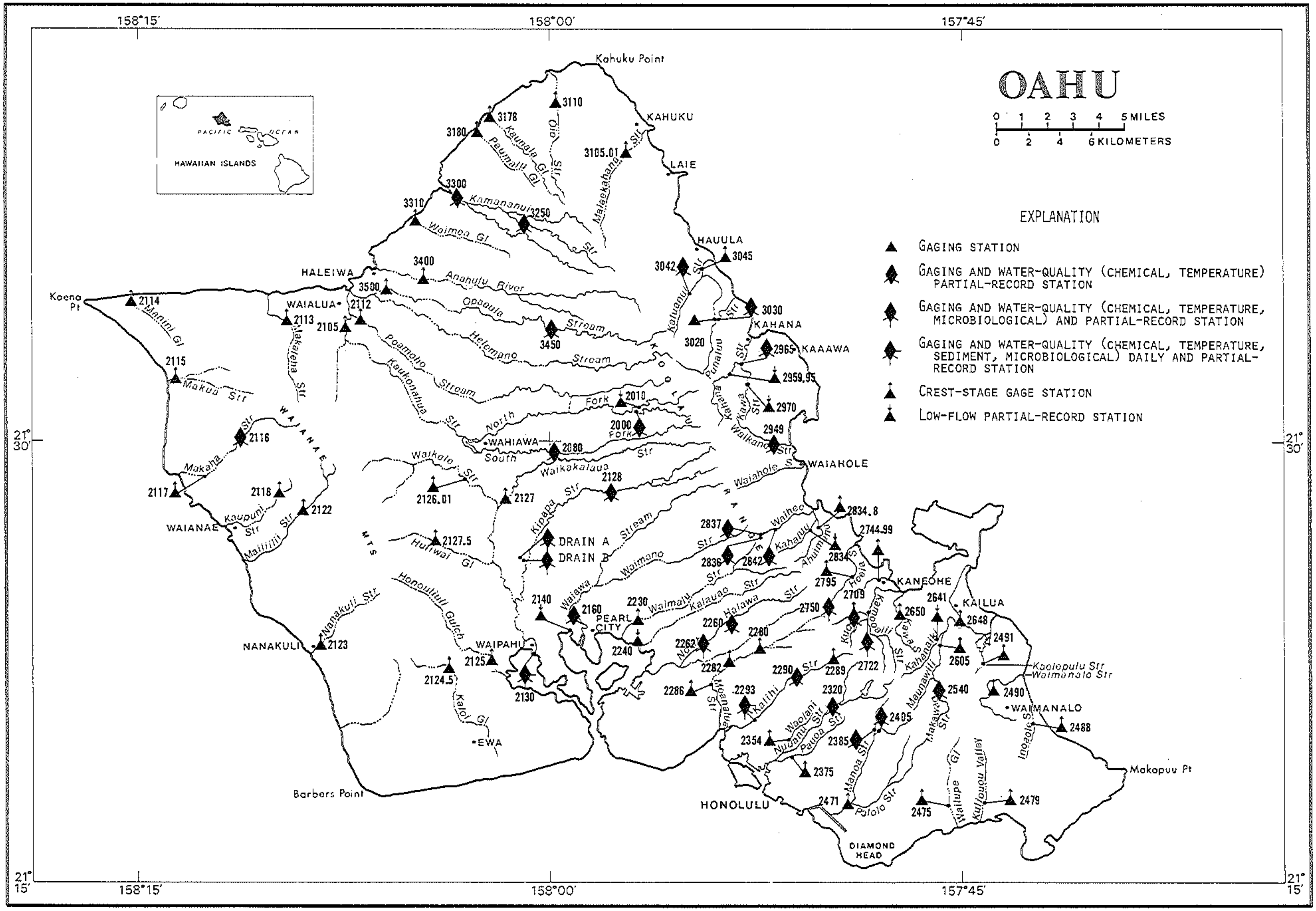

FIGURE 4.--LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS ON OAHU.

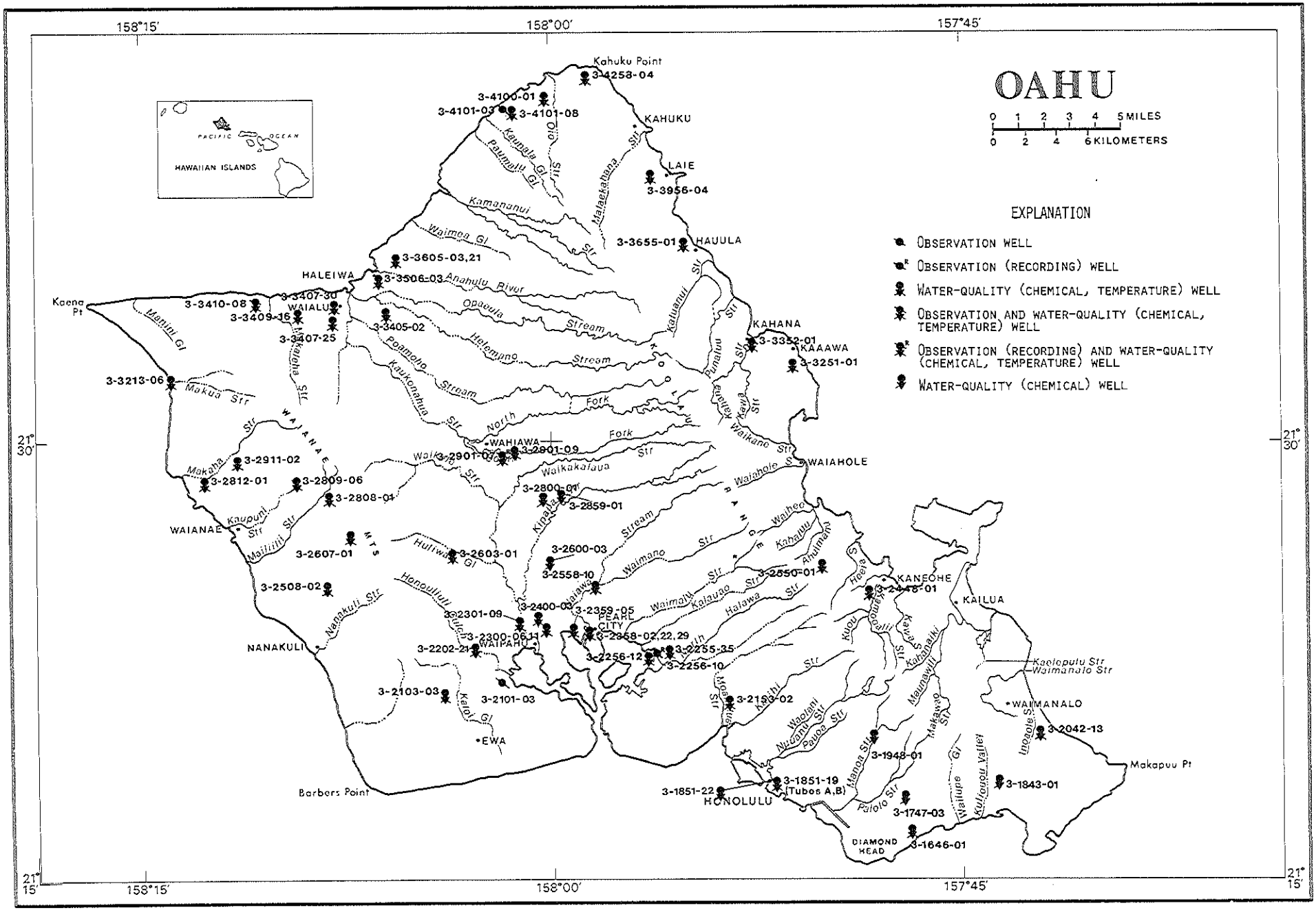

FIGURE 5.--LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES ON OAHU.

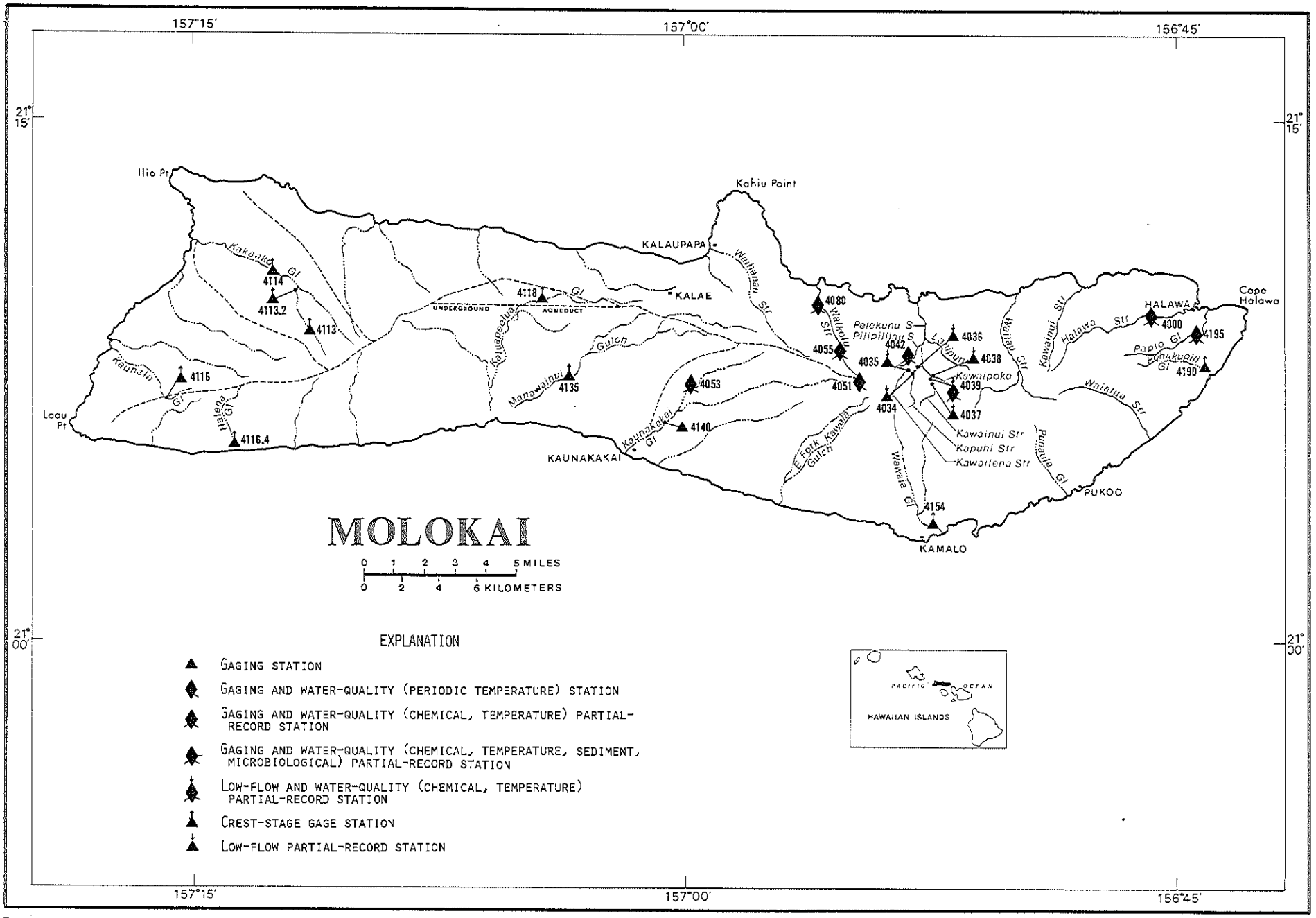

FIGURE 6.--LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS ON MOLOKAI.

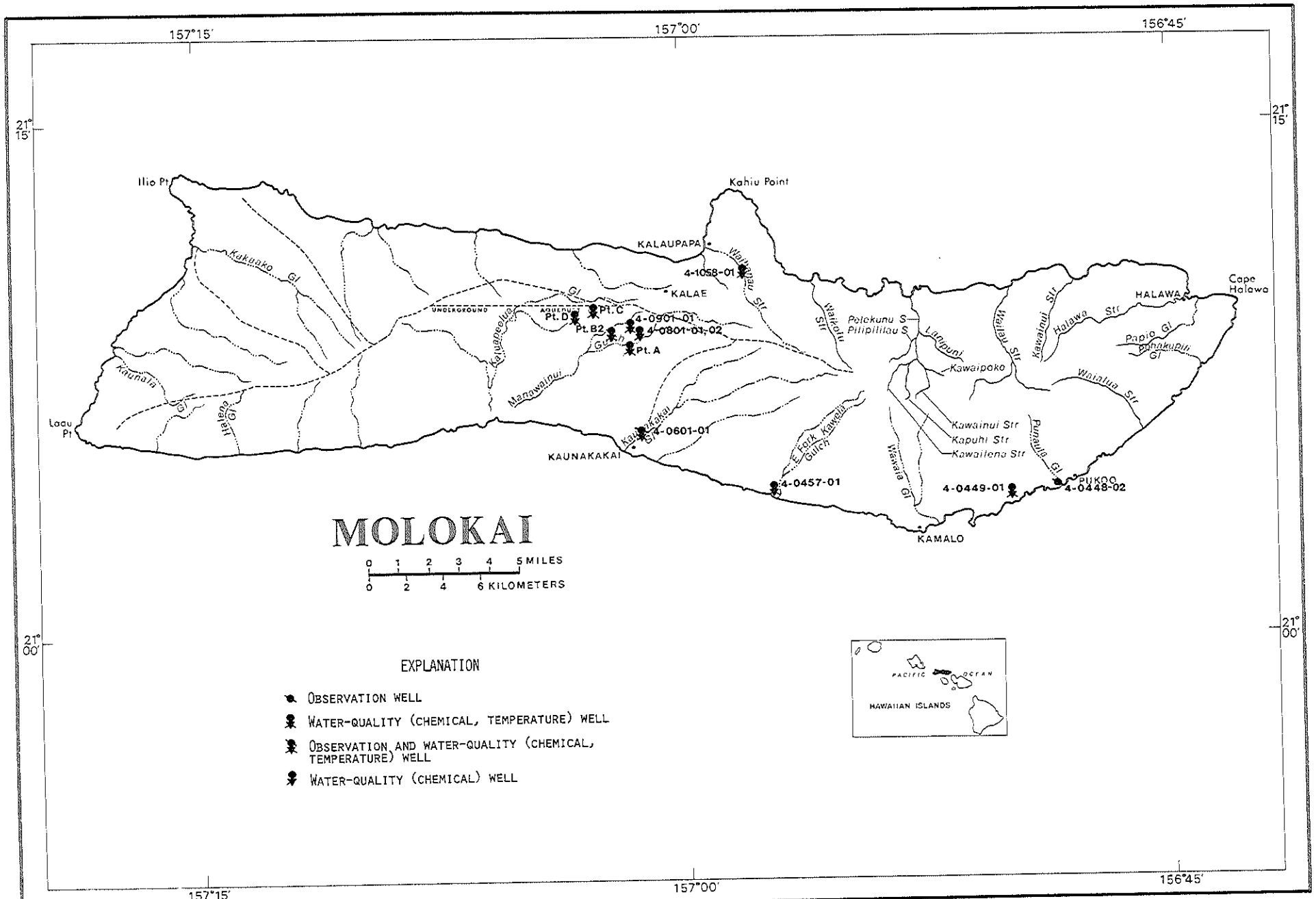

FIGURE 7.--LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES ON MOLOKAI.

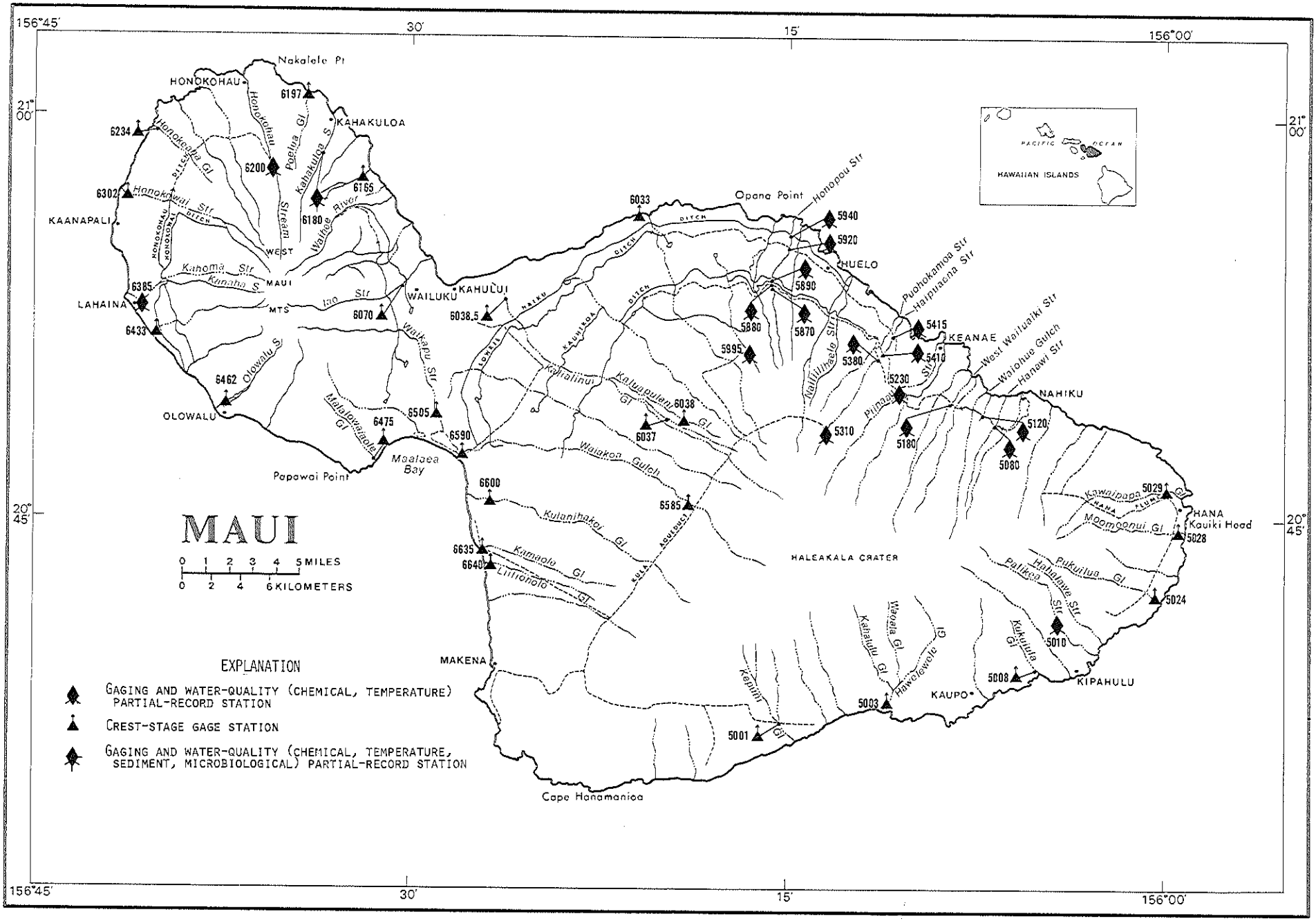

FIGURE 8.--LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS ON MAUI.

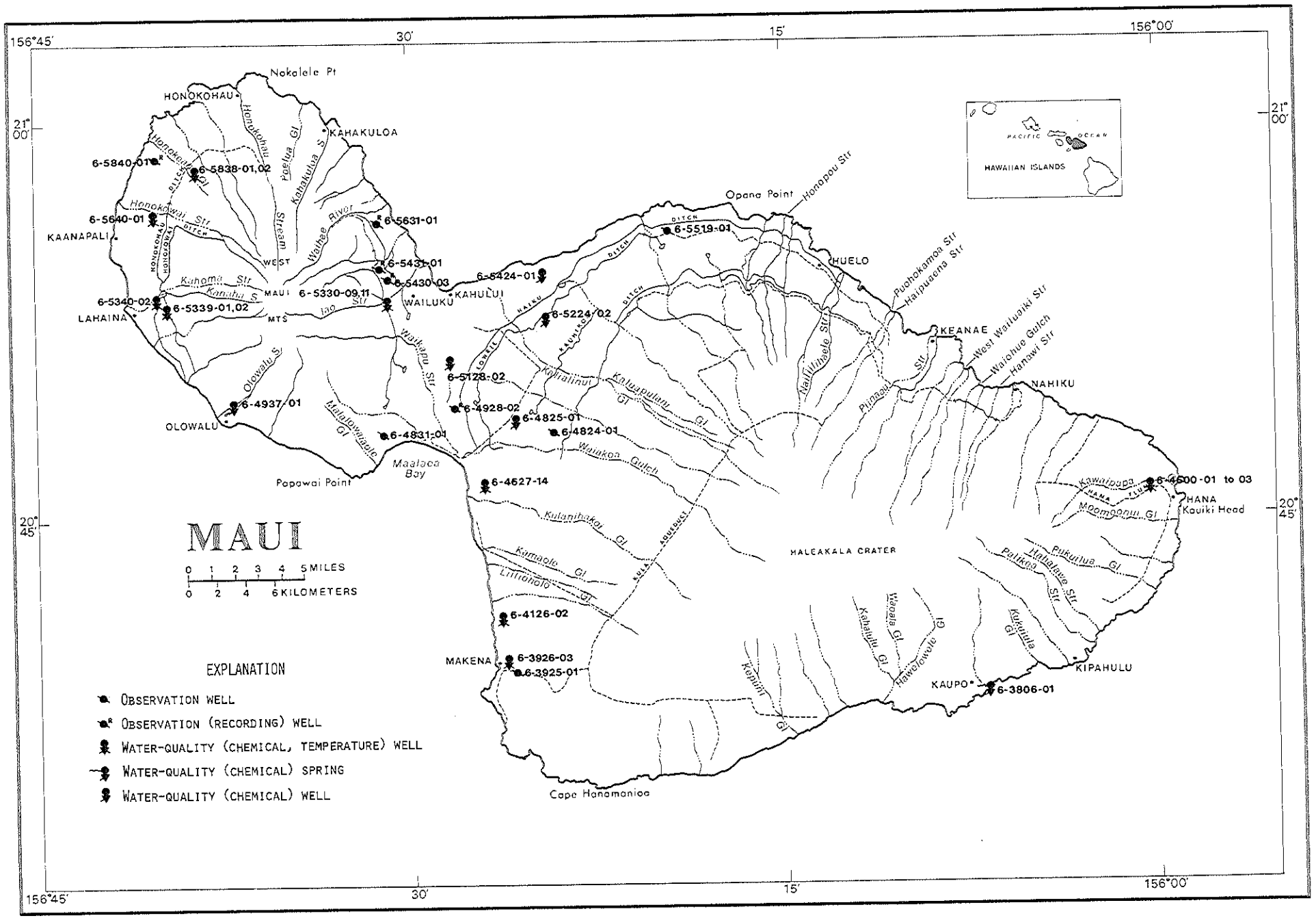

FIGURE 9.--LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES ON MAUI.

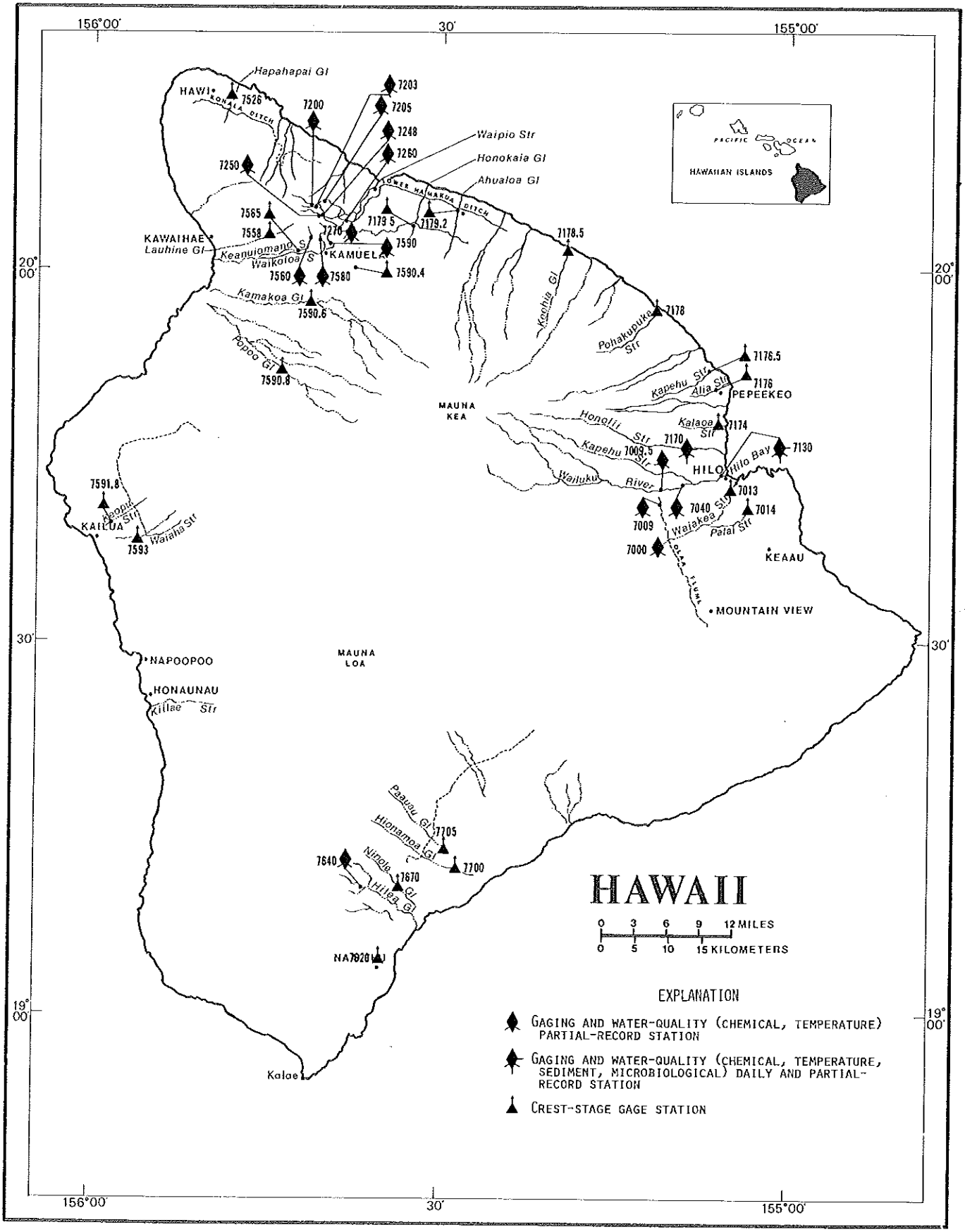

FIGURE 10.--LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS ON HAWAII.

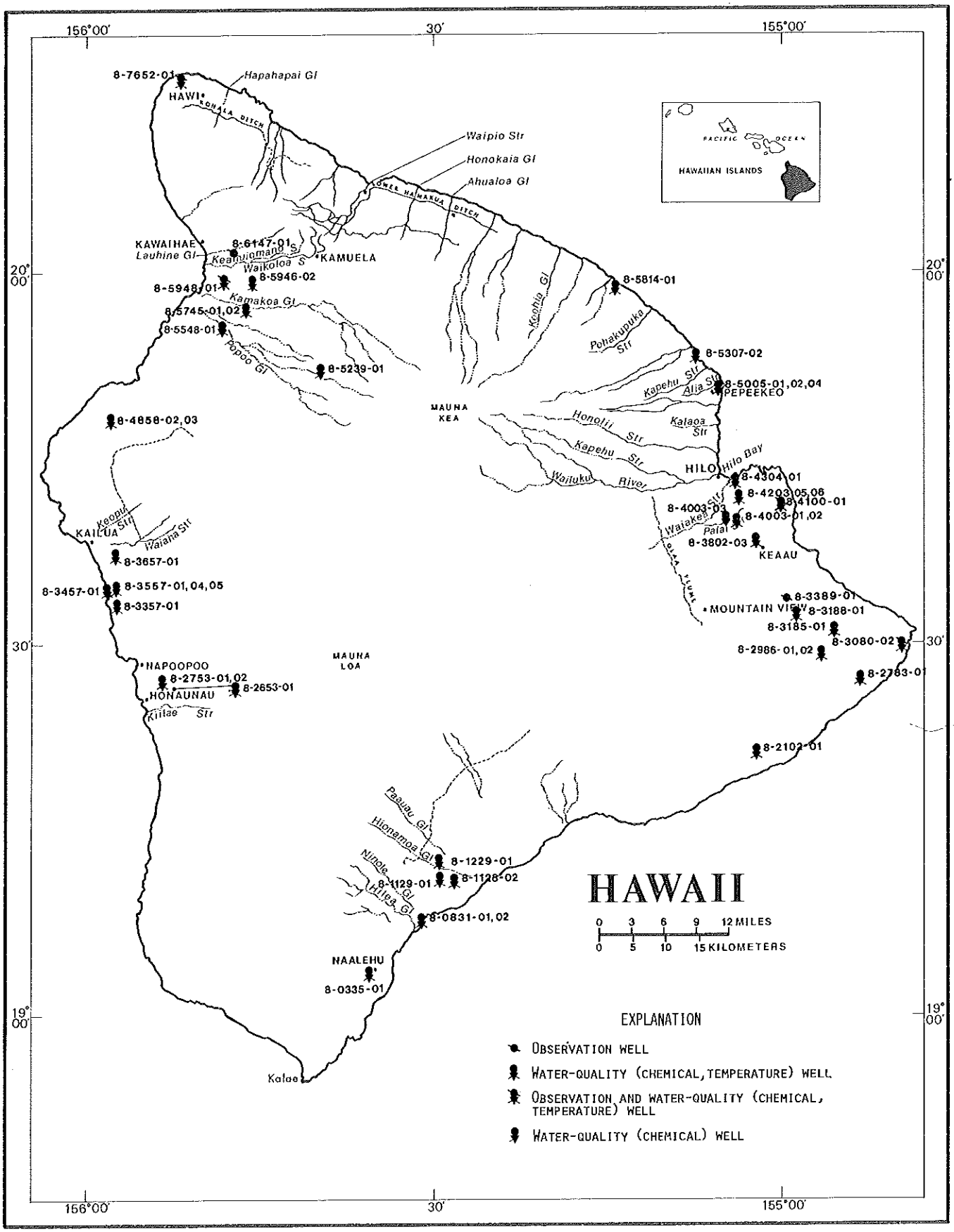

FIGURE 11.--LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES ON HAWAII.

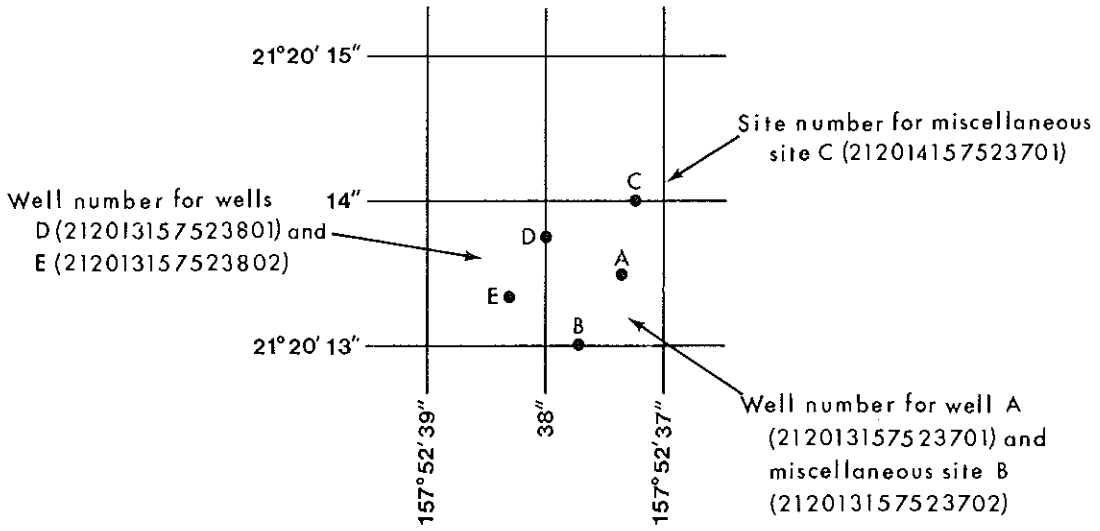

Figure 12. Sketch showing system for numbering wells and miscellaneous sites

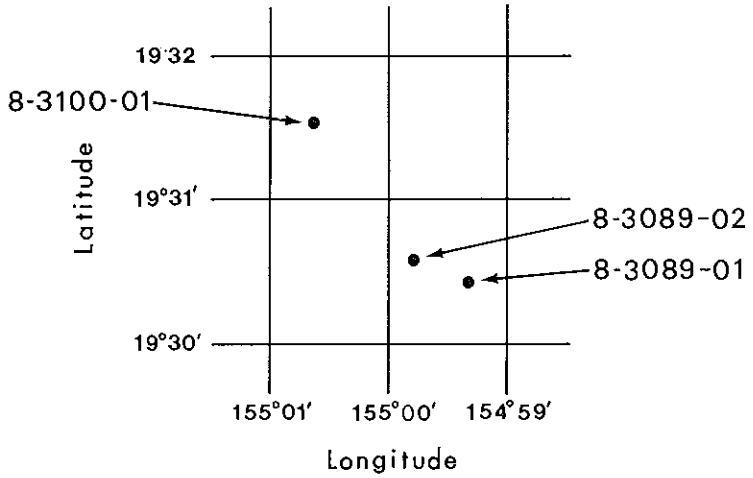

Figure 13. Sketch showing local well numbering system

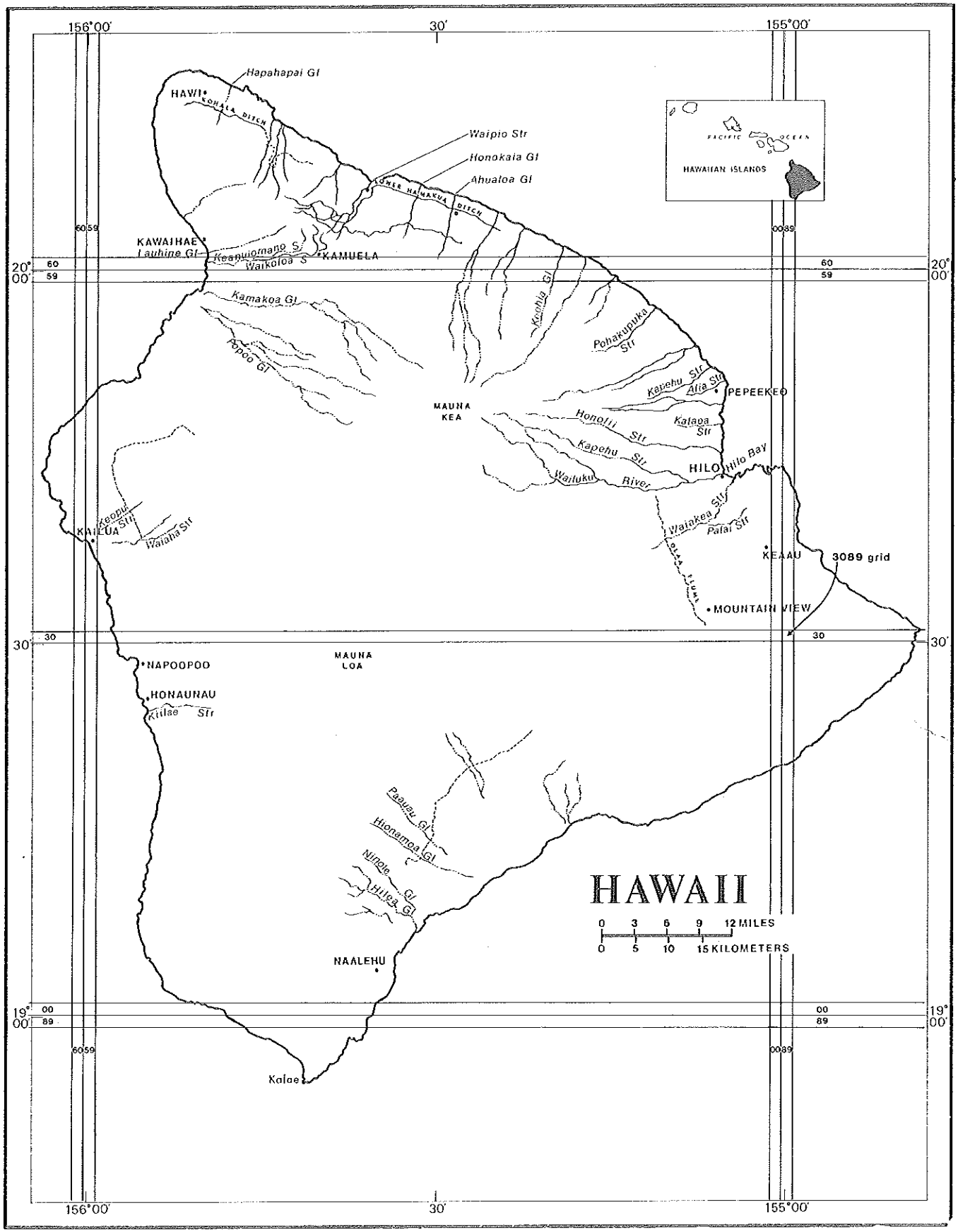

FIGURE 14.--MAP OF HAWAII SHOWING SYSTEM FOR NUMBERING LOCAL WELL NUMBERS.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely to be governed solely by natual conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network is an accounting network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on the river-basin accounting units designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium network is a network of station which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent of continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations, the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to computed daily discharge or contents. This happens when the recorder stop or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations, in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging station on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharge were revised. If the drainage area has been revised, the report in which the revised figures was first published is given.

The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE", it is not given for stations having fewer than 5 complete years of record or for station where changes to water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected.

For most gaging station on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of field data and computed results

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements and (2) the accuracy of observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Records of discharge collected by agencies other than the Geological Survey

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of water-data sites not published by the Geological Survey. Information on records available at specific sites can be obtained upon request.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperature, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

Publications

In each water-supply paper entitled, "Surface Water Supply of the United States" there is a list of numbers of preceding water-supply papers containing streamflow information for the area covered by that report. In addition, there is a list of numbers of water-supply papers containing detailed information on major floods in the area. Records for stations in Hawaii and other Pacific areas for the period October 1959 to September 1965, are in Water-Supply Paper 1937.

Two series of summary reports entitled, "Compilation of Records of Surface Waters of the United States" have been published; the first series covers the entire period of record through September 1950 (June 1950, for Hawaii), and the second series covers the period October 1950 to September 1960 (July 1950 to June 1960, for Hawaii and other Pacific areas). These reports contain summaries of monthly and annual discharge and monthend storage for all previously published records, as well as some record not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical. The yearly summary table for each gaging station lists the numbers of the water-supply papers in which daily records were published for that station. Records for stations in Hawaii and other Pacific areas are compiled in Water-Supply Paper 1319 through June 1950, in 1739 and 1751 for July 1950 to June 1960, in 1937 for October 1959 to September 1965, and 2137 for October 1966 to September 1970.

Special reports on major floods or droughts or of other hydrologic studies for the area have been issued in publications other than water-supply papers. Information relative to these reports may be obtained from the district office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The water-quality records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives periods of record for the various types of water-quality data (chemical, specific conductance, biological determination, water temperatures, sediment discharge), period of record, and extremes of pertinent data, and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water-quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. Large streams have a small diel temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained several verticals in the cross section, or a single or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration time 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

Publications

The annual series of water-supply papers that contain information on quality of surface waters in Hawaii and other Pacific areas are listed below.

Water year	WSP No.	Water year	WSP No.	Water year	WSP No.
1964	1966	1967	2016	1970	2160
1965	1966	1968	2016		
1966	1996	1969	2150		

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitiude and (2) a local number that is provided for local needs. See figure 13.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom). To show the intraday variation in the ground-water levels caused by local pumping and tidal fluctuations, instantaneous maximum and minimum water levels are given with the mean water levels for the day.

Water levels are reportd to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

Publications

Publication of ground-water level data for the United States in Water-Supply Papers was begun by the Geological Survey in 1935. From 1935 through 1939, a single Water-Supply Paper for each year covering the entire nation was issued (Water-Supply Papers 777, 817, 840, 845, and 886). From 1940 through 1974, separate Water-Supply Papers were issued for 6 sections of the United States. Water-level data for Hawaii are in the Water-Supply Papers listed below each report containing one or more calendar years (January-December) of data. Data in this report are for the 12-month water year ending September 30.

Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.
1935	777	1942	949	1949	1161	1956-60	1770
1936	817	1943	991	1950	1170	1961-65	1855
1937	840	1944	1021	1951	1196	1966-70	2010
1938	845	1945	1028	1952	1226	1971-74	2162
1939	886	1946	1076	1953	1270		
1940	911	1947	1101	1954	1326		
1941	941	1948	1131	1955	1409		

ACCESS TO WATSTORE DATA

The National WATer Data STOrage and REtrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's district offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

Thirty-seven manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 604 South Pickett St., Alexandria, VA 22304 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. *Water temperature--influential factors, field measurement, and data presentation,* by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents,* by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.

2-D1. *Application of surface geophysics to ground-water investigations,* by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.

2-E1. *Application of borehole geophysics to water-resources investigations,* by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.

3-A1. *General field and office procedures for indirect discharge measurements,* by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.

3-A2. *Measurement of peak discharge by the slope-area method,* by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.

3-A3. *Measurement of peak discharge at culverts by indirect methods,* by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.

3-A4. *Measurement of peak discharge at width contractions by indirect methods,* by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.

3-A5. *Measurement of peak discharge at dams by indirect methods,* by Harry Hulsing: USGS--TWRI Book 3, Chapter A5, 1967. 29 pages.

3-A6. *General procedure for gaging streams,* by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.

3-A7. *Stage measurements at gaging stations,* by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.

3-A8. *Discharge measurements at gaging stations,* by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.

3-A9. *Measurement of time of travel and dispersion in streams by dye tracing,* by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.

3-A11. *Measurement of discharge by moving-boat method,* by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.

3-B1. *Aquifer-test design, observation, and data analysis,* by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.

3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction,* by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.

3-B3. *Type curves for selected problems of flow to wells in confined aquifers,* by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.

3-C1. *Fluvial sediment concepts,* by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.

3-C2. *Field methods for measurement of fluvial sediment,* by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.

3-C3. *Computation of fluvial-sediment discharge,* by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.

4-A1. *Some statistical tools in hydrology,* by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.

4-A2. *Frequency curves,* by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.

4-B1. *Low-flow investigations,* by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.

4-B2. *Storage analyses for water supply,* by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.

4-B3. *Regional analyses of streamflow characteristics,* by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.

4-D1. *Computation of rate and volume of stream depletion by wells,* by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.

5-A1. *Methods for determination of inorganic substances in water and fluvial sediments,* by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.

5-A2. *Determination of minor elements in water by emission spectroscopy,* by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.

5-A3. *Methods for analysis of organic substances in water,* by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.

5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples,* edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.

5-A5. *Methods for determination of radioactive substances in water and fluvial sediments,* by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.

5-C1. *Laboratory theory and methods for sediment analysis,* by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments,* by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.

7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water,* by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

7-C3. *A model for simulation of flow in singular and interconnected channels,* by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.

8-A1. *Methods of measuring water levels in deep wells,* by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.

8-B2. *Calibration and maintenance of vertical-axis type current meters,* by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

HAWAII, ISLAND OF KAUAI

16010000 KAWAIKOI STREAM NEAR WAIMEA

LOCATION.--Lat 22°08'09", long 159°37'22", Hydrologic Unit 20070000, on left bank 0.2 mi upstream from Kokee-Mohihi Road crossing, 2.5 mi east of Kokee Lodge, and 12.5 mi north of Waimea.

DRAINAGE AREA.--3.95 mi².

PERIOD OF RECORD.--April 1909 to October 1912, December 1912 to March 1913, May 1913 to June 1915, August 1915 to May 1916, July to December 1916, July 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 555: 1920-21. WSP 1185: 1914-17(M), 1920-38(M), 1940-43(M), 1947(M). WSP 1719: 1912, 1921-25, 1927-32, 1936. WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,420 ft, by barometer. Prior to May 26, 1910, nonrecording gage at site 300 ft downstream at different datum.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--66 years (water years 1912, 1914, 1920-83), 34.7 ft³/s (25,140 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft³/s Jan. 13, 1967, gage height, 15.33 ft, from rating curve extended above 470 ft³/s on basis of slope-area measurements at gage heights 12.12 ft and 13.43 ft; minimum, 1.14 ft³/s Sept. 21, 22, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1230	*4370	10.66
Nov. 23	2230	3140	9.38

Minimum discharge, 3.7 ft³/s Apr. 7.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	120	21	19	19	5.3	4.0	75	31	8.1	21	16
2	18	218	29	15	11	5.0	3.9	80	26	7.4	38	17
3	21	482	22	13	9.5	4.8	3.9	85	15	18	283	30
4	11	365	19	12	8.7	4.8	3.8	134	10	56	64	27
5	58	70	14	12	8.1	5.1	3.8	178	8.7	118	85	39
6	18	53	105	11	7.6	7.0	4.0	100	7.9	53	63	21
7	9.2	36	161	10	7.2	7.9	4.2	35	7.4	38	35	78
8	6.8	25	42	10	7.0	6.4	12	33	7.4	120	22	82
9	6.0	20	27	12	7.4	5.1	6.8	20	7.4	36	18	44
10	6.0	17	20	58	8.1	4.8	8.7	16	8.7	107	16	17
11	6.2	15	17	203	7.0	9.2	8.1	13	16	75	15	12
12	9.2	14	139	55	6.8	38	7.4	12	17	38	50	13
13	14	21	133	19	8.7	9.2	12	10	11	53	20	16
14	8.1	18	145	18	7.0	66	24	10	7.9	101	14	13
15	6.0	14	42	15	6.4	17	7.4	9.2	7.2	53	12	27
16	5.3	12	38	12	12	9.0	5.0	8.7	65	89	24	14
17	5.1	11	31	11	8.4	8.4	20	8.1	30	30	22	19
18	9.2	9.6	171	10	6.6	7.9	33	7.9	22	57	14	15
19	14	8.8	51	9.8	6.0	6.6	54	7.4	39	41	15	10
20	7.0	23	29	9.5	5.6	6.0	35	145	22	25	12	12
21	6.2	45	44	9.0	5.4	5.4	42	38	25	20	10	14
22	16	17	50	10	15	5.1	70	17	25	16	9.5	24
23	14	691	177	14	7.4	5.1	15	45	15	15	9.0	17
24	7.4	383	43	9.8	6.0	5.0	38	45	35	14	8.1	32
25	5.6	48	34	51	5.4	4.8	27	51	41	17	8.1	32
26	32	32	28	14	5.4	4.5	47	46	19	14	8.1	16
27	32	43	35	15	5.3	4.5	126	19	13	12	9.8	9.8
28	136	24	35	13	5.8	4.3	150	14	11	10	9.2	9.2
29	415	18	24	12	---	4.2	65	12	11	37	10	9.2
30	491	16	19	16	---	4.2	56	10	9.2	38	15	11
31	119	---	25	66	---	4.0	---	9.2	---	25	17	---
TOTAL	1537.3	2869.4	1770	764.1	223.8	284.6	897.0	1293.5	570.8	1341.5	956.8	696.2
MEAN	49.6	95.6	57.1	24.6	7.99	9.18	29.9	41.7	19.0	43.3	30.9	23.2
MAX	491	691	177	203	19	66	150	178	65	120	283	82
MIN	5.1	8.8	14	9.0	5.3	4.0	3.8	7.4	7.2	7.4	8.1	9.2
AC-FT	3050	5690	3510	1520	444	565	1780	2570	1130	2660	1900	1380

CAL YR 1982	TOTAL	20947.3	MEAN	57.4	MAX	691	MIN	4.8	AC-FT	41550
WTR YR 1983	TOTAL	13205.0	MEAN	36.2	MAX	691	MIN	3.8	AC-FT	26190

16014000 KOKEE DITCH NEAR WAIMEA

LOCATION.--Lat 22°06'42", long 159°40'43", Hydrologic Unit 20070000, on left bank 0.3 mi west of Highway 55, 1.9 mi south of Kokee Lodge, and 10.5 mi north of Waimea.

PERIOD OF RECORD.--September 1926 to December 1982 (discontinued).

GAGE.--Water-stage recorder and suppressed weir. Altitude of gage is 3,310 ft, by barometer. Prior to July 1, 1962, at datum 0.07 ft higher.

REMARKS.--Records good. Ditch diverts at altitude 3,400 ft from Mohihi Stream and all streams west which are tributary to Waimea River, for irrigation in vicinity of Kekaha. Records do not include waste water diverted at times at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--56 years, 24.7 ft³/s (17,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 105 ft³/s Dec. 2, 1929, Mar. 4, 1934; no flow at times.

EXTREMES FOR PERIOD OCTOBER TO DECEMBER.--Maximum daily discharge, 86 ft³/s Oct. 29; no flow for several days in November.

DISCHARGE (CUBIC FEET/SECOND) OCTOBER TO DECEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	PEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	48	8.6									
2	25	50	13									
3	28	27	13									
4	17	37	12									
5	35	34	13									
6	28	29	14									
7	15	13	26									
8	11	35	31									
9	10	48	28									
10	9.8	45	27									
11	10	41	25									
12	12	38	25									
13	18	43	24									
14	13	40	23									
15	9.5	36	22									
16	8.2	31	20									
17	7.8	30	26									
18	9.5	28	57									
19	17	26	59									
20	10	38	51									
21	8.7	57	52									
22	16	36	30									
23	18	10	22									
24	11	.00	12									
25	8.5	.00	8.5									
26	11	.00	3.2									
27	47	.00	12									
28	54	.00	17									
29	86	.00	8.0									
30	55	.00	19									
31	21	---	30									
TOTAL	656.0	820.00	731.3									
MEAN	21.2	27.3	23.6									
MAX	86	57	59									
MIN	7.8	.00	3.2									
AC-FT	1300	1630	1450									

CAL YR 1982 TOTAL 10525.60 MEAN 28.8 MAX 86 MIN .00 AC-FT 20880

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA

LOCATION.--Lat 22°05'20", long 159°34'18", Hydrologic Unit 20070000, on left bank 5.0 mi northeast of mouth, 6.4 mi southeast of Kokee Lodge, and 11 mi northeast of Waimea.

DRAINAGE AREA.--1.79 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1920 to July 1932, June 1952 to current year. Prior to July 1954, published as Waialae River at altitude 3,700 ft near Waimea.

REVISED RECORDS.--WSP 1937: 1921, 1922-32(M), 1953(M), 1954. WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,820 ft, from topographic map.

REMARKS.--Records good. No diversion above station.

AVERAGE DISCHARGE.--42 years (water years 1921-31, 1953-83), 22.4 ft³/s (16,230 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,530 ft³/s Jan. 16, 1921, gage height, 8.44 ft, from rating curve extended above 1,100 ft³/s on basis of slope-area measurement at gage height 4.60 ft; minimum, 0.99 ft³/s May 17, 18, May 30 to June 2, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1300	*3210	7.07
Nov. 23	2200	2730	6.51

Minimum discharge, 1.7 ft³/s Apr. 3-5.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	135	81	5.5	4.8	1.8	1.8	14	11	4.2	15	12
2	15	50	34	5.0	3.5	1.8	1.8	43	11	3.5	11	6.4
3	17	224	21	4.8	3.0	1.8	1.7	31	5.5	5.2	185	8.4
4	10	291	12	4.5	2.8	2.0	1.7	64	4.0	25	65	6.0
5	30	92	10	4.0	2.8	5.9	2.0	86	7.7	47	39	5.2
6	17	112	18	3.8	2.4	12	2.4	70	6.8	20	32	4.5
7	9.6	34	11	3.5	2.4	14	12	14	4.5	24	14	32
8	6.4	15	11	4.2	2.4	5.5	5.8	11	4.0	100	16	55
9	5.2	11	9.6	13	2.8	3.4	3.4	8.0	4.2	15	12	26
10	6.4	9.2	7.6	23	2.6	2.8	2.3	6.0	4.8	105	8.4	11
11	12	7.2	6.8	28	2.4	21	2.2	5.2	6.4	45	8.8	7.6
12	12	7.2	46	24	2.4	20	2.0	4.2	9.2	51	226	8.4
13	12	8.0	39	8.0	2.6	6.0	14	3.8	5.5	53	20	8.8
14	8.0	8.4	51	6.4	2.3	24	43	6.4	4.0	94	12	7.6
15	5.0	7.2	14	5.2	2.3	9.2	5.5	6.0	4.1	24	8.8	8.4
16	4.5	6.4	8.8	4.2	2.4	4.8	3.4	4.8	33	36	28	6.4
17	11	6.0	8.0	4.0	2.3	4.0	8.8	4.0	18	18	22	97
18	12	5.0	61	3.5	2.2	3.5	14	3.5	14	18	12	16
19	8.4	4.2	23	3.4	2.2	3.0	15	4.0	16	24	8.8	8.8
20	5.2	5.2	11	3.2	2.0	2.8	15	13	12	13	7.2	6.8
21	4.5	16	12	3.2	2.0	2.6	24	9.2	9.6	8.8	6.0	6.4
22	4.2	9.6	14	3.0	2.2	2.4	45	5.5	15	7.2	5.8	8.4
23	4.8	700	190	3.2	2.0	2.4	19	4.5	8.8	6.0	5.2	8.0
24	4.2	165	21	2.9	1.9	2.9	12	5.2	12	5.8	5.0	6.8
25	3.5	21	11	3.5	2.0	2.9	12	7.6	12	5.2	6.0	6.4
26	24	12	9.2	2.9	2.0	2.8	17	14	9.6	5.0	8.8	5.8
27	32	11	16	3.2	1.9	2.4	42	6.4	7.2	4.8	13	5.5
28	93	8.8	14	2.9	1.8	2.2	65	4.2	6.4	4.2	8.0	13
29	345	7.2	9.2	2.9	---	1.9	36	3.5	6.8	15	6.0	10
30	568	6.4	7.2	2.9	---	1.9	14	3.2	5.2	31	5.8	11
31	148	---	6.4	4.8	---	1.8	---	3.2	---	33	8.4	---
TOTAL	1457.9	1995.0	793.8	196.6	68.4	175.5	443.8	468.4	278.3	850.9	829.0	423.6
MEAN	47.0	66.5	25.6	6.34	2.44	5.66	14.8	15.1	9.28	27.4	26.7	14.1
MAX	568	700	190	28	4.8	24	65	86	33	105	226	97
MIN	3.5	4.2	6.4	2.9	1.8	1.8	1.7	3.2	4.0	3.5	5.0	4.5
AC-FT	2890	3960	1570	390	136	348	880	929	552	1690	1640	840

CAL YR 1982	TOTAL	14444.9	MEAN	39.6	MAX	700	MIN	2.3	AC-FT	28650
WTR YR 1983	TOTAL	7981.2	MEAN	21.9	MAX	700	MIN	1.7	AC-FT	15830

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO
OCT												
07...	1000	9.6	27	5.5	16.0	6	0	1.1	.8	2.9	49	.5
DEC												
16...	1045	9.0	31	5.5	14.0	5	0	.8	.7	3.5	59	.7
MAR												
18...	0910	3.5	42	6.1	13.0	9	0	1.3	1.3	4.4	51	.7
MAY												
19...	0945	4.0	36	7.1	16.0	8	1	1.3	1.1	4.5	53	.7
AUG												
24...	1025	4.6	30	7.3	16.0	5	0	.8	.8	3.8	54	.7

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)
OCT										
07...	.5	7.0	--	5.3	<.10	3.1	--	--	<.10	<.010
DEC										
16...	.4	8.0	<5.0	7.2	<.10	4.3	31	.04	<.10	.040
MAR										
18...	.5	9.0	7.6	9.0	<.10	4.4	34	.05	<.10	.020
MAY										
19...	.6	7.0	8.6	7.3	<.10	5.7	34	.05	<.10	--
AUG										
24...	1.6	8.0	8.8	7.6	<.10	5.6	34	.05	<.10	--

DATE	TIME	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
OCT			
07...	1000	430	8
DEC			
16...	1045	190	7
MAR			
18...	0910	210	7
MAY			
19...	0945	280	6
AUG			
24...	1025	260	2

< Actual value is known to be less than the value shown.

16031000 WAIMEA RIVER NEAR WAIMEA
(National stream-quality accounting network station)

LOCATION.--Lat 21°59'02", long 159°39'47", Hydrologic Unit 20070000, on right bank 1.3 mi upstream from Makaweli River and 1.9 mi north of Waimea Post Office.

DRAINAGE AREA.--57.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1910 to June 1918, July to October 1919, November 1943 to September 1968, October 1969 to September 1972 (discontinued as a continuous-record station, converted to a crest-stage partial-record station October 1972 to April 1975), May 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 20.0 ft above mean sea level (Department of Water, County of Kauai bench mark). Prior to Oct. 5, 1911, nonrecording gage at site 1.0 mi downstream at different datum. Oct. 5, 1911, to Oct. 31, 1919, nonrecording gage at present site at different datum. Oct. 1, 1972, to Apr. 30, 1975, at site 60 ft streamward at same datum.

REMARKS.--Records fair. Several upstream diversions for power and irrigation.

AVERAGE DISCHARGE.--42 years (water years 1911-17, 1945-68, 1970-72, 1976-83), 130 ft³/s (94,180 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,100 ft³/s Feb. 7, 1949, gage height, 19.3 ft, from rating curve extended above 5,200 ft³/s on basis of slope-area measurements at gage heights 10.28 ft and 18.7 ft; practically no flow occasionally owing to upstream diversions.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 19, 1974, which destroyed the station reached a stage of 19.05 ft, from floodmarks, discharge, 29,100 ft³/s, from rating curve extended above 2,200 ft³/s on basis of slope-area measurement at gage height 19.05 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,700 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1400	*24060	17.52
Nov. 23	2300	19080	15.63

Minimum discharge, 4.3 ft³/s Oct. 22.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	1820	323	100	52	10	11	52	9.0	11	31	12
2	26	760	362	94	28	10	10	134	31	10	19	13
3	15	1610	270	90	24	10	10	131	21	10	454	10
4	13	1560	222	85	24	11	10	219	12	19	326	11
5	30	520	188	82	21	25	10	255	10	155	146	13
6	80	435	323	64	15	69	10	295	13	65	83	16
7	29	288	456	43	14	76	10	67	12	46	46	27
8	13	190	267	43	14	41	15	38	10	262	24	225
9	8.3	147	190	48	14	21	12	28	9.0	65	26	66
10	7.2	117	153	125	16	15	11	17	8.7	156	15	31
11	7.5	94	133	198	13	21	10	13	10	193	11	15
12	15	83	123	264	13	149	9.3	11	13	92	328	11
13	20	77	170	72	13	53	9.3	9.3	14	91	82	11
14	15	73	460	51	13	125	123	9.0	11	223	26	48
15	9.0	65	200	44	12	98	31	9.3	9.3	123	15	11
16	7.2	60	151	38	13	38	13	10	57	106	10	18
17	6.4	59	137	32	14	23	10	9.0	43	73	57	96
18	12	53	366	28	12	17	30	8.3	50	34	29	62
19	19	50	233	26	11	15	32	8.3	31	132	14	18
20	11	50	115	26	11	13	62	61	28	46	10	11
21	6.6	62	82	26	11	12	28	67	20	32	9.3	10
22	5.3	98	115	26	12	12	158	20	17	24	8.7	10
23	5.6	4010	1090	26	12	12	53	12	24	12	8.3	11
24	6.4	2830	326	27	11	11	39	16	14	10	8.0	12
25	6.1	538	185	48	11	11	27	20	21	9.6	7.7	20
26	9.6	326	143	35	11	11	29	92	20	9.6	8.7	13
27	178	260	160	26	11	11	210	33	17	9.0	11	10
28	338	195	170	24	11	11	230	15	13	8.3	16	9.3
29	3220	158	139	26	---	11	185	11	11	8.0	11	24
30	5180	147	119	26	---	11	56	9.3	12	44	9.0	13
31	1600	---	107	39	---	10	---	9.0	---	65	8.7	---
TOTAL	10908.5	16735	7478	1882	437	963	1453.6	1688.5	571.0	2143.5	1858.4	857.3
MEAN	352	558	241	60.7	15.6	31.1	48.5	54.5	19.0	69.1	59.9	28.6
MAX	5180	4010	1090	264	52	149	230	295	57	262	454	225
MIN	5.3	50	82	24	11	10	9.3	8.3	8.7	8.0	7.7	9.3
AC-FT	21640	33190	14830	3730	867	1910	2880	3350	1130	4250	3690	1700

CAL YR 1982	TOTAL	116368.8	MEAN	319	MAX	5420	MIN	5.3	AC-FT	230800
WTR YR 1983	TOTAL	46975.8	MEAN	129	MAX	5180	MIN	5.3	AC-FT	93180

16031000 WAIMEA RIVER NEAR WAIMEA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971-74, November 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT											
12...	1345	21	140	7.6	25.0	1.0	9.2	111	250	320	56
DEC											
07...	1115	500	60	6.9	16.5	8.0	9.8	100	--	--	17
15...	1115	191	67	7.4	19.0	3.5	9.8	105	190	3400	21
FEB											
14...	1315	12	160	7.1	21.5	.80	9.2	104	150	350	61
APR											
04...	1145	10	170	7.9	23.5	1.0	9.2	108	140	160	66
JUN											
06...	1115	12	170	7.8	24.5	1.3	9.3	111	460	1300	66
AUG											
01...	1130	35	105	7.8	23.5	2.5	9.0	105	280	1900	38

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT										
12...	0	7.4	9.1	8.5	24	.5	.9	58	<5.0	10
DEC										
07...	2	2.4	2.7	5.4	40	.6	.4	15	5.7	9.6
15...	0	3.0	3.2	5.4	36	.5	.4	21	7.0	9.3
FEB										
14...	0	8.2	9.9	10	26	.6	.9	65	3.3	16
APR										
04...	0	8.3	11	11	26	.6	.8	73	3.2	13
JUN										
06...	0	8.2	11	9.3	23	.5	.7	70	3.3	13
AUG										
01...	0	4.9	6.2	6.2	26	.4	.5	40	6.3	8.4

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT											
12...	<.10	25	92	--	.13	<.10	.070	.70	.040	.040	<.010
DEC											
07...	<.10	11	44	46	.06	.11	<.060	1.20	.030	.010	<.010
15...	<.10	12	55	53	.08	<.10	<.060	.40	.030	.020	<.010
FEB											
14...	.10	23	98	111	.13	<.10	.100	.50	.030	.030	.020
APR											
04...	<.10	25	99	116	.13	<.10	<.060	.40	.010	.010	.020
JUN											
06...	<.10	25	105	112	.14	<.10	<.060	.70	.020	.010	<.010
AUG											
01...	<.10	19	79	76	.11	<.10	.020	.80	.030	.020	.020

< Actual value is known to be less than the value shown.

HAWAII, ISLAND OF KAUAI

16031000 WAIMEA RIVER NEAR WAIMEA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT 12...	1345	30	<1	11	2	<1	<1	<3	<1	52	<1
FEB 14...	1315	20	2	12	1	<1	<1	<3	4	87	<1
APR 04...	1145	10	1	12	<1	<1	<1	<3	2	91	<1
AUG 01...	1130	70	1	11	<1	<1	<1	<3	2	180	3

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT 12...	5	10	.1	<10	<1	<1	<1	46	<6.0	<3
FEB 14...	10	22	--	<10	<1	<1	<1	52	<6.0	14
APR 04...	10	26	.1	<10	1	<1	<1	54	<6.0	9
AUG 01...	11	15	<.1	<10	<1	<1	<1	30	<6.0	4

DATE	TIME	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 12...	1345	2	.11	100
DEC 15...	1115	4	2.1	100
FEB 14...	1315	1	.03	100
APR 04...	1145	1	.03	100
JUN 06...	1115	1	.03	100
AUG 01...	1130	6	.57	100

< Actual value is known to be less than the value shown.

16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°02'24", long 159°22'58", Hydrologic Unit 20070000, on right bank 0.2 mi upstream from Wailua Falls and 4.3 mi north of Lihue.

DRAINAGE AREA.--22.4 mi².

PERIOD OF RECORD.--December 1911 to April 1919, June 1919 to March 1921, May 1921 to June 1957, August, September 1957, November 1957 to February 1958, June 1958 to current year. Monthly discharge only for some periods, published in WSP 1319. Published as "above Waiehu Falls, near Lihue" 1912-13.

REVISED RECORDS.--WSP 1249: 1941-47(M), 1948-51(P). WSP 1719: 1943-49. WSP 1937: 1958-60.

GAGE.--Water-stage recorder. Altitude of gage is 240 ft, from topographic map. Prior to Nov. 18, 1918, at site 0.3 mi upstream at different datum. Nov. 18, 1918, to June 30, 1957, at site 10 ft downstream from present site at datum 2.50 ft higher and July 1, 1957, to June 23, 1958, at present datum.

REMARKS.--Records good. Lihue and Hanamaulu ditches divert upstream for irrigation of sugarcane in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--66 years (water years 1913-18, 1920, 1922-24, 1926-56, 1959-83), 117 ft³/s (84,770 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,300 ft³/s Apr. 15, 1963, gage height, 22.90 ft, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.69 ft³/s Sept. 21, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,800 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1500	*28870	18.93
Nov. 23	2300	10920	16.13

Minimum discharge, 3.5 ft³/s Apr. 3.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	846	256	58	12	9.4	3.8	5.3	13	8.3	54	22
2	80	437	160	57	11	9.4	3.8	40	20	15	29	16
3	63	763	161	67	8.0	8.6	4.3	32	19	34	334	19
4	70	1150	123	68	6.4	8.6	4.5	165	12	120	433	16
5	120	576	110	59	6.2	9.7	10	303	34	134	239	17
6	171	664	104	59	6.2	49	5.1	186	27	26	158	12
7	117	382	87	52	6.2	15	4.9	64	18	18	118	30
8	70	252	83	70	6.2	9.1	23	117	12	173	101	149
9	78	194	81	60	5.8	12	5.3	31	12	44	33	70
10	111	132	61	64	6.2	8.3	4.2	13	12	346	58	28
11	98	94	32	76	6.2	7.4	4.2	7.2	12	171	43	18
12	121	92	42	131	7.2	7.7	4.2	13	11	309	163	16
13	86	80	45	53	7.2	7.7	7.8	5.8	10	222	52	16
14	54	90	51	44	6.9	6.6	58	8.8	8.0	320	27	14
15	48	86	42	39	6.6	7.2	6.4	8.2	7.7	182	20	11
16	70	82	39	37	6.0	6.2	4.2	5.3	40	192	26	12
17	126	88	39	36	5.6	6.0	12	4.7	16	120	82	101
18	219	76	48	34	5.6	6.0	25	15	18	102	52	68
19	141	66	43	32	6.4	5.6	6.0	54	11	193	41	19
20	70	86	34	28	6.0	5.3	27	81	10	111	30	11
21	59	346	32	20	6.6	5.3	6.2	28	9.7	64	23	8.0
22	54	146	71	20	6.9	5.3	39	14	13	46	40	10
23	59	2100	1200	20	6.9	5.1	122	10	10	31	103	16
24	52	796	221	20	7.2	4.7	45	8.8	11	26	95	8.0
25	47	224	125	19	8.8	6.0	31	7.4	11	26	155	6.9
26	175	159	108	18	8.8	4.9	7.7	10	24	17	58	6.9
27	196	142	118	20	8.3	4.5	18	7.7	17	9.7	47	18
28	271	118	87	18	8.6	4.3	20	6.4	11	7.4	34	208
29	1920	113	63	12	---	4.2	27	4.7	11	22	30	163
30	4420	103	80	12	---	4.0	6.4	4.3	8.8	100	51	97
31	1270	---	72	12	---	3.8	---	5.1	---	133	28	---
TOTAL	10523	10483	3818	1315	200.0	256.9	546.0	1265.7	449.2	3322.4	2757	1206.8
MEAN	339	349	123	42.4	7.14	8.29	18.2	40.8	15.0	107	88.9	40.2
MAX	4420	2100	1200	131	12	49	122	303	40	346	433	208
MIN	47	66	32	12	5.6	3.8	3.8	4.3	7.7	7.4	20	6.9
AC-FT	20870	20790	7570	2610	397	510	1080	2510	891	6590	5470	2390

CAL YR 1982	TOTAL	107024	MEAN	293	MAX	4480	MIN	11	AC-FT	212300
WTR YR 1983	TOTAL	36143.0	MEAN	99.0	MAX	4420	MIN	3.8	AC-FT	71690

16061000 NORTH WAILUA DITCH NEAR LIHUE

LOCATION.--Lat 22°03'56", long 159°28'14", Hydrologic Unit 20070000, on left bank 300 ft downstream from intake, 7.9 mi west of Wailua House Lots, and 8.8 mi northwest of Lihue.

PERIOD OF RECORD.--July 1932 to current year.

REVISED RECORDS.--WSP 770: 1933.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,105.45 ft above mean sea level (levels by Lihue Plantation Co.).

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for power and irrigation in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--51 years, 18.7 ft³/s (13,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 59 ft³/s Dec. 21, 1933, Apr. 24, 1934; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 37 ft³/s Oct. 30; no flow many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	12	.32	.00	.00	17	16	23	26	20	23	22
2	21	13	.02	.00	.00	17	16	25	24	20	23	22
3	22	26	.07	.00	.00	17	18	24	24	26	29	22
4	21	17	.00	.00	.00	18	21	28	24	26	7.3	23
5	17	.00	.00	.00	.00	18	23	30	26	26	8.2	21
6	23	.07	.00	.00	.00	18	19	26	26	25	8.8	19
7	20	.00	.00	.00	.00	18	20	26	24	24	3.7	27
8	20	.00	.00	.00	.00	17	20	24	23	29	8.3	28
9	21	.09	.00	.00	7.9	17	18	23	24	25	2.7	28
10	21	.22	.00	.21	14	17	17	23	24	31	19	23
11	21	.32	.00	.01	16	21	18	24	24	22	23	22
12	21	.45	.05	.00	18	18	20	22	24	25	28	22
13	21	.32	.00	.00	17	18	23	23	22	22	23	22
14	20	.22	.00	.00	17	22	24	23	21	24	23	20
15	21	.22	.00	.00	17	17	20	23	23	21	22	20
16	22	.22	.00	.00	17	17	20	22	25	27	26	20
17	22	.22	.00	.00	17	17	24	23	25	24	25	30
18	24	.22	.01	.00	17	17	22	23	24	26	23	24
19	21	.22	.00	.00	18	16	23	23	23	29	23	21
20	20	.22	.00	.00	17	16	22	26	23	24	22	20
21	20	.32	.00	.00	17	16	23	24	24	23	22	20
22	20	.32	.21	.00	18	16	24	23	24	23	26	24
23	20	1.6	.60	.00	17	17	24	22	24	22	26	22
24	20	.15	.00	.00	17	21	23	22	24	23	29	21
25	20	.00	.00	.00	18	16	24	24	25	22	17	23
26	24	.00	.00	.00	17	16	24	23	26	21	24	22
27	25	.00	.01	.00	17	16	26	21	24	20	24	28
28	28	.00	.00	.00	17	17	26	21	24	20	23	33
29	34	.06	.08	.00	---	16	24	20	23	24	22	25
30	37	.00	.00	.00	---	16	23	20	21	26	8.6	18
31	20	---	.00	.00	---	16	---	20	---	25	16	---
TOTAL	688	73.46	1.37	.22	330.90	536	645	724	718	745	608.6	692
MEAN	22.2	2.45	.044	.007	11.8	17.3	21.5	23.4	23.9	24.0	19.6	23.1
MAX	37	26	.60	.21	18	22	26	30	26	31	29	33
MIN	17	.00	.00	.00	.00	16	16	20	21	20	2.7	18
AC-FT	1360	146	2.7	.4	656	1060	1280	1440	1420	1480	1210	1370

CAL YR 1982	TOTAL	6358.36	MEAN	17.4	MAX	44	MIN	.00	AC-FT	12610
WTR YR 1983	TOTAL	5762.55	MEAN	15.8	MAX	37	MIN	.00	AC-FT	11430

16061200 NORTH WAILUA DITCH BELOW WAIKOKO STREAM, NEAR LIHUE

LOCATION.--Lat 22°03'34", long 159°28'00", Hydrologic Unit 20070000, on left bank 380 ft downstream from Waikoko Stream, 8.1 mi west of Wailua, and 8.4 mi northwest of Lihue.

PERIOD OF RECORD.--January 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,070 ft, from topographic map.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River and Waikoko Stream for power and irrigation in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--18 years, 23.2 ft³/s (16,810 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 58 ft³/s Oct. 11, 1966; no flow Jan. 1-18, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 39 ft³/s July 10; minimum daily, 1.8 ft³/s Nov. 14-16.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	26	21	5.8	2.6	17	16	22	26	23	32	27
2	16	20	17	5.3	2.5	17	16	24	23	22	30	25
3	16	27	17	4.7	2.4	17	17	22	21	31	36	27
4	16	29	12	4.5	2.4	17	21	26	22	34	14	26
5	17	21	9.8	4.2	2.4	18	22	35	25	34	5.5	24
6	25	24	8.2	3.9	2.4	18	20	30	23	32	5.2	22
7	23	17	7.0	3.8	2.2	18	20	29	21	31	3.6	28
8	21	13	6.3	6.5	2.2	17	21	27	18	37	5.0	30
9	22	11	5.7	5.6	9.6	17	19	25	19	33	3.2	30
10	23	9.8	5.4	4.5	15	17	18	24	18	39	6.8	28
11	23	4.8	5.1	14	17	19	18	26	18	35	7.0	26
12	23	2.0	8.5	11	18	19	20	24	18	37	22	26
13	23	1.9	5.7	5.7	18	18	21	26	22	36	26	26
14	21	1.8	6.9	4.8	18	20	24	26	23	37	24	23
15	21	1.8	4.9	4.0	18	17	21	26	27	34	22	25
16	22	1.8	4.5	3.7	18	17	20	25	32	35	28	24
17	23	4.8	4.3	3.5	18	17	23	27	32	33	29	31
18	26	5.6	8.0	3.3	18	17	22	27	29	34	25	30
19	23	4.9	5.1	3.2	18	17	23	27	28	37	23	27
20	21	7.2	4.3	3.0	18	17	22	28	28	33	21	24
21	21	19	4.4	2.9	18	17	22	27	28	31	20	25
22	20	10	13	2.9	18	16	24	25	31	29	25	27
23	21	30	25	2.8	18	17	26	24	29	27	29	26
24	20	22	11	2.7	17	20	24	23	29	29	30	25
25	20	12	6.8	2.7	18	17	24	24	31	29	30	26
26	22	9.2	7.1	2.6	17	17	24	23	35	26	28	26
27	23	9.5	9.4	2.7	17	16	26	23	30	24	27	29
28	26	7.5	6.2	2.6	17	17	26	22	29	24	24	32
29	33	9.1	11	2.6	---	16	24	21	27	31	23	31
30	36	7.5	9.8	2.6	---	16	23	21	24	35	12	26
31	28	---	7.2	3.4	---	16	---	21	---	35	20	---
TOTAL	691	370.2	277.6	135.5	362.7	536	647	780	766	987	636.3	802
MEAN	22.3	12.3	8.95	4.37	13.0	17.3	21.6	25.2	25.5	31.8	20.5	26.7
MAX	36	30	25	14	18	20	26	35	35	39	36	32
MIN	16	1.8	4.3	2.6	2.2	16	16	21	18	22	3.2	22
AC-FT	1370	734	551	269	719	1060	1280	1550	1520	1960	1260	1590

CAL YR 1982	TOTAL	7157.8	MEAN	19.6	MAX	38	MIN	1.8	AC-FT	14200
WTR YR 1983	TOTAL	6991.3	MEAN	19.2	MAX	39	MIN	1.8	AC-FT	13870

16062000 STABLE STORM DITCH NEAR LIHUE

LOCATION.--Lat 22°04'09", long 159°26'46", Hydrologic Unit 20070000, on left bank 100 ft downstream from intake, 7.8 mi northwest of Lihue, and 7.9 mi west of Kapaa.

PERIOD OF RECORD.--December 1936 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 710 ft, by barometer.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for irrigation of sugarcane in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--46 years (water years 1938-83), 10.6 ft³/s (7,680 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 71 ft³/s Apr. 3, 1948; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maxiumum daily discharge, 52 ft³/s May 20; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.12	.05	.00	.00	28	25	.05	40	31	.64	19
2	.12	.12	.05	.00	.00	28	25	.05	40	31	.64	20
3	.12	.12	.02	.00	.00	28	30	.05	38	40	.84	21
4	.12	.12	.01	.00	.00	28	34	.05	36	40	.24	22
5	.12	.12	.00	.00	.00	28	34	.05	42	25	.00	21
6	.12	.12	.00	.00	.00	28	28	.05	42	1.1	.00	20
7	.12	.12	.00	.00	.00	28	37	.05	37	1.1	.00	21
8	.12	.12	.00	.00	.00	28	36	.05	36	1.1	.00	22
9	.12	.12	.00	.00	.00	28	28	.05	36	1.1	.00	21
10	.12	.12	.00	.00	4.1	27	27	.05	36	1.1	.00	20
11	.12	.05	.00	.00	9.1	29	26	.05	36	.92	.00	17
12	.12	.05	.00	.00	7.8	28	28	.02	36	.92	.00	17
13	.05	.00	.00	.00	7.5	28	43	.02	33	.92	.00	18
14	.05	.00	.00	.00	7.2	32	42	.00	32	.92	.00	17
15	.05	.00	.00	.00	5.8	28	30	.00	34	.78	.00	17
16	.05	.00	.00	.00	2.6	28	27	.00	40	.64	.00	17
17	.05	.00	.00	.00	5.2	28	43	16	40	.64	9.9	19
18	.05	.00	.00	.00	15	27	36	40	35	.64	34	18
19	.05	.00	.00	.00	15	26	38	39	34	.64	31	18
20	.05	.00	.00	.00	20	26	36	52	35	.64	26	17
21	.05	.02	.00	.00	24	26	37	46	36	.64	23	19
22	.05	.00	.00	.00	27	26	45	41	38	.64	26	21
23	.05	.72	.05	.00	30	26	50	39	36	.64	26	19
24	.05	.12	.02	.00	30	33	42	34	36	.64	27	14
25	.05	.12	.02	.00	30	26	24	42	38	.64	27	14
26	.05	.05	.02	.00	29	26	.38	40	42	.64	25	14
27	.05	.05	.00	.00	30	25	.28	36	36	.50	25	15
28	.05	.05	.00	.00	28	26	.28	21	36	.50	24	8.9
29	.12	.05	.00	.00	---	25	.28	22	34	.50	23	.28
30	1.9	.05	.00	.00	---	25	.05	32	32	.50	25	.28
31	.12	---	.00	.00	---	25	---	32	---	.50	23	---
TOTAL	4.38	2.53	.24	.00	327.30	848	852.27	532.59	1102	186.50	377.26	507.46
MEAN	.14	.084	.008	.00	11.7	27.4	28.4	17.2	36.7	6.02	12.2	16.9
MAX	1.9	.72	.05	.00	30	33	50	52	42	40	34	22
MIN	.05	.00	.00	.00	.00	25	.05	.00	32	.50	.00	.28
AC-FT	8.7	5.0	.5	.00	649	1680	1690	1060	2190	370	748	1010

CAL YR 1982	TOTAL	278.80	MEAN	.764	MAX	28	MIN	.00	AC-FT	553
WTR YR 1983	TOTAL	4740.53	MEAN	13.0	MAX	52	MIN	.00	AC-FT	9400

16063000 NORTH FORK WAILUA RIVER AT ALTITUDE 650 FT, NEAR LIHUE

LOCATION.--Lat 22°04'02", long 159°26'21", Hydrologic Unit 20070000, on right bank 0.5 mi downstream from intake of Stable storm ditch and 7.6 mi northwest of Lihue.

DRAINAGE AREA.--5.29 mi².

PERIOD OF RECORD.--September 1914 to March 1915, May 1915 to October 1918, December 1918, March 1919, June 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 555: 1921. WSP 1569: 1915-27(M), 1943-47(M), 1948-56(P). WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 650 ft, from topographic map. Prior to Sept. 9, 1944, at datum 2.0 ft higher.

REMARKS.--Records fair. Since 1925, Hanalei tunnel (station 16100000) has diverted from Hanalei River basin into North Fork Wailua River above station; North Wailua and Stable storm ditches (station 16061000 and 160620000) divert water above station for power development and irrigation in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--67 years (water years 1916-18, 1920-83), 74.1 ft³/s (53,690 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,200 ft³/s Nov. 12, 1955, gage height, 13.53 ft, from rating curve extended above 2,300 ft³/s on basis of slope-area measurement at gage height 10.65 ft; minimum, 0.23 ft³/s June 5, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,800 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1400	*6880	10.54
Nov. 23	2200	5030	9.22

Minimum discharge, 1.4 ft³/s Apr. 7, 10-13.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	254	181	48	31	2.1	1.6	60	29	4.6	80	22
2	39	232	85	46	31	2.1	1.6	91	22	4.4	83	19
3	54	421	84	45	30	2.0	3.2	76	12	26	477	19
4	44	539	77	45	29	2.1	19	214	8.9	26	213	20
5	119	233	66	44	29	2.2	4.8	201	35	54	133	18
6	164	327	55	44	28	2.2	2.3	131	25	60	86	16
7	76	138	54	44	28	2.2	13	122	11	63	62	61
8	48	95	54	61	28	2.2	6.2	92	8.7	140	69	44
9	62	81	54	52	24	2.2	1.8	68	9.4	72	60	43
10	83	72	53	44	15	2.1	1.6	64	9.5	223	60	32
11	73	68	52	213	8.1	2.2	1.4	71	8.7	138	56	29
12	109	71	122	77	8.1	2.2	1.4	58	9.0	211	180	29
13	91	60	64	51	8.1	2.1	68	54	6.0	153	80	32
14	47	60	71	46	7.4	2.6	19	66	5.5	210	70	28
15	48	58	51	45	7.4	2.1	2.2	55	13	120	64	24
16	68	62	47	43	7.1	2.0	1.8	49	29	140	120	22
17	81	65	47	40	8.1	2.0	20	32	20	100	80	60
18	157	55	117	39	14	2.0	6.5	18	7.8	120	45	40
19	69	52	53	38	14	1.9	12	9.5	8.4	220	40	32
20	44	64	47	37	9.1	1.8	6.0	94	7.6	108	34	23
21	37	168	50	36	2.6	1.6	7.6	29	9.0	86	28	26
22	33	67	146	36	2.5	1.6	22	13	18	79	30	32
23	33	1230	424	35	2.3	1.8	40	9.0	9.7	71	34	32
24	28	272	88	34	2.1	3.1	17	6.4	8.7	80	38	26
25	26	103	66	33	2.2	1.8	39	19	14	69	50	30
26	119	88	63	33	2.2	1.6	69	11	29	66	35	26
27	52	88	73	33	2.2	1.6	118	5.5	11	60	26	33
28	208	77	59	32	2.2	1.8	103	22	10	59	24	150
29	680	80	72	33	---	1.8	81	17	7.1	93	22	90
30	1530	69	71	32	---	1.6	60	3.6	5.5	122	24	80
31	479	---	57	37	---	1.6	---	3.6	---	119	29	---
TOTAL	4749	5249	2603	1476	382.7	62.2	750.0	1764.6	407.5	3097.0	2432	1138
MEAN	153	175	84.0	47.6	13.7	2.01	25.0	56.9	13.6	99.9	78.5	37.9
MAX	1530	1230	424	213	31	3.1	118	214	35	223	477	150
MIN	26	52	47	32	2.1	1.6	1.4	3.6	5.5	4.4	22	16
AC-FT	9420	10410	5160	2930	759	123	1490	3500	808	6140	4820	2260

CAL YR 1982	TOTAL	58563	MEAN	160	MAX	1700	MIN	23	AC-FT	116200
WTR YR 1983	TOTAL	24111.0	MEAN	66.1	MAX	1530	MIN	1.4	AC-FT	47820

16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°04'19", long 159°25'05", Hydrologic Unit 20070000, on right bank 1,200 ft upstream from mouth and 7.2 mi northwest of Lihue.

DRAINAGE AREA.--6.27 mi².

PERIOD OF RECORD.--July 1912 to September 1914, December 1914 to March 1915, May 1915 to March 1919, June 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 500 ft, from topographic map. Prior to Dec. 31, 1914, nonrecording gage at site 725 ft downstream at different datum. Dec. 31, 1914 to May 10, 1934, water-stage recorder at site 75 ft upstream at present datum.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--68 years (water years 1913-14, 1916-17, 1920-83), 48.6 ft³/s (35,210 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft³/s Nov. 12, 1955, gage height, 14.7 ft, from floodmarks, from rating curve extended above 2,700 ft³/s; minimum, 6.8 ft³/s July 3, 13, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,480 ft³/s Oct. 30, gage height, 6.39 ft, no other peak above base of 1,900 ft³/s; minimum, 9.1 ft³/s Apr. 16.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	129	50	33	18	14	10	25	27	18	38	28
2	33	149	38	31	18	13	10	37	30	17	37	25
3	37	325	36	29	18	13	26	36	24	30	306	24
4	41	357	37	28	18	13	18	105	21	34	146	22
5	79	167	34	27	18	14	16	76	37	39	97	38
6	64	154	32	27	18	14	14	68	31	28	66	24
7	43	96	31	25	17	14	46	50	24	26	51	39
8	36	76	30	31	17	13	25	48	23	67	47	51
9	38	64	28	26	16	13	14	35	21	31	41	44
10	43	57	28	28	16	13	11	30	21	82	41	31
11	42	52	27	87	16	13	11	27	21	59	37	28
12	64	48	54	48	16	12	10	24	21	72	75	28
13	50	44	40	31	16	12	10	22	19	52	36	31
14	37	41	48	28	16	13	11	24	18	76	31	27
15	34	38	31	26	15	12	10	22	20	48	30	26
16	37	38	28	25	15	12	9.4	20	40	53	50	24
17	42	38	28	24	15	12	26	18	27	41	50	52
18	57	36	51	23	15	12	19	25	22	51	33	33
19	38	33	31	23	15	12	22	23	22	79	32	27
20	33	41	28	22	15	12	21	56	22	51	29	24
21	32	70	29	22	15	12	20	33	22	43	28	27
22	30	40	63	21	15	12	27	23	27	37	30	33
23	30	455	299	21	14	12	41	21	22	35	33	32
24	28	146	60	20	14	13	28	20	23	36	36	24
25	27	64	45	20	14	12	28	21	27	35	50	27
26	70	53	41	19	14	12	29	22	35	31	32	24
27	50	52	54	20	14	11	62	18	24	27	30	31
28	127	45	40	19	14	11	55	18	25	26	28	62
29	462	40	38	18	---	11	41	16	22	37	26	42
30	879	38	45	18	---	10	27	16	20	49	28	36
31	310	---	38	20	---	10	---	16	---	46	32	---
TOTAL	2932	2986	1462	840	442	382	697.4	995	738	1356	1626	964
MEAN	94.6	99.5	47.2	27.1	15.8	12.3	23.2	32.1	24.6	43.7	52.5	32.1
MAX	879	455	299	87	18	14	62	105	40	82	306	62
MIN	27	33	27	18	14	10	9.4	16	18	17	26	22
AC-FT	5820	5920	2900	1670	877	758	1380	1970	1460	2690	3230	1910

CAL YR 1982	TOTAL	33942	MEAN	93.0	MAX	1040	MIN	24	AC-FT	67320
WTR YR 1983	TOTAL	15420.4	MEAN	42.2	MAX	879	MIN	9.4	AC-FT	30590

16069000 WAILUA DITCH NEAR KAPAA

LOCATION.--Lat 22°04'34", long 159°24'04", Hydrologic Unit 20070000, on right bank 2,000 ft downstream from Wailua Reservoir, 5.2 mi west of Kapaa, and 7.0 mi north of Lihue.

PERIOD OF RECORD.--November 1936 to current year.

GAGE.--Water-stage recorder. Sharp-crested weir since Feb. 4, 1965. Datum of gage is 462.3 ft above mean sea level (by stadia survey).

REMARKS.--Records good. Ditch diverts water from North Fork Wailua River to reservoir, 2,000 ft above station and thence to fields for irrigation of sugarcane in vicinity of Kapaa. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--46 years (water years 1938-83), 15.4 ft^3/s (11,160 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 63 ft^3/s June 4, 1937; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 32 ft^3/s Feb. 9, 10; no flow Aug. 4.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	4.0	1.8	1.6	21	21	12	30	26	25	26	29
2	23	3.4	1.9	1.4	21	20	12	30	26	25	26	30
3	23	3.0	1.9	1.4	20	20	16	30	27	25	9.2	30
4	23	2.5	1.9	1.4	22	23	18	30	26	25	.00	30
5	24	2.1	1.9	1.5	28	25	19	30	26	25	15	30
6	24	1.6	1.8	1.8	29	24	19	30	27	26	24	30
7	24	1.2	1.6	1.6	30	23	19	30	27	26	24	30
8	24	1.2	1.4	1.5	31	22	18	30	26	27	23	30
9	23	1.0	1.4	1.4	32	20	21	30	26	27	22	30
10	23	.86	1.4	1.4	32	18	20	30	26	28	20	30
11	23	.72	1.3	1.4	27	16	20	30	26	28	19	30
12	24	.72	1.3	1.4	24	15	19	29	26	28	18	30
13	24	.93	1.3	5.6	24	15	18	29	26	29	19	30
14	24	1.1	1.3	6.5	24	15	19	29	25	29	20	30
15	24	1.5	1.4	.27	24	15	19	29	25	30	20	30
16	24	1.8	1.3	.30	24	14	18	28	25	30	23	30
17	24	1.9	1.3	.30	23	14	18	28	25	30	26	30
18	25	2.1	1.3	.27	24	14	20	28	25	30	28	30
19	25	2.3	1.2	7.7	24	14	20	28	25	30	28	30
20	25	2.3	1.2	20	24	14	21	28	25	30	28	30
21	25	2.3	1.2	14	24	14	21	29	25	30	28	30
22	25	2.3	1.1	6.6	23	13	22	29	25	29	28	29
23	25	2.3	1.2	6.6	23	13	23	28	25	29	28	29
24	26	2.1	1.4	14	22	13	24	28	25	28	29	29
25	26	1.9	1.4	24	22	13	26	28	25	28	30	29
26	26	1.8	1.4	24	22	12	26	28	25	28	30	29
27	26	1.6	1.4	24	22	12	28	28	25	28	30	29
28	26	1.6	1.4	23	21	12	29	27	25	27	29	20
29	14	1.5	1.4	23	---	12	30	27	25	27	29	15
30	5.3	1.4	1.4	22	---	12	30	27	25	27	29	31
31	4.9	---	1.6	22	---	12	---	26	---	26	29	---
TOTAL	705.2	55.03	44.8	261.94	687	500	625	891	766	860	737.20	869
MEAN	22.7	1.83	1.45	8.45	24.5	16.1	20.8	28.7	25.5	27.7	23.8	29.0
MAX	26	4.0	1.9	24	32	25	30	30	27	30	30	31
MIN	4.9	.72	1.1	.27	20	12	12	26	25	25	.00	15
AC-FT	1400	109	89	520	1360	992	1240	1770	1520	1710	1460	1720

CAL YR 1982	TOTAL	4177.48	MEAN	11.4	MAX	30	MIN	.00	AC-FT	8290
WTR YR 1983	TOTAL	7002.17	MEAN	19.2	MAX	32	MIN	.00	AC-FT	13890

16071000 NORTH FORK WAILUA RIVER NEAR KAPAA

LOCATION.--Lat 22°03'08", long 159°22'22", Hydrologic Unit 20070000, on right bank 1.1 mi upstream from confluence with South Fork, 3.7 mi southwest of Kapaa, and 5.0 mi north of Lihue.

DRAINAGE AREA.--17.9 mi².

PERIOD OF RECORD.--July 1952 to current year.

REVISED RECORDS.--WSP 2137: Drainage area. WDR HI-75-1: 1974.

GAGE.--Water-stage recorder. Altitude of gage is 18 ft, from topographic map.

REMARKS.--Records good. Wailua and Aahoaka ditches (stations 16069000 and 16070000) divert above station for irrigation of sugarcane in vicinities of Kapaa and Wailua, respectively. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--31 years, 129 ft³/s (93,460 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,200 ft³/s Nov. 12, 1955, gage height, 19.88 ft in gage well, 20.8 ft, from floodmarks, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.12 ft³/s Oct. 28, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1530	*12060	10.82
Nov. 23	2200	6710	8.53

Minimum discharge, 5.4 ft³/s Apr. 11, 12.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	649	238	110	49	10	6.4	52	19	7.3	105	37
2	66	484	152	103	44	7.8	6.4	102	26	7.2	84	28
3	79	853	144	89	44	7.9	14	88	18	12	589	27
4	75	1120	131	57	35	8.1	12	258	12	46	566	24
5	167	614	127	61	22	8.6	15	237	39	52	291	45
6	183	625	119	72	21	8.8	6.1	202	30	56	190	27
7	107	403	107	90	20	8.4	30	124	18	45	147	49
8	72	292	101	118	20	8.2	29	146	13	176	147	124
9	81	234	98	97	19	8.2	6.6	83	10	67	119	79
10	102	202	94	89	12	8.0	5.7	67	10	253	122	41
11	95	146	92	260	12	8.1	5.7	66	11	172	92	35
12	150	122	171	188	9.0	7.8	6.5	58	10	234	167	34
13	116	103	132	103	11	7.4	26	48	9.8	170	83	38
14	66	96	152	91	9.1	7.2	40	60	7.3	215	70	31
15	61	111	105	85	10	6.9	6.5	49	7.1	136	46	31
16	74	142	97	82	8.1	7.5	5.7	42	46	149	61	27
17	95	146	95	80	7.5	7.8	9.3	36	20	104	94	98
18	143	109	174	78	7.8	7.8	15	13	16	122	19	57
19	105	102	110	72	8.1	7.6	6.5	22	12	257	16	33
20	57	125	91	55	7.9	7.4	15	106	11	153	22	28
21	49	262	96	60	8.3	7.4	6.5	53	12	115	20	28
22	42	137	198	73	7.9	6.4	15	19	19	97	34	39
23	43	1540	888	73	7.3	6.1	43	13	10	83	61	40
24	37	592	227	64	7.7	7.1	17	11	13	91	88	28
25	34	253	150	50	7.9	7.4	14	8.9	16	83	117	31
26	87	193	138	49	7.1	7.2	48	21	35	73	44	30
27	137	175	160	51	7.4	7.1	115	9.1	18	65	34	51
28	214	147	129	49	9.1	6.9	112	6.9	13	61	24	182
29	1320	143	124	49	---	6.8	102	21	12	96	20	158
30	2760	135	147	50	---	6.7	62	6.7	8.8	151	25	105
31	1210	---	126	56	---	6.4	---	6.1	---	155	49	---
TOTAL	7904	10255	4913	2604	439.2	235.0	801.9	2034.7	502.0	3503.5	3546	1585
MEAN	255	342	158	84.0	15.7	7.58	26.7	65.6	16.7	113	114	52.8
MAX	2760	1540	888	260	49	10	115	258	46	257	589	182
MIN	34	96	91	49	7.1	6.1	5.7	6.1	7.1	7.2	16	24
AC-FT	15680	20340	9740	5170	871	466	1590	4040	996	6950	7030	3140

CAL YR 1982	TOTAL	96652	MEAN	265	MAX	3050	MIN	22	AC-FT	191700
WTR YR 1983	TOTAL	38323.3	MEAN	105	MAX	2760	MIN	5.7	AC-FT	76010

HAWAII, ISLAND OF KAUAI

16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA

LOCATION.--Lat 22°04'43", long 159°23'55", Hydrologic Unit 20070000, on left bank 0.4 mi upstream from mouth, 0.6 mi northeast of Wailua Reservoir, and 4.9 mi west of Kapaa.

DRAINAGE AREA.--0.65 mi².

PERIOD OF RECORD.--May 1960 to current year. Prior to July 1960, published as Left Branch Opaikaa Stream near Kapaa.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 458.4 ft above mean sea level (by stadia survey).

REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--23 years, 2.72 ft³/s (1,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 724 ft³/s Jan. 31, 1975, gage height, 5.58 ft, from rating curve extended above 415 ft³/s on basis of slope-area measurement at gage height 5.01 ft; minimum, 0.09 ft³/s Sept. 27-30, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 70 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1400	*558	5.01
Nov. 23	2200	145	2.96
Dec. 23	0730	175	3.18

Minimum discharge, 0.60 ft³/s May 22.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	15	4.3	2.9	1.8	1.4	.75	.75	1.1	.67	1.5	1.6
2	2.4	12	3.9	2.8	1.8	1.4	.75	.75	1.0	.67	1.4	1.5
3	2.4	17	3.8	2.7	1.7	1.3	1.6	.75	.91	.75	5.9	1.5
4	2.8	20	3.6	2.5	1.7	1.3	1.0	2.1	.91	.83	5.4	1.4
5	2.8	14	3.6	2.5	1.7	1.3	.83	1.6	.91	.91	3.1	1.9
6	3.2	12	3.4	2.4	1.7	1.4	.83	1.6	.91	.83	2.5	1.5
7	2.8	9.2	3.2	2.4	1.7	1.3	1.4	1.4	.83	.75	2.4	1.6
8	2.5	7.7	3.1	2.4	1.7	1.2	1.2	1.3	.75	1.1	2.3	2.1
9	2.4	6.6	3.1	2.4	1.6	1.2	.91	1.1	.75	.91	2.3	1.8
10	2.5	6.1	2.9	2.3	1.6	1.2	.83	1.0	.75	1.5	2.3	1.6
11	2.9	5.7	2.8	3.7	1.6	1.2	.75	.91	.75	1.6	2.2	1.6
12	4.8	5.3	3.1	3.6	1.6	1.1	.75	.83	.75	1.6	2.2	1.5
13	2.8	5.0	2.9	2.7	1.6	1.1	.75	.83	.75	1.5	2.1	1.5
14	2.7	4.6	2.9	2.4	1.6	1.0	.75	.83	.75	1.7	1.9	1.5
15	2.5	4.4	2.8	2.3	1.6	1.0	.67	.83	.75	1.7	1.8	1.6
16	2.4	4.3	2.5	2.3	1.6	1.0	.67	.83	1.1	1.9	2.0	1.6
17	2.4	4.3	2.4	2.3	1.6	1.0	.83	.83	.83	1.7	2.5	1.8
18	3.1	4.1	2.4	2.3	1.6	.91	.75	.91	.83	1.9	2.0	1.7
19	2.3	4.1	2.3	2.3	1.6	.91	.75	.91	.75	2.3	1.9	1.6
20	2.4	4.1	2.2	2.1	1.6	.91	.75	1.5	.75	1.8	1.8	1.5
21	2.2	4.3	2.2	2.1	1.6	.91	.75	.83	.75	1.6	1.8	1.6
22	2.2	3.9	2.4	2.0	1.6	.91	.75	.67	.75	1.5	1.9	1.6
23	2.2	25	31	2.0	1.6	.91	.75	.83	.75	1.4	1.9	1.5
24	2.2	9.9	5.3	2.0	1.6	.91	.91	.83	.75	1.5	1.9	1.4
25	2.1	5.7	4.1	1.9	1.6	.83	.91	.83	.75	1.4	1.9	1.5
26	4.5	5.0	3.8	1.9	1.5	.83	.83	.83	1.0	1.3	1.8	1.5
27	3.6	5.0	3.8	1.9	1.5	.83	1.0	.75	.83	1.2	1.8	1.6
28	6.3	4.6	3.4	1.9	1.5	.83	1.0	.75	.75	1.2	1.7	2.0
29	27	4.4	3.1	1.8	---	.83	1.0	.75	.75	1.4	1.6	1.7
30	83	4.3	3.4	1.8	---	.83	.83	.67	.67	1.7	1.6	1.7
31	24	---	3.1	1.8	---	.83	---	.83	---	1.7	1.6	---
TOTAL	214.1	237.6	126.8	72.4	45.5	32.58	26.25	30.13	24.58	42.52	69.0	48.5
MEAN	6.91	7.92	4.09	2.34	1.62	1.05	.87	.97	.82	1.37	2.23	1.62
MAX	83	25	31	3.7	1.8	1.4	1.6	2.1	1.1	2.3	5.9	2.1
MIN	2.1	3.9	2.2	1.8	1.5	.83	.67	.67	.67	.67	1.4	1.4
AC-FT	425	471	252	144	90	65	52	60	49	84	137	96

CAL YR 1982	TOTAL	2247.6	MEAN	6.16	MAX	83	MIN	1.6	AC-FT	4460
WTR YR 1983	TOTAL	969.96	MEAN	2.66	MAX	83	MIN	.67	AC-FT	1920

16077000 MAKALEHA DITCH NEAR KEALIA

LOCATION.--Lat 22°07'06", long 159°22'04", Hydrologic Unit 20070000, on left bank at end of last tunnel from which flow enters Mimino Reservoir, 3.9 mi northwest of Kealia, and 4.0 mi northwest of Kapaa.

PERIOD OF RECORD.--December 1936 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 518 ft above mean sea level (by stadia survey).

REMARKS.--Records good. Ditch diverts from Makaleha Stream for irrigation of sugarcane in vicinity of Kealia. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--46 years (water years 1938-83), 6.78 ft³/s (4,910 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 31 ft³/s Aug. 1, 1961, June 30, 1982; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 23 ft³/s Oct. 5; minimum daily, 0.24 ft³/s Dec. 5, 6.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	3.2	.42	.87	11	9.4	7.3	12	17	8.4	16	13
2	.69	2.0	.33	.74	10	9.3	7.3	17	18	7.6	10	9.8
3	.69	3.5	.33	.63	9.4	8.6	10	14	14	14	3.7	11
4	6.3	6.3	.28	.58	9.8	7.6	7.8	13	12	11	6.5	7.5
5	23	3.0	.24	4.2	11	8.3	8.7	2.0	14	12	8.7	3.6
6	21	1.9	.24	12	11	9.4	9.0	6.1	16	13	7.4	5.7
7	16	1.4	.28	12	11	9.0	13	14	12	14	6.2	15
8	10	.93	.28	15	11	8.7	13	13	10	21	6.2	16
9	3.5	2.4	.33	13	11	9.4	11	11	9.1	14	5.5	16
10	3.0	3.5	.33	16	11	8.7	8.7	10	11	22	4.6	11
11	2.6	3.4	.28	18	11	8.3	8.9	10	12	19	5.0	9.8
12	2.2	2.0	.38	18	10	8.6	9.0	9.3	13	12	13	11
13	1.8	.81	5.2	14	11	8.7	8.7	9.1	11	2.2	13	12
14	4.0	.69	6.1	8.0	11	10	8.7	11	11	1.9	10	10
15	7.6	.58	5.7	.58	11	9.1	8.9	11	12	5.1	9.5	11
16	7.8	.52	5.6	.52	10	8.7	8.6	8.9	19	12	18	9.7
17	7.8	.52	5.5	4.9	10	8.7	18	8.2	11	11	18	18
18	8.0	.42	5.6	12	10	8.7	12	13	1.6	13	12	12
19	7.8	.38	5.5	11	10	8.4	15	12	1.5	11	12	9.7
20	7.6	.38	5.2	11	10	8.6	14	22	4.4	1.5	9.7	8.9
21	7.6	.63	5.2	11	9.7	8.0	14	9.2	14	1.2	8.7	12
22	7.5	.58	5.8	11	10	8.2	16	1.5	14	.99	13	14
23	7.3	5.9	11	11	9.1	8.0	18	4.7	12	.87	14	13
24	6.9	5.4	2.8	11	8.0	8.7	16	9.8	13	4.7	11	9.1
25	6.8	1.8	1.4	10	9.4	8.0	13	10	16	5.6	1.9	11
26	12	.99	.99	11	9.6	7.8	4.0	10	19	11	5.5	11
27	18	.74	.99	11	8.7	7.6	3.9	10	14	9.7	12	13
28	20	.58	.81	11	8.8	7.5	3.9	9.4	13	8.9	10	19
29	19	.47	.74	11	---	7.8	6.2	8.9	12	12	9.7	18
30	21	.42	1.1	12	---	7.3	12	8.3	9.7	19	11	14
31	10	---	.93	11	---	7.5	---	9.3	---	20	14	---
TOTAL	278.22	55.34	79.88	294.02	283.5	262.6	314.6	317.7	366.3	319.66	305.8	354.8
MEAN	8.97	1.84	2.58	9.48	10.1	8.47	10.5	10.2	12.2	10.3	9.86	11.8
MAX	23	6.3	11	18	11	10	18	22	19	22	18	19
MIN	.69	.38	.24	.52	8.0	7.3	3.9	1.5	1.5	.87	1.9	3.6
AC-FT	552	110	158	583	562	521	624	630	727	634	607	704

CAL YR 1982	TOTAL	1777.52	MEAN	4.87	MAX	31	MIN	.24	AC-FT	3530
WTR YR 1983	TOTAL	3232.42	MEAN	8.86	MAX	23	MIN	.24	AC-FT	6410

16079000 KAPAHI DITCH NEAR KEALIA

LOCATION.--Lat 22°06'09", long 159°22'28", Hydrologic Unit 20070000, on right bank 500 ft downstream from intake and 4.0 mi west of Kealia.

PERIOD OF RECORD.--April 1909 to February 1911, May 1911, July 1911 to May 1914, July 1915 to April 1917, June 1917 to current year. Published as "at Kapahi, near Kapaa" prior to January 1914 and as "at Kapahi, near Kealia" January to December 1913.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 377.1 ft above mean sea level (by stadia survey). Prior to Nov. 26, 1936, at site 61 ft upstream at datum 2.52 ft higher.

REMARKS.--Records good. Ditch diverts from Kapaa Stream for irrigation of sugarcane in vicinity of Kapaa. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--65 years (water years 1918-20, 1922-83), 6.26 ft^3/s (4,540 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 138 ft^3/s Feb. 6, 1913; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 17 ft^3/s July 16; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	.25	.06	.10	5.6	3.3	3.9	5.2	7.8	3.8	10	4.9
2	8.4	.38	.00	.06	5.4	3.3	3.9	10	9.6	4.1	5.6	2.6
3	8.4	.90	.00	.06	5.0	3.3	9.3	9.4	6.8	11	1.6	3.9
4	8.0	.99	.00	.06	4.4	4.9	5.6	13	4.7	13	.49	4.7
5	13	.38	.00	1.7	4.4	5.4	5.8	12	8.2	13	7.2	10
6	12	.51	.00	3.8	4.2	5.2	5.3	4.3	8.0	9.0	10	7.5
7	8.4	.19	.00	.10	4.1	4.9	8.8	.25	5.0	5.9	9.8	3.8
8	5.4	.19	.00	.10	4.1	4.7	11	.31	6.9	8.8	13	.10
9	3.8	.19	.00	.06	3.8	4.7	5.4	.38	7.5	.38	12	3.5
10	6.7	.19	.00	.03	3.8	4.4	5.2	.31	5.0	.38	13	5.0
11	12	.19	.00	.93	3.8	4.2	4.1	.31	4.7	.25	12	4.2
12	15	.14	.02	.14	3.8	4.2	4.2	.38	5.4	.19	13	4.1
13	15	.06	.00	.06	3.6	4.6	4.2	.31	3.9	.10	6.6	4.4
14	13	.06	.01	.06	3.6	5.2	5.3	.31	3.8	.41	5.0	3.8
15	12	.03	.00	.06	3.6	4.4	3.6	.31	5.1	2.7	4.9	3.9
16	13	.00	.00	.06	3.5	4.2	3.6	1.8	12	17	12	3.9
17	9.5	.00	.00	1.4	3.5	4.2	10	5.2	7.0	11	15	7.4
18	7.8	.14	.01	6.2	3.5	4.2	6.8	8.6	8.0	13	6.8	5.9
19	7.2	.14	.00	6.1	3.5	4.1	5.9	8.8	6.6	6.8	6.2	4.4
20	8.3	.14	.00	5.1	3.6	4.1	6.7	10	5.7	.14	4.9	4.0
21	11	.31	.00	2.1	3.8	3.9	5.4	.31	5.2	.10	5.4	5.0
22	10	.00	3.5	.25	3.6	3.9	7.5	.19	5.2	.14	8.8	6.4
23	12	.71	1.9	.19	4.5	3.9	12	2.6	4.4	.19	8.5	6.1
24	9.0	.06	.10	4.2	4.8	4.9	7.6	6.2	5.2	.19	9.8	4.1
25	8.6	.10	.14	5.9	3.6	4.2	5.8	7.6	5.4	7.8	13	4.4
26	11	.06	.10	5.7	3.6	4.1	.38	8.6	5.4	4.4	10	4.2
27	15	.10	.14	5.9	3.5	4.1	.38	4.9	5.7	3.9	4.7	5.2
28	8.9	.06	.14	5.7	3.7	4.2	.31	3.9	5.4	3.8	4.2	7.6
29	2.1	.06	.14	5.7	---	4.4	.25	3.8	4.7	8.9	3.9	7.6
30	4.2	.06	.19	5.7	---	4.2	2.6	3.9	3.6	13	4.2	7.0
31	.38	---	.14	5.7	---	4.2	---	4.1	---	15	6.0	---
TOTAL	287.88	6.59	6.59	73.22	111.9	133.5	160.82	137.27	181.9	178.37	247.59	149.60
MEAN	9.29	.22	.21	2.36	4.00	4.31	5.36	4.43	6.06	5.75	7.99	4.99
MAX	15	.99	3.5	6.2	5.6	5.4	12	13	12	17	15	10
MIN	.38	.00	.00	.03	3.5	3.3	.25	.19	3.6	.10	.49	.10
AC-FT	571	13	13	145	222	265	319	272	361	354	491	297

CAL YR 1982	TOTAL	1507.37	MEAN	4.13	MAX	24	MIN	.00	AC-FT	2990
WTR YR 1983	TOTAL	1675.23	MEAN	4.59	MAX	17	MIN	.00	AC-FT	3320

16080000 KAPAA STREAM AT KAPAHI DITCH INTAKE, NEAR KAPAA

LOCATION.--Lat 22°06'15", long 159°22'29", Hydrologic Unit 20070000, on right bank at Kapahi ditch intake, 3.8 mi northwest of Kapaa, and 4.3 mi northwest of Wailua.

DRAINAGE AREA.--3.86 mi².

PERIOD OF RECORD.--July 1936 to current year. Prior to July 1959, published as Kapaa River at Kapahi ditch intake, near Kapaa.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete-masonry control. Datum of gage is 381.8 ft above mean sea level (by stadia survey). Prior to July 1, 1962, at datum 0.07 ft higher.

REMARKS.--Records good. Entire low flow is diverted above station at times for irrigation of sugarcane. Records do not include flow of Kapahi ditch (sta 16079000). Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--47 years, 20.6 ft³/s (14,920 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,670 ft³/s Jan. 25, 1956, gage height, 5.41 ft, present datum, from rating curve extended above 2,800 ft³/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1400	*5010	4.43
Nov. 23	2130	2340	3.23

No flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	63	36	26	.00	.00	.00	.01	2.7	.00	.10	1.1
2	11	135	26	24	.00	.00	.00	2.1	1.2	.00	14	1.4
3	15	217	26	21	.00	.00	3.2	.68	.00	8.7	252	.00
4	12	242	24	21	.00	.00	.00	56	.00	2.3	74	.00
5	22	81	24	15	.00	.00	.14	43	2.4	7.3	38	9.3
6	4.9	99	24	2.8	.00	.00	.00	29	.02	.00	14	.08
7	.00	48	21	7.7	.00	.00	32	16	.00	1.7	4.8	10
8	4.4	34	21	13	.00	.00	1.9	15	.12	35	3.7	20
9	20	28	20	8.5	.00	.00	.00	8.5	.00	9.3	.00	11
10	20	24	20	15	.00	.00	.00	6.5	.00	46	.00	.00
11	14	22	20	145	.00	.00	.00	6.5	.00	26	.00	.00
12	31	22	50	35	.00	.00	.00	6.5	.00	33	4.7	.00
13	20	22	35	16	.00	.00	.00	5.8	.00	26	.00	.00
14	4.2	21	40	16	.00	.00	.00	10	.00	58	.00	.00
15	.00	20	20	20	.00	.00	.00	10	.23	19	.00	.00
16	2.0	20	17	19	.00	.00	.00	4.4	4.8	5.5	2.0	.00
17	16	24	17	12	.00	.00	5.9	.00	5.8	.00	4.2	8.9
18	37	20	34	.00	.00	.00	.02	16	5.8	1.7	.00	.19
19	12	20	19	.00	.00	.00	8.8	1.4	8.5	32	.00	.00
20	5.3	34	16	1.2	.00	.00	2.0	85	7.0	24	.00	.00
21	.76	77	19	4.8	.00	.00	1.4	35	.30	24	.00	.00
22	.00	28	79	6.5	.00	.00	2.3	20	.82	18	.02	.60
23	.02	386	275	6.5	.02	.00	9.2	11	.07	15	.00	.84
24	.00	93	42	2.3	.31	.00	1.7	.00	.77	15	5.9	.00
25	.00	35	32	.00	.00	.00	8.7	2.8	3.1	5.7	15	.00
26	40	30	36	.00	.00	.00	27	.65	13	.00	2.3	.00
27	3.9	35	47	.00	.00	.00	39	.00	1.1	.00	.00	1.9
28	70	26	35	.00	.00	.00	34	.00	.00	.00	.00	17
29	283	24	38	.00	---	.00	17	.00	.00	.11	.00	8.4
30	802	24	55	.00	---	.00	3.5	.00	.00	6.6	.00	.78
31	142	---	38	.00	---	.00	---	.00	---	3.7	.00	---
TOTAL	1606.48	1954	1206	438.30	.33	.00	197.76	391.84	57.73	423.61	434.72	91.49
MEAN	51.8	65.1	38.9	14.1	.012	.00	6.59	12.6	1.92	13.7	14.0	3.05
MAX	802	386	275	145	.31	.00	39	85	13	58	252	20
MIN	.00	20	16	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	3190	3880	2390	869	.6	.00	392	777	115	840	862	181

CAL YR 1982	TOTAL	17976.88	MEAN	49.3	MAX	802	MIN	.00	AC-FT	35660
WTR YR 1983	TOTAL	6802.26	MEAN	18.6	MAX	802	MIN	.00	AC-FT	13490

16087000 ANAHOLA DITCH WASTEWAY NEAR KEALIA

LOCATION.--Lat 22°08'16", long 159°22'28", Hydrologic Unit 20070000, on right bank 300 ft downstream from wasteway gates on Anahola ditch, 500 ft north of Kaneha Reservoir, 3.8 mi west of Anahola, and 4.9 mi northwest of Kealia.

PERIOD OF RECORD.--July 1936 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 825 ft above mean sea level (by stadia survey).

REMARKS.--Records good. Water that passes station flows into Kaupaku Stream and thence into Anahola Stream 2 mi below gaging station 16089000 on Anahola Stream. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--47 years, 4.32 ft³/s (3,130 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 84 ft³/s Nov. 12, 1955; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 30 ft³/s Oct. 30; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	9.7	2.6	9.3	.08	.04	.08	.00	.03	.13	.20	.04
2	.08	12	2.4	7.4	.08	.04	.08	.02	.01	.13	3.5	.04
3	.08	16	1.8	6.6	.08	.04	.08	.02	.00	.20	17	.08
4	.13	18	.58	6.8	.08	.04	.02	.11	.00	.20	6.6	.08
5	.13	11	.42	6.0	.08	.08	.04	.08	.03	.20	5.1	.13
6	.05	12	.42	2.5	.08	.13	.04	.08	.01	.20	4.4	.08
7	.03	8.6	.42	.93	.08	.13	.04	.00	.00	.20	2.4	.13
8	.03	7.4	.42	.58	.08	.13	.01	.02	.00	.20	.93	.08
9	.08	7.1	.42	.30	.08	.20	.00	.00	.02	.13	.93	.02
10	.08	6.6	.42	.42	.08	.20	.00	.00	.04	.30	.93	.03
11	.13	6.3	.42	.20	.08	.20	.02	.00	.08	.13	.93	.04
12	.13	6.3	.58	.13	.13	.20	.04	.00	.08	.20	.76	.04
13	.08	2.5	.58	.13	.20	.20	.08	.00	.08	.13	.76	.08
14	.03	.76	.76	.13	.20	.20	.13	.01	.08	.20	.76	.08
15	.08	.76	.58	.08	.20	.00	.08	.00	.08	.13	.76	.08
16	.13	.76	.58	.08	.20	.00	.08	.00	.13	.30	.76	.04
17	.13	.76	.58	.08	.20	.00	.13	.00	.08	.13	.76	.08
18	.20	.93	.58	.08	.20	.00	.00	.02	.08	.20	.58	.13
19	.08	.93	.30	.08	.13	.00	.02	.00	.08	.13	.76	.13
20	.08	5.9	.30	.08	.13	.00	.01	.04	.08	.13	.76	.20
21	.08	10	.30	.08	.13	.03	.03	.00	.13	.20	.76	.30
22	.08	6.8	.42	.08	.20	.08	.04	.00	.13	.20	.58	.20
23	.08	19	14	.04	.13	.08	.05	.00	.08	.30	.42	.13
24	.13	5.1	13	.04	.13	.13	.01	.00	.13	.58	.58	.08
25	.13	3.6	9.6	.04	.13	.08	.06	.00	.20	.42	.58	.13
26	.13	3.1	10	.04	.20	.08	.02	.00	.13	.30	.58	.08
27	.04	3.1	12	.08	.20	.08	.08	.00	.13	.42	.58	.20
28	6.2	2.8	16	.08	.08	.08	.05	.00	.13	.42	.58	.20
29	17	2.8	13	.13	---	.08	.00	.00	.13	.30	.58	.20
30	30	2.6	15	.13	---	.08	.00	.00	.13	.30	.58	.20
31	14	---	13	.13	---	.08	---	.00	---	.30	.30	---
TOTAL	69.71	193.20	131.48	42.77	3.67	2.71	1.32	.40	2.31	7.31	55.70	3.33
MEAN	2.25	6.44	4.24	1.38	.13	.087	.044	.013	.077	.24	1.80	.11
MAX	30	19	16	9.3	.20	.20	.13	.11	.20	.58	17	.30
MIN	.03	.76	.30	.04	.08	.00	.00	.00	.00	.13	.20	.02
AC-FT	138	383	261	85	7.3	5.4	2.6	.8	4.6	14	110	6.6

CAL YR 1982	TOTAL	1842.95	MEAN	5.05	MAX	30	MIN	.03	AC-FT	3660
WTR YR 1983	TOTAL	513.91	MEAN	1.41	MAX	30	MIN	.00	AC-FT	1020

16088000 ANAHOLA DITCH ABOVE KANEHA RESERVOIR, NEAR KEALIA

LOCATION.--Lat 22°08'10", long 159°22'28", Hydrologic Unit 20070000, on left bank at point of discharge into Kaneha Reservoir, 500 ft below wasteway gates, and 4.8 mi northwest of Kealia.

PERIOD OF RECORD.--December 1921 to current year. Records for May 1915 to December 1921 at site 520 ft upstream not equivalent owing to intervening diversion.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 821.8 ft above mean sea level (Lihue Plantation bench mark). Dec. 9, 1921, to June 2, 1934, at site 480 ft upstream at different datum.

REMARKS.--Records fair. Ditch diverts water from Anahola Stream to Kaneha Reservoir, where it is stored for irrigation. Flood sometimes diverted above station by Anahola ditch wasteway (see sta 16087000). Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--59 years (water years, 1923-25, 1928-83), 4.19 ft³/s (3,040 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 62 ft³/s Nov. 12, 1947; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 24 ft³/s May 20; minimum daily, 0.02 ft³/s Dec. 25, 26, Jan. 2-5.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	2.9	.09	.04	3.2	1.2	.72	4.7	11	2.9	9.7	8.3
2	8.4	3.8	.09	.02	2.8	.97	.79	7.7	9.7	2.6	6.3	4.8
3	9.3	6.3	.92	.02	2.6	.88	5.7	8.5	7.0	6.7	2.3	6.2
4	7.9	6.7	1.9	.02	2.4	.88	1.4	14	5.6	6.6	.16	5.3
5	20	3.1	1.9	.02	2.3	.88	.97	17	8.7	8.6	.13	8.5
6	13	3.3	2.5	2.6	2.0	.88	.88	13	6.4	5.3	.04	4.6
7	8.7	2.0	2.2	3.9	1.9	.88	4.8	6.8	3.9	4.4	1.0	13
8	5.9	1.7	1.9	7.3	1.8	.88	5.7	6.8	3.9	12	3.3	14
9	8.0	1.4	1.8	4.4	1.7	.88	1.8	4.4	5.3	6.4	3.0	12
10	9.4	1.4	1.8	17	1.6	.88	1.6	3.9	5.3	15	3.3	6.1
11	10	1.4	1.8	17	1.6	.80	1.4	3.9	5.3	11	3.0	5.7
12	15	1.4	2.2	13	1.6	.80	1.4	3.5	5.0	14	3.6	5.9
13	13	4.0	2.2	10	1.6	.80	1.5	3.0	3.8	12	2.8	10
14	6.8	5.1	2.4	6.6	1.6	5.0	3.3	6.0	3.2	14	2.6	6.1
15	6.1	5.0	4.1	5.3	1.4	2.0	1.4	4.1	3.0	9.8	2.6	11
16	8.0	4.8	5.0	4.8	1.4	1.0	1.2	3.0	8.0	12	3.5	6.6
17	13	5.0	5.1	4.4	1.4	.90	15	2.6	5.0	8.7	3.3	12
18	16	4.6	10	4.1	1.4	.85	4.6	5.4	3.3	9.5	2.6	8.2
19	8.9	4.3	5.0	3.9	1.4	.79	6.8	4.8	3.5	11	2.8	6.2
20	6.1	3.5	3.9	3.6	1.4	.79	5.8	24	4.5	9.1	2.3	5.0
21	5.0	2.8	4.8	3.5	1.4	.79	8.5	14	6.2	9.5	2.3	10
22	4.8	1.2	18	4.6	2.1	.79	6.2	7.8	6.1	8.0	2.9	10
23	4.6	2.2	11	4.6	1.4	.79	9.7	6.4	3.8	6.8	2.8	8.8
24	3.8	.16	.04	3.2	1.4	1.2	7.3	5.0	4.8	6.6	3.0	5.1
25	3.5	.13	.02	2.9	1.4	.97	13	6.6	8.4	8.2	3.3	7.8
26	9.4	.13	.02	2.8	1.2	.88	8.9	5.5	8.5	5.7	2.6	6.5
27	8.9	.13	.06	3.0	3.2	.79	12	4.1	5.5	4.8	2.6	12
28	7.8	.13	.13	2.8	2.3	.79	18	3.5	3.9	4.4	2.6	15
29	12	.13	.06	5.2	---	.79	9.3	3.3	4.1	7.9	3.8	13
30	17	.13	.20	5.8	---	.79	5.3	3.0	3.0	8.2	5.1	9.1
31	5.4	---	.06	5.6	---	.79	---	3.2	---	8.0	9.5	---
TOTAL	284.7	78.84	91.19	152.02	51.5	32.31	164.96	209.5	165.7	259.7	98.83	256.8
MEAN	9.18	2.63	2.94	4.90	1.84	1.04	5.50	6.76	5.52	8.38	3.19	8.56
MAX	20	6.7	18	17	3.2	5.0	18	24	11	15	9.7	15
MIN	3.5	.13	.02	.02	1.2	.79	.72	2.6	3.0	2.6	.04	4.6
AC-FT	565	156	181	302	102	64	327	416	329	515	196	509

CAL YR 1982	TOTAL	1467.73	MEAN	4.02	MAX	22	MIN	.01	AC-FT	2910
WTR YR 1983	TOTAL	1846.05	MEAN	5.06	MAX	24	MIN	.02	AC-FT	3660

16089000 ANAHOLA STREAM NEAR KEALIA

LOCATION.--Lat 22°09'05", long 159°21'17", Hydrologic Unit 20070000, on right bank at intake of Lower Anahola ditch and 4.7 mi northwest of Kealia.

DRAINAGE AREA.--4.27 mi².

PERIOD OF RECORD.--August to December 1910, January 1913 to November 1918, January 1919, March 1919 to current year. Monthly discharge only for some periods, published in WSP 1319. Published as Anahola River above dam at Kiokala, near Kealia prior to July 1913 and as Anahola River near Kealia July 1913 to June 1958.

REVISED RECORDS.--WSP 1719: 1915, 1916-18(M). WSP 2137: 1965(P), drainage area.

GAGE.--Water-stage recorder and combination concrete dam and orifice control. Datum of gage is 295.11 ft above mean sea level (Highway Department bench mark). Prior to May 4, 1934, at site 0.1 mi upstream at different datum.

REMARKS.--Records poor. Records include flow in Lower Anahola ditch (see sta 16091000). Anahola ditch (see 16088000) diverts 3 mi above station for irrigation in vicinity of Kealia. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--68 years (water years 1914-17, 1920-83), 22.8 ft³/s (16,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,600 ft³/s Jan. 25, 1956, gage height, 14.6 ft from floodmarks, from rating curve extended above 590 ft³/s; minimum, 1.9 ft³/s Oct. 30 to Nov. 1, Nov. 7-11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,610 ft³/s Oct. 30, gage height, 7.93 ft, from rating curve extended above 410 ft³/s on basis of slope-area measurement at gage height 10.6 ft, no other peak above base of 2,200 ft³/s; minimum 3.3 ft³/s for several days in April.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	80	17	17	9.0	5.7	3.6	4.8	12	4.2	16	12
2	8.2	108	10	16	8.0	5.7	3.9	5.4	14	3.9	31	10
3	8.2	215	11	14	7.2	5.4	5.7	8.0	9.1	7.4	281	11
4	8.6	337	32	14	6.8	5.4	4.2	33	6.8	8.6	84	11
5	63	101	14	12	6.6	6.3	3.6	36	7.2	14	59	12
6	17	141	46	11	6.4	6.8	3.6	20	6.3	5.7	28	10
7	10	56	22	10	6.3	5.7	4.6	7.7	5.7	5.4	18	17
8	7.7	45	16	11	6.3	5.1	5.7	7.7	5.7	33	18	30
9	7.7	32	16	11	6.3	5.1	3.6	6.3	5.7	7.2	16	17
10	12	28	15	69	6.3	5.1	3.6	6.0	5.7	32	17	11
11	10	21	14	68	6.3	4.8	3.3	5.7	5.7	22	14	10
12	37	21	29	31	6.3	4.8	4.2	5.7	5.7	35	40	9.6
13	20	17	20	19	6.3	4.8	4.2	5.1	5.4	23	16	13
14	8.6	16	46	14	6.0	8.7	3.6	6.0	5.1	28	14	11
15	7.7	15	16	12	6.0	5.7	3.6	6.0	4.5	14	13	15
16	8.2	13	10	11	5.7	4.8	3.3	5.7	8.8	20	20	9.6
17	15	12	11	10	5.4	4.8	9.3	4.8	5.7	12	20	13
18	27	11	10	9.8	5.1	4.8	7.4	9.5	5.4	15	15	11
19	13	11	10	9.6	4.8	4.5	6.6	8.2	4.8	20	15	10
20	8.6	46	9.1	9.2	4.8	4.5	7.7	178	5.1	13	13	8.6
21	7.7	139	9.1	9.0	5.1	4.2	6.8	28	6.0	16	13	11
22	7.7	27	127	11	7.2	4.2	6.0	7.7	8.6	12	34	13
23	7.2	453	199	11	5.4	3.9	8.3	6.3	5.1	11	17	13
24	6.3	153	29	8.4	5.1	3.9	6.8	6.0	5.4	10	18	8.6
25	5.7	37	17	7.6	5.1	3.9	8.8	6.3	7.7	13	23	10
26	60	23	16	7.2	6.3	3.6	8.2	6.3	11	9.6	15	9.6
27	24	26	24	7.8	5.7	3.6	9.7	5.7	5.7	8.6	13	13
28	125	16	38	7.0	6.6	3.6	20	5.4	5.4	7.7	13	16
29	348	11	29	10	---	3.9	6.8	5.1	4.5	12	12	14
30	846	10	45	11	---	3.6	5.4	5.1	4.2	13	11	11
31	200	---	23	10	---	3.6	---	5.1	---	11	13	---
TOTAL	1944.2	2221	930.2	478.6	172.4	150.5	182.1	456.6	198.0	447.3	930	371.0
MEAN	62.7	74.0	30.0	15.4	6.16	4.85	6.07	14.7	6.60	14.4	30.0	12.4
MAX	846	453	199	69	9.0	8.7	20	178	14	35	281	30
MIN	5.7	10	9.1	7.0	4.8	3.6	3.3	4.8	4.2	3.9	11	8.6
AC-FT	3860	4410	1850	949	342	299	361	906	393	887	1840	736

CAL YR 1982	TOTAL	17367.7	MEAN	47.6	MAX	846	MIN	5.7	AC-FT	34450
WTR YR 1983	TOTAL	8481.9	MEAN	23.2	MAX	846	MIN	3.3	AC-FT	16820

16091000 LOWER ANAHOLA DITCH NEAR KEALIA

LOCATION.--Lat 22°08'14", long 159°19'31", Hydrologic Unit 20070000, on left bank 100 ft downstream from last wasteway, 1.5 mi southwest of mouth of Anahola Stream, and 2.8 mi northwest of Kealia.

PERIOD OF RECORD.--December 1936 to September 1983 (discontinued).

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 276.11 ft above mean sea level (Highway Department bench mark).

REMARKS.--Records good. Ditch diverts from Anahola Stream for irrigation of sugarcane in vicinity of Anahola.

AVERAGE DISCHARGE.--46 years (water years 1938-83), 2.86 ft³/s (2,070 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18.6 ft³/s June 1, 1938; no flow at times.

EXTREMES FOR CURRENT YEAR.--No flow for the entire year.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1982	TOTAL	44.67	MEAN	.122	MAX	3.2	MIN	.00	AC-FT	89
WTR YR 1983	TOTAL	.00	MEAN	.00	MAX	.00	MIN	.00	AC-FT	.00

16093200 ANAHOLA STREAM AT ANAHOLA

LOCATION.--Lat 22°08'42", long 159°18'59", Hydrologic Unit 20070000, on downstream side of old highway bridge at Anahola, 0.1 mi upstream from Highway 56, and 0.9 mi upstream from mouth.

DRAINAGE AREA.--9.24 mi².

PERIOD OF RECORD.--Annual maximum, water years 1962-65, November 1964 to December 1982 (discontinued).

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (by stadia survey). Apr. 12, 1962, to Nov. 19, 1964, crest-stage gage at same site and datum.

REMARKS.--Records good. Anahola and Lower Anahola ditches (see sta 16088000 and 16091000) divert above station for irrigation of sugarcane in vicinities of Kealia and Anahola, respectively. Observations of specific conductance, pH, and water temperature are published elsewhere in this report.

AVERAGE DISCHARGE.--17 years (water years 1966-83), 36.5 ft³/s (26,440 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s May 15, 1965, gage height, 15.84 ft, present site, from rating curve extended above 5,800 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 2.1 ft³/s Oct. 25, 1975.

EXTREMES FOR PERIOD OCTOBER TO DECEMBER 1982.--Peak discharges above base of 2,200 ft³/s and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1400	*11480	15.19
Nov. 30	1330	2530	9.79

Minimum discharge, 13 ft³/s Oct. 24-26.

DISCHARGE (CUBIC FEET/SECOND) OCTOBER TO DECEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	140	44									
2	18	209	35									
3	17	263	35									
4	17	415	51									
5	57	142	39									
6	26	161	61									
7	19	98	35									
8	15	75	29									
9	15	62	26									
10	19	55	25									
11	16	49	23									
12	134	48	38									
13	64	41	33									
14	15	33	56									
15	14	33	26									
16	15	30	20									
17	21	27	20									
18	31	26	20									
19	23	26	18									
20	15	58	18									
21	14	150	17									
22	13	53	107									
23	13	530	261									
24	13	239	64									
25	13	83	44									
26	59	59	39									
27	101	53	52									
28	123	46	68									
29	549	40	55									
30	1570	39	77									
31	333	---	53									
TOTAL	3370	3283	1489									
MEAN	109	109	48.0									
MAX	1570	530	261									
MIN	13	26	17									
AC-FT	6680	6510	2950									

CAL YR 1982 TOTAL 29995 MEAN 82.2 MAX 1570 MIN 13 AC-FT 59500

16097500 HALAULANI STREAM AT ALTITUDE 400 FT, NEAR KILAUEA

LOCATION.--Lat 22°10'54", long 159°25'17", Hydrologic Unit 20070000, on left bank 0.5 mi upstream from confluence with Pohakuhonu Stream and 2.3 mi south of Kilauea.

DRAINAGE AREA.--1.9 mi².

PERIOD OF RECORD.--November 1957 to current year.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 391.8 ft above mean sea level (by stadia survey).

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--25 years (water years 1959-83), 11.7 ft³/s (8,480 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,070 ft³/s Aug. 6, 1959, gage height, 8.30 ft, from rating curve extended above 190 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.8 ft³/s Sept. 6-8, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 580 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	0900	1020	5.89
Nov. 23	1300	*1040	5.95
Aug. 3	1430	668	4.86

Minimum discharge, 4.6 ft³/s Mar. 30, 31, Apr. 1, 2, 8-12, 16.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	22	11	11	6.9	5.7	4.7	8.2	8.3	5.9	13	8.6
2	8.6	21	11	10	6.8	5.7	4.7	13	12	6.1	17	7.1
3	12	46	10	9.5	6.7	5.6	6.2	20	9.2	9.5	90	7.7
4	9.6	92	17	9.3	6.7	5.6	4.9	31	7.2	8.5	36	7.0
5	29	28	11	9.0	6.6	5.8	4.7	39	8.2	13	22	10
6	17	42	20	8.5	6.6	5.7	4.7	19	7.2	8.1	14	7.3
7	12	21	14	8.4	6.5	5.4	4.7	17	6.5	8.0	11	19
8	9.9	15	10	9.0	6.5	5.6	4.7	13	6.4	23	11	15
9	11	12	9.4	8.3	6.4	5.4	4.7	9.1	6.2	10	9.0	13
10	11	11	9.0	22	6.4	5.4	4.6	8.6	6.4	30	9.3	8.4
11	9.8	10	9.1	18	6.4	5.3	4.7	7.8	6.8	20	8.6	7.9
12	20	10	12	14	6.4	5.3	5.9	7.1	6.4	26	24	7.7
13	18	9.5	10	12	6.4	5.3	5.0	6.8	5.9	22	9.7	8.4
14	10	9.0	16	9.1	6.3	6.2	5.4	7.9	5.8	22	8.6	8.1
15	9.5	8.7	10	8.6	6.1	5.4	4.9	7.1	5.8	13	8.4	9.0
16	10	8.5	9.1	8.3	6.0	5.3	4.8	6.4	9.4	16	11	7.5
17	14	8.4	8.7	8.1	5.9	5.2	7.4	6.2	7.1	11	14	15
18	29	8.2	8.8	7.9	5.9	5.2	6.0	10	6.3	14	10	8.6
19	14	8.6	8.3	7.8	5.9	5.2	8.0	7.6	6.3	16	9.3	7.7
20	11	21	8.1	7.7	5.9	5.2	7.1	52	6.2	11	8.1	7.5
21	9.7	45	8.4	7.6	5.9	5.2	10	19	6.4	10	7.5	8.6
22	9.6	13	42	7.7	6.1	5.2	8.9	9.9	6.7	9.0	7.9	7.7
23	9.1	173	48	7.5	5.8	5.0	18	8.3	6.3	8.9	7.5	8.1
24	8.6	33	14	7.3	5.8	5.3	13	7.4	7.8	8.9	8.1	7.0
25	8.4	15	11	7.2	5.9	5.2	9.9	7.4	8.5	9.4	12	9.5
26	19	13	11	7.1	5.8	5.0	8.3	7.0	8.7	8.0	7.9	7.5
27	12	14	11	7.0	5.9	4.9	12	6.5	7.1	7.5	7.3	9.7
28	42	11	24	6.9	5.8	4.9	14	6.3	6.6	7.2	7.0	13
29	87	9.9	16	8.7	---	4.9	8.8	6.0	6.3	11	7.0	13
30	247	9.6	20	7.9	---	4.7	7.2	5.9	5.9	12	6.8	11
31	36	---	14	7.5	---	4.7	---	5.9	---	12	9.5	---
TOTAL	763.5	748.4	441.9	288.9	174.3	164.5	217.9	386.4	213.9	397.0	432.5	285.6
MEAN	24.6	24.9	14.3	9.32	6.22	5.31	7.26	12.5	7.13	12.8	14.0	9.52
MAX	247	173	48	22	6.9	6.2	18	52	12	30	90	19
MIN	8.4	8.2	8.1	6.9	5.8	4.7	4.6	5.9	5.8	5.9	6.8	7.0
AC-FT	1510	1480	877	573	346	326	432	766	424	787	858	566

CAL YR 1982	TOTAL	7489.1	MEAN	20.5	MAX	247	MIN	6.0	AC-FT	14850
WTR YR 1983	TOTAL	4514.8	MEAN	12.4	MAX	247	MIN	4.6	AC-FT	8960

16100000 HANALEI TUNNEL OUTLET NEAR LIHUE

LOCATION.--Lat 22°05'03", long 159°27'51", Hydrologic Unit 20070000, on left bank at outlet of Hanalei tunnel, 2.2 mi downstream from intake on Kaapoko Stream, and 9.4 mi northwest of Lihue.

PERIOD OF RECORD.--July 1932 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,210 ft, from tunnel-profile.

REMARKS.--Records good. Tunnel diverts water from Kaapoko Stream and Hanalei River into North Branch of North Fork Wailua River, from which it is later diverted for irrigation in vicinity of Lihue and Kapaa. Prior to Feb. 24, 1976 records do not include water by-passing at times above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--51 years, 27.0 ft³/s (19,560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 99 ft³/s Apr. 11, 25, 26, 1942; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 57 ft³/s Aug. 3; minimum daily, 0.38 ft³/s Feb. 16.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	16	19	9.3	6.5	26	23	33	36	26	33	25
2	5.7	20	12	8.9	6.0	26	23	39	35	26	35	25
3	6.3	37	12	8.3	5.7	25	25	36	30	35	57	25
4	6.3	31	12	8.2	5.7	25	26	43	29	34	27	26
5	13	22	11	8.1	5.7	26	26	43	38	36	21	24
6	14	27	11	7.8	5.7	26	23	40	36	33	18	23
7	7.3	13	10	7.8	5.4	25	29	38	31	32	15	31
8	6.0	9.6	10	11	5.4	25	28	34	29	44	17	33
9	7.0	8.1	9.6	9.5	5.4	24	24	30	29	34	14	31
10	9.1	7.8	9.6	9.6	5.4	24	23	29	30	51	15	26
11	7.5	7.6	9.6	23	5.1	25	23	30	30	42	14	26
12	9.7	8.3	19	14	5.1	25	24	28	30	47	19	26
13	9.1	6.8	14	10	5.4	24	34	27	28	43	11	26
14	5.7	6.8	14	9.6	5.0	28	32	30	28	46	11	25
15	6.5	6.5	11	8.6	3.0	24	25	28	32	36	10	26
16	6.8	7.3	10	8.1	.38	25	25	26	35	42	13	25
17	7.5	8.1	11	8.1	6.1	25	41	29	34	34	12	42
18	11	6.3	19	7.8	20	24	28	33	29	37	10	28
19	5.4	6.3	11	7.8	20	23	31	28	29	46	9.6	26
20	4.2	9.0	10	7.6	20	23	29	43	28	36	9.6	25
21	4.0	16	11	7.3	20	23	30	34	30	34	9.3	26
22	4.0	7.8	19	7.6	23	23	35	30	32	32	13	26
23	3.7	43	24	7.0	26	23	37	30	30	30	11	25
24	3.5	23	12	6.5	26	29	31	23	30	32	15	25
25	3.2	14	11	6.5	27	23	33	35	32	30	14	25
26	7.1	13	11	6.5	26	23	32	32	33	29	9.6	25
27	5.7	13	11	6.5	27	23	39	29	30	27	9.6	32
28	14	12	11	6.3	26	23	43	28	31	27	8.3	39
29	31	12	12	6.5	---	23	35	27	28	36	8.1	35
30	46	12	11	6.5	---	23	30	27	27	40	14	31
31	26	---	11	7.8	---	23	---	28	---	36	27	---
TOTAL	302.6	430.3	388.8	268.1	347.98	757	887	990	929	1113	510.1	833
MEAN	9.76	14.3	12.5	8.65	12.4	24.4	29.6	31.9	31.0	35.9	16.5	27.8
MAX	46	43	24	23	27	29	43	43	38	51	57	42
MIN	3.2	6.3	9.6	6.3	.38	23	23	23	27	26	8.1	23
AC-FT	600	853	771	532	690	1500	1760	1960	1840	2210	1010	1650

CAL YR 1982	TOTAL	5150.0	MEAN	14.1	MAX	56	MIN	2.4	AC-FT	10220
WTR YR 1983	TOTAL	7756.88	MEAN	21.3	MAX	57	MIN	.38	AC-FT	15390

16103000 HANALEI RIVER NEAR HANALEI

LOCATION.--Lat 22°11'31", long 159°27'57", Hydrologic Unit 20070000, on right bank 2.6 mi southeast of Hanalei School and 4.9 mi upstream from mouth.

DRAINAGE AREA.--19.1 mi².

PERIOD OF RECORD.--January 1912 to November 1919, annual maximum, water years 1962-63, December 1962 to current year.

REVISED RECORDS.--WSP 1937: Drainage area. WSP 2137: 1962(M), 1963-65(P). WDR HI-77-1: 1970-76(M), 1975-76.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 35.8 ft above mean sea level (by stadia survey). Jan. 1, 1912 to Nov. 20, 1919, nonrecording gage at site 0.2 mi upstream at different datum. Jan. 26 to Dec. 26, 1962, crest-stage gage at present site and datum.

REMARKS.--Records fair except those for period of no gage-height record, Jan. 19 to Apr. 22, which are poor. Since 1925, Hanalei tunnel (sta 16100000) has diverted from Hanalei River and its tributary Kaapoko Stream above station to North Branch of North Fork Wailua River for irrigation. China ditch above station diverts for irrigation of taro in vicinity of Hanalei. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since diversion to Hanalei tunnel).--20 years (water years 1964-83), 223 ft³/s (161,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s Apr. 19, 1974, gage height, 14.28 ft, from rating curve extended above 9,600 ft³/s; minimum, 31 ft³/s Sept. 30, Oct. 1, 2, 5, 12, 13, Nov. 3, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,200 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1300	*19840	13.21
Nov. 23	2130	16680	12.42

Minimum discharge, 47 ft³/s July 1, 2.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	225	387	236	161	120	68	48	210	170	49	132	102
2	173	588	165	149	110	68	49	382	153	47	178	79
3	201	1810	165	139	107	67	54	340	95	86	1470	86
4	185	1810	161	135	100	67	58	569	98	121	720	77
5	742	617	155	132	98	74	68	730	241	181	393	100
6	345	739	204	128	96	80	60	419	128	109	240	72
7	211	362	187	124	94	90	70	256	87	86	165	180
8	171	242	155	151	92	74	68	219	77	289	157	205
9	181	205	141	130	90	72	52	139	72	103	122	149
10	198	189	132	229	89	72	49	113	75	437	129	91
11	179	175	132	799	89	94	48	99	78	287	113	81
12	290	175	388	262	86	82	48	88	70	360	426	84
13	269	153	274	199	84	78	60	79	61	280	169	105
14	165	145	378	163	82	120	400	87	57	420	128	85
15	155	141	189	147	80	80	160	75	57	181	116	119
16	187	141	161	137	78	82	84	68	140	233	223	85
17	239	149	169	134	77	84	74	71	85	145	244	328
18	329	134	309	128	76	66	250	91	68	252	139	134
19	220	130	185	123	74	58	160	78	73	304	139	99
20	161	241	153	120	72	56	220	972	64	157	112	86
21	149	487	163	120	71	54	170	249	69	122	103	117
22	145	189	340	119	71	54	224	119	85	102	144	120
23	141	3910	864	118	70	64	333	99	64	91	165	102
24	129	898	233	117	69	94	239	93	76	92	181	86
25	124	302	197	115	68	64	175	103	93	95	216	110
26	291	231	181	114	68	54	161	99	103	76	124	91
27	202	229	195	113	68	50	296	72	71	69	129	116
28	560	191	191	113	68	49	445	66	58	64	103	202
29	1620	181	195	112	---	48	230	60	59	115	99	168
30	5310	181	213	112	---	48	143	56	51	194	102	126
31	947	---	189	180	---	48	---	55	---	165	116	---
TOTAL	14444	15332	7000	5023	2347	2159	4496	6156	2688	5312	6997	3585
MEAN	466	511	226	162	83.8	69.6	150	199	89.6	171	226	120
MAX	5310	3910	864	799	120	120	445	972	241	437	1470	328
MIN	124	130	132	112	68	48	48	55	51	47	99	72
AC-FT	28650	30410	13880	9960	4660	4280	8920	12210	5330	10540	13880	7110

CAL YR 1982	TOTAL	151740	MEAN	416	MAX	5310	MIN	85	AC-FT	301000
WTR YR 1983	TOTAL	75539	MEAN	207	MAX	5310	MIN	47	AC-FT	149800

16108000 WAINIHA RIVER NEAR HANALEI

LOCATION.--Lat 22°08'20", long 159°33'38", Hydrologic Unit 20070000, on left bank at Puwainui Falls, 1.5 mi upstream from Wainiha powerplant intake, and 6.0 mi southwest of Hanalei.

DRAINAGE AREA.--10.2 mi².

PERIOD OF RECORD.--August 1952 to February 1956, October 1957 to current year.

GAGE.--Water-stage recorder. Altitiude of gage is 960 ft, from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--28 years (water years 1953-55, 1959-83), 142 ft³/s (102,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s Apr. 19, 1974, gage height, 9.47 ft, from rating curve extended above 1,100 ft³/s on basis of slope-area measurement at gage height 7.72 ft; minimum, 33.0 ft³/s Feb. 11, 12, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 17, 1956, which destroyed the station, reached a stage of 14.1 ft, from floodmarks, discharge, about 40,000 ft³/s, from unit-discharge study.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s and maximum (*), from rating curve extended as explained above.

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 30	1300	8700	6.58
Nov. 23	1530	*9200	6.68

Minimum discharge, 50 ft³/s Mar. 30, 31, Apr. 1-4, 7.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	253	231	75	70	56	51	156	152	55	119	83
2	114	569	109	74	64	56	50	341	129	56	138	75
3	127	1630	109	70	62	56	52	220	78	152	678	81
4	102	1170	87	72	62	56	55	395	78	165	308	72
5	312	488	81	69	64	58	72	526	156	232	235	63
6	253	615	94	67	61	64	58	359	102	165	170	57
7	132	198	94	67	60	67	72	154	70	150	92	252
8	88	113	101	130	60	58	71	119	71	360	148	209
9	108	89	84	101	61	56	55	75	80	137	78	176
10	140	93	76	160	61	56	56	66	92	498	102	83
11	134	93	76	372	59	76	55	67	100	241	92	78
12	162	125	459	188	59	72	71	62	93	308	510	88
13	154	93	278	98	60	58	391	60	63	228	111	96
14	87	98	287	93	59	98	186	94	65	405	83	75
15	119	89	120	76	59	63	61	69	113	160	72	97
16	138	107	98	71	59	63	55	58	185	232	185	76
17	156	98	111	69	58	66	180	71	158	116	144	351
18	190	76	420	67	58	58	116	65	100	198	81	93
19	105	74	162	66	58	55	163	60	98	235	76	71
20	81	107	107	65	58	53	121	215	93	116	64	63
21	83	246	134	65	58	53	172	111	97	84	59	91
22	93	95	198	65	58	52	223	72	127	72	88	98
23	90	2640	540	67	57	52	185	76	93	66	98	76
24	75	684	134	64	57	89	135	94	107	87	138	69
25	71	148	104	64	57	56	137	150	108	81	176	76
26	132	118	93	63	57	53	161	127	108	68	94	74
27	113	135	104	66	57	52	319	78	75	62	117	120
28	332	104	94	63	57	51	419	65	88	60	74	223
29	1010	102	84	64	---	51	209	58	71	170	71	143
30	1760	99	84	68	---	51	119	56	57	202	93	105
31	440	---	86	108	---	51	---	56	---	152	107	---
TOTAL	7053	10549	4839	2807	1670	1856	4070	4175	3007	5313	4601	3314
MEAN	228	352	156	90.5	59.6	59.9	136	135	100	171	148	110
MAX	1760	2640	540	372	70	98	419	526	185	498	678	351
MIN	71	74	76	63	57	51	50	56	57	55	59	57
AC-FT	13990	20920	9600	5570	3310	3680	8070	8280	5960	10540	9130	6570

CAL YR 1982	TOTAL	88871	MEAN	243	MAX	2640	MIN	58	AC-FT	176300
WTR YR 1983	TOTAL	53254	MEAN	146	MAX	2640	MIN	50	AC-FT	105600

16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA

LOCATION.--Lat 21°31'09", long 157°56'53", Hydrologic Unit 20060000, on left bank 140 ft upstream from Mauka ditch intake and Right Branch, and 4.5 mi northeast of Wahiawa.

DRAINAGE AREA.--1.38 mi².

PERIOD OF RECORD.--May 1913 to July 1953, April 1960 to current year. Monthly discharge only for some periods, published in WSP 1319. Prior to August 1953, published as Left Branch of North Fork Kaukonahua Stream near Wahiawa.

REVISED RECORDS.--WSP 1219: 1931-33(M), 1935(M), 1937-38(M). WSP 1319: 1914, 1917-18(M), 1920-23(M), 1925(M), 1927-30(M). WSP 1719: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,150 ft, from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--60 years (water years 1914-24, 1927-52, 1961-83), 16.5 ft³/s (11,950 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,640 ft³/s Oct. 28, 1981, gage height, 13.2 ft, from rating curve extended above 68 ft³/s on basis of slope-area measurement at gage height, 12.46 ft; minimum, 0.12 ft³/s Mar. 2, 13, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,280 ft³/s Dec. 23, gage height, 6.20 ft, no peak above base of 1,300 ft³/s; minimum, 0.13 ft³/s Mar. 31

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	7.9	8.2	12	1.8	.38	.22	17	66	3.9	9.7	6.3
2	7.7	7.0	4.2	5.1	1.3	.36	.25	52	11	22	17	5.7
3	12	91	4.7	4.2	1.1	.36	10	10	10	23	37	6.1
4	7.2	13	5.7	3.9	.94	.36	7.2	21	12	14	26	5.1
5	53	19	3.9	3.5	.94	.33	.60	44	25	45	18	4.9
6	34	44	8.5	3.6	.94	.33	.36	11	25	12	15	55
7	9.3	14	4.4	4.1	.82	.33	.31	24	8.2	41	8.7	26
8	15	8.4	3.3	4.2	.72	.31	.25	8.2	6.7	45	14	14
9	32	7.2	3.1	3.0	.68	.29	.24	5.3	34	13	7.9	7.2
10	19	6.7	3.0	6.6	.64	.29	.22	6.0	25	31	7.0	4.6
11	53	6.1	2.7	18	.60	.29	.22	11	8.7	36	6.5	5.7
12	30	9.0	63	36	.57	.33	33	5.5	12	44	41	6.1
13	38	18	11	4.6	.54	.29	1.9	12	7.0	29	13	9.1
14	12	5.5	6.5	3.5	.54	.29	1.4	29	8.8	63	13	4.9
15	13	5.1	3.8	3.1	.49	.27	.46	6.3	13	15	12	4.6
16	44	6.7	3.2	2.7	.49	.25	10	4.9	28	15	70	4.6
17	31	5.1	28	2.6	.46	.25	17	7.7	15	19	18	59
18	42	4.4	10	2.4	.46	.25	2.0	72	7.7	68	15	6.1
19	12	4.1	4.1	2.3	.46	.25	8.3	7.7	7.2	25	11	4.7
20	9.6	20	3.3	2.2	.44	.25	3.5	12	9.5	15	7.7	4.4
21	8.2	43	3.2	2.1	.44	.24	9.1	19	5.9	14	12	4.7
22	9.0	5.5	21	2.0	.44	.24	23	5.9	5.7	10	16	9.2
23	7.0	32	64	1.9	.41	.29	11	4.7	4.9	9.0	37	4.2
24	6.1	9.1	7.8	1.9	.41	.36	57	4.2	5.7	9.6	54	5.3
25	5.7	4.9	8.1	2.1	.41	.33	17	3.6	6.1	7.9	21	69
26	6.5	4.2	27	1.8	.46	.25	5.1	3.3	20	7.4	11	31
27	74	4.1	5.7	1.6	.57	.24	9.6	3.9	6.3	7.7	14	104
28	35	3.9	6.2	1.6	.44	.24	6.7	3.1	5.1	8.4	8.4	51
29	102	16	45	1.4	---	.22	6.1	2.8	4.7	15	7.2	60
30	20	17	11	1.4	---	.18	4.3	3.5	3.9	30	8.2	49
31	10	---	5.3	2.0	---	.14	---	9.8	---	9.6	10	---
TOTAL	765.2	441.9	388.9	147.4	18.51	8.79	246.33	430.4	408.1	707.5	566.3	631.5
MEAN	24.7	14.7	12.5	4.75	.66	.28	8.21	13.9	13.6	22.8	18.3	21.1
MAX	102	91	64	36	1.8	.38	57	72	66	68	70	104
MIN	5.7	3.9	2.7	1.4	.41	.14	.22	2.8	3.9	3.9	6.5	4.2
AC-FT	1520	877	771	292	37	17	489	854	809	1400	1120	1250

CAL YR 1982	TOTAL	10055.3	MEAN	27.5	MAX	332	MIN	1.5	AC-FT	19940
WTR YR 1983	TOTAL	4760.83	MEAN	13.0	MAX	104	MIN	.14	AC-FT	9440

16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA

LOCATION.--Lat 21°29'32", long 157°59'54", Hydrologic Unit 20060000, on right bank on upstream side of dam at East Pump Reservoir, 2.3 mi east of Wahiawa Post Office, and 7.1 mi north of Waipahu.

DRAINAGE AREA.--4.04 mi².

PERIOD OF RECORD.--July 1957 to June 1963, water years 1963-64 (annual maximum), July 1964 to current year.

GAGE.--Water-stage recorder and Ogee-type dam control. Datum of gage is 860.35 ft above mean sea level. July 1, 1963, to June 30, 1964, crest-stage gage at same site and datum.

REMARKS.--Records good. Prior to 1960, diversions from reservoirs above station for use at Schofield Barracks. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--(since termination of diversions to Schofield Barracks).--21 years (water years, 1961-62, 1965-83), 22.1 ft³/s (16,010 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,460 ft³/s Apr. 15, 1963, gage height, 11.33 ft, from rating curve extended above 1,100 ft³/s on basis of computation of peak flow over dam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 785 ft³/s Oct. 29, gage height, 4.51 ft, no peak above base of 1,100 ft³/s; minimum, 0.36 ft³/s Mar. 30, 31.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	18	11	17	2.5	.76	.46	11	56	8.7	33	11
2	11	15	6.4	8.4	2.3	.64	.52	60	15	6.7	25	7.7
3	23	165	6.5	6.2	1.8	.68	1.3	17	13	24	59	14
4	19	33	7.2	5.5	1.7	.77	11	28	7.3	21	38	7.9
5	32	26	6.9	5.0	1.5	.76	13	98	8.6	115	47	6.9
6	58	41	11	4.6	1.5	.70	2.9	34	13	50	40	12
7	11	19	9.2	5.2	1.4	.75	2.8	26	8.1	78	21	69
8	20	14	5.3	6.1	1.4	.83	1.0	15	5.3	57	17	41
9	29	12	4.7	4.7	1.4	.77	.64	9.3	24	30	14	14
10	25	11	4.3	4.0	1.3	.69	.50	7.4	32	67	13	9.3
11	31	10	4.1	8.6	1.3	.75	.48	7.9	13	34	11	13
12	34	11	63	68	1.2	.79	1.0	7.2	8.9	34	26	15
13	65	46	25	10	1.2	.83	3.7	5.4	7.2	45	20	26
14	14	12	24	5.3	1.1	.86	1.1	12	9.0	91	26	11
15	11	9.3	7.8	4.4	1.1	.76	.62	6.7	16	34	13	8.8
16	34	9.9	5.7	3.8	1.0	.65	.48	4.6	60	33	101	8.6
17	26	8.8	41	3.5	.96	.62	43	4.4	20	30	46	71
18	54	7.6	37	3.3	.96	.66	4.6	59	14	60	27	15
19	17	7.0	9.8	3.1	.89	.64	8.5	10	17	44	18	10
20	11	13	6.5	2.9	.96	.61	10	6.2	27	33	13	9.0
21	9.7	43	5.9	2.8	.90	.61	13	25	13	21	13	16
22	9.8	10	24	2.6	.82	.61	23	7.0	15	17	27	13
23	11	51	116	2.6	.80	.85	13	4.8	10	16	13	9.0
24	7.5	29	25	2.6	.79	.82	70	4.3	13	17	25	7.2
25	6.8	9.6	12	2.7	.80	.54	41	3.6	12	15	33	22
26	7.2	7.6	29	2.7	.90	.48	9.3	3.2	33	13	12	29
27	126	7.0	11	2.4	.93	.48	17	3.4	12	12	12	51
28	87	6.3	7.7	2.4	.85	.46	16	3.1	9.5	11	10	72
29	225	11	37	2.2	---	.44	24	2.5	11	33	9.6	61
30	48	17	16	2.1	---	.38	9.0	2.2	7.5	50	13	45
31	26	---	7.3	2.0	---	.37	---	2.4	---	22	16	---
TOTAL	1100.0	680.1	587.3	206.7	34.26	20.56	342.90	490.6	510.4	1122.4	791.6	705.4
MEAN	35.5	22.7	18.9	6.67	1.22	.66	11.4	15.8	17.0	36.2	25.5	23.5
MAX	225	165	116	68	2.5	.86	70	98	60	115	101	72
MIN	6.8	6.3	4.1	2.0	.79	.37	.46	2.2	5.3	6.7	9.6	6.9
AC-FT	2180	1350	1160	410	68	41	680	973	1010	2230	1570	1400

CAL YR 1982	TOTAL	12997.9	MEAN	35.6	MAX	345	MIN	2.5	AC-FT	25780
WTR YR 1983	TOTAL	6592.22	MEAN	18.1	MAX	225	MIN	.37	AC-FT	13080

16211600 MAKAHA STREAM NEAR MAKAHA

LOCATION.--Lat 21°30'16", long 158°10'59", Hydrologic Unit 20060000, on right bank 1.5 mi northeast of Kaneaki Heiau and 3.4 mi northeast of Makaha.

DRAINAGE AREA.--2.31 mi².

PERIOD OF RECORD.--July 1959 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete-masonry control. Datum of gage is 938.64 ft above mean sea level (Waianae Plantation bench mark).

REMARKS.--Records fair. Wells and water-development tunnels in the vicinity and above the station may affect low-flow records. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--24 years, 1.95 ft³/s (1,410 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,450 ft³/s Jan. 6, 1982, gage height, 7.40 ft, from floodmarks, from rating curve extended above 51 ft³/s on basis of slope-area measurements at gage heights 6.50 ft and 7.40 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1953, about 7.8 ft Nov. 24, 1954, from information by local resident. Discharge, about 1,700 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 255 ft³/s Oct. 27, gage height, 3.62 ft, no other peak above base of 200 ft³/s; minimum, 0.01 ft³/s Sept. 25.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	5.5	1.2	4.2	2.0	1.0	.44	.97	.63	.45	.41	.39
2	.30	3.6	1.1	3.8	1.7	.91	.44	.83	.69	.44	1.4	.35
3	.29	4.8	5.5	3.5	1.6	.86	.44	.76	.63	.52	7.1	.35
4	.28	3.2	3.1	3.3	1.5	.86	.44	.72	.61	.65	2.0	.49
5	.36	2.5	2.1	3.0	1.4	.83	.44	.89	.57	1.3	1.3	.44
6	.34	2.2	6.3	2.8	1.3	.79	.44	.99	.53	1.5	1.4	.60
7	.33	1.9	4.3	2.7	1.2	.86	.45	1.0	.50	1.8	1.1	.85
8	.32	1.6	2.9	2.5	1.2	.85	.44	.97	.49	1.4	.84	1.1
9	.32	1.4	2.6	2.3	1.2	.84	.44	.76	.49	.98	.73	.66
10	.30	1.3	2.0	12	1.1	.79	.42	.69	.49	1.2	.63	.54
11	.32	1.2	1.7	7.4	1.1	.96	.39	.63	.49	.99	.58	.44
12	.34	1.1	2.6	7.8	1.0	1.6	.43	.61	.50	.73	.56	.39
13	.33	1.6	3.4	4.7	1.0	1.2	.44	.60	.50	1.1	.52	.35
14	.29	1.2	2.0	4.0	.99	2.4	.39	.58	.49	1.1	.50	.31
15	.30	1.0	1.6	3.3	.99	1.1	.41	.55	.50	.89	.49	.34
16	.31	.99	1.4	2.8	1.0	.65	.60	.54	.52	.70	.52	.31
17	.29	1.0	1.8	2.5	1.0	.67	.78	.54	.66	.63	.69	.31
18	.32	.92	4.2	2.3	.98	.73	.85	.54	.81	2.1	.72	.31
19	.33	.92	2.1	2.1	.92	.85	1.4	.54	.64	1.2	.61	.31
20	.34	1.5	1.5	2.0	.92	.75	1.3	3.9	.59	.76	.54	.31
21	.34	2.0	1.3	1.9	.92	.72	1.1	5.6	.56	.62	.52	.31
22	.33	1.2	1.5	1.9	1.2	.68	.82	1.6	.56	.52	.54	.30
23	.31	5.6	6.4	3.1	1.1	.60	.83	1.2	.52	.49	.93	.37
24	.30	8.6	14	2.9	.91	.53	.80	1.2	.49	.47	2.6	.14
25	.28	3.9	7.2	3.4	.86	.46	.82	.96	.50	.44	2.8	.18
26	2.5	2.7	3.2	2.2	1.7	.44	.76	.80	.60	.40	2.9	.47
27	16	2.1	1.4	2.4	1.3	.44	1.6	.72	.55	.37	2.9	.42
28	16	1.6	2.3	2.0	1.5	.44	1.9	.72	.51	.35	3.0	.43
29	40	1.4	7.9	1.8	---	.44	1.2	.78	.48	.37	3.0	1.4
30	19	1.3	6.0	3.0	---	.50	1.2	.66	.45	.39	2.3	.65
31	12	---	5.0	2.5	---	.46	---	.60	---	.41	.39	---
TOTAL	113.37	69.83	109.6	106.1	33.59	25.21	22.41	32.45	16.55	25.27	44.52	13.82
MEAN	3.66	2.33	3.54	3.42	1.20	.81	.75	1.05	.55	.82	1.44	.46
MAX	40	8.6	14	12	2.0	2.4	1.9	5.6	.81	2.1	7.1	1.4
MIN	.28	.92	1.1	1.8	.86	.44	.39	.54	.45	.35	.39	.14
AC-FT	225	139	217	210	67	50	44	64	33	50	88	27

CAL YR 1982	TOTAL	1547.76	MEAN	4.24	MAX	107	MIN	.28	AC-FT	3070
WTR YR 1983	TOTAL	612.72	MEAN	1.68	MAX	40	MIN	.14	AC-FT	1220

16212800 KIPAPA STREAM NEAR WAHIAWA

LOCATION.--Lat 21°28'13", long 157°57'40", Hydrologic Unit 20060000, on left bank 1,700 ft downstream from forest-reserve boundary, 4.9 mi southeast of Wahiawa Post Office, and 6.3 mi northeast of Waipahu.

DRAINAGE AREA.--4.29 mi².

PERIOD OF RECORD.--January 1957 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 690 ft, from topographic map.

REMARKS.--Records fair. At times, a small amount of water is diverted from the gage pool for domestic use. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--26 years, 11.1 ft³/s (8,040 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,680 ft³/s May 14, 1963, gage height, 12.29 ft, from rating curve extended above 300 ft³/s on basis of slope-area measurements at gage heights 7.96 ft and 12.29 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 696 ft³/s Dec. 23, gage height, 6.29 ft, no peak above base of 930 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	6.8	4.1	4.7	.81	.39	.00	.81	22	.69	10	3.5
2	2.4	4.6	2.6	3.5	.54	.17	.00	3.9	5.9	.69	7.0	1.9
3	4.4	105	1.7	2.2	.40	.06	.05	2.2	3.3	5.4	20	1.8
4	5.8	18	3.0	2.0	.35	.00	5.4	1.3	3.5	4.7	12	1.5
5	47	15	2.3	1.6	.32	.00	1.4	4.5	6.4	16	15	1.8
6	27	50	4.6	1.4	.27	.00	.81	7.2	4.3	11	7.0	6.1
7	4.8	11	3.6	1.4	.24	.00	.32	8.5	2.5	25	5.0	14
8	7.1	6.5	2.1	1.5	.23	.00	.19	4.9	1.4	24	4.1	13
9	17	4.6	1.6	1.3	.22	.00	.00	2.0	3.9	8.8	3.5	3.5
10	6.2	4.2	1.4	1.2	.21	.00	.00	1.2	4.7	13	3.0	2.1
11	8.3	3.6	1.3	8.8	.26	.00	.00	.81	2.8	9.5	2.9	1.6
12	15	4.4	29	40	.26	.00	1.9	1.0	1.5	12	8.0	1.4
13	22	18	12	5.1	.29	.00	1.9	.81	1.3	12	6.0	1.5
14	4.6	4.3	8.7	2.2	.32	.00	.43	1.4	1.3	36	9.0	1.9
15	3.6	4.0	3.5	1.6	.35	.04	.15	1.3	1.4	11	4.0	.95
16	7.7	4.8	2.1	1.3	.32	.00	.02	.69	25	8.1	30	.75
17	5.9	3.6	16	1.1	.32	.00	17	.48	5.9	5.9	10	18
18	10	3.0	24	1.0	.39	.00	2.1	9.5	3.9	21	5.6	3.3
19	5.1	2.8	5.1	.88	.43	.00	1.3	4.3	2.2	12	4.0	2.1
20	3.0	5.0	2.8	.88	.48	.00	4.5	2.7	6.7	5.6	3.2	2.1
21	2.4	16	2.2	.81	.48	.00	6.1	8.1	2.9	4.7	3.0	1.6
22	2.7	3.8	32	.75	.35	.00	4.9	2.8	1.9	3.9	8.5	2.4
23	4.0	26	74	.69	.29	.00	2.8	1.4	1.6	3.0	3.0	2.1
24	2.0	15	15	.81	.29	.00	3.2	.88	1.4	2.8	7.0	1.1
25	1.6	4.0	7.8	.88	.29	.00	13	.58	1.4	2.5	15	14
26	1.7	2.8	29	.75	.43	.00	3.0	.43	11	2.3	4.3	7.2
27	57	2.3	7.0	.63	.63	.00	2.0	.39	3.5	2.2	3.5	18
28	70	2.0	3.9	.75	.75	.00	2.4	.35	2.5	2.1	2.7	24
29	144	2.2	24	.63	---	.00	3.0	.23	1.4	9.0	2.2	52
30	35	11	7.5	.58	---	.00	1.4	.23	.95	15	2.1	40
31	13	---	3.3	.63	---	.00	---	1.2	---	5.6	5.1	---
TOTAL	542.5	364.3	337.2	91.57	10.52	.66	79.27	76.09	138.45	295.48	225.7	245.20
MEAN	17.5	12.1	10.9	2.95	.38	.021	2.64	2.45	4.61	9.53	7.28	8.17
MAX	144	105	74	40	.81	.39	17	9.5	25	36	30	52
MIN	1.6	2.0	1.3	.58	.21	.00	.00	.23	.95	.69	2.1	.75
AC-FT	1080	723	669	182	21	1.3	157	151	275	586	448	486

CAL YR 1982	TOTAL	7617.87	MEAN	20.9	MAX	286	MIN	.77	AC-FT	15110
WTR YR 1983	TOTAL	2406.94	MEAN	6.59	MAX	144	MIN	.00	AC-FT	4770

16213000 WAIKELE STREAM AT WAIPAHU
(National stream-quality accounting network station)

LOCATION.--Lat 21°23'11", long 159°00'49", Hydrologic Unit 20060000, on left bank 300 ft upstream from bridge on Highway 90 and 0.3 mi southwest of sugar refinery at Waipahu.

DRAINAGE AREA.--45.7 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to October 1951, December 1951 to October 1959, July 1960 to current year.

REVISED RECORDS.--WSP 1639: 1955(M). WSP 1937: Drainage area. WSP 2137: 1965.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1.37 ft above mean sea level. Prior to July 1, 1960, at site 300 ft downstream at datum 1.30 ft higher.

REMARKS.--Records good. Diversions above station for irrigation of sugarcane in vicinity of Waipahu.

AVERAGE DISCHARGE.--30 years (water years 1953-59, 1961-83), 39.4 ft³/s (28,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft³/s Nov. 28, 1954, gage height, 14.82 ft, site and datum then in use, from rating curve extended above 730 ft³/s on basis of slope-area measurement of peak flow; no flow for part of Feb. 25, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s and maximum (*), from rating curve extended above 2,200 ft³/s on basis of slope-area measurements at gage heights 9.65 ft, 10.80 ft and 12.53 ft:

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 27	0200	1740	5.23
Oct. 29	0800	*2040	5.54

Minimum discharge, 9.6 ft³/s June 15.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	74	38	56	34	21	31	34	25	20	24	22
2	20	61	32	60	34	21	33	27	35	24	24	18
3	29	250	31	56	35	20	35	23	24	32	69	25
4	29	99	34	54	33	22	36	22	21	36	48	25
5	79	74	38	47	37	32	28	17	23	31	44	25
6	61	110	71	30	41	34	26	28	22	45	57	21
7	33	69	56	27	33	29	27	31	17	42	39	19
8	28	48	46	28	28	28	21	44	16	51	32	42
9	37	32	34	26	25	25	26	29	15	41	23	26
10	31	29	26	24	26	30	28	17	17	33	21	25
11	27	31	26	27	26	28	22	17	26	39	20	24
12	43	27	37	72	30	25	18	15	31	34	21	15
13	53	62	72	41	42	29	18	16	21	37	27	13
14	37	44	46	29	39	23	17	24	14	54	27	15
15	31	32	34	28	34	21	23	33	11	53	21	16
16	27	29	29	28	28	25	29	27	28	38	39	15
17	27	28	27	32	25	23	43	17	28	36	51	31
18	27	28	92	29	25	20	30	16	27	33	32	34
19	31	27	46	25	29	27	20	23	31	48	26	21
20	29	36	31	28	38	30	20	19	28	29	25	28
21	25	75	27	32	34	23	23	23	23	28	21	25
22	22	60	46	29	28	20	27	28	21	25	22	19
23	25	120	289	28	25	20	32	18	21	28	25	18
24	24	131	116	23	24	20	35	16	20	30	24	30
25	21	65	69	23	23	19	41	14	24	26	37	32
26	25	58	87	25	27	19	30	13	32	25	26	26
27	342	55	73	34	30	25	30	13	29	24	24	24
28	339	52	62	37	26	23	26	16	20	23	24	46
29	629	46	73	41	---	19	29	30	21	24	18	99
30	151	40	74	46	---	19	35	23	21	33	19	72
31	97	---	60	39	---	21	---	16	---	35	19	---
TOTAL	2398	1892	1822	1104	859	741	839	689	692	1057	929	851
MEAN	77.4	63.1	58.8	35.6	30.7	23.9	28.0	22.2	23.1	34.1	30.0	28.4
MAX	629	250	289	72	42	34	43	44	35	54	69	99
MIN	19	27	26	23	23	19	17	13	11	20	18	13
AC-FT	4760	3750	3610	2190	1700	1470	1660	1370	1370	2100	1840	1690

CAL YR 1982	TOTAL	28831	MEAN	79.0	MAX	1760	MIN	15	AC-FT	57190
WTR YR 1983	TOTAL	13873	MEAN	38.0	MAX	629	MIN	11	AC-FT	27520

16213000 WAIKELE STREAM AT WAIPAHU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-72. April 1973 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1973 to September 1981.
WATER TEMPERATURES: April 1973 to September 1981.
SUSPENDED SEDIMENT DISCHARGE: July 1972 to current year.

INSTRUMENTATION.--Water-quality monitor since April 1973 to September 1981. Automatic pumping sediment sampler since July 1972.

REMARKS.--In addition to the water-quality monitor record, water-quality samples were collected once a month.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 796 micromhos/cm Dec. 1, 1980; minimum, 30 micromhos/cm Apr. 19, 1974.
WATER TEMPERATURES: Maximum, 30.0°C May 6, 1973; minimum, 16.0°C Mar. 16, 1976.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,420 mg/L Feb. 7, 1976; minimum daily mean, 5 mg/L on many days during 1983.
SEDIMENT DISCHARGE: Maximum daily, 32,900 tons Apr. 19, 1974; minimum daily, 0.07 ton Sept. 4, Oct. 1, 1975.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 771 mg/L Oct. 27; minimum daily mean, 5 mg/L on many days during the year.
SEDIMENT DISCHARGE: Maximum daily, 1,880 tons Oct. 29; minimum daily, 0.28 ton May 5, Sept. 13, 14.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
OCT					
14...	0900	29	360	6.8	23.0
26...	1000	18	480	6.8	22.5
NOV					
30...	1130	34	405	6.9	23.0
DEC					
20...	1010	29	460	6.6	21.0
JAN					
31...	1330	37	410	6.9	22.5
FEB					
28...	0940	28	560	6.9	21.5
APR					
27...	1030	30	520	6.9	23.0
MAY					
24...	0930	14	530	6.9	22.5
JUN					
21...	0930	22	458	6.6	22.5
JUL					
13...	1200	41	420	6.8	25.0
AUG					
15...	0945	18	474	7.0	23.0
SEP					
07...	1005	22	455	6.8	23.5

DATE	TIME	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT										
26...	1000	5.0	10.0	116	1600	13000	78	17	13	11
DEC										
20...	1010	4.2	8.0	91	2800	6000	73	20	13	9.8
FEB										
28...	0940	1.2	7.4	84	2400	1600	91	28	15	13
APR										
27...	1030	1.1	8.2	95	3800	1800	87	30	15	12
JUN										
21...	0930	1.5	6.6	76	16000	11000	71	14	12	9.9
AUG										
15...	0945	3.4	5.8	68	50000	16000	80	21	14	11

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT									
26...	65	63	3.3	3.0	61	22	94	.20	62
DEC									
20...	53	60	2.8	3.3	53	20	87	.10	47
FEB									
28...	71	62	3.3	3.4	63	26	110	.20	64
APR									
27...	67	62	3.2	3.2	57	23	110	.20	57
JUN									
21...	57	62	3.0	3.0	57	21	85	.20	54
AUG									
15...	60	61	3.0	3.1	59	20	90	.20	58

16213000 WAIKELE STREAM AT WAIPAHU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT 26...	298	310	.41	2.5	.150	1.40	.870	.850	.850
DEC 20...	269	267	.37	2.0	.350	1.20	.760	.720	.640
FEB 28...	348	344	.47	2.9	.390	2.00	.990	.990	1.00
APR 27...	324	323	.44	2.5	.090	.70	.530	.510	.460
JUN 21...	299	279	.41	2.4	.120	.90	.800	.790	.790
AUG 15...	301	294	.41	3.0	.130	1.20	.810	.790	.790

DATE	TIME	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)
OCT 26...	1000	200	<1	13	1	1	<1	<3	3	230	2
FEB 28...	0940	<10	<1	11	<1	<1	<1	<3	3	42	1
APR 27...	1030	10	<1	12	<1	<1	<1	<3	1	31	<1
AUG 15...	0945	20	<1	12	<1	<1	<1	<3	7	19	<1

DATE	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT 26...	11	110	<.1	<10	2	2	<1	91	34	7
FEB 28...	6	78	<.1	<10	2	2	<1	100	35	<3
APR 27...	5	65	<.1	<10	<1	2	<1	100	31	7
AUG 15...	<4	48	<.1	<10	4	2	<1	89	30	7

DATE	TIME	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM
OCT 26...	1000	7	.34	100	--
DEC 20...	1010	13	1.0	100	--
FEB 28...	0940	3	.23	100	--
APR 27...	1030	4	.32	100	--
JUN 21...	0930	3	.18	100	--
AUG 15...	0945	7	.34	100	24

< Actual value is known to be less than the value shown.

16213000 WAIKELE STREAM AT WAIPAHU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	19	9	.46	74	26	5.2	38	25	2.6
2	20	10	.54	61	24	4.0	32	15	1.3
3	29	35	2.7	250	256	370	31	15	1.3
4	29	35	2.7	99	85	23	34	15	1.4
5	79	118	38	74	25	5.0	38	20	2.1
6	61	57	9.4	110	35	10	71	67	16
7	33	25	2.2	69	18	3.4	56	30	4.5
8	28	20	1.5	48	15	1.9	46	18	2.2
9	37	30	3.0	32	15	1.3	34	15	1.4
10	31	18	1.5	29	15	1.2	26	10	.70
11	27	15	1.1	31	18	1.5	26	10	.70
12	43	28	3.3	27	20	1.5	37	21	5.1
13	53	40	5.7	62	30	5.0	72	52	12
14	37	26	2.6	44	25	3.0	46	22	2.7
15	31	14	1.2	32	30	2.6	34	16	1.5
16	27	12	.87	29	25	2.0	29	15	1.2
17	27	12	.87	28	20	1.5	27	15	1.1
18	27	12	.87	28	20	1.5	92	48	13
19	31	12	1.0	27	20	1.5	46	17	2.1
20	29	16	1.3	36	25	2.4	31	12	1.0
21	25	14	.95	75	50	10	27	18	1.3
22	22	13	.77	60	40	6.5	46	29	4.5
23	25	16	1.1	120	75	24	289	308	542
24	24	14	.91	131	80	28	116	40	13
25	21	13	.74	65	35	6.1	69	22	4.1
26	25	30	2.0	58	30	4.7	87	30	7.0
27	342	771	1260	55	30	4.5	73	18	3.5
28	339	505	886	52	30	4.2	62	15	2.5
29	629	594	1880	46	25	3.1	73	25	4.9
30	151	70	29	40	25	2.7	74	22	4.4
31	97	36	9.4	---	---	---	60	18	2.9
TOTAL	2398	---	4151.68	1892	---	541.3	1822	---	664.00
		JANUARY			FEBRUARY			MARCH	
1	56	18	2.7	34	5	.46	21	10	.57
2	60	16	2.6	34	5	.46	21	8	.45
3	56	13	2.0	35	5	.47	20	7	.38
4	54	12	1.7	33	5	.45	22	9	.53
5	47	10	1.3	37	8	.80	32	10	.86
6	30	8	.65	41	8	.89	34	10	.92
7	27	8	.58	33	7	.62	29	10	.78
8	28	8	.60	28	7	.53	28	14	1.1
9	26	8	.56	25	5	.34	25	14	.95
10	24	8	.52	26	5	.35	30	14	1.1
11	27	8	.58	26	5	.35	28	12	.91
12	72	20	3.9	30	6	.49	25	11	.74
13	41	15	1.7	42	8	.91	29	10	.78
14	29	10	.78	39	7	.74	23	9	.56
15	28	8	.60	34	6	.55	21	9	.51
16	28	8	.60	28	7	.53	25	12	.81
17	32	10	.86	25	7	.47	23	12	.75
18	29	9	.70	25	6	.41	20	12	.65
19	25	8	.54	29	7	.55	27	12	.87
20	28	8	.60	38	10	1.0	30	10	.81
21	32	10	.86	34	9	.83	23	8	.50
22	29	9	.70	28	8	.60	20	10	.54
23	28	9	.68	25	8	.54	20	8	.43
24	23	9	.56	24	7	.45	20	8	.43
25	23	9	.56	23	6	.37	19	8	.41
26	25	9	.61	27	5	.36	19	8	.41
27	34	5	.46	30	5	.41	25	8	.54
28	37	5	.50	26	7	.49	23	7	.43
29	41	6	.66	---	---	---	19	8	.41
30	46	7	.87	---	---	---	19	8	.41
31	39	5	.53	---	---	---	21	8	.45
TOTAL	1104	---	31.06	859	---	15.42	741	---	19.99

16213000 WAIKELE STREAM AT WAIPAHU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	31	8	.67	34	10	.92	25	15	1.0
2	33	8	.71	27	7	.51	35	20	1.9
3	35	8	.76	23	7	.43	24	15	.97
4	36	20	1.9	22	7	.42	21	12	.68
5	28	20	1.5	17	6	.28	23	12	.75
6	26	15	1.1	28	12	.91	22	12	.71
7	27	10	.73	31	15	1.3	17	12	.55
8	21	6	.34	44	25	3.0	16	12	.52
9	26	6	.42	29	15	1.2	15	11	.45
10	28	7	.53	17	8	.37	17	12	.55
11	22	7	.42	17	8	.37	26	15	1.1
12	18	8	.39	15	8	.32	31	15	1.3
13	18	8	.39	16	8	.35	21	12	.68
14	17	7	.32	24	15	.97	14	15	.57
15	23	7	.43	33	25	2.2	11	12	.36
16	29	8	.63	27	15	1.1	28	16	1.2
17	43	15	1.7	17	10	.46	28	16	1.2
18	30	12	.97	16	10	.43	27	14	1.0
19	20	10	.54	23	15	.93	31	13	1.1
20	20	8	.43	19	15	.77	28	13	.98
21	23	8	.50	23	20	1.2	23	13	.81
22	27	9	.66	28	25	1.9	21	13	.74
23	32	10	.86	18	20	.97	21	14	.79
24	35	8	.76	16	20	.86	20	14	.76
25	41	10	1.1	14	17	.64	24	14	.91
26	30	10	.81	13	16	.56	32	13	1.1
27	30	10	.81	13	15	.53	29	13	1.0
28	26	10	.70	16	16	.69	20	13	.70
29	29	12	.94	30	18	1.5	21	13	.74
30	35	14	1.3	23	14	.87	21	13	.74
31	---	---	---	16	12	.52	---	---	---
TOTAL	839	---	23.32	689	---	27.48	692	---	25.86
		JULY			AUGUST			SEPTEMBER	
1	20	12	.65	24	18	1.2	22	8	.48
2	24	16	1.0	24	18	1.2	18	8	.39
3	32	18	1.6	69	39	8.5	25	6	.41
4	36	12	1.2	48	20	2.6	25	6	.41
5	31	13	1.1	44	18	2.1	25	6	.41
6	45	18	2.2	57	24	3.7	21	7	.40
7	42	20	2.3	39	16	1.7	19	10	.51
8	51	22	3.0	32	14	1.2	42	25	2.8
9	41	18	2.0	23	12	.75	26	12	.84
10	33	22	2.0	21	12	.68	25	12	.81
11	39	25	2.6	20	10	.54	24	10	.65
12	34	20	1.8	21	8	.45	15	8	.32
13	37	22	2.2	27	10	.73	13	8	.28
14	54	35	7.3	27	10	.73	15	7	.28
15	53	28	4.0	21	10	.57	16	8	.35
16	38	16	1.6	39	27	5.2	15	8	.32
17	36	10	.97	51	32	4.4	31	8	.67
18	33	10	.89	32	15	1.3	34	8	.73
19	48	18	2.3	26	12	.84	21	8	.45
20	29	12	.94	25	12	.81	28	10	.76
21	28	10	.76	21	10	.57	25	10	.68
22	25	9	.61	22	12	.71	19	8	.41
23	28	9	.68	25	15	1.0	18	8	.39
24	30	10	.81	24	15	.97	30	18	1.5
25	26	12	.84	37	20	2.0	32	20	1.7
26	25	12	.81	26	14	.98	26	14	.98
27	24	10	.65	24	8	.52	24	12	.78
28	23	9	.56	24	8	.52	46	30	3.7
29	24	10	.65	18	7	.34	99	117	41
30	33	13	1.2	19	7	.36	72	60	12
31	35	15	1.4	19	8	.41	---	---	---
TOTAL	1057	---	50.62	929	---	47.58	851	---	75.41
YEAR	13873		5673.72						

HAWAII, ISLAND OF OAHU

16216000 WAIAWA STREAM NEAR PEARL CITY

LOCATION.--Lat 21°23'57", long 157°58'51", Hydrologic Unit 20060000, on left bank 100 ft upstream from lower bridge on Highway 90, 0.6 mi northwest of Pearl City, and 2.0 mi northeast of Waipahu.

DRAINAGE AREA.--26.4 mi².

PERIOD OF RECORD.--June 1952 to current year.

REVISED RECORDS.--WSP 1569: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1.81 ft above mean sea level.

REMARKS.--Records good except those above 200 ft³/s which are poor. Low flow affected by effluent from sewage treatment plant and occasional small irrigation diversion and return flow above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--31 years, 34.1 ft³/s (24,710 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s Oct. 28, 1981, gage height, 26.46 ft, from rating curve extended above 1,100 ft³/s on basis of slope-area measurements at gage heights 17.1 ft and 20.56 ft; minimum, 1.7 ft³/s Nov. 8, 9, 1973, Jan. 26, Sept. 25, 27, 1977, Mar. 25, Apr. 2-4, 1978, Apr. 22, Sept. 15, 20, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 28	0130	*5170	11.88
Nov. 3	1300	4820	11.54
Dec. 23	1630	3170	9.90

Minimum discharge, 1.8 ft³/s for several days in September.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	48	9.9	8.2	3.0	2.8	2.6	2.5	2.8	2.9	3.5	2.0
2	6.7	36	5.6	11	3.0	2.8	2.6	2.5	3.6	2.9	2.7	1.9
3	14	531	4.4	6.6	3.0	2.8	2.6	2.5	3.3	3.0	39	2.0
4	9.4	73	3.8	5.2	3.0	2.8	3.4	2.5	2.9	3.0	27	1.9
5	96	57	3.4	4.5	3.0	2.8	2.7	3.3	3.0	3.4	26	1.9
6	70	81	144	3.9	3.0	2.8	2.7	6.9	4.0	26	34	2.0
7	21	32	28	3.5	3.0	2.8	2.7	5.3	3.1	26	12	2.0
8	20	17	12	3.3	3.0	2.8	2.7	13	2.6	55	7.2	9.2
9	18	11	7.5	3.1	3.0	2.8	2.7	4.8	2.4	27	5.1	6.2
10	9.9	8.3	5.9	3.0	3.0	2.7	2.7	3.1	2.4	20	3.5	3.2
11	14	7.3	4.9	2.9	3.0	2.8	2.7	2.5	2.5	34	2.7	2.4
12	35	6.2	28	43	3.0	2.8	2.6	2.3	2.8	28	8.9	2.0
13	61	24	33	13	3.0	2.8	2.5	2.3	2.4	27	8.9	1.9
14	15	13	33	6.0	3.0	2.7	2.5	2.3	2.3	47	4.5	1.9
15	8.0	7.1	12	5.0	3.0	2.7	2.5	2.3	2.3	31	3.5	1.9
16	13	4.8	7.2	3.9	3.1	2.7	2.5	2.2	2.5	17	49	1.8
17	17	3.9	56	3.2	3.1	2.6	2.5	2.3	6.0	12	34	19
18	27	3.5	64	2.9	3.0	2.6	2.5	2.4	4.5	30	16	9.2
19	17	3.2	22	2.9	2.9	2.7	2.5	2.2	3.6	42	8.8	3.7
20	8.3	18	12	2.9	2.9	2.7	2.5	2.3	2.8	17	5.4	2.4
21	5.6	64	7.8	2.9	2.9	2.7	2.5	13	2.5	9.7	3.8	2.0
22	8.8	17	35	2.9	2.9	2.7	2.5	8.1	2.4	6.7	4.0	5.1
23	13	45	309	2.9	2.9	2.7	2.5	4.1	2.3	4.9	6.1	4.8
24	5.6	52	69	2.9	2.9	2.6	2.5	3.1	2.3	3.7	20	8.1
25	4.2	15	26	2.9	2.9	2.6	2.5	2.6	2.3	3.1	20	5.8
26	6.0	8.6	66	2.9	2.9	2.6	2.5	2.5	2.2	2.8	7.1	17
27	171	5.8	24	2.9	2.9	2.6	2.5	2.4	4.2	2.6	4.2	21
28	696	4.4	15	3.0	2.8	2.6	2.5	2.4	3.4	2.4	2.9	55
29	925	3.6	55	3.0	---	2.6	2.5	2.4	2.7	2.3	2.4	102
30	111	7.8	27	3.0	---	2.5	2.5	2.3	2.7	2.3	2.2	34
31	66	---	11	3.0	---	2.5	---	2.3	---	4.8	2.1	---
TOTAL	2498.7	1208.5	1141.4	170.3	83.1	83.7	77.7	114.7	88.8	499.5	376.5	333.3
MEAN	80.6	40.3	36.8	5.49	2.97	2.70	2.59	3.70	2.96	16.1	12.1	11.1
MAX	925	531	309	43	3.1	2.8	3.4	13	6.0	55	49	102
MIN	4.2	3.2	3.4	2.9	2.8	2.5	2.5	2.2	2.2	2.3	2.1	1.8
AC-FT	4960	2400	2260	338	165	166	154	228	176	991	747	661

CAL YR 1982	TOTAL	26895.5	MEAN	73.7	MAX	1390	MIN	3.2	AC-FT	53350
WTR YR 1983	TOTAL	6676.2	MEAN	18.3	MAX	925	MIN	1.8	AC-FT	13240

16226000 NORTH HALAWA STREAM NEAR AIEA

LOCATION.--Lat 21°23'46", long 157°53'37", Hydrologic Unit 20060000, on left bank 2.7 mi upstream from confluence with South Halawa Stream and 2.7 mi northeast of Aiea Post Office.

DRAINAGE AREA.--3.45 mi².

PERIOD OF RECORD.--August 1929 to June 1933, July 1953 to current year. Monthly discharge only May, June 1931, published in WSP 1319.

REVISED RECORDS.--WSP 1319: Drainage area. WSP 1719: 1954-55(P), 1956, 1957(P), 1958-59.

GAGE.--Water-stage recorder. Altitude of gage is 320 ft, from topographic map.

REMARKS.--Records fair. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--33 years (water years 1930-32, 1954-83), 5.04 ft³/s (3,650 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,650 ft³/s Feb. 28, 1932, gage height, 13.36 ft, from rating curve extended above 420 ft³/s; maximum gage height, 13.46 ft May 14, 1963; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 695 ft³/s Oct. 27, gage height, 9.25 ft, no other peak above base of 570 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.29	5.3	.88	3.8	.00	.00	.00	.01	.01	.00	.01	.03
2	.80	8.8	.52	2.5	.00	.00	.00	.01	.01	.00	.01	.02
3	1.0	43	8.4	1.7	.00	.00	.00	.01	.01	.00	19	.01
4	.63	14	4.7	1.3	.00	.00	.00	.01	.01	.00	9.2	.01
5	4.6	10	1.7	1.2	.00	.00	.00	2.0	.01	.00	5.3	.01
6	7.9	14	9.8	.80	.00	.00	.00	3.0	.01	.00	3.2	.01
7	1.7	6.6	3.1	.68	.00	.00	.00	1.4	.01	.00	1.5	2.6
8	1.4	3.6	1.6	.58	.00	.00	.00	1.3	.00	1.2	.88	9.9
9	.80	2.3	.68	.48	.00	.00	.00	.48	.00	1.9	.52	2.7
10	.52	1.6	.48	.85	.00	.00	.00	.27	.00	.88	.32	1.0
11	9.1	1.2	.27	3.1	.00	.00	.00	.13	.00	1.4	.17	.58
12	7.6	1.3	8.5	31	.00	.00	.00	.07	.00	3.2	.19	.30
13	10	3.8	6.9	4.4	.00	.00	.00	.03	.00	2.8	.23	.23
14	3.0	1.8	5.3	2.2	.00	.00	.00	.02	.00	6.2	1.0	.12
15	1.4	1.1	2.3	1.4	.00	.00	.00	.01	.00	3.5	.48	.08
16	.88	.88	1.2	.88	.00	.00	.00	.01	.00	1.9	7.5	.04
17	.75	.75	19	.58	.00	.00	.00	.01	.00	1.0	6.8	4.3
18	.75	.52	13	.44	.00	.00	.00	.01	.00	1.4	4.2	1.5
19	.75	.38	4.4	.27	.00	.00	.00	.01	.00	4.4	1.7	.50
20	.52	.32	2.2	.14	.00	.00	.00	6.2	.00	2.3	.93	.33
21	.29	11	1.4	.10	.00	.00	.00	15	.00	1.1	.58	.30
22	.17	1.8	19	.05	.00	.00	.00	2.2	.00	.75	.38	.20
23	.10	9.7	32	.03	.00	.00	.00	.68	.00	.48	2.9	.10
24	.07	7.4	27	.02	.00	.00	.00	.32	.00	.29	2.8	.06
25	.05	2.3	9.0	.02	.00	.00	.05	.19	.00	.14	1.8	.04
26	.04	1.2	18	.01	.00	.00	.25	.08	.00	.08	.75	.02
27	23	.88	6.6	.01	.00	.00	.19	.07	.00	.03	.40	.04
28	87	.58	14	.01	.00	.00	.11	.02	.00	.02	.21	8.0
29	57	.34	46	.01	---	.00	.04	.01	.00	.02	.12	18
30	28	.89	9.2	.01	---	.00	.02	.01	.00	.02	.08	12
31	11	---	4.6	.01	---	.00	---	.01	---	.01	.05	---
TOTAL	261.11	157.34	281.73	58.58	.00	.00	.66	33.58	.07	35.02	73.21	63.03
MEAN	8.42	5.24	9.09	1.89	.00	.00	.022	1.08	.002	1.13	2.36	2.10
MAX	87	43	46	31	.00	.00	.25	15	.01	6.2	19	18
MIN	.04	.32	.27	.01	.00	.00	.00	.01	.00	.00	.01	.01
AC-FT	518	312	559	116	.00	.00	1.3	67	.1	69	145	125

CAL YR 1982	TOTAL	4168.70	MEAN	11.4	MAX	164	MIN	.04	AC-FT	8270
WTR YR 1983	TOTAL	964.33	MEAN	2.64	MAX	87	MIN	.00	AC-FT	1910

16226200 NORTH HALAWA STREAM NEAR HONOLULU

LOCATION.--Lat 21°22'34", long 157°54'22", Hydrologic Unit 20060000, on right bank 0.5 mi north of Halawa quarry, 1.7 mi east of Aiea High School, and 1.9 mi east of Aiea.

DRAINAGE AREA.--4.01 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 160 ft, from topographic map.

REMARKS.--Records fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period February to September 1983, 93 ft³/s Sept. 29; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) FEBRUARY TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					.00	.00	.00	.00	.05	.00	.01	.05
2					.00	.00	.00	.00	.03	.00	.01	.04
3					.00	.00	.00	.00	.01	.00	19	.03
4					.00	.00	.00	.00	.01	.00	8.7	.03
5					.00	.00	.00	.00	.01	.00	5.4	.03
6					.00	.00	.00	3.1	.01	.00	3.4	.03
7					.00	.00	.00	1.5	.01	.00	1.8	.53
8					.00	.00	.00	1.4	.01	.00	.96	10
9					.00	.00	.00	.50	.00	.60	.72	3.1
10					.00	.00	.00	.29	.00	.64	.44	1.2
11					.00	.00	.00	.14	.00	.63	.25	.72
12					.00	.00	.00	.08	.00	2.9	.27	.50
13					.00	.00	.00	.04	.00	2.7	.19	.32
14					.00	.00	.00	.02	.00	5.4	.74	.17
15					.00	.00	.00	.01	.00	3.7	.61	.10
16					.00	.00	.00	.01	.00	2.2	7.0	.06
17					.00	.00	.00	.00	.00	.72	6.3	3.9
18					.00	.00	.00	.00	.00	1.1	4.4	1.7
19					.00	.00	.00	.00	.00	3.9	2.0	.80
20					.00	.00	.00	.62	.00	2.4	1.0	.50
21					.00	.00	.00	20	.00	1.2	.76	.47
22					.00	.00	.00	3.0	.00	.80	.57	.32
23					.00	.00	.00	.88	.00	.50	2.4	.15
24					.00	.00	.00	.57	.00	.32	2.7	.09
25					.00	.00	.00	.25	.00	.13	2.4	.08
26					.00	.00	.00	.15	.00	.06	.96	.06
27					.00	.00	.00	.15	.00	.03	.64	.07
28					.00	.00	.00	.09	.00	.02	.38	7.1
29					---	.00	.00	.06	.00	.02	.17	19
30					---	.00	.00	.04	.00	.02	.12	14
31					---	.00	---	.03	---	.02	.09	---
TOTAL					.00	.00	.00	32.93	.14	30.01	74.39	65.15
MEAN					.00	.00	.00	1.06	.005	.97	2.40	2.17
MAX					.00	.00	.00	20	.05	5.4	19	19
MIN					.00	.00	.00	.00	.00	.00	.01	.03
AC-FT					.00	.00	.00	65	.3	60	148	129

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--February to September 1983.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: February to September 1983.

INSTRUMENTATION.--Automatic pumping sediment sampler since February 1983.

REMARKS.--Water-quality samples were also collected at this site.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 25 mg/L May 21; no flow for many days.
SEDIMENT DISCHARGE: Maximum daily, 1.4 tons May 21; no flow for many days.

WATER QUALITY DATA, FEBRUARY TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
MAY										
23...	1130	.78	121	6.5	21.0	1.2	7.7	87	93	32
JUL										
12...	1350	3.7	120	7.4	24.0	--	--	--	--	--
15...	0945	3.7	120	6.9	21.5	1.5	7.8	89	150	--
AUG										
03...	0930	35	69	7.3	22.0	6.8	8.4	97	480	17
30...	1615	.10	140	6.9	24.0	--	--	--	--	--
SEP										
07...	1300	.03	165	6.8	24.5	--	--	--	--	--
08...	0930	12	80	6.9	22.0	5.3	7.7	89	--	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
MAY									
23...	0	5.2	4.5	12	45	1.0	.8	32	4.7
AUG									
03...	0	2.9	2.3	7.4	47	.8	1.0	19	5.8

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
MAY										
23...	17	<.10	21	75	85	.10	25	<.10	.70	.010
JUL										
15...	--	--	--	--	--	--	1	<.10	.30	.020
AUG										
03...	11	<.10	12	49	54	.07	5	<.10	.80	.030
SEP										
08...	--	--	--	--	--	--	5	--	--	--

DATE	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)
MAY									
23...	80	30	<1	<1	<100	6	<10	<1	1
AUG									
03...	500	200	<1	<1	<100	6	<10	1	<1

< Actual value is known to be less than the value shown.

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

WATER QUALITY DATA, FEBRUARY TO SEPTEMBER 1983

DATE	TIME	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
MAY 23...	1130	<1	<10	<1	1	<3	5	1	70	34	3
AUG 03...	0930	<1	<10	<1	11	<3	5	6	590	160	<1

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)
MAY 23...	<1	<10	5	<10	10	<.1	<.1	<1	<10	3
AUG 03...	<1	<10	6	20	6	.1	<.1	<1	<10	4

DATE	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY 23...	<1	<1	<1	<1	<1	32	<6.0	30	20
AUG 03...	1	<1	<1	<1	<1	19	<6.0	270	9

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
MAY 23...	.9	<1	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01
AUG 03...	4.3	5	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
MAY 23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 03...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
MAY 23...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01
AUG 03...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01

< Actual value is known to be less than the value shown.

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), FEBRUARY TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1				.00	0	.00	.00	0	.00
2				.00	0	.00	.00	0	.00
3				.00	0	.00	.00	0	.00
4				.00	0	.00	.00	0	.00
5				.00	0	.00	.00	0	.00
6				.00	0	.00	.00	0	.00
7				.00	0	.00	.00	0	.00
8				.00	0	.00	.00	0	.00
9				.00	0	.00	.00	0	.00
10				.00	0	.00	.00	0	.00
11				.00	0	.00	.00	0	.00
12				.00	0	.00	.00	0	.00
13				.00	0	.00	.00	0	.00
14				.00	0	.00	.00	0	.00
15				.00	0	.00	.00	0	.00
16				.00	0	.00	.00	0	.00
17				.00	0	.00	.00	0	.00
18				.00	0	.00	.00	0	.00
19				.00	0	.00	.00	0	.00
20				.00	0	.00	.00	0	.00
21				.00	0	.00	.00	0	.00
22				.00	0	.00	.00	0	.00
23				.00	0	.00	.00	0	.00
24				.00	0	.00	.00	0	.00
25				.00	0	.00	.00	0	.00
26				.00	0	.00	.00	0	.00
27				.00	0	.00	.00	0	.00
28				.00	0	.00	.00	0	.00
29				---	---	---	.00	0	.00
30				---	---	---	.00	0	.00
31				---	---	---	.00	0	.00
TOTAL				0.00	---	0.00	0.00	---	0.00
		APRIL			MAY			JUNE	
1	.00	0	.00	.00	0	.00	.05	0	.00
2	.00	0	.00	.00	0	.00	.03	0	.00
3	.00	0	.00	.00	0	.00	.01	0	.00
4	.00	0	.00	.00	0	.00	.01	0	.00
5	.00	0	.00	.00	0	.00	.01	0	.00
6	.00	0	.00	3.1	15	.13	.01	0	.00
7	.00	0	.00	1.5	9	.04	.01	0	.00
8	.00	0	.00	1.4	5	.02	.01	0	.00
9	.00	0	.00	.50	4	.00	.00	0	.00
10	.00	0	.00	.29	3	.00	.00	0	.00
11	.00	0	.00	.14	2	.00	.00	0	.00
12	.00	0	.00	.08	1	.00	.00	0	.00
13	.00	0	.00	.04	1	.00	.00	0	.00
14	.00	0	.00	.02	0	.00	.00	0	.00
15	.00	0	.00	.01	0	.00	.00	0	.00
16	.00	0	.00	.01	0	.00	.00	0	.00
17	.00	0	.00	.00	0	.00	.00	0	.00
18	.00	0	.00	.00	0	.00	.00	0	.00
19	.00	0	.00	.00	0	.00	.00	0	.00
20	.00	0	.00	.62	1	.00	.00	0	.00
21	.00	0	.00	20	25	1.4	.00	0	.00
22	.00	0	.00	3.0	11	.09	.00	0	.00
23	.00	0	.00	.88	10	.02	.00	0	.00
24	.00	0	.00	.57	5	.00	.00	0	.00
25	.00	0	.00	.25	2	.00	.00	0	.00
26	.00	0	.00	.15	1	.00	.00	0	.00
27	.00	0	.00	.15	1	.00	.00	0	.00
28	.00	0	.00	.09	1	.00	.00	0	.00
29	.00	0	.00	.06	1	.00	.00	0	.00
30	.00	0	.00	.04	0	.00	.00	0	.00
31	---	---	---	.03	0	.00	---	---	---
TOTAL	0.00	---	0.00	32.93	---	1.70	0.14	---	0.00

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), FEBRUARY TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	.00	0	.00	.01	0	.00	.05	0	.00
2	.00	0	.00	.01	0	.00	.04	0	.00
3	.00	0	.00	19	20	1.0	.03	0	.00
4	.00	0	.00	8.7	5	.12	.03	0	.00
5	.00	0	.00	5.4	5	.07	.03	0	.00
6	.00	0	.00	3.4	6	.06	.03	0	.00
7	.00	0	.00	1.8	5	.02	.53	3	.00
8	.00	0	.00	.96	4	.01	10	10	.27
9	.60	2	.00	.72	3	.00	3.1	3	.03
10	.64	1	.00	.44	2	.00	1.2	2	.00
11	.63	2	.00	.25	1	.00	.72	1	.00
12	2.9	10	.08	.27	1	.00	.50	1	.00
13	2.7	7	.05	.19	1	.00	.32	1	.00
14	5.4	18	.26	.74	5	.00	.17	1	.00
15	3.7	10	.10	.61	3	.00	.10	1	.00
16	2.2	5	.03	7.0	6	.11	.06	0	.00
17	.72	2	.00	6.3	3	.05	3.9	5	.05
18	1.1	3	.00	4.4	2	.02	1.7	4	.02
19	3.9	5	.05	2.0	2	.01	.80	1	.00
20	2.4	4	.03	1.0	2	.00	.50	1	.00
21	1.2	3	.00	.76	1	.00	.47	1	.00
22	.80	2	.00	.57	1	.00	.32	1	.00
23	.50	1	.00	2.4	5	.03	.15	1	.00
24	.32	1	.00	2.7	6	.04	.09	0	.00
25	.13	1	.00	2.4	4	.03	.08	0	.00
26	.06	0	.00	.96	3	.00	.06	0	.00
27	.03	0	.00	.64	2	.00	.07	0	.00
28	.02	0	.00	.38	1	.00	7.1	3	.06
29	.02	0	.00	.17	1	.00	19	15	.77
30	.02	0	.00	.12	1	.00	14	10	.38
31	.02	0	.00	.09	0	.00	---	---	---
TOTAL	30.01	---	0.60	74.39	---	1.57	65.15	---	1.58

16229000 KALIHI STREAM NEAR HONOLULU

LOCATION.--Lat 21°22'00", long 157°50'49", Hydrologic Unit 20060000, on right bank 1.9 mi upstream from Kamanaiki Stream and 4.1 mi north of Honolulu Post Office.

DRAINAGE AREA.--2.61 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1913 to April 1914, July 1914 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1569: Drainage area. WSP 1719: 1921-22(M), 1923-24, 1925-26(M), 1927-28, 1929-32(M), 1935, 1937, 1938-39(M), 1943(M), 1948-52(P), 1955-56, 1957-58(M), 1959.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 464.40 ft above mean sea level. Prior to Oct. 12, 1923, at datum 2.00 ft lower.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--69 years (water years 1915-83), 6.74 ft³/s (4,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 12,400 ft³/s Nov. 18, 1930, gage height, 13.81 ft, from rating curve extended above 280 ft³/s on basis of indirect measurements at gage heights 8.9 ft, 10.96 ft, and 11.27 ft; minimum, 0.09 ft³/s Oct. 22, 1933, July 29, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 608 ft³/s Oct. 28, gage height, 7.06 ft, no peak above base of 700 ft³/s; minimum, 0.50 ft³/s for several days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	4.9	2.3	11	2.3	1.1	.65	.57	2.2	.91	1.3	1.3
2	2.2	5.7	2.2	7.4	2.0	1.1	.73	1.0	1.8	1.1	1.9	1.3
3	2.4	32	4.9	6.5	1.8	1.1	4.7	.65	1.9	1.2	11	1.4
4	2.3	7.8	5.8	6.8	1.8	1.3	1.3	.91	1.4	.91	7.4	1.4
5	6.0	6.5	4.0	5.6	1.9	1.3	1.2	2.3	3.7	1.8	5.6	1.2
6	7.8	8.1	18	5.1	1.6	1.0	1.0	1.8	1.8	1.8	3.8	4.0
7	2.6	4.9	5.4	4.9	1.6	1.3	1.0	2.2	1.3	6.1	2.8	5.6
8	2.3	4.2	3.8	4.6	1.5	1.1	1.7	1.4	1.1	5.6	2.3	7.0
9	2.6	3.6	3.2	4.2	1.5	1.1	.91	1.0	1.1	3.4	2.0	3.4
10	2.2	3.8	3.0	4.0	1.5	1.2	.82	.91	1.3	2.2	1.8	2.3
11	3.2	3.2	2.3	7.3	1.5	1.2	.73	1.1	.91	2.8	1.6	2.0
12	5.3	4.0	21	22	1.6	1.1	1.0	.82	1.0	2.8	2.0	2.0
13	6.6	4.9	6.5	5.1	1.5	1.0	.73	.82	.82	3.6	1.5	1.8
14	2.6	3.0	4.2	5.9	1.5	1.0	.65	.82	.82	4.7	1.5	1.5
15	2.3	2.8	3.6	4.0	1.4	1.1	.65	.73	1.2	3.4	1.4	1.6
16	2.8	2.8	3.2	3.4	1.5	1.0	1.9	.57	1.3	2.4	7.2	1.4
17	2.8	2.6	18	3.2	1.4	1.1	1.8	1.1	1.1	2.3	3.6	3.5
18	2.2	2.4	7.1	3.0	1.4	1.0	1.0	3.0	1.0	9.4	2.3	1.6
19	2.0	2.4	4.2	3.0	1.4	.88	1.0	1.1	.91	6.3	1.9	1.5
20	1.9	2.8	3.6	2.8	1.3	.82	.82	5.9	2.0	3.4	1.8	1.5
21	1.8	3.2	3.4	2.6	1.2	.82	1.0	10	1.2	2.8	1.8	2.2
22	1.9	2.4	19	2.4	1.2	.82	1.1	2.6	1.1	2.0	2.6	3.4
23	1.6	5.8	38	2.6	1.1	1.2	.91	1.9	1.1	1.9	3.6	1.9
24	1.5	3.0	18	2.4	1.1	.82	1.2	1.6	1.1	2.0	4.4	1.9
25	1.4	2.4	9.1	2.3	1.2	1.0	1.2	1.2	.91	1.6	3.0	1.6
26	1.4	2.3	11	2.2	1.8	.91	.91	1.0	2.0	1.5	2.3	3.6
27	22	2.3	9.1	2.6	1.3	.73	1.0	1.4	1.3	1.4	2.2	5.2
28	43	2.0	17	2.4	1.2	.73	.73	1.1	1.1	1.4	1.8	5.4
29	33	2.8	56	2.4	---	.65	.65	1.1	.91	2.0	1.5	22
30	17	3.8	16	2.3	---	.65	.57	1.1	.91	2.3	1.6	6.8
31	6.8	---	9.5	3.4	---	.65	---	1.6	---	1.5	1.4	---
TOTAL	195.7	142.4	332.4	147.4	42.1	30.78	33.56	53.30	40.29	86.52	90.9	101.3
MEAN	6.31	4.75	10.7	4.75	1.50	.99	1.12	1.72	1.34	2.79	2.93	3.38
MAX	43	32	56	22	2.3	1.3	4.7	10	3.7	9.4	11	22
MIN	1.4	2.0	2.2	2.2	1.1	.65	.57	.57	.82	.91	1.3	1.2
AC-FT	388	282	659	292	84	61	67	106	80	172	180	201

CAL YR 1982	TOTAL	4451.8	MEAN	12.2	MAX	180	MIN	1.4	AC-FT	8830
WTR YR 1983	TOTAL	1296.65	MEAN	3.55	MAX	56	MIN	.57	AC-FT	2570

16229000 KALIHI STREAM NEAR HONOLULU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972, 1974 to current year.

REMARKS.--Miscellaneous chemical analyses published for this station for 1969, 1973 water years.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
OCT					
26...	1050	1.4	145	7.0	21.5
NOV					
24...	1100	2.9	145	7.1	22.0
DEC					
28...	1155	6.8	130	7.3	21.0
JAN					
26...	1550	2.0	150	7.2	19.5
FEB					
24...	1100	.96	160	7.0	19.5
MAR					
29...	1220	.63	160	7.4	23.5
MAY					
26...	1200	.92	160	7.4	20.0
JUN					
28...	1010	1.0	145	6.7	21.5
AUG					
29...	1000	1.5	140	6.7	21.5
SEP					
28...	1100	6.1	130	7.0	22.0

DATE	TIME	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)
NOV										
24...	1100	36	6	6.7	4.7	14	45	1.0	1.1	30
FEB										
24...	1100	36	2	5.9	5.1	14	45	1.0	.9	34
MAY										
26...	1200	36	4	6.0	5.2	13	43	1.0	.9	32
AUG										
29...	1000	33	7	5.3	4.7	13	46	1.0	.9	26

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV										
24...	9.0	22	<.10	12	88	.12	<.10	--	260	8
FEB										
24...	6.3	21	<.10	12	86	.12	<.10	.020	140	6
MAY										
26...	7.0	21	<.10	13	85	.12	.93	--	150	3
AUG										
29...	5.7	19	.10	12	76	.10	2.1	--	180	13

< Actual value is known to be less than the value shown.

16229300 KALIHI STREAM AT KALIHI
(National stream-quality accounting network station)

LOCATION.--Lat 21°20'29", long 157°52'36", Hydrologic Unit 20060000, on right bank at Kalihi, 0.4 mi northwest of Bishop Museum, and 2.4 mi northwest of Honolulu Post Office.

DRAINAGE AREA.--5.18 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Water year 1962 (annual maximum), July 1962 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 70 ft, from topographic map. Aug. 28, 1961, to June 30, 1962, crest-stage gage at site 600 ft downstream at different datum.

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station.

AVERAGE DISCHARGE.--21 years, 11.1 ft³/s (8,040 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,110 ft³/s Apr. 19, 1974, gage height, 9.98 ft from rating curve extended above 180 ft³/s on basis of slope-area measurement at gage height 9.98 ft; minimum, 0.16 ft³/s June 24, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 14, 1960, reached a stage of 8.0 ft from floodmarks, present site and datum, discharge, 6,350 ft³/s, from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 1,040 ft³/s Oct. 28, gage height, 4.10 ft, no peak above base of 1,600 ft³/s; minimum, 0.71 ft³/s Mar. 30, 31, Apr. 1.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	8.2	3.1	14	2.5	1.2	.83	1.3	3.3	1.1	1.7	2.0
2	3.2	7.5	2.7	9.2	2.3	1.2	1.7	2.6	1.7	1.3	2.1	1.8
3	3.4	49	4.8	7.8	2.3	1.1	7.2	1.3	1.7	1.7	17	1.9
4	3.3	15	6.0	8.1	2.3	1.1	1.6	2.0	1.5	1.2	9.3	2.1
5	9.5	11	4.5	6.4	2.3	1.2	1.4	4.5	3.6	4.3	6.9	2.4
6	12	12	30	5.9	2.1	1.1	1.1	3.5	2.2	3.7	4.8	5.1
7	5.0	7.8	6.6	5.8	2.0	1.5	1.1	3.5	1.7	11	3.4	8.7
8	3.3	6.1	4.1	6.0	1.9	1.1	1.6	2.4	1.4	9.4	2.9	12
9	3.9	5.1	3.5	4.8	1.9	1.0	1.2	1.8	1.5	6.2	2.5	5.7
10	3.4	4.7	3.3	4.6	1.9	1.1	1.0	1.3	1.7	5.8	2.2	4.0
11	4.9	4.4	3.0	4.7	1.8	1.2	1.1	1.3	1.2	6.0	2.3	4.7
12	9.0	6.7	32	39	1.8	1.0	1.3	1.2	1.2	5.9	4.9	3.9
13	12	10	12	6.8	1.8	1.0	.95	1.1	1.1	6.3	2.0	3.4
14	4.1	4.5	6.3	8.0	1.8	1.1	1.1	1.4	1.0	6.4	1.9	3.1
15	3.0	3.9	4.4	4.8	1.8	1.1	1.3	1.3	1.5	4.6	1.8	3.5
16	4.5	3.9	4.2	4.2	2.0	1.1	3.6	1.1	3.5	3.7	11	3.2
17	4.1	3.5	37	3.9	1.7	1.2	3.7	1.2	1.9	3.3	5.1	13
18	4.1	3.4	18	3.6	1.5	1.1	1.8	2.9	1.4	19	3.3	2.6
19	3.0	3.3	7.6	3.6	1.5	1.1	2.3	1.6	1.5	9.7	2.4	2.0
20	2.8	5.0	5.2	3.3	1.2	1.0	1.7	2.8	3.1	5.4	2.3	2.3
21	2.5	5.7	4.7	3.3	1.3	1.0	2.6	10	1.5	3.6	2.4	4.2
22	2.3	3.6	21	3.1	1.2	1.0	2.6	2.8	1.4	2.8	3.0	5.4
23	1.8	12	89	3.2	1.2	2.1	2.2	2.0	1.3	2.6	4.4	2.4
24	1.8	5.9	40	3.3	1.4	1.3	2.4	2.2	2.3	3.1	4.5	2.1
25	1.7	3.4	15	3.0	1.2	1.5	1.8	1.4	1.5	2.5	3.6	2.8
26	1.8	3.0	14	2.8	1.8	1.2	1.7	1.3	2.6	2.2	2.8	5.0
27	45	3.2	19	2.8	1.2	1.1	1.8	1.8	1.7	1.7	2.7	6.9
28	133	2.8	19	2.6	1.2	1.0	1.7	1.3	1.6	1.6	2.1	10
29	79	4.4	64	2.7	---	1.1	1.4	1.2	1.2	2.7	1.9	33
30	46	4.5	21	2.7	---	1.0	1.1	1.1	1.1	4.4	2.6	10
31	15	---	12	4.2	---	.81	---	1.7	---	2.1	2.0	---
TOTAL	431.6	223.5	517.0	188.2	48.9	35.61	56.88	66.9	53.9	145.3	121.8	169.2
MEAN	13.9	7.45	16.7	6.07	1.75	1.15	1.90	2.16	1.80	4.69	3.93	5.64
MAX	133	49	89	39	2.5	2.1	7.2	10	3.6	19	17	33
MIN	1.7	2.8	2.7	2.6	1.2	.81	.83	1.1	1.0	1.1	1.7	1.8
AC-FT	856	443	1030	373	97	71	113	133	107	288	242	336

CAL YR 1982	TOTAL	7602.6	MEAN	20.8	MAX	421	MIN	1.7	AC-FT	15080
WTR YR 1983	TOTAL	2058.79	MEAN	5.64	MAX	133	MIN	.81	AC-FT	4080

16229300 KALIHI STREAM AT KALIHI--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970-74, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
OCT					
12...	1520	3.2	220	8.5	26.5
26...	1200	1.6	260	8.2	22.5
DEC					
06...	1430	61	100	7.1	21.5
FEB					
01...	1525	2.6	225	8.7	22.0
28...	1100	1.2	280	8.2	20.0
APR					
27...	1230	1.8	269	7.9	21.0
MAY					
24...	1515	2.0	240	7.9	22.5
JUL					
21...	1535	3.7	240	7.8	27.0
AUG					
15...	1145	1.8	240	7.9	25.0
26...	1530	2.8	200	7.8	26.5

DATE	TIME	TUR-BID-ITY (NTU)	OXYGEN DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT										
26...	1200	.80	10.0	117	5700	3000	74	0	16	8.2
FEB										
28...	1100	.80	9.1	100	7700	14000	75	1	15	9.1
APR										
27...	1230	.90	9.1	102	10000	17000	78	3	16	9.1
AUG										
15...	1145	2.0	8.1	98	11000	21000	66	0	13	8.2

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT									
26...	23	40	1.2	1.3	73	10	34	<.10	13
FEB									
28...	25	42	1.3	1.4	74	10	35	<.10	9.2
APR									
27...	25	41	1.3	1.6	75	10	34	<.10	13
AUG									
15...	21	40	1.2	1.4	68	9.3	31	<.10	15

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT									
26...	146	150	.20	<.10	.100	.80	.080	.070	<.010
FEB									
28...	146	150	.20	.15	.140	.50	.050	.060	.040
APR									
27...	154	154	.21	.12	.070	.90	.090	.080	.050
AUG									
15...	135	140	.18	.12	.110	.50	.060	.090	.080

< Actual value is known to be less than the value shown.

HAWAII, ISLAND OF OAHU

16229300 KALIHI STREAM AT KALIHI--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT 26...	1200	10	<1	10	<1	<1	<1	<3	1	33	2
FEB 28...	1100	10	<1	10	<1	<1	<1	<3	2	74	<1
APR 27...	1230	20	1	11	<1	<1	<1	<3	2	100	<1
AUG 15...	1145	30	1	11	<1	<1	<1	<3	14	180	4

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT 26...	7	11	<.1	<10	1	<1	1	120	<6.0	4
FEB 28...	<4	11	<.1	<10	1	<1	<1	120	<6.0	<3
APR 27...	<4	11	<.1	<10	<1	1	<1	140	<6.0	7
AUG 15...	<4	16	<.1	<10	<1	<1	<1	110	<6.0	38

DATE	TIME	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .062 MM
OCT 26...	1200	0	.00	100	--
FEB 28...	1100	1	.00	100	--
APR 27...	1230	1	.00	100	--
AUG 15...	1145	4	.02	100	7

< Actual value is known to be less than the value shown.

HAWAII, ISLAND OF OAHU

16240500 WAIAKEAKUA STREAM AT HONOLULU

LOCATION.--Lat 21°19'53", long 157°48'12", Hydrologic Unit 20060000, on right bank 5 ft downstream from bridge on Waaloa Way, 500 ft upstream from confluence with Waihi Stream, and 4.2 mi northeast of Honolulu Post Office.

DRAINAGE AREA.--1.06 mi².

PERIOD OF RECORD.--May 1913 to January 1921, August 1925 to current year. Prior to July 1960, published as East Branch Manoa Stream near Honolulu.

REVISED RECORDS.--WSP 1319: 1919(M), 1930-33(M). WSP 1569: Drainage area. WSP 1937: 1949(M), 1960(M).

GAGE.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft above mean sea level (Honolulu Board of Water Supply bench mark). Prior to May 20, 1914, nonrecording gage at site 200 ft upstream at different datum. May 20, 1914, to Jan. 16, 1921, water-stage recorder at site 30 ft upstream at different datum. Aug. 18, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 2.99 ft lower, and Mar. 16, 1928, to Oct. 18, 1933, at datum 0.41 ft higher than present datum.

REMARKS.--Records fair. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnel above station. Occasional small diversions for irrigation above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--65 years (water years 1914-20, 1926-83), 5.09 ft³/s (3,690 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,090 ft³/s Jan. 16, 1921, gage height, 10.4 ft, from floodmarks, site and datum then in use, from rating curve extended above 58 ft³/s. Current peak discharges are derived from rating curve extended above 1,760 ft³/s on the basis of slope-area measurement at gage height 5.28 ft; minimum, 0.6 ft³/s June 7, 8, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 280 ft³/s Oct. 27, gage height, 3.13 ft, no peak above base of 310 ft³/s; minimum, 2.2 ft³/s Apr. 15, 16.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	5.9	4.2	8.3	3.6	2.9	2.5	3.0	4.6	2.4	2.7	2.9
2	4.6	5.4	4.0	5.7	3.6	2.8	2.8	4.6	3.1	2.6	4.4	2.9
3	4.8	12	4.9	5.3	3.6	2.8	4.4	3.3	2.9	3.2	10	2.9
4	4.7	6.5	4.9	5.9	3.4	2.8	3.0	5.0	2.8	2.7	6.1	3.4
5	5.6	7.2	4.0	5.0	3.7	2.8	2.7	9.0	3.4	5.6	4.7	3.0
6	18	8.3	8.3	5.0	3.5	2.8	2.5	4.8	4.0	4.1	4.6	8.2
7	5.3	5.5	4.4	5.0	3.4	2.9	2.4	8.0	3.1	7.5	3.4	8.2
8	5.2	5.0	4.0	5.1	3.3	2.9	2.8	4.5	2.9	7.5	3.2	9.6
9	7.0	4.8	3.7	4.7	3.3	2.8	2.4	3.5	3.9	4.1	2.9	4.5
10	5.0	4.5	4.3	4.7	3.3	2.7	2.4	3.1	5.7	5.0	2.8	3.6
11	6.7	4.4	3.6	5.4	3.2	2.8	2.4	3.0	3.3	4.2	2.8	3.3
12	6.6	7.7	14	9.3	3.2	2.7	2.7	2.9	3.1	4.2	3.3	3.3
13	9.2	6.5	6.1	4.8	3.2	2.8	2.4	2.8	2.8	4.0	3.3	3.4
14	5.3	4.6	4.4	5.2	3.2	2.8	2.4	3.1	2.7	6.3	2.8	3.0
15	4.9	4.5	3.8	4.6	3.1	2.8	2.3	3.0	3.9	4.3	2.7	2.8
16	5.2	4.4	4.1	4.4	3.1	2.7	3.7	2.8	3.5	3.5	14	3.2
17	4.9	4.4	23	4.3	3.1	2.7	3.6	3.0	2.9	3.6	7.8	4.0
18	5.0	4.2	7.6	4.3	3.1	2.7	2.6	3.6	2.7	7.0	4.6	3.5
19	4.7	4.2	4.6	4.2	3.0	2.7	2.7	3.2	3.0	9.1	3.6	3.1
20	4.6	4.5	4.1	4.2	3.0	2.7	2.5	8.0	5.6	5.1	3.2	3.1
21	4.5	8.0	4.2	4.1	3.0	2.7	2.9	9.7	3.4	3.8	3.0	3.8
22	4.8	4.8	9.7	4.0	3.0	2.7	3.4	3.6	3.1	3.4	4.8	4.1
23	4.4	5.9	17	4.0	2.9	2.7	3.5	3.0	3.1	3.2	5.6	3.0
24	4.2	4.6	6.8	4.0	3.0	2.7	4.6	2.9	3.2	3.3	8.5	2.8
25	4.2	4.1	10	3.9	2.9	2.7	3.5	2.8	3.4	3.0	4.3	6.3
26	4.3	4.1	9.7	3.8	3.4	2.8	3.8	2.7	4.9	2.9	4.4	5.5
27	20	4.0	6.8	3.8	3.0	2.7	4.6	3.1	3.2	2.8	3.8	8.6
28	24	3.8	11	3.7	3.0	2.8	3.2	2.7	2.8	2.8	3.2	5.4
29	14	5.6	24	3.6	---	2.7	3.0	2.7	3.0	3.0	3.4	16
30	10	5.5	7.4	3.7	---	2.6	2.9	2.6	3.1	3.4	3.1	7.4
31	6.3	---	5.9	4.2	---	2.5	---	3.3	2.8	---	---	---
TOTAL	222.7	164.9	234.5	148.2	90.1	84.8	90.6	123.3	102.2	130.1	140.0	144.8
MEAN	7.18	5.50	7.56	4.78	3.22	2.74	3.02	3.98	3.41	4.20	4.52	4.83
MAX	24	12	24	9.3	3.7	2.9	4.6	9.7	5.7	9.1	14	16
MIN	4.2	3.8	3.6	3.6	2.9	2.5	2.3	2.6	2.5	2.4	2.7	2.8
AC-FT	442	327	465	294	179	168	180	245	203	258	278	287
YR 1982 TOTAL		3021.5	MEAN	8.28	MAX	68	MIN	2.6	AC-FT	5990		
YR 1983 TOTAL		1676.2	MEAN	4.59	MAX	24	MIN	2.3	AC-FT	3320		

16254000 MAKAWAO STREAM NEAR KAILUA

LOCATION.--Lat 21°21'49", long 157°46'02", Hydrologic Unit 20060000, on left bank 650 ft upstream from mouth, 2.7 mi southwest of Kailua, and 4.3 mi southeast of Kaneohe Courthouse.

DRAINAGE AREA.--2.04 mi².

PERIOD OF RECORD.--November 1912 to June 1916, January 1958 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 80 ft, from topographic map. Prior to Jan. 1, 1958, nonrecording gage at sites about 200 ft upstream at different datums.

REMARKS.--Records good except for periods of no gage-height record, which are poor. Maunawili ditch diverts 1.5 mi above station for irrigation in vicinity of Waimanalo. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--27 years (water years 1914-15, 1959-83), 5.15 ft³/s (3,730 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,000 ft³/s Feb. 4, 1965, gage height, 12.41 ft, from rating curve extended above 470 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.43 ft³/s Sept. 8-12, 14, 16-20, 22, 23, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 212 ft³/s Oct. 28, gage height, 4.06 ft, no peak above base of 390 ft³/s; minimum, 1.4 ft³/s Aug. 28 to Sept. 3.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	9.6	4.7	7.0	4.6	3.3	2.7	2.3	2.5	2.1	1.9	1.4
2	3.6	8.8	4.7	6.2	4.6	3.2	2.7	2.6	2.4	2.1	2.3	1.4
3	3.6	8.1	12	6.0	4.6	3.3	4.4	2.3	2.4	2.0	3.8	1.4
4	3.5	7.3	7.4	5.7	4.6	3.5	3.0	2.5	2.3	2.2	2.7	1.8
5	3.6	7.4	6.1	5.6	4.6	3.4	2.8	3.2	2.4	2.4	2.5	1.5
6	3.6	7.8	11	5.4	4.6	3.3	2.7	2.5	2.3	2.2	2.1	2.7
7	3.3	7.4	6.4	5.3	4.5	3.3	2.6	2.6	2.4	2.6	2.1	3.0
8	3.3	6.3	5.3	5.2	4.5	3.2	2.7	2.3	2.4	2.8	2.1	3.3
9	3.3	5.4	4.9	5.1	4.3	3.2	2.6	2.3	2.6	2.6	2.0	2.8
10	3.2	5.3	5.3	5.1	4.2	3.1	2.7	2.3	2.5	2.8	2.0	1.8
11	3.3	5.1	4.8	5.6	4.1	3.1	2.6	2.3	2.3	2.5	1.9	1.6
12	3.4	5.3	8.6	11	4.1	3.3	2.6	2.3	2.3	2.3	2.0	1.5
13	3.4	5.1	7.3	6.0	3.8	3.3	2.6	2.3	2.3	2.3	1.9	1.8
14	3.3	4.8	6.6	6.4	3.8	3.5	2.5	2.2	2.3	2.7	1.8	1.6
15	3.3	4.8	5.0	5.8	4.0	3.1	2.5	2.2	2.6	2.3	1.7	1.5
16	3.3	4.8	5.2	5.6	4.1	2.9	2.6	2.2	2.5	2.2	1.8	2.6
17	3.2	5.1	24	5.4	4.0	2.8	2.5	2.2	2.3	2.3	1.7	2.9
18	3.2	5.5	8.0	5.2	4.0	2.8	2.5	2.3	2.4	2.6	1.7	2.9
19	3.0	5.2	6.0	5.1	4.0	2.7	2.5	2.5	2.3	2.6	1.6	2.6
20	3.1	6.0	5.4	5.0	3.9	2.8	2.4	4.2	2.5	2.4	2.5	1.6
21	3.0	7.1	5.6	4.9	3.7	2.8	2.4	8.6	2.3	2.0	3.5	1.6
22	3.2	6.0	8.0	4.8	3.8	2.9	2.5	3.8	2.2	2.2	1.6	1.6
23	2.9	7.3	14	4.7	3.5	2.9	2.5	3.0	2.2	2.1	1.7	1.7
24	2.8	7.3	7.0	4.7	3.4	2.9	2.8	2.6	2.2	2.1	1.6	1.9
25	2.8	6.1	8.6	4.7	4.0	2.8	2.5	2.5	2.3	1.9	1.5	1.8
26	3.0	5.5	8.8	4.7	4.4	2.7	2.7	2.5	2.4	2.1	1.5	2.0
27	14	5.0	7.0	4.6	3.6	2.6	2.7	2.6	2.0	2.0	1.5	1.9
28	30	5.2	9.0	4.6	3.4	2.6	2.5	2.5	2.2	2.0	1.4	1.8
29	23	5.0	19	4.6	---	2.6	2.4	2.4	2.1	2.0	1.6	2.8
30	18	4.7	11	4.6	---	2.7	2.4	2.4	2.1	2.0	1.5	2.1
31	11	---	7.6	5.0	---	2.7	---	2.5	---	1.9	1.4	---
TOTAL	180.8	184.3	254.3	169.6	114.7	93.3	79.6	85.0	70.0	70.3	60.9	60.9
MEAN	5.83	6.14	8.20	5.47	4.10	3.01	2.65	2.74	2.33	2.27	1.96	2.03
MAX	30	9.6	24	11	4.6	3.5	4.4	8.6	2.6	2.8	3.8	3.3
MIN	2.8	4.7	4.7	4.6	3.4	2.6	2.4	2.2	2.0	1.9	1.4	1.4
AC-FT	359	366	504	336	228	185	158	169	139	139	121	121

CAL YR 1982	TOTAL	3898.8	MEAN	10.7	MAX	180	MIN	2.8	AC-FT	7730
WTR YR 1983	TOTAL	1423.7	MEAN	3.90	MAX	30	MIN	1.4	AC-FT	2820

NOTE.--No gage-height record Dec. 14 to Feb. 4, Aug. 5-18, Sept. 9-16.

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE

LOCATION.--Lat 21°23'47", long 157°48'23", Hydrologic Unit 20060000, on left bank 300 ft downstream from Luluku Stream, 1.0 mi southwest of Castle High School, and 1.9 mi northwest of the intersection of State Highways 61 and 83.

DRAINAGE AREA.--3.81 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder and concrete control.

REMARKS.--Records good. Flow regulated by a flood-control dam upstream.

AVERAGE DISCHARGE.--6 years, 12.6 ft³/s (9,130 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft³/s Mar. 18, 1980, gage height, 5.50 ft from rating curve extended above 200 ft³/s; minimum, 0.60 ft³/s Mar. 27, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 281 ft³/s Oct. 28, gage height 3.17 ft; minimum, 1.0 ft³/s May 24, 25.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	16	13	22	14	12	9.0	7.7	8.8	5.2	7.1	4.1
2	13	19	13	20	14	12	8.9	8.1	7.9	5.4	7.8	4.4
3	13	25	34	20	14	12	12	7.8	7.6	5.6	13	4.7
4	12	18	22	20	13	11	10	7.8	7.2	5.4	10	4.7
5	13	16	16	19	14	11	11	8.6	7.1	6.1	8.9	4.1
6	12	16	29	19	13	11	9.8	8.2	7.0	5.6	8.4	5.3
7	12	15	17	18	13	11	9.4	8.7	6.7	6.5	8.0	6.4
8	12	14	15	18	13	11	9.4	8.0	6.5	6.2	6.7	6.1
9	12	15	14	18	13	11	8.8	7.6	6.5	5.7	4.7	5.0
10	12	12	14	19	13	11	8.9	7.5	7.0	5.6	4.6	4.5
11	13	13	13	20	13	11	8.8	7.9	6.5	6.0	4.7	4.6
12	13	14	17	40	13	11	8.9	7.7	6.5	5.6	4.7	4.4
13	13	14	16	20	13	11	8.9	7.7	6.4	6.0	4.6	4.4
14	12	13	14	20	13	11	8.7	7.3	6.4	6.5	4.7	4.2
15	12	13	13	17	13	10	8.3	7.2	6.7	5.9	4.6	4.4
16	12	13	13	17	13	10	9.0	7.1	6.9	5.5	5.3	4.2
17	12	13	15	16	13	10	8.7	7.6	6.9	5.4	4.9	4.6
18	12	13	14	16	12	10	8.4	8.0	6.4	6.7	4.6	4.3
19	11	13	14	16	12	9.9	8.7	7.8	6.6	6.2	4.5	6.1
20	11	14	13	16	12	10	8.4	8.7	7.8	5.3	4.5	4.3
21	11	15	13	16	12	10	8.7	14	6.9	5.0	4.6	4.6
22	11	13	32	15	13	9.9	8.8	8.5	6.6	5.0	4.5	5.1
23	11	18	54	16	12	10	8.5	7.7	6.4	5.0	5.6	5.1
24	11	17	32	16	12	10	8.5	10	6.5	5.8	5.1	4.9
25	11	14	19	15	12	10	8.3	3.9	6.3	5.0	4.6	4.7
26	11	13	23	15	14	9.8	8.5	6.9	6.9	5.0	4.4	5.7
27	32	13	21	15	12	9.6	8.7	7.6	6.1	4.7	4.3	4.8
28	71	13	41	15	12	9.5	8.3	7.7	5.8	5.0	4.3	4.6
29	58	13	60	14	---	9.6	7.8	7.3	5.5	5.1	4.3	6.2
30	30	13	26	15	---	9.5	8.0	7.2	5.4	5.7	4.4	5.4
31	18	---	22	15	---	9.3	---	8.1	---	6.3	4.4	---
TOTAL	520	441	672	558	360	324.1	268.1	245.9	201.8	174.0	176.8	145.9
MEAN	16.8	14.7	21.7	18.0	12.9	10.5	8.94	7.93	6.73	5.61	5.70	4.86
MAX	71	25	60	40	14	12	12	14	8.8	6.7	13	6.4
MIN	11	12	13	14	12	9.3	7.8	3.9	5.4	4.7	4.3	4.1
AC-FT	1030	875	1330	1110	714	643	532	488	400	345	351	289

CAL YR 1982	TOTAL	8597	MEAN	23.6	MAX	237	MIN	11	AC-FT	17050
WTR YR 1983	TOTAL	4087.6	MEAN	11.2	MAX	71	MIN	3.9	AC-FT	8110

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1976 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: November 1976 to current year.

INSTRUMENTATION.--Automatic pumping sediment sampler since November 1976.

REMARKS.--In addition to the sediment sampler record, water quality data were collected during the year.

EXTREMES FOR PERIOD OF RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 879 mg/L Mar. 18, 1980; minimum daily mean, 2 mg/L several days in 1981, 1983.
SEDIMENT DISCHARGE: Maximum daily, 1,380 tons Mar. 18, 1980; minimum daily, 0 ton Oct. 9-11, 1981.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 148 mg/L Oct. 28; minimum daily mean, 2 mg/L several days in September.
SEDIMENT DISCHARGE: Maximum daily, 54 tons Oct. 28; minimum daily, 0.02 ton Sept. 16, 20, 21.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
OCT 05...	1525	16	180	7.4	25.0
DEC 16...	1035	13	170	7.1	22.0
FEB 02...	1245	15	176	7.1	20.5
APR 18...	1340	9.0	180	7.2	23.5
MAY 18...	1240	8.4	169	6.8	26.0
JUN 30...	1300	5.6	174	6.8	27.0
JUL 13...	1400	5.5	183	6.9	26.5
28...	0935	6.0	210	7.6	26.0
AUG 18...	1440	5.3	178	7.5	26.5
SEP 08...	1420	7.1	178	7.2	27.0
20...	1420	4.3	170	6.8	22.5
28...	0950	4.7	183	7.1	26.0

DATE	TIME	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM DIS-SOLVED (MG/L AS MG)	SODIUM DIS-SOLVED (MG/L AS NA)
FEB 02...	1245	1.5	8.6	96	K19	52	0	8.2	7.6	15
MAY 18...	1240	1.0	6.5	81	32	--	--	--	--	--
JUL 13...	1400	.80	6.6	82	--	--	--	--	--	--
AUG 18...	1440	1.2	7.0	88	43	52	0	7.8	7.8	15
SEP 28...	0950	1.7	6.5	80	110	--	--	--	--	--

DATE	TIME	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L (AS F)	SILICA DIS-SOLVED (MG/L AS SI02)
FEB 02...	1245	38	.9	.9	59	6.8	18	<.10	22
AUG 18...	1440	38	.9	1.0	56	6.8	20	<.10	22

K Results based on colony count outside the acceptable range (non-ideal colony count).
< Actual value is known to be less than the value shown.

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
FEB 02...	1245	100	114	.14	<1	.30	.80	1.1	.050
MAY 18...	1240	--	--	--	16	.30	.30	.60	.020
JUL 13...	1400	--	--	--	5	.20	.70	.90	.040
AUG 18...	1440	99	114	.13	6	.30	.40	.70	.010
SEP 28...	0950	--	--	--	8	.20	.40	.60	.020

DATE	TIME	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)
FEB 02...	1245	200	10	1	1	<100	10	<10	<1	<1
AUG 18...	1440	300	20	<1	1	<100	9	<10	<1	<1

DATE	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
FEB 02...	<1	<10	<1	2	<3	<1	<1	280	85	<1
AUG 18...	<1	<10	<1	1	<3	4	1	470	52	1

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)
FEB 02...	<1	<10	11	60	45	.1	<.1	<1	<10	5
AUG 18...	<1	<10	<4	70	40	.1	<.1	<1	<10	3

< Actual value is known to be less than the value shown.

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
FEB 02...	1245	1	<1	<1	<1	<1	65	<6.0	10	4
AUG 18...	1440	2	<1	<1	<1	<1	68	<6.0	40	<3

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
FEB 02...	1.8	<1	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01
AUG 18...	1.3	2	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB 02...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 18...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB 02...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01
AUG 18...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01

< Actual value is known to be less than the value shown.

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	13	8	.28	16	7	.30	13	5	.18
2	13	8	.28	19	8	.41	13	5	.18
3	13	8	.28	25	12	.81	34	15	2.6
4	12	7	.23	18	9	.44	22	10	.59
5	13	8	.28	16	8	.35	16	6	.26
6	12	7	.23	16	8	.35	29	24	2.8
7	12	7	.23	15	7	.28	17	15	.69
8	12	7	.23	14	6	.23	15	15	.61
9	12	7	.23	15	10	.91	14	12	.45
10	12	7	.23	12	5	.16	14	8	.30
11	13	10	.35	13	6	.21	13	6	.21
12	13	10	.35	14	7	.26	17	12	.55
13	13	10	.35	14	7	.26	16	10	.43
14	12	9	.29	13	6	.21	14	8	.30
15	12	9	.29	13	6	.21	13	6	.21
16	12	9	.29	13	6	.21	13	6	.21
17	12	9	.29	13	6	.21	15	7	.28
18	12	9	.29	13	6	.21	14	6	.23
19	11	8	.24	13	6	.21	14	6	.23
20	11	8	.24	14	7	.26	13	5	.18
21	11	8	.24	15	8	.32	13	5	.18
22	11	8	.24	13	5	.18	32	9	.89
23	11	8	.24	18	47	3.5	54	33	9.6
24	11	8	.24	17	20	.92	32	16	1.4
25	11	8	.24	14	6	.23	19	10	.51
26	11	8	.24	13	5	.18	23	12	.75
27	32	42	4.7	13	5	.18	21	11	.62
28	71	148	54	13	5	.18	41	25	2.8
29	58	23	4.3	13	5	.18	60	35	5.7
30	30	16	1.4	13	5	.18	26	12	.84
31	18	9	.44	---	---	---	22	10	.59
TOTAL	520	---	71.76	441	---	12.54	672	---	35.37
		JANUARY			FEBRUARY			MARCH	
1	22	10	.59	14	7	.26	12	10	.32
2	20	8	.43	14	7	.26	12	10	.32
3	20	8	.43	14	7	.26	12	9	.29
4	20	8	.43	13	7	.25	11	9	.27
5	19	7	.36	14	7	.26	11	8	.24
6	19	7	.36	13	8	.28	11	8	.24
7	18	6	.29	13	8	.28	11	8	.24
8	18	6	.29	13	8	.28	11	8	.24
9	18	6	.29	13	8	.28	11	8	.24
10	19	6	.31	13	8	.28	11	8	.24
11	20	7	.38	13	8	.28	11	10	.30
12	40	13	2.0	13	7	.25	11	10	.30
13	20	6	.32	13	6	.21	11	10	.30
14	20	6	.32	13	6	.21	11	10	.30
15	17	5	.23	13	6	.21	10	10	.27
16	17	5	.23	13	6	.21	10	10	.27
17	16	4	.17	13	6	.21	10	10	.27
18	16	4	.17	12	9	.29	10	12	.32
19	16	4	.17	12	9	.29	9.9	15	.40
20	16	4	.17	12	10	.32	10	16	.43
21	16	4	.17	12	10	.32	10	16	.43
22	15	4	.16	13	12	.42	9.9	16	.43
23	16	5	.22	12	10	.32	10	18	.49
24	16	5	.22	12	10	.32	10	25	.68
25	15	5	.20	12	10	.32	10	35	.95
26	15	5	.20	14	12	.45	9.8	30	.79
27	15	5	.20	12	10	.32	9.6	25	.65
28	15	5	.20	12	10	.32	9.5	20	.51
29	14	5	.19	---	---	---	9.6	20	.52
30	15	6	.24	---	---	---	9.5	12	.31
31	15	6	.24	---	---	---	9.3	10	.25
TOTAL	558	---	10.18	360	---	7.96	324.1	---	11.81

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	9.0	10	.24	7.7	6	.12	8.8	4	.10
2	8.9	10	.24	8.1	6	.13	7.9	4	.09
3	12	12	.39	7.8	6	.13	7.6	5	.10
4	10	10	.27	7.8	6	.13	7.2	5	.10
5	11	12	.36	8.6	6	.14	7.1	5	.10
6	9.8	8	.21	8.2	6	.13	7.0	5	.09
7	9.4	8	.20	8.7	6	.14	6.7	5	.09
8	9.4	8	.20	8.0	6	.13	6.5	5	.09
9	8.8	10	.24	7.6	6	.12	6.5	5	.09
10	8.9	10	.24	7.5	6	.12	7.0	5	.09
11	8.8	10	.24	7.9	6	.13	6.5	5	.09
12	8.9	10	.24	7.7	6	.12	6.5	5	.09
13	8.9	10	.24	7.7	6	.12	6.4	5	.09
14	8.7	10	.23	7.3	7	.14	6.4	5	.09
15	8.3	10	.22	7.2	7	.14	6.7	7	.13
16	9.0	9	.22	7.1	7	.13	6.9	10	.19
17	8.7	8	.19	7.6	8	.16	6.9	10	.19
18	8.4	8	.18	8.0	10	.22	6.4	8	.14
19	8.7	8	.19	7.8	8	.17	6.6	8	.14
20	8.4	6	.14	8.7	9	.21	7.8	10	.21
21	8.7	6	.14	14	10	.38	6.9	8	.15
22	8.8	6	.14	8.5	6	.14	6.6	6	.11
23	8.5	6	.14	7.7	5	.10	6.4	6	.10
24	8.5	6	.14	10	10	.27	6.5	6	.11
25	8.3	6	.13	3.9	8	1.4	6.3	6	.10
26	8.5	6	.14	6.9	4	.07	6.9	6	.11
27	8.7	6	.14	7.6	5	.10	6.1	6	.10
28	8.3	6	.13	7.7	5	.10	5.8	6	.09
29	7.8	8	.17	7.3	5	.10	5.5	5	.07
30	8.0	8	.17	7.2	5	.10	5.4	7	.10
31	---	---	---	8.1	5	.11	---	---	---
TOTAL	268.1	---	6.12	245.9	---	5.70	201.8	---	3.34
		JULY			AUGUST			SEPTEMBER	
1	5.2	8	.11	7.1	10	.19	4.1	5	.06
2	5.4	8	.12	7.8	12	.25	4.4	5	.06
3	5.6	10	.15	13	18	.63	4.7	6	.08
4	5.4	10	.15	10	15	.41	4.7	6	.08
5	6.1	8	.13	8.9	12	.29	4.1	5	.06
6	5.6	10	.15	8.4	10	.23	5.3	7	.10
7	6.5	7	.12	8.0	10	.22	6.4	9	.16
8	6.2	7	.12	6.7	7	.13	6.1	7	.12
9	5.7	9	.14	4.7	4	.05	5.0	5	.07
10	5.6	8	.12	4.6	3	.04	4.5	3	.04
11	6.0	9	.15	4.7	4	.05	4.6	3	.04
12	5.6	7	.11	4.7	4	.05	4.4	3	.04
13	6.0	7	.11	4.6	3	.04	4.4	3	.04
14	6.5	5	.09	4.7	3	.04	4.2	3	.03
15	5.9	4	.06	4.6	3	.04	4.4	3	.04
16	5.5	5	.07	5.3	6	.09	4.2	2	.02
17	5.4	5	.07	4.9	5	.07	4.6	3	.04
18	6.7	8	.14	4.6	5	.06	4.3	2	.02
19	6.2	6	.10	4.5	5	.06	6.1	5	.08
20	5.3	5	.07	4.5	5	.06	4.3	2	.02
21	5.0	5	.07	4.6	6	.07	4.6	2	.02
22	5.0	5	.07	4.5	6	.07	5.1	3	.04
23	5.0	5	.07	5.6	7	.11	5.1	3	.04
24	5.8	6	.09	5.1	6	.08	4.9	2	.03
25	5.0	5	.07	4.6	5	.06	4.7	2	.03
26	5.0	5	.07	4.4	5	.06	5.7	5	.08
27	4.7	4	.05	4.3	5	.06	4.8	4	.05
28	5.0	5	.07	4.3	5	.06	4.6	3	.04
29	5.1	5	.07	4.3	5	.06	6.2	5	.08
30	5.7	6	.09	4.4	5	.06	5.4	3	.04
31	6.3	8	.14	4.4	5	.06	---	---	---
TOTAL	174.0	---	3.14	176.8	---	3.75	145.9	---	1.65
YEAR	4087.6		173.32						

16275000 HAIKU STREAM NEAR HEEIA

LOCATION.--Lat 21°24'46", long 157°49'33", Hydrologic Unit 20060000, on left bank 1.7 mi west of Kaneohe Post Office and 1.8 mi southwest of Heeia.

DRAINAGE AREA.--0.97 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1914 to October 1919, July 1939 to September 1977, October 1982 to September 1983.

REVISED RECORDS (FISCAL YEARS).--WSP 935: 1940. WSP 1319: 1916-19(M). WSP 1569: Drainage area. WSP 1719: 1942-43, 1946(M), 1947, 1949, 1951, 1954(M), 1955, 1957-59. WSP 1937: 1940-45(M), 1947(M), 1948-50(P), 1951, 1952(P), 1953(M), 1955-57(P), 1958-59, 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 271.9 ft above mean sea level (levels by city and county of Honolulu). Prior to Apr. 28, 1914, nonrecording gage and Apr. 28, 1914, to Oct. 25, 1919, water-stage recorder, at same site at different datums.

REMARKS.--Records poor. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1943.

AVERAGE DISCHARGE (since diversion from tunnel began).--35 years (water years 1944-77, 1983), 2.16 ft³/s (1,560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,740 ft³/s May 2, 1965, gage height, 7.94 ft, from rating curve extended above 57 ft³/s on basis of slope-area measurements at gage heights 3.87 ft, 3.88 ft, and 7.94 ft; minimum, 0.20 ft³/s July 20, 1957, Sept. 17, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 165 ft³/s Oct. 28, gage height, 2.67 ft, no peak above base of 340 ft³/s; minimum, 1.5 ft³/s for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	3.4	2.4	4.5	2.3	2.2	2.0	1.8	1.7	1.6	1.5	1.6
2	2.5	4.8	2.4	4.0	2.3	2.2	2.1	1.8	1.7	1.6	1.7	1.7
3	2.5	6.6	4.0	3.5	2.3	2.2	2.4	1.8	1.6	1.6	4.6	1.6
4	2.5	4.5	3.3	3.4	2.3	2.2	2.3	1.8	1.6	1.6	2.9	1.6
5	3.0	3.5	2.5	3.3	2.3	2.1	2.2	1.7	1.6	1.6	2.4	1.6
6	2.8	3.5	4.3	3.2	2.3	2.1	2.1	1.7	1.6	1.6	2.2	1.8
7	2.8	3.2	3.7	3.0	2.3	2.1	2.1	1.7	1.6	1.6	1.9	1.7
8	2.6	2.9	2.9	2.9	2.2	2.0	2.2	1.6	1.5	1.6	1.6	1.8
9	2.5	2.8	2.8	2.9	2.2	2.0	2.1	1.6	1.6	1.6	1.6	1.7
10	2.5	2.6	2.6	3.1	2.2	2.0	2.1	1.6	1.6	1.6	1.6	1.7
11	2.6	2.5	2.5	4.4	2.2	2.0	1.9	1.6	1.7	1.6	1.6	1.7
12	2.6	2.6	2.8	9.3	2.2	2.0	1.9	1.6	1.7	1.6	1.6	1.6
13	2.8	2.5	2.8	4.2	2.2	2.0	1.9	1.6	1.7	1.7	1.6	1.6
14	2.8	2.4	2.9	3.2	2.2	2.0	1.9	1.6	1.7	1.7	1.6	1.6
15	2.5	2.4	2.9	2.8	2.1	2.0	1.9	1.6	1.7	1.6	1.6	1.6
16	2.5	2.4	2.8	2.7	2.2	2.0	1.9	1.6	1.7	1.6	1.6	1.6
17	2.4	2.4	3.1	2.6	2.2	2.0	2.0	1.6	1.7	1.6	1.6	1.7
18	2.4	2.4	3.0	2.5	2.2	2.0	2.0	1.7	1.6	1.8	1.6	1.5
19	2.3	2.4	2.9	2.5	2.2	2.0	2.0	1.7	1.6	1.8	1.6	1.8
20	2.3	2.8	2.8	2.5	2.1	2.0	2.0	1.7	1.6	1.8	1.7	1.6
21	2.3	3.6	2.8	2.5	2.1	2.0	2.0	1.7	1.6	1.7	1.6	1.7
22	2.3	2.8	6.5	2.5	2.2	2.0	2.0	1.7	1.6	1.7	1.6	1.6
23	2.3	3.5	9.0	2.4	2.2	2.0	1.9	1.7	1.6	1.6	1.7	1.7
24	2.3	3.0	7.3	2.4	2.2	2.0	1.8	1.7	1.6	1.6	1.7	1.7
25	2.3	2.8	4.5	2.3	2.2	2.0	1.8	1.7	1.6	1.6	1.7	1.6
26	2.3	2.6	7.0	2.1	2.2	2.0	1.8	1.7	1.6	1.5	1.7	1.6
27	4.0	2.5	4.0	2.1	2.2	2.0	1.8	1.7	1.6	1.5	1.6	1.6
28	14	2.5	7.8	2.2	2.2	2.0	1.8	1.7	1.6	1.5	1.5	1.6
29	11	2.4	18	2.2	---	2.0	1.8	1.7	1.6	1.5	1.5	4.3
30	7.6	2.4	7.8	2.2	---	2.0	1.8	1.6	1.6	1.5	1.5	2.8
31	4.5	---	5.4	2.2	---	2.0	---	1.7	---	1.5	1.6	---
TOTAL	106.4	90.7	139.5	95.6	62.0	63.1	59.5	52.0	48.8	50.0	55.8	53.3
MEAN	3.43	3.02	4.50	3.08	2.21	2.04	1.98	1.68	1.63	1.61	1.80	1.78
MAX	14	6.6	18	9.3	2.3	2.2	2.4	1.8	1.7	1.8	4.6	4.3
MIN	2.3	2.4	2.4	2.1	2.1	2.0	1.8	1.6	1.5	1.5	1.5	1.5
AC-FT	211	180	277	190	123	125	118	103	97	99	111	106

WTR YR 1983 TOTAL 876.7 MEAN 2.40 MAX 18 MIN 1.5 AC-FT 1740

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
MAR 28...	1110	2.0	160	7.0	20.5	--	--	--	--	--
APR 20...	1115	2.0	145	7.3	19.5	1.0	8.5	93	K23	45
JUN 02...	1510	1.7	144	6.9	21.0	--	--	--	--	--
JUL 13...	1030	1.7	146	7.0	21.5	.60	8.2	93	--	--
29...	1355	1.5	140	6.8	22.0	--	--	--	--	--
AUG 18...	1130	1.5	147	7.7	22.0	.70	8.4	97	65	45
SEP 29...	0910	2.3	167	6.3	22.0	1.6	8.3	96	--	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
APR 20...	0	8.5	5.7	12	36	.8	.8	51	3.5
AUG 18...	0	8.4	5.7	12	37	.8	.7	50	3.2

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
APR 20...	10	<.10	27	93	98	.13	<1	<.10	.40	.070
JUL 13...	--	--	--	--	--	--	6	<.10	.50	.040
AUG 18...	17	<.10	28	85	105	.12	<1	<.10	.30	.010
SEP 29...	--	--	--	--	--	--	11	--	--	--

DATE	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)
APR 20...	100	<10	<1	<1	<100	6	<10	1	<1
AUG 18...	100	<10	<1	<1	100	5	<10	<1	<1

DATE	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
APR 20...	<1	<10	<1	1	<3	5	1	400	120	1
AUG 18...	<1	<10	<1	7	<3	2	<1	370	110	1

K Results based on colony count outside the acceptable range (non-ideal colony count).
< Actual value is known to be less than the value shown.

16275000 HAIKU STREAM NEAR HEEIA, OAHU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)
APR											
20...	1115	1	<10	5	30	20	<.1	<.1	<1	<10	3
AUG											
18...	1130	<1	<10	4	30	18	<.1	<.1	<1	<10	<1

DATE	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
APR									
20...	4	<1	<1	<1	<1	53	<6.0	20	<3
AUG									
18...	<1	<1	<1	<1	1	53	<6.0	20	<3

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
APR										
20...	.5	<1	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01
AUG										
18...	.4	2	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
APR										
20...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG										
18...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
APR										
20...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01
AUG										
18...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01

< Actual value is known to be less than the value shown.

16283600 SOUTH FORK WAIHEE STREAM NEAR HEEIA

LOCATION.--Lat 21°26'47", long 157°52'12", Hydrologic Unit 20060000, on left bank 0.2 mi upstream from confluence with North Fork, 3.0 mi southwest of Waiahole School, and 4.0 mi northwest of Heeia.

DRAINAGE AREA.--0.03 mi².

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 615.74 ft above mean sea level (levels by Honolulu Board of Water Supply).

REMARKS.--Records good. Honolulu Board of Water Supply diverts water from wells in drainage area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--21 years, 1.57 ft³/s (1,140 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 430 ft³/s Oct. 28, 1981, gage height, 4.68 ft, from rating curve extended above 4.8 ft³/s; no flow July 7, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50 ft³/s Oct. 27, gage height, 2.18 ft, no other peak above base of 47 ft³/s; minimum, 0.22 ft³/s for many days in April.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	.42	.30	.30	.28	.26	.26	.24	.56	.60	.60	.85
2	.47	.37	.30	.30	.28	.26	.28	.26	.56	.65	.65	.85
3	.51	1.2	.42	.30	.28	.26	.30	.33	.56	.65	.80	.85
4	.51	.37	.37	.30	.28	.26	.22	.37	.56	.65	.70	.85
5	.79	.33	.30	.30	.28	.26	.22	.47	.56	.65	.65	.85
6	.56	.49	1.2	.30	.28	.26	.22	.42	.56	.65	.65	.91
7	.60	.30	.37	.30	.28	.26	.22	.47	.56	.65	.65	.91
8	.60	.30	.33	.30	.28	.26	.24	.42	.56	.75	.65	.91
9	.56	.30	.33	.30	.28	.26	.24	.42	.56	.65	.75	.85
10	.51	.30	.33	.30	.28	.26	.24	.42	.56	.65	.75	.85
11	.60	.30	.33	.54	.28	.26	.24	.42	.56	.65	.75	.85
12	.62	.30	.33	.48	.28	.24	.24	.42	.56	.65	.88	.75
13	.63	.30	.43	.30	.28	.24	.22	.47	.56	.70	.75	.51
14	.51	.30	.37	.30	.28	.24	.22	.42	.56	.80	.75	.51
15	.51	.30	.30	.30	.28	.24	.22	.42	.56	.60	.80	.60
16	.51	.30	.30	.30	.28	.24	.22	.42	.56	.60	.98	.60
17	.51	.30	.42	.30	.28	.24	.22	.42	.56	.60	.91	.65
18	.51	.30	.33	.30	.28	.24	.24	.47	.51	1.1	.85	.60
19	.51	.30	.30	.30	.28	.24	.24	.42	.51	.65	.85	.65
20	.51	1.1	.30	.30	.28	.24	.24	.48	.56	.60	.85	.65
21	.51	.60	.30	.30	.28	.24	.24	.60	.60	.60	.85	.65
22	.51	.30	.94	.30	.28	.24	.24	.42	.60	.60	.98	.65
23	.51	.85	1.4	.30	.26	.24	.24	.42	.60	.60	.91	.65
24	.51	.37	.47	.30	.26	.24	.26	.37	.60	.60	1.1	.65
25	.51	.30	.33	.30	.26	.24	.26	.37	.65	.60	.91	.65
26	.51	.30	.81	.30	.26	.24	.24	.37	.65	.60	.85	.65
27	2.1	.30	.37	.28	.26	.26	.24	.37	.65	.60	.85	.65
28	2.1	.30	.79	.28	.26	.26	.24	.37	.60	.60	.85	.70
29	2.1	.30	1.5	.28	---	.26	.24	.37	.60	.60	.85	1.1
30	.84	.30	.37	.28	---	.26	.24	.37	.60	.60	.85	.65
31	.51	---	.30	.28	---	.26	---	.51	---	.60	.85	---
TOTAL	21.71	12.10	15.24	9.62	7.72	7.76	7.18	12.72	17.25	20.10	25.07	22.05
MEAN	.70	.40	.49	.31	.28	.25	.24	.41	.57	.65	.81	.73
MAX	2.1	1.2	1.5	.54	.28	.26	.30	.60	.65	1.1	1.1	1.1
MIN	.47	.30	.30	.28	.26	.24	.22	.24	.51	.60	.60	.51
AC-FT	43	24	30	19	15	15	14	25	34	40	50	44

CAL YR 1982	TOTAL	230.51	MEAN	.63	MAX	13	MIN	.22	AC-FT	457
WTR YR 1983	TOTAL	178.52	MEAN	.49	MAX	2.1	MIN	.22	AC-FT	354

HAWAII, ISLAND OF OAHU

16283700 NORTH FORK WAIHEE STREAM NEAR HEEIA

LOCATION.--Lat 21°26'48", long 157°52'18", Hydrologic Unit 20060000, on left bank 0.3 mi upstream from confluence with South Fork, 2.8 mi southwest of Waiahole School, and 4.3 mi northwest of Heeia.

DRAINAGE AREA.--0.03 mi².

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 639.00 ft above mean sea level (levels by Honolulu Board of Water Supply).

REMARKS.--Records fair except for periods of no gage-height record, which are poor. Honolulu Board of Water Supply diverts water from wells in South Fork Waihee which affects the low flow at this station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--21 years, 1.67 ft³/s (1,210 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 376 ft³/s Feb. 4, 1965, gage height, 3.38 ft, from rating curve extended above 19 ft³/s; no flow July 7, 8, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27 ft³/s Oct. 27, gage height, 1.48 ft, no peak above base of 45 ft³/s; minimum, 0.33 ft³/s Apr. 27-30.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.1	.91	.76	.62	.58	.58	.36	.96	1.0	.96	1.2
2	1.1	.96	.91	.76	.62	.58	.58	.42	.96	1.0	1.1	1.2
3	1.1	1.6	1.0	.76	.62	.58	.62	.71	.96	1.0	1.2	1.2
4	1.1	.96	.92	.76	.62	.58	.54	.81	.96	1.0	1.1	1.2
5	1.4	.91	.91	.71	.62	.58	.50	.91	.96	1.0	1.1	1.2
6	1.1	1.1	1.6	.71	.62	.58	.46	.91	.96	1.0	1.1	1.2
7	1.1	.91	1.1	.71	.62	.58	.46	.91	.96	1.0	1.0	1.2
8	1.2	.91	.91	.71	.62	.58	.46	.91	.96	1.1	1.1	1.2
9	1.0	.91	.86	.71	.62	.58	.46	.91	.96	1.0	1.1	1.1
10	1.1	.91	.81	.71	.62	.58	.46	.91	.96	1.0	1.1	1.1
11	1.1	.91	.81	1.0	.62	.58	.46	.86	.96	1.0	1.1	1.1
12	1.1	.91	.81	.90	.62	.58	.46	.86	.96	1.0	1.2	1.1
13	1.2	.91	.91	.70	.62	.54	.42	.86	.96	1.0	1.1	.81
14	1.1	.91	.86	.70	.62	.54	.42	.86	.96	1.1	1.1	.76
15	1.1	.91	.76	.70	.62	.54	.42	.81	.96	1.0	1.2	.91
16	1.1	.91	.76	.70	.62	.54	.42	.81	.96	1.0	1.3	.91
17	1.1	.91	.88	.70	.62	.54	.39	.81	.96	1.0	1.2	1.0
18	1.1	.91	.81	.70	.62	.54	.39	.81	.96	1.4	1.2	.96
19	1.1	.91	.76	.70	.62	.54	.39	.81	.96	1.0	1.2	.96
20	1.1	1.5	.76	.70	.62	.54	.39	.88	1.0	1.0	1.2	.96
21	1.1	1.0	.76	.70	.62	.54	.36	1.0	1.1	1.0	1.2	.96
22	1.1	.91	1.2	.70	.58	.54	.36	.81	1.1	1.0	1.2	.96
23	1.1	1.3	1.7	.70	.58	.54	.36	.81	1.1	.96	1.2	.96
24	1.1	.91	.91	.70	.58	.54	.39	.81	1.1	.96	1.2	.96
25	1.1	.91	.81	.70	.58	.54	.39	.81	1.1	.96	1.2	.96
26	1.1	.91	1.2	.70	.58	.54	.36	.81	1.1	.96	1.2	.96
27	1.7	.91	.81	.70	.58	.58	.33	.86	1.0	.96	1.2	1.0
28	1.9	.91	1.1	.62	.58	.58	.33	.86	1.0	.96	1.2	1.0
29	2.2	.91	1.6	.62	---	.58	.33	.86	1.0	.96	1.2	1.2
30	1.4	.91	.81	.62	---	.58	.33	.86	1.0	.96	1.2	.96
31	1.1	---	.76	.62	---	.58	---	.91	---	.96	1.2	---
TOTAL	37.3	29.54	29.71	22.18	17.08	17.42	12.82	25.53	29.84	31.24	35.86	31.19
MEAN	1.20	.98	.96	.72	.61	.56	.43	.82	.99	1.01	1.16	1.04
MAX	2.2	1.6	1.7	1.0	.62	.58	.62	1.0	1.1	1.4	1.3	1.2
MIN	1.0	.91	.76	.62	.58	.54	.33	.36	.96	.96	.96	.76
AC-FT	74	59	59	44	34	35	25	51	59	62	71	62

CAL YR 1982	TOTAL	371.23	MEAN	1.02	MAX	5.3	MIN	.30	AC-FT	736
WTR YR 1983	TOTAL	319.71	MEAN	.88	MAX	2.2	MIN	.33	AC-FT	634

NOTE.--No gage-height record Jan. 9 to Feb. 16.

16284200 WAIHEE STREAM NEAR KAHALUU

LOCATION.--Lat 21°27'04", long 157°51'36", Hydrologic Unit 20060000, on right bank 0.2 mi downstream from forest-reserve boundary, 1.0 mi south of Kahaluu School, and 1.6 mi west of Ahuimanu sewage treatment plant.

DRAINAGE AREA.--0.97 mi².

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 170 ft, from topographic map.

REMARKS.--Records good. Honolulu Board of Water Supply diverts water from tunnel and wells in drainage area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--9 years, 5.86 ft³/s (4,250 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,180 ft³/s Mar. 14, 1982, gage height, 7.52 ft, from rating curve extended above 100 ft³/s; minimum, 1.1 ft³/s Apr. 7, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 27	2300	*285	5.02	Dec. 6	0900	174	4.48
Nov. 23	1900	202	4.63	Dec. 23	1330	157	4.38

Minimum discharge, 4.4 ft³/s Sept. 14.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	9.1	7.2	8.3	6.8	6.4	6.1	5.6	6.1	5.8	5.3	5.4
2	7.6	8.6	7.2	7.9	6.8	6.4	6.1	5.6	6.1	5.8	5.4	5.4
3	7.9	16	7.9	7.6	6.8	6.4	6.4	5.9	6.1	5.8	6.1	5.4
4	7.6	9.1	7.6	7.6	6.8	6.4	6.2	6.1	5.9	5.8	5.8	5.4
5	8.8	8.6	7.4	7.6	6.8	6.4	6.1	6.2	5.9	5.8	5.4	5.4
6	7.6	8.6	16	7.4	6.8	6.4	6.1	5.9	5.9	5.6	5.4	5.6
7	7.6	7.9	8.3	7.4	6.8	6.4	6.1	6.1	5.9	5.6	5.4	5.8
8	7.6	7.6	7.6	7.4	6.8	6.4	6.1	5.9	5.9	5.9	5.4	5.4
9	7.6	7.6	7.4	7.4	6.6	6.4	6.1	5.8	5.9	5.8	5.4	5.3
10	7.4	7.4	7.4	7.6	6.6	6.4	6.1	5.8	5.8	5.8	5.4	5.2
11	7.6	7.4	7.2	8.9	6.6	6.4	6.1	5.8	5.8	5.8	5.4	5.2
12	7.9	7.4	7.4	8.3	6.6	6.4	6.1	5.6	5.8	5.6	5.8	5.0
13	8.1	7.4	7.7	7.6	6.6	6.4	6.1	5.6	5.8	5.8	5.4	4.6
14	7.6	7.4	7.6	7.4	6.6	6.4	5.9	5.6	5.8	6.1	5.4	4.5
15	7.4	7.4	7.4	7.4	6.6	6.6	5.9	5.6	5.8	5.8	5.4	4.5
16	7.4	7.2	7.2	7.4	6.6	6.6	6.1	5.6	5.8	5.6	5.9	4.6
17	7.4	7.2	7.6	7.2	6.4	6.6	5.9	5.6	5.8	5.6	5.8	4.9
18	7.4	7.2	7.4	7.2	6.6	6.4	5.9	5.6	5.8	7.1	5.6	4.7
19	7.4	7.2	7.2	7.2	6.6	6.4	5.9	5.6	5.8	5.9	5.6	4.7
20	7.4	13	7.0	7.2	6.6	6.4	5.9	5.9	5.8	5.6	5.6	4.7
21	7.2	11	7.0	7.2	6.4	6.4	5.9	6.4	5.8	5.3	5.8	4.9
22	7.2	8.3	12	7.2	6.4	6.2	5.9	5.8	5.8	5.3	5.8	4.7
23	7.2	12	20	7.0	6.6	6.2	5.9	5.6	5.8	4.7	5.8	4.7
24	7.2	8.8	10	7.0	6.6	6.2	6.1	5.6	5.8	5.2	6.4	4.7
25	7.2	8.1	8.6	7.0	6.6	6.2	5.9	5.6	5.8	5.2	5.8	4.9
26	7.4	7.6	13	7.0	6.8	6.1	5.8	5.6	5.9	5.2	5.6	4.7
27	30	7.4	8.8	7.0	6.6	6.1	5.8	5.6	5.8	5.2	5.6	5.0
28	23	7.2	12	7.0	6.4	6.1	5.8	5.6	5.8	5.2	5.6	5.0
29	32	7.2	23	6.6	---	6.1	5.6	5.6	5.8	5.3	5.4	6.4
30	15	7.2	10	6.8	---	6.1	5.6	5.8	5.8	5.3	5.4	5.0
31	7.8	---	8.8	6.8	---	6.1	---	5.9	---	5.3	5.4	---
TOTAL	304.1	254.1	290.9	228.6	185.8	196.4	179.5	178.5	175.6	173.8	173.5	151.7
MEAN	9.81	8.47	9.38	7.37	6.64	6.34	5.98	5.76	5.85	5.61	5.60	5.06
MAX	32	16	23	8.9	6.8	6.6	6.4	6.4	6.1	7.1	6.4	6.4
MIN	7.2	7.2	7.0	6.6	6.4	6.1	5.6	5.6	5.8	4.7	5.3	4.5
AC-FT	603	504	577	453	369	390	356	354	348	345	344	301

CAL YR 1982	TOTAL	3614.1	MEAN	9.90	MAX	77	MIN	4.2	AC-FT	7170
WTR YR 1983	TOTAL	2492.5	MEAN	6.83	MAX	32	MIN	4.5	AC-FT	4940

16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE

LOCATION.--Lat 21°30'00", long 157°51'54", Hydrologic Unit 20060000, on right bank 0.3 mi downstream from Waikeekee Stream, 0.7 mi west of Waikane, and 1.2 mi northwest of Waiahole School.

DRAINAGE AREA.--2.22 mi².

PERIOD OF RECORD.--December 1959 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 75 ft, from topographic map.

REMARKS.--Records good except those for period of no gage-height record, which are poor. Waiahole tunnel diverts from two tributaries above station for irrigation in vicinity of Waipahu. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--23 years (water years 1961-83), 8.57 ft³/s (6,210 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft³/s Feb. 4, 1965, gage height, 10.76 ft, from rating curve extended above 120 ft³/s on basis of slope-area measurements at gage heights 4.88 ft, 9.46 ft, and 10.76 ft; minimum, 0.76 ft³/s Oct. 27, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,060 ft³/s Dec. 23, gage height, 5.59 ft, no other peak above base of 700 ft³/s; minimum, 2.2 ft³/s, June 23, 29-30, July 1.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	8.9	4.2	17	3.9	3.3	2.9	3.2	4.2	2.3	2.5	3.1
2	4.2	8.0	4.4	14	3.9	3.3	2.9	3.1	3.4	2.5	3.7	3.1
3	3.9	77	8.2	11	3.9	3.2	8.8	2.7	3.6	2.6	21	3.1
4	3.9	17	14	9.0	3.9	3.1	4.7	2.6	3.2	2.5	7.0	3.4
5	8.8	14	7.8	8.0	3.9	3.0	6.3	4.2	3.0	3.5	6.1	3.3
6	7.1	12	12	7.2	3.9	3.0	5.3	3.6	3.1	3.0	7.0	3.4
7	4.2	9.6	7.8	6.8	3.9	2.9	4.2	4.2	2.9	4.0	4.8	9.0
8	4.4	8.3	6.8	6.5	3.9	3.1	3.9	3.4	2.7	4.0	4.1	4.0
9	4.2	7.6	6.1	6.2	3.9	3.1	3.3	2.9	2.9	3.1	3.7	3.0
10	3.7	7.1	5.8	6.8	3.9	3.1	3.0	2.9	3.0	3.2	3.5	2.8
11	5.0	6.6	5.7	8.0	3.9	3.0	2.9	3.0	2.8	2.8	3.3	2.6
12	4.4	6.6	14	10	4.0	3.2	4.1	2.8	2.9	2.8	3.5	2.5
13	5.2	6.5	7.9	8.6	3.9	3.3	3.3	2.7	2.9	2.9	3.2	2.4
14	3.7	6.0	6.8	7.0	3.9	3.4	3.0	2.6	3.1	6.8	3.2	2.4
15	3.5	5.8	6.1	6.0	3.8	3.1	2.8	2.6	2.8	4.0	3.2	2.4
16	3.5	5.8	5.7	5.6	3.7	2.9	3.5	2.6	3.5	3.4	8.3	2.4
17	3.5	5.6	11	5.2	3.7	2.9	4.4	2.6	2.8	2.9	5.1	5.0
18	4.2	5.5	8.3	5.0	3.6	3.0	3.3	15	2.6	5.0	5.4	2.6
19	3.5	5.3	6.2	4.8	3.6	2.9	3.5	5.0	2.5	4.2	4.3	2.4
20	3.3	40	5.7	4.6	3.6	2.9	3.8	5.8	2.7	3.3	3.8	2.3
21	3.3	14	5.5	4.5	3.4	2.9	3.7	8.0	2.5	3.0	3.7	2.3
22	3.5	5.5	35	4.4	3.6	2.9	3.2	4.8	2.4	2.8	3.6	2.3
23	3.3	14	74	4.2	3.5	2.9	3.1	3.9	2.3	2.6	3.4	2.3
24	3.1	9.5	20	4.2	3.4	2.9	3.6	3.4	2.4	2.8	4.3	3.0
25	2.9	5.5	19	4.1	3.4	3.0	5.3	3.2	2.5	2.6	4.1	7.0
26	3.1	5.0	46	4.1	4.7	2.9	3.8	3.0	3.0	2.6	3.4	3.4
27	21	4.4	20	4.0	3.6	2.8	3.6	2.9	2.6	2.6	3.3	3.5
28	28	4.4	27	4.0	3.5	2.9	4.1	2.9	2.5	2.5	3.2	3.7
29	89	4.2	82	4.0	---	2.9	3.5	2.8	2.4	2.7	3.1	8.2
30	27	4.4	29	4.0	---	2.9	3.2	2.8	2.4	2.7	3.1	15
31	12	---	20	4.0	---	2.8	---	2.8	---	2.5	3.6	---
TOTAL	284.7	334.1	532.0	202.8	105.8	93.5	117.0	118.0	85.6	98.2	145.5	115.9
MEAN	9.18	11.1	17.2	6.54	3.78	3.02	3.90	3.81	2.85	3.17	4.69	3.86
MAX	89	77	82	17	4.7	3.4	8.8	15	4.2	6.8	21	15
MIN	2.9	4.2	4.2	4.0	3.4	2.8	2.8	2.6	2.3	2.3	2.5	2.3
AC-FT	565	663	1060	402	210	185	232	234	170	195	289	230

CAL YR 1982	TOTAL	6015.5	MEAN	16.5	MAX	436	MIN	2.9	AC-FT	11930
WTR YR 1983	TOTAL	2233.1	MEAN	6.12	MAX	89	MIN	2.3	AC-FT	4430

NOTE.--No gage-height record Jan. 3 to Feb. 10.

16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA

LOCATION.--Lat 21°32'37", long 157°53'07", Hydrologic Unit 20060000, on right bank 600 ft upstream from Kawa Stream, 1.1 mi southwest of Kahana, and 2.2 mi southwest of Swanzy Beach Park in Kaaawa.

DRAINAGE AREA.--3.74 mi².

PERIOD OF RECORD.--December 1958 to current year.

REVISED RECORDS.--WSP 1937: 1959-60.

GAGE.--Water-stage recorder and concrete-masonry control. Altitude of gage is 30 ft, from topographic map.

REMARKS.--Records fair to poor. Approximately 9 ft³/s is diverted by Waiahole Water Co. at 800-ft elevation, 2.3 mi above station. Recording rain gage located at station. Observations of specific conductance, pH and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--24 years (water years 1960-83), 36.6 ft³/s (26,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,430 ft³/s Apr. 15, 1963, gage height, 8.10 ft, from rating curve extended above 530 ft³/s on basis of computation of peak flow over submerged weir; minimum, 10 ft³/s Sept. 17, 18, 20, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,620 ft³/s Dec. 23, gage height, 5.88 ft, no other peak above base of 1,600 ft³/s; minimum, 15 ft³/s Mar. 27 to Apr. 2.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	35	30	39	21	17	16	18	44	16	20	21
2	25	32	29	36	21	17	16	20	25	16	23	20
3	25	196	32	33	20	17	24	18	22	20	41	20
4	25	44	41	31	20	17	22	18	21	17	30	20
5	51	51	29	29	20	17	22	29	29	25	28	20
6	59	95	31	29	20	17	18	24	30	20	29	39
7	29	40	29	29	20	17	17	30	24	29	24	32
8	35	34	26	28	20	17	18	25	21	30	23	28
9	34	32	26	27	20	17	16	21	25	21	22	22
10	28	30	25	41	20	17	16	21	22	22	21	21
11	65	29	25	55	20	17	16	22	20	21	20	20
12	37	29	108	68	20	17	39	20	20	27	22	20
13	38	32	31	32	20	17	20	20	19	21	37	21
14	29	27	27	29	19	17	17	22	18	49	27	19
15	27	26	25	28	19	16	16	20	18	31	22	18
16	26	26	24	27	19	16	20	18	22	29	48	18
17	27	26	40	26	19	16	29	20	19	25	32	41
18	40	25	29	25	19	16	19	137	18	51	31	20
19	28	25	23	25	19	16	19	31	17	34	25	18
20	25	110	22	25	19	16	18	37	18	28	23	18
21	25	82	22	24	18	16	18	61	17	27	24	18
22	25	32	104	24	18	16	19	31	17	25	43	19
23	24	86	177	23	18	16	21	26	16	23	59	21
24	22	38	41	22	18	16	25	24	16	22	73	47
25	22	30	37	23	18	16	31	22	17	21	45	60
26	22	29	107	22	21	16	21	21	20	21	30	33
27	110	28	39	22	18	16	21	20	17	20	28	49
28	75	27	51	22	18	16	20	20	16	20	25	50
29	266	28	195	22	---	16	19	18	16	21	23	90
30	69	37	59	22	---	16	19	18	16	21	22	65
31	40	---	42	22	---	16	---	25	---	20	22	---
TOTAL	1379	1361	1526	910	542	510	612	857	620	773	942	908
MEAN	44.5	45.4	49.2	29.4	19.4	16.5	20.4	27.6	20.7	24.9	30.4	30.3
MAX	266	196	195	68	21	17	39	137	44	51	73	90
MIN	22	25	22	22	18	16	16	18	16	16	20	18
AC-FT	2740	2700	3030	1800	1080	1010	1210	1700	1230	1530	1870	1800

CAL YR 1982	TOTAL	23987	MEAN	65.7	MAX	683	MIN	20	AC-FT	47580
WTR YR 1983	TOTAL	10940	MEAN	30.0	MAX	266	MIN	16	AC-FT	21700

16302000 PUNALUU DITCH NEAR PUNALUU

LOCATION.--Lat 21°33'41", long 157°54'10", Hydrologic Unit 20060000, on right bank 800 ft downstream from intake, 1.5 mi west of Kahana, and 1.7 mi southwest of Punaluu.

PERIOD OF RECORD.--May 1953 to current year.

REVISED RECORDS.--WSP 1719: 1954-55.

GAGE.--Water-stage recorder. Altitude of gage is 200 ft, from topographic map.

REMARKS.--Records poor. Ditch diverts from Punaluu Stream for irrigation in Punaluu Valley.

AVERAGE DISCHARGE.--30 years, 7.44 ft³/s (5,390 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 54 ft³/s Oct. 31, 1964; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 8.3 ft³/s Aug. 28; minimum daily, 0.10 ft³/s Dec. 24.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	.21	7.0	4.6	2.0	2.4	3.0	2.9	2.3	2.7	4.2	5.3
2	3.0	.11	6.0	6.6	2.0	2.0	5.0	2.4	1.0	3.4	3.9	6.2
3	2.5	3.0	4.0	5.6	2.0	1.5	5.0	2.2	.97	3.4	6.4	6.4
4	2.2	2.0	2.0	4.7	2.0	2.0	4.1	2.3	2.0	3.1	7.8	5.1
5	1.8	2.0	6.0	4.4	2.0	2.4	2.9	2.0	2.3	2.6	6.5	4.4
6	1.2	5.0	2.0	4.5	2.0	2.2	2.0	1.6	1.8	1.6	6.8	3.1
7	.92	2.0	4.0	4.0	2.0	2.1	1.8	1.4	1.6	1.4	7.1	3.6
8	1.8	3.0	3.0	4.0	2.0	2.0	1.0	.97	2.5	1.2	6.5	4.8
9	2.5	3.0	4.0	4.0	2.0	1.3	.87	.97	3.4	1.0	8.2	3.9
10	1.6	6.0	4.0	5.0	2.0	1.0	2.9	.97	3.3	3.7	8.0	2.9
11	1.4	7.0	4.0	4.0	2.0	1.2	3.4	3.4	3.3	3.2	7.0	3.2
12	3.2	4.0	7.0	3.0	2.0	1.0	1.9	3.0	3.6	1.9	5.7	2.7
13	3.0	3.0	2.0	5.0	2.0	1.0	1.2	3.3	3.3	4.2	5.3	2.4
14	2.4	3.0	1.0	3.0	2.0	2.0	1.2	2.4	3.3	3.1	7.5	2.1
15	2.0	4.0	1.0	5.0	2.0	2.0	2.1	1.8	2.4	2.4	7.1	1.8
16	1.7	6.0	1.0	5.0	2.3	2.0	2.0	1.6	1.8	2.0	5.2	1.6
17	1.8	7.0	1.0	3.0	2.3	2.0	1.0	1.4	1.4	1.6	2.7	3.0
18	2.0	6.0	1.0	4.0	1.3	1.0	1.6	4.9	1.2	2.6	2.0	3.0
19	1.6	8.0	1.0	3.0	2.7	1.0	1.5	4.1	1.0	1.4	4.9	5.4
20	1.4	6.0	1.0	3.0	2.1	1.0	1.0	3.0	1.0	1.3	7.6	5.0
21	1.4	8.0	1.0	3.0	1.3	1.0	1.0	1.4	5.5	1.1	8.1	4.0
22	3.6	6.0	1.0	2.0	1.3	1.0	1.0	1.4	4.8	.97	8.3	4.0
23	4.1	4.0	.31	2.0	1.1	1.0	1.0	1.3	5.5	.87	5.9	4.0
24	3.9	8.0	.10	2.0	1.4	1.0	1.2	1.2	5.7	.78	4.5	1.0
25	4.4	5.0	.12	1.0	1.3	2.0	1.1	1.1	3.7	3.7	4.4	6.0
26	4.5	7.0	.19	1.0	1.1	3.0	1.1	4.9	2.4	3.3	4.0	4.0
27	2.1	8.0	.14	1.0	2.2	2.0	1.0	4.8	2.2	2.8	7.2	2.0
28	1.8	8.0	.15	1.0	2.5	1.0	.97	4.9	2.2	2.6	8.3	2.0
29	.71	6.0	.26	1.0	---	1.0	1.6	5.3	4.0	4.0	6.6	6.0
30	.26	4.0	3.5	2.0	---	2.0	3.0	4.1	3.3	5.8	6.0	5.0
31	.19	---	4.7	3.0	---	3.0	---	3.4	---	4.6	5.8	---
TOTAL	68.28	144.32	73.47	104.4	52.9	51.1	58.44	80.41	82.77	78.32	189.5	113.9
MEAN	2.20	4.81	2.37	3.37	1.89	1.65	1.95	2.59	2.76	2.53	6.11	3.80
MAX	4.5	8.0	7.0	6.6	2.7	3.0	5.0	5.3	5.7	5.8	8.3	6.4
MIN	.19	.11	.10	1.0	1.1	1.0	.87	.97	.97	.78	2.0	1.0
AC-FT	135	286	146	207	105	101	116	159	164	155	376	226

CAL YR 1982	TOTAL	1134.66	MEAN	3.11	MAX	13	MIN	.02	AC-FT	2250
WTR YR 1983	TOTAL	1097.81	MEAN	3.01	MAX	8.3	MIN	.10	AC-FT	2180

16303000 PUNALUU STREAM NEAR PUNALUU

LOCATION.--Lat 21°33'33", long 157°54'06", Hydrologic Unit 20060000, on left bank at Punaluu ditch diversion dam, 1.4 mi west of Kahana, and 1.8 mi southwest of Punaluu.

DRAINAGE AREA.--2.78 mi².

PERIOD OF RECORD.--May 1953 to current year.

REVISED RECORDS.--WSP 1569: Drainage area. WRD Hawaii 1974: 1971-72(P), 1973(M). WDR HI-78-1: 1954(M), 1955-70(P).

GAGE.--Water-stage recorder and masonry control. Altitude of gage is 212 ft, from topographic map.

REMARKS.--Records poor. Records do not include flow of Punaluu ditch (see sta 16302000). Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--30 years, 17.9 ft³/s (12,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,700 ft³/s July 17, 1974, gage height, 7.60 ft, from rating curve extended above 170 ft³/s on basis of slope-area measurements at gage heights 5.77 ft and 7.60 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 930 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 27	0130	1230	3.92
Dec. 23	1430	*1580	4.41

Minimum discharge, 7.2 ft³/s June 29, Sept. 18, 24.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	28	21	25	15	13	10	12	21	10	12	12
2	19	27	21	23	15	13	10	13	14	10	14	10
3	22	76	23	22	15	14	13	12	15	10	25	9.6
4	20	30	29	21	15	13	12	12	11	10	15	10
5	26	35	23	21	15	13	14	13	23	12	15	10
6	37	44	26	21	15	13	13	13	16	12	13	15
7	23	30	23	21	15	12	13	18	14	12	12	13
8	21	26	23	21	15	12	15	15	12	14	12	12
9	19	25	22	21	15	13	13	14	12	12	10	11
10	19	22	22	34	15	13	10	14	12	10	10	11
11	26	19	21	53	15	13	10	12	11	11	10	11
12	22	22	67	37	15	13	24	12	11	14	13	11
13	22	25	28	23	15	13	15	13	11	10	11	12
14	19	22	25	22	15	12	14	13	12	12	10	12
15	19	21	24	18	14	12	12	13	12	11	10	12
16	19	19	22	16	14	12	13	13	13	12	19	12
17	19	17	23	16	14	10	14	17	13	12	15	16
18	21	18	22	15	15	12	13	23	13	18	15	11
19	19	18	21	16	14	12	13	12	13	16	12	8.6
20	19	79	21	16	14	12	14	23	13	15	10	9.1
21	19	33	21	16	14	12	14	32	10	15	11	10
22	16	25	50	17	14	12	15	19	9.6	15	12	10
23	16	67	96	16	14	12	15	16	9.1	14	18	10
24	15	30	31	16	14	12	16	16	9.1	13	19	15
25	15	23	30	18	14	11	16	15	10	11	16	22
26	16	19	56	17	17	10	14	11	11	11	15	15
27	77	18	31	17	13	11	14	10	11	11	11	16
28	54	18	39	17	13	12	14	10	11	12	10	19
29	136	19	102	17	---	12	12	9.6	9.1	11	11	39
30	43	25	40	16	---	11	12	10	9.6	10	12	22
31	31	---	29	15	---	10	---	13	---	10	12	---
TOTAL	869	880	1032	644	408	375	407	448.6	371.5	376	410	406.3
MEAN	28.0	29.3	33.3	20.8	14.6	12.1	13.6	14.5	12.4	12.1	13.2	13.5
MAX	136	79	102	53	17	14	24	32	23	18	25	39
MIN	15	17	21	15	13	10	10	9.6	9.1	10	10	8.6
AC-FT	1720	1750	2050	1280	809	744	807	890	737	746	813	806

CAL YR 1982	TOTAL	13385	MEAN	36.7	MAX	259	MIN	12	AC-FT	26550
WTR YR 1983	TOTAL	6627.4	MEAN	18.2	MAX	136	MIN	8.6	AC-FT	13150

16304200 KALUANUI STREAM NEAR PUNALUU

LOCATION.--Lat 21°35'22", long 157°54'38", Hydrologic Unit 20060000, on right bank 0.8 mi downstream from Sacred Falls, 1.6 mi west of Punaluu Beach Park, and 1.7 mi south of cemetery in Hauula.

DRAINAGE AREA.--1.11 mi².

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 110 ft, from topographic map.

REMARKS.--Records fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--16 years, 4.25 ft³/s (3,080 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft³/s Jan. 6, 1982, gage height, 11.90 ft, from rating curve extended above 14 ft³/s on basis of slope-area measurements at gage heights 8.85 ft and 10.0 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 442 ft³/s Oct. 27, gage height, 8.24 ft, no peak above base of 500 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	2.6	1.4	4.0	.70	.27	.00	1.5	7.0	.64	1.0	1.0
2	.80	3.7	3.1	2.4	.34	.10	.00	1.9	1.5	3.3	8.8	.71
3	.72	26	11	2.1	.26	.05	10	.88	.96	4.0	21	.86
4	1.1	3.0	15	1.4	.20	.02	1.7	.58	1.1	1.9	7.2	.72
5	3.9	6.6	2.1	1.3	.19	.00	12	7.1	2.9	11	4.4	.57
6	6.6	9.7	7.3	1.3	.24	.00	1.1	1.9	2.3	2.6	2.6	1.2
7	1.3	4.4	6.0	1.8	.16	.00	.35	2.2	.90	6.7	1.5	7.0
8	.80	1.8	.70	1.7	.13	.00	5.2	1.1	.66	7.5	1.5	4.1
9	.90	1.3	1.1	.87	.11	.00	.56	.68	1.6	3.8	.99	1.6
10	1.3	1.1	.99	29	.09	.00	.23	.54	1.5	5.9	.86	.89
11	2.0	.92	.81	30	.07	.00	.13	1.7	.94	3.0	.75	1.2
12	3.0	3.4	19	11	.06	.00	4.6	1.1	.79	4.0	1.7	1.4
13	1.7	6.7	2.8	3.0	.05	1.0	.55	.76	.65	4.5	.77	1.5
14	.92	.89	1.3	2.5	.05	1.8	.27	1.6	.79	9.4	1.3	.67
15	.70	.67	1.0	1.4	.07	.85	.18	.68	.59	2.3	.66	.58
16	.90	.81	.84	1.1	.05	.16	3.2	.46	5.6	2.6	12	1.1
17	1.3	1.1	6.5	.94	.05	.04	3.5	1.7	1.3	2.2	3.2	18
18	2.4	1.1	2.2	.81	.04	.00	.64	9.8	.86	11	2.8	1.1
19	1.0	.58	.77	.72	.02	.00	2.6	1.3	.94	2.5	1.4	.75
20	.60	44	.58	.63	.01	.00	1.1	25	3.2	2.3	.85	.60
21	.45	9.2	.54	.55	.00	.00	.97	21	1.4	1.7	1.5	2.5
22	.38	1.7	28	.62	.15	.00	3.8	2.1	1.1	1.4	1.4	3.2
23	.36	28	31	1.2	.19	.00	2.3	1.4	.93	1.0	5.0	5.4
24	.33	9.7	3.7	.56	.05	.00	6.0	1.2	.90	1.0	5.9	7.0
25	.31	2.0	9.8	2.6	.01	.00	3.0	.87	5.2	1.1	3.1	6.0
26	5.6	1.4	29	.69	6.3	.13	1.2	.72	3.9	.79	1.2	2.2
27	28	1.1	4.1	1.4	.49	.07	1.8	.62	1.5	.66	1.4	7.5
28	22	.88	23	.59	1.5	.00	1.7	.67	1.1	.58	1.1	7.3
29	51	1.9	54	.36	---	.00	.89	.58	.93	1.5	1.3	12
30	9.0	8.3	6.3	1.7	---	.00	2.3	.82	.72	2.3	1.6	3.6
31	3.0	---	2.7	3.7	---	.00	---	1.2	---	1.3	3.7	---
TOTAL	153.05	184.55	276.63	111.94	11.58	4.49	71.87	93.66	53.76	104.47	102.48	102.25
MEAN	4.94	6.15	8.92	3.61	.41	.14	2.40	3.02	1.79	3.37	3.31	3.41
MAX	51	44	54	30	6.3	1.8	12	25	7.0	11	21	18
MIN	.31	.58	.54	.36	.00	.00	.00	.46	.59	.58	.66	.57
AC-FT	304	366	549	222	23	8.9	143	186	107	207	203	203

CAL YR 1982	TOTAL	3530.72	MEAN	9.67	MAX	159	MIN	.28	AC-FT	7000
WTR YR 1983	TOTAL	1270.73	MEAN	3.48	MAX	54	MIN	.00	AC-FT	2520

16325000 KAMANANUI STREAM AT PUPUKEA MILITARY ROAD, NEAR MAUNAWAI

LOCATION.--Lat 21°37'25", long 158°01'04", Hydrologic Unit 20060000, on right bank 75 ft upstream from Pupukea Military Road and 3.5 mi southeast of Maunawai.

DRAINAGE AREA.--3.13 mi².

PERIOD OF RECORD.--June 1963 to current year. Occasional low-flow measurements, water years 1961 and 1963.

GAGE.--Water-stage recorder and combination pipe culverts and paved road control. Altitude of gage is 590 ft, from topographic map.

REMARKS.--Records poor. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--20 years, 10.8 ft³/s (7,820 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,390 ft³/s Jan. 30, 1975, gage height, 10.06 ft, from rating curve extended above 42 ft³/s on basis of slope-area measurement at gage height 10.06 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 802 ft³/s Oct. 27, gage height, 6.93 ft, no peak above base of 950 ft³/s; minimum, about 0.18 ft³/s Apr. 3.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	7.2	8.5	24	3.9	1.5	.20	2.0	1.4	.73	2.7	2.6
2	2.0	5.6	5.8	13	2.8	1.1	.19	8.0	3.0	.71	4.5	1.8
3	4.8	62	17	10	2.4	.90	.18	6.0	2.2	4.6	37	1.5
4	9.8	13	23	7.4	2.1	.80	1.9	2.5	1.6	8.2	12	1.3
5	18	12	10	6.3	1.9	.74	1.2	12	3.2	16	11	1.2
6	14	36	27	5.8	1.8	.66	.80	7.0	3.4	14	8.3	1.1
7	4.4	17	26	5.6	1.7	.60	1.0	4.0	2.1	13	5.8	2.0
8	2.6	7.8	8.5	9.0	1.6	.58	.70	5.0	1.6	13	4.4	13
9	2.8	6.1	6.3	7.5	1.5	.54	.50	2.0	1.2	8.3	3.8	4.0
10	3.5	5.4	5.6	40	1.5	.50	.40	1.5	3.0	15	2.3	1.8
11	6.0	4.7	5.0	43	1.4	.48	.30	1.3	4.6	11	2.6	1.5
12	11	4.5	19	70	1.3	1.4	.23	1.1	2.5	15	16	1.5
13	22	17	15	30	1.3	3.2	1.4	1.0	1.7	13	5.0	1.4
14	4.2	5.0	13	15	1.2	2.8	1.0	.90	1.4	28	2.8	1.7
15	2.4	3.7	6.5	9.0	1.2	6.4	.70	1.2	2.0	12	2.1	1.3
16	2.1	3.4	4.7	6.5	1.5	2.5	.60	1.1	7.0	15	30	1.0
17	8.4	3.2	9.8	5.2	2.0	1.2	17	1.0	6.2	7.0	13	14
18	16	3.2	15	4.8	1.4	.80	6.0	1.4	3.0	8.6	10	4.2
19	5.0	3.0	5.0	4.5	1.1	.60	2.5	4.0	2.0	9.5	6.5	1.6
20	2.3	52	3.9	5.0	1.0	.50	5.0	9.0	1.8	4.7	4.5	1.2
21	1.7	25	4.1	4.0	.90	.45	7.0	50	5.0	3.5	3.7	2.1
22	1.7	7.2	23	3.8	1.0	.40	9.0	7.0	3.0	3.0	3.9	3.7
23	1.5	42	74	4.4	1.2	.50	6.0	3.0	2.3	2.4	4.4	1.7
24	1.2	34	24	3.9	1.1	.43	4.6	2.4	1.6	2.0	6.6	1.2
25	1.0	11	16	3.6	1.0	.37	18	1.9	1.4	1.9	6.5	45
26	2.9	7.4	56	4.6	.90	.80	4.0	1.6	2.8	1.8	4.0	14
27	83	6.3	12	3.4	1.6	1.0	2.8	1.4	5.0	1.5	2.5	12
28	36	5.6	40	3.0	1.4	.60	5.8	1.3	2.5	1.3	2.1	19
29	115	6.5	81	2.8	---	.40	6.3	1.2	1.4	1.7	1.9	19
30	24	24	25	4.0	---	.30	2.6	1.1	.90	6.2	1.8	7.0
31	14	---	12	3.7	---	.25	---	1.0	---	4.2	2.1	---
TOTAL	425.6	440.8	601.7	362.8	43.70	33.30	107.90	143.90	80.80	246.84	223.8	184.4
MEAN	13.7	14.7	19.4	11.7	1.56	1.07	3.60	4.64	2.69	7.96	7.22	6.15
MAX	115	62	81	70	3.9	6.4	18	50	7.0	28	37	45
MIN	1.0	3.0	3.9	2.8	.90	.25	.18	.90	.90	.71	1.8	1.0
AC-FT	844	874	1190	720	87	66	214	285	160	490	444	366

CAL YR 1982	TOTAL	7731.2	MEAN	21.2	MAX	220	MIN	1.0	AC-FT	15330
WTR YR 1983	TOTAL	2895.54	MEAN	7.93	MAX	115	MIN	.18	AC-FT	5740

16330000 KAMANANUI STREAM AT MAUNAWAI

LOCATION.--Lat 21°38'20", long 158°03'27", Hydrologic Unit 20060000, on right bank 0.5 mi upstream from Kamehameha Highway, 4.9 mi northeast of Waialua School, and 7.3 mi southwest of Kahuku School.

DRAINAGE AREA.--12.36 mi², revised, including that of Elehaha Stream which is mostly diverted into Kamananui Stream since June 14, 1975.

PERIOD OF RECORD.--February 1958 to current year.

REVISED RECORDS.--WSP 1937: 1958-60. WRD Hawaii 1974: 1971(P), 1972-73(M). WDR HI-81-1: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft, from topographic map. Prior to May 13, 1965, at datum 2.00 ft higher and May 13, 1965, to May 17, 1966, at datum 1.00 ft higher.

REMARKS.--Records good. Small diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--25 years, 17.9 ft³/s (12,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,540 ft³/s Mar. 18, 1980, gage height, 11.46 ft, from rating curve extended above 150 ft³/s on basis of slope-area measurements at gage heights 5.68 ft and 11.46 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 27	0230	*2340	6.74
Oct. 29	0600	1790	6.10
Dec. 23	1600	1360	5.55

Minimum discharge, 0.03 ft³/s Apr. 2-4.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	20	15	40	6.3	1.8	.09	2.7	.92	.59	2.6	2.3
2	4.2	14	9.2	23	4.2	1.4	.04	8.4	3.2	.44	1.8	1.6
3	5.5	246	28	20	3.6	1.2	.03	7.0	2.5	1.2	65	1.4
4	12	41	31	14	3.2	1.0	2.0	3.1	1.9	5.2	14	1.3
5	24	28	17	12	3.0	.87	1.5	14	3.4	12	11	1.2
6	25	70	32	11	2.9	.78	1.0	10	3.5	17	9.5	.92
7	9.7	35	51	10	2.8	.74	1.1	4.4	2.1	8.7	6.2	1.1
8	4.4	19	16	16	2.6	.74	.91	5.7	1.5	12	4.0	14
9	4.0	14	11	12	2.5	.74	.53	3.1	.91	11	3.6	5.0
10	5.1	12	8.8	48	2.4	.74	.40	1.7	1.6	12	2.4	2.3
11	5.5	11	7.5	55	2.3	.51	.26	1.2	4.7	13	2.1	1.7
12	14	9.7	24	124	2.0	1.2	.16	.90	2.2	14	18	1.4
13	43	33	22	43	2.0	3.6	1.5	.78	1.3	13	8.2	1.4
14	11	13	18	21	2.0	3.3	1.1	.76	1.1	36	3.2	1.4
15	5.1	9.1	12	16	1.9	7.4	.53	1.3	1.2	18	2.3	1.5
16	4.1	8.0	7.7	12	2.2	2.7	.53	1.2	8.1	16	41	1.2
17	9.8	7.1	8.3	10	2.7	1.3	20	.82	7.1	8.7	20	12
18	21	6.3	24	9.2	1.9	.88	5.6	.92	2.7	5.6	9.6	7.8
19	14	5.6	9.1	8.5	1.6	.68	2.9	2.0	1.7	11	6.8	2.5
20	5.1	163	6.2	9.2	1.5	.56	5.7	11	1.7	5.0	4.1	1.5
21	3.6	82	5.6	7.7	1.4	.51	6.5	95	5.2	3.2	3.0	1.3
22	3.3	18	22	7.0	1.5	.49	9.6	11	3.2	2.7	2.9	3.4
23	3.2	168	212	7.4	1.7	.56	6.6	4.0	2.7	2.2	2.6	1.9
24	2.7	107	45	6.8	1.6	.54	5.3	2.7	1.6	1.8	3.9	1.3
25	2.4	26	18	6.4	1.4	.44	21	2.0	1.3	1.6	5.2	74
26	2.9	16	67	7.7	1.3	.91	5.2	1.5	2.6	1.5	3.5	30
27	323	12	20	5.6	2.3	1.1	3.1	1.2	5.2	1.3	2.3	13
28	109	10	90	5.0	1.7	.64	6.1	1.1	2.0	1.1	1.9	24
29	523	9.7	185	4.6	---	.44	6.8	1.0	1.2	1.2	1.7	29
30	77	27	53	6.5	---	.25	3.1	.92	.81	3.5	1.6	12
31	40	---	24	5.9	---	.17	---	.77	---	3.8	1.9	---
TOTAL	1320.4	1240.5	1099.4	584.5	66.5	38.19	119.18	202.17	79.14	244.33	265.9	253.42
MEAN	42.6	41.4	35.5	18.9	2.37	1.23	3.97	6.52	2.64	7.88	8.58	8.45
MAX	523	246	212	124	6.3	7.4	21	95	8.1	36	65	74
MIN	2.4	5.6	5.6	4.6	1.3	.17	.03	.76	.81	.44	1.6	.92
AC-FT	2620	2460	2180	1160	132	76	236	401	157	485	527	503

CAL YR 1982	TOTAL	18394.4	MEAN	50.4	MAX	747	MIN	2.4	AC-FT	36490
WTR YR 1983	TOTAL	5513.63	MEAN	15.1	MAX	523	MIN	.03	AC-FT	10940

16345000 OPAEULA STREAM NEAR WAHIAWA

LOCATION.--Lat 21°33'55", long 158°00'10", Hydrologic Unit 200600000, on left bank 4.3 mi northeast of Leilehua High School in Wahiawa and 8.1 mi east of Waialua School.

DRAINAGE AREA.--2.98 mi².

PERIOD OF RECORD.--August 1959 to current year.

REVISED RECORDS.--WSP 1937: 1960.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft, from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--24 years, 13.9 ft³/s (10,070 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,540 ft³/s July 17, 1974, gage height, 11.94 ft from rating curve extended above 110 ft³/s on basis of slope-area measurements at gage heights 6.74 ft and 10.12 ft; no flow Jan. 24, 25, 1977, Feb. 18, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,400 ft³/s Oct. 27, gage height, 6.74 ft, no other peak above base of 1,200 ft³/s; minimum, 0.01 ft³/s, Mar. 30 to Apr. 1.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	6.4	8.1	9.5	7.0	1.4	.03	5.2	21	1.7	3.6	5.8
2	4.8	4.9	3.9	7.0	2.6	1.3	.05	7.3	11	1.6	4.7	2.6
3	4.6	83	3.1	5.2	1.7	.75	25	6.1	3.6	8.8	72	2.1
4	6.0	12	8.1	4.7	1.4	.49	8.5	3.4	2.5	10	13	2.1
5	19	17	6.9	3.8	1.2	.35	5.0	10	13	37	23	2.0
6	35	26	9.8	3.6	1.1	.28	9.6	11	6.4	18	12	1.7
7	8.0	14	22	4.3	1.1	.23	2.5	4.4	4.7	20	7.6	15
8	4.4	7.4	6.4	5.3	1.1	.19	1.3	9.1	2.6	25	4.8	23
9	4.7	4.9	3.6	4.3	.89	.16	4.3	3.2	3.1	11	4.6	6.0
10	6.7	4.3	2.9	31	.82	.12	1.7	2.1	5.7	15	3.2	3.8
11	8.5	3.9	2.9	34	.76	.10	.88	1.7	6.2	11	2.8	2.9
12	15	3.9	54	94	.69	.15	17	3.1	3.0	15	8.8	2.7
13	28	36	19	8.8	.65	.17	5.8	2.8	2.4	12	5.1	2.8
14	6.3	6.2	9.3	5.5	.63	.23	2.1	4.2	2.4	26	3.6	2.9
15	4.1	3.8	5.1	4.7	.60	.33	1.1	4.8	2.0	11	3.6	2.1
16	5.2	3.5	3.5	3.7	.63	1.3	.79	2.3	9.3	8.6	33	1.7
17	6.2	3.7	30	3.2	.62	1.1	30	1.7	6.1	9.5	14	54
18	14	3.6	29	2.8	.57	.64	6.0	31	3.6	25	10	7.1
19	8.2	3.6	6.0	2.6	.56	.42	6.0	7.8	2.9	13	5.8	3.1
20	3.8	25	3.8	2.5	.47	.28	7.8	22	3.7	6.7	4.3	2.2
21	2.9	35	3.1	2.3	.40	.20	5.1	54	6.3	5.6	3.6	6.1
22	2.7	7.0	31	2.2	.38	.15	12	7.4	4.3	4.2	4.8	15
23	4.0	58	106	2.1	.39	.13	27	3.9	3.2	3.4	3.6	5.6
24	3.5	36	22	2.2	.36	.10	14	3.2	2.5	3.1	7.6	2.9
25	2.3	9.1	9.1	3.5	.33	.08	24	2.8	5.6	3.1	10	13
26	2.4	4.5	59	6.3	.33	.07	5.4	2.2	12	2.9	4.4	19
27	137	3.7	11	2.6	3.7	.05	8.6	2.0	5.8	2.4	3.1	21
28	51	3.3	6.8	4.3	1.8	.03	9.8	1.7	3.3	2.2	3.8	33
29	184	4.7	67	2.4	---	.02	7.6	1.5	2.5	2.5	2.9	42
30	26	21	25	2.0	---	.02	6.1	1.4	2.0	10	2.8	16
31	11	---	6.7	6.7	---	.01	---	1.3	---	6.1	6.0	---
TOTAL	623.1	455.4	584.1	277.1	32.78	10.85	255.05	224.6	162.7	331.4	292.1	319.2
MEAN	20.1	15.2	18.8	8.94	1.17	.35	8.50	7.25	5.42	10.7	9.42	10.6
MAX	184	83	106	94	7.0	1.4	30	54	21	37	72	54
MIN	2.3	3.3	2.9	2.0	.33	.01	.03	1.3	2.0	1.6	2.8	1.7
AC-FT	1240	903	1160	550	65	22	506	445	323	657	579	633

CAL YR 1982	TOTAL	10146.2	MEAN	27.8	MAX	371	MIN	1.9	AC-FT	20120
WTR YR 1983	TOTAL	3568.38	MEAN	9.78	MAX	184	MIN	.01	AC-FT	7080

16400000 HALAWA STREAM NEAR HALAWA
(National stream-quality accounting network station)

LOCATION.--Lat 21°09'31", long 156°45'53", Hydrologic Unit 20050000, on right bank 600 ft downstream from Hipuapua Stream and 1.5 mi west of Halawa.

DRAINAGE AREA.--4.62 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1917 to July 1932, November 1937 to current year.

REVISED RECORDS.--WSP 1319: 1928, 1929(M), 1930-31, 1938-50(M), drainage area. WSP 1719: 1954.

GAGE.--Water-stage recorder. Altitude of gage is 210 ft, from topographic map. Prior to June 25, 1923, at site 350 ft upstream at different datum. June 25, 1923 to July 18, 1932, and Nov. 17, 1937, to Feb. 3, 1965, at present site at datum 2.00 ft higher.

REMARKS.--Records fair. No diversion above station.

AVERAGE DISCHARGE.--59 years (water years 1918-31, 1939-83), 29.4 ft³/s (21,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,900 ft³/s Feb. 4, 1965, gage height, 19.91 ft, from floodmarks, from rating curve extended above 105 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.76 ft³/s about Nov. 23, 1962.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Nov. 23	1930	2160	8.65
Dec. 23	1730	*2890	9.61

Minimum discharge, 2.0 ft³/s Mar. 11, 12.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	8.2	18	15	6.8	3.2	3.9	18	25	4.8	12	6.7
2	12	7.6	9.2	81	5.4	2.8	5.9	29	7.1	28	69	5.7
3	9.7	6.4	7.7	26	5.0	2.7	12	8.6	9.2	28	84	6.7
4	8.4	11	7.3	16	4.6	2.4	10	14	8.9	15	61	12
5	12	13	6.5	12	5.0	2.3	51	35	6.5	44	22	78
6	12	45	9.7	12	5.0	2.3	57	17	11	38	19	50
7	18	14	7.0	11	4.2	2.2	13	126	7.9	19	14	68
8	41	6.8	5.4	17	4.0	2.2	53	23	6.5	14	11	54
9	40	5.5	5.4	9.1	4.1	2.1	8.1	13	5.0	12	8.4	15
10	16	29	27	7.3	3.5	2.1	6.4	8.7	26	31	7.4	12
11	47	7.7	64	76	3.2	2.1	5.5	12	7.9	33	7.5	9.2
12	35	19	141	20	3.2	2.8	7.2	10	8.5	12	19	16
13	49	28	141	24	3.2	14	5.9	7.1	7.5	37	7.9	57
14	16	9.0	16	38	3.2	94	5.0	7.0	9.2	56	6.4	9.9
15	12	10	12	11	3.1	19	4.4	6.3	6.8	13	6.0	8.7
16	11	16	9.7	7.7	3.6	5.8	17	6.8	12	30	49	19
17	14	7.2	33	6.6	4.8	8.0	33	57	8.5	39	31	62
18	14	6.3	185	6.5	3.2	33	6.6	58	9.1	121	10	15
19	7.0	5.1	22	5.8	2.9	19	6.8	18	9.9	43	8.0	30
20	5.9	4.8	11	5.4	2.8	5.7	16	20	7.0	19	8.5	30
21	68	11	45	5.1	2.7	4.5	23	292	8.1	13	18	52
22	29	6.7	198	5.0	19	4.1	40	24	12	10	12	137
23	9.9	141	275	43	6.2	4.7	23	11	15	18	30	108
24	6.5	103	71	6.6	3.4	5.6	66	14	23	16	121	40
25	5.6	21	54	27	2.8	10	16	8.1	22	18	17	153
26	5.1	11	126	8.9	48	5.2	14	10	62	11	13	60
27	176	12	86	16	6.2	4.0	27	23	11	14	16	124
28	104	9.2	144	8.1	4.7	3.7	39	7.9	7.0	28	8.1	57
29	56	32	238	5.2	---	12	15	6.2	5.6	17	6.8	73
30	18	89	30	113	---	4.8	9.6	5.4	5.4	39	6.3	50
31	9.9	---	20	13	---	3.7	---	19	---	13	7.3	---
TOTAL	890.0	695.5	2024.9	658.3	173.8	290.0	600.3	915.1	370.6	833.8	716.6	1418.9
MEAN	28.7	23.2	65.3	21.2	6.21	9.35	20.0	29.5	12.4	26.9	23.1	47.3
MAX	176	141	275	113	48	94	66	292	62	121	121	153
MIN	5.1	4.8	5.4	5.0	2.7	2.1	3.9	5.4	5.0	4.8	6.0	5.7
AC-FT	1770	1380	4020	1310	345	575	1190	1820	735	1650	1420	2810

CAL YR 1982	TOTAL	16534.9	MEAN	45.3	MAX	649	MIN	4.5	AC-FT	32800
WTR YR 1983	TOTAL	9587.8	MEAN	26.3	MAX	292	MIN	2.1	AC-FT	19020

HAWAII, ISLAND OF MOLOKAI

16400000 HALAWA STREAM NEAR HALAWA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-74, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT 18...	1430	12	50	6.5	21.0	8.4	9.4	107	210	5400	7
DEC 07...	1230	7.1	58	6.9	18.5	3.0	9.6	104	190	1900	8
FEB 07...	1245	4.1	63	6.9	18.5	1.9	9.6	102	21	1000	9
APR 18...	1300	5.8	58	6.7	19.5	4.7	9.6	105	400	940	9
JUN 06...	1330	11	49	6.6	22.5	3.1	8.5	99	29	3100	7
AUG 08...	1230	10	44	6.8	22.5	4.7	8.4	98	30	2500	7

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT 18...	0	1.0	1.1	6.4	64	1.1	.6	9.0	--	10
DEC 07...	0	1.2	1.3	7.4	64	1.1	.7	10	5.0	12
FEB 07...	0	1.4	1.4	7.8	63	1.1	.7	12	<5.0	12
APR 18...	0	1.3	1.3	6.9	62	1.0	.6	9.0	6.5	11
JUN 06...	0	1.0	1.1	6.3	64	1.1	.5	8.0	5.6	10
AUG 08...	0	1.0	1.0	6.2	65	1.1	.5	8.0	5.8	9.9

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT 18...	<.10	6.7	32	--	.04	<.10	<.060	1.70	.070	.040	<.010
DEC 07...	<.10	8.8	36	42	.05	<.10	<.060	1.00	.020	.010	<.010
FEB 07...	<.10	9.6	40	--	.05	<.10	.100	.50	.030	.030	.050
APR 18...	<.10	5.7	37	39	.05	<.10	.070	.50	.080	.060	.050
JUN 06...	<.10	7.1	32	36	.04	<.10	<.060	.50	.010	.020	.010
AUG 08...	<.10	6.9	32	37	.04	<.10	.030	.30	.070	.060	.020

< Actual value is known to be less than the value shown.

16400000 HALAWA STREAM NEAR HALAWA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT											
18...	1430	70	1	6	<1	<1	<1	<3	<1	110	<1
FEB											
07...	1245	60	<1	8	<1	<1	<1	<3	5	75	<1
APR											
18...	1300	--	<1	5	<1	<1	<1	<3	1	200	<1
AUG											
08...	1230	100	<1	4	<1	<1	<1	<3	6	200	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT										
18...	<4	<1	.1	<10	<1	<1	<1	14	<6.0	<3
FEB										
07...	9	3	<.1	<10	<1	<1	<1	20	<6.0	3
APR										
18...	4	5	<.1	<10	2	1	<1	19	<6.0	5
AUG										
08...	<4	4	<.1	<10	<1	<1	<1	13	<6.0	<3

DATE	TIME	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT				
18...	1430	9	.29	100
DEC				
07...	1230	5	.10	100
FEB				
07...	1245	1	.01	100
APR				
18...	1300	3	.05	100
JUN				
06...	1330	2	.06	100
AUG				
08...	1230	6	.16	100

< Actual value is known to be less than the value shown.

16404200 PILIPILILAU STREAM NEAR PELEKUNU

LOCATION.--Lat 21°08'08", long 156°53'09", Hydrologic Unit 20050000, on right bank 500 ft downstream from left-bank tributary, 1.9 mi south of former village of Pelekunu, and 5.8 mi north of Kamalo.

DRAINAGE AREA.--0.49 mi².

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,000 ft, from topographic map.

REMARKS.--Records fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--15 years, 1.52 ft³/s (1,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 835 ft³/s Jan. 25, 1982, gage height, 4.25 ft, from rating curve extended above 6.2 ft³/s on basis of slope-area measurement at gage height, 4.25 ft; minimum, 0.50 ft³/s Sept. 2-8, 21-29, 1975, Nov. 26 to Dec. 3, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 79 ft³/s Dec. 18, gage height, 2.83 ft, no peak above base of 100 ft³/s; minimum, 0.76 ft³/s, several days in August and September.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.0	1.0	2.2	1.4	1.0	.94	1.3	1.1	.89	.89	.80
2	.99	.99	1.0	2.1	1.3	1.0	.94	1.4	1.0	.94	1.5	.80
3	.94	.99	1.0	2.0	1.3	1.0	.94	1.2	.99	.99	1.7	.80
4	.94	.99	1.0	1.9	1.3	1.0	.94	1.3	1.0	.94	1.0	.76
5	1.0	1.0	.99	1.8	1.3	1.0	.94	1.2	.99	1.7	.94	.80
6	.94	1.2	1.8	1.8	1.2	.99	.94	1.2	.99	1.3	.89	.80
7	.94	.99	1.3	1.7	1.2	1.0	1.2	1.6	.99	1.3	.89	.84
8	.94	.94	1.0	1.6	1.2	1.0	3.2	1.2	.94	.99	.84	.80
9	.99	.94	1.0	1.6	1.2	1.0	.99	1.1	.94	.99	.84	.76
10	.99	1.0	1.1	1.6	1.2	1.0	.94	1.0	1.1	1.0	.84	.76
11	1.1	.94	1.3	1.9	1.2	.99	.94	1.0	.99	1.0	.94	.76
12	.99	1.1	4.4	1.6	1.2	1.0	.94	1.0	.94	1.0	1.6	.89
13	.99	1.9	4.8	2.9	1.4	1.0	.94	1.0	.94	1.1	.89	.89
14	.94	1.1	1.9	2.8	1.2	1.8	.94	.99	.94	1.0	.84	.80
15	.94	1.0	1.6	1.6	1.2	1.2	.94	.94	.99	.94	.84	.80
16	.94	.99	1.4	1.5	1.4	1.0	1.1	1.0	.99	.94	.89	.95
17	.94	.94	1.6	1.5	1.2	1.0	.99	1.0	.99	.99	.89	1.8
18	.99	.94	16	1.4	1.2	1.3	.94	.99	.94	1.0	.84	.89
19	.94	.94	4.5	1.4	1.1	1.2	.99	.94	.94	.94	.80	.84
20	.94	.99	2.8	1.3	1.1	1.0	1.2	2.1	.99	.94	.76	.80
21	1.0	1.0	2.5	1.3	1.1	.99	1.4	4.6	.99	.89	.76	.89
22	.99	.94	2.5	1.4	1.2	1.0	2.0	1.6	.94	.89	.76	.89
23	.94	2.2	6.4	1.6	1.1	1.0	1.2	1.2	.94	.89	.76	.84
24	.89	5.1	4.2	1.3	1.1	1.0	1.1	1.2	.99	.89	.84	.80
25	.89	1.8	2.6	1.7	1.0	.99	.99	1.3	.94	.94	.80	.99
26	.94	1.3	2.3	1.3	1.3	.94	1.0	1.3	.99	.89	.84	.84
27	4.7	1.2	2.2	1.5	1.1	.94	1.2	1.2	.94	.89	.84	.94
28	3.5	1.1	4.4	1.3	1.0	.94	1.7	1.1	.89	.89	.80	.94
29	1.6	1.2	6.1	1.3	---	.94	1.4	1.0	.89	.94	.80	1.8
30	1.3	1.2	2.8	2.4	---	.94	1.2	1.0	.89	.94	.80	.94
31	1.1	---	2.4	1.7	---	.94	---	1.1	---	.89	.80	---
TOTAL	37.23	37.92	89.89	53.0	33.7	32.10	35.08	40.06	29.09	30.83	28.42	27.21
MEAN	1.20	1.26	2.90	1.71	1.20	1.04	1.17	1.29	.97	.99	.92	.91
MAX	4.7	5.1	16	2.9	1.4	1.8	3.2	4.6	1.1	1.7	1.7	1.8
MIN	.89	.94	.99	1.3	1.0	.94	.94	.94	.89	.89	.76	.76
AC-FT	74	75	178	105	67	64	70	79	58	61	56	54

CAL YR 1982	TOTAL	974.87	MEAN	2.67	MAX	60	MIN	.89	AC-FT 1930
WTR YR 1983	TOTAL	474.53	MEAN	1.30	MAX	16	MIN	.76	AC-FT 941

16405100 MOLOKAI TUNNEL AT EAST PORTAL

LOCATION.--Lat 21°08'38", long 156°55'16", Hydrologic Unit 200500000, on left bank 100 ft downstream from the east portal, 5.3 mi southeast of Kalaupapa, and 7.5 mi northeast of Kaunakakai.

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 989 ft, from tunnel plans.

REMARKS.--Records good. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells and from the stream at elevation 728 ft in Waikolu Valley near the east portal. Water is used for irrigation in west-central Molokai. Periodic determinations of water temperature for the current year are published elsewhere in this report.

AVERAGE DISCHARGE.--17 years, 3.27 ft³/s (2,370 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 30 ft³/s Apr. 29, 1981; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 29 ft³/s May 21; minimum daily, 1.1 ft³/s Jan. 19, 20.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	2.3	3.0	2.8	4.0	2.2	1.8	8.8	1.8	1.4	3.2	1.4
2	2.8	1.9	2.1	2.6	2.5	2.3	2.0	10	1.9	1.4	12	1.3
3	2.0	1.7	1.9	2.5	2.1	2.1	2.1	5.5	1.6	6.4	17	1.4
4	1.8	1.8	2.4	2.4	1.9	2.0	2.1	9.8	1.5	6.7	6.4	1.4
5	1.7	3.0	1.9	2.3	1.9	2.0	2.1	5.9	1.5	15	4.3	1.7
6	1.7	5.8	7.8	2.3	1.8	1.9	2.0	3.9	1.5	16	3.4	1.7
7	1.7	3.2	5.3	2.2	1.7	2.0	2.7	14	1.5	15	2.4	3.4
8	1.7	2.1	2.6	2.4	1.7	1.9	19	3.8	1.5	7.6	1.9	4.8
9	2.8	1.8	2.1	2.2	1.7	1.9	3.8	2.3	1.6	4.0	1.6	2.2
10	3.1	1.9	5.8	2.0	1.7	1.9	2.6	1.9	5.3	7.0	2.2	1.8
11	6.7	1.8	12	6.9	1.6	1.9	2.3	1.7	3.1	6.1	2.2	1.8
12	3.2	4.3	16	3.8	1.6	2.2	2.3	1.7	2.0	5.5	15	1.9
13	4.5	12	14	4.9	2.8	2.3	2.2	1.6	1.8	7.2	3.8	6.9
14	2.5	3.9	4.4	11	3.3	7.9	2.4	1.6	1.7	7.9	2.5	4.4
15	2.0	3.7	3.4	4.1	2.6	6.1	2.5	1.5	1.7	3.7	1.9	4.0
16	1.8	5.2	3.6	2.6	3.4	3.3	4.7	1.9	2.8	3.4	2.7	4.3
17	1.8	2.8	9.0	2.3	4.1	4.7	6.6	4.6	4.1	2.6	6.2	21
18	2.3	2.2	20	2.1	2.8	15	3.5	2.8	2.6	4.4	3.5	5.5
19	2.0	1.9	12	1.1	2.5	8.3	4.0	2.1	2.3	3.8	1.9	4.1
20	1.7	1.8	4.7	1.1	2.4	3.2	14	8.0	3.2	2.3	1.6	5.6
21	7.6	2.2	6.4	1.9	2.4	2.6	17	29	2.2	1.8	1.5	5.8
22	6.6	2.3	11	1.9	2.8	2.4	23	7.3	3.5	1.6	1.7	5.0
23	3.1	7.5	8.4	6.2	2.6	3.3	9.4	3.1	5.5	1.5	1.4	4.3
24	2.0	14	11	2.6	2.5	3.5	5.2	3.5	6.5	1.8	1.6	4.2
25	1.7	5.3	4.9	6.0	2.1	2.7	4.7	5.1	4.8	3.6	2.0	7.0
26	1.6	3.1	5.1	4.1	5.1	2.4	4.1	7.1	6.4	3.5	2.0	7.4
27	12	2.3	6.3	6.1	2.4	2.2	9.9	4.9	2.4	2.0	5.3	9.7
28	13	2.0	11	3.6	2.3	2.2	15	2.8	1.7	1.8	2.0	8.3
29	6.0	4.0	14	2.4	---	2.0	11	2.0	1.5	3.3	1.5	17
30	5.2	7.0	4.4	10	---	1.9	5.5	1.7	1.4	5.1	1.9	5.3
31	2.7	---	3.2	7.0	---	1.8	---	1.6	---	2.7	1.4	---
TOTAL	111.6	114.8	219.7	115.4	70.3	102.1	189.5	161.5	80.9	156.1	118.0	154.6
MEAN	3.60	3.83	7.09	3.72	2.51	3.29	6.32	5.21	2.70	5.04	3.81	5.15
MAX	13	14	20	11	5.1	15	23	29	6.5	16	17	21
MIN	1.6	1.7	1.9	1.1	1.6	1.8	1.8	1.5	1.4	1.4	1.4	1.3
AC-FT	221	228	436	229	139	203	376	320	160	310	234	307

CAL YR 1982	TOTAL	1747.71	MEAN	4.79	MAX	20	MIN	.09	AC-FT	3470
WTR YR 1983	TOTAL	1594.5	MEAN	4.37	MAX	29	MIN	1.1	AC-FT	3160

16405300 MOLOKAI TUNNEL AT WEST PORTAL

LOCATION.--Lat 21°07'27", long 156°59'50", Hydrologic Unit 20050000, on left bank 50 ft upstream from the west portal, 2.5 mi northeast of Kaunakakai, and 4.7 mi south of Kalaupapa.

PERIOD OF RECORD.--July 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 970 ft, from tunnel plans.

REMARKS.--Records good. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells and from the stream at elevation 728 ft in Waikolu Valley near east portal and one well in the tunnel near east portal. Water is used for irrigation in west-central Molokai. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--18 years, 5.66 ft³/s (4,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 35 ft³/s May 21, 1983; minimum daily, 1.8 ft³/s Oct. 15, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 35 ft³/s May 21; minimum daily, 3.7 ft³/s Jan. 20.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	5.2	5.9	5.4	7.1	5.1	4.3	11	5.0	4.5	6.1	3.9
2	6.1	4.7	5.0	5.2	5.4	4.9	4.3	13	5.0	4.3	11	3.9
3	5.4	4.5	4.5	5.2	5.2	5.2	4.3	8.5	4.7	8.6	21	3.9
4	5.2	4.5	5.2	5.0	5.0	4.9	4.3	12	4.5	10	9.0	3.9
5	5.0	5.4	4.7	5.0	4.7	4.9	4.3	9.7	4.3	14	6.9	4.3
6	5.0	8.4	9.6	4.7	4.7	4.9	4.3	6.6	4.3	20	5.9	4.3
7	4.7	6.1	8.5	4.7	4.7	4.8	4.3	17	4.3	18	5.2	5.3
8	4.7	5.0	5.3	5.0	4.7	4.7	20	7.4	4.3	10	4.5	7.9
9	5.4	4.5	4.7	5.0	4.5	4.7	6.4	5.4	4.3	6.9	4.1	4.7
10	6.1	4.5	7.3	4.7	4.7	4.7	5.2	5.0	7.4	9.3	4.4	4.3
11	9.2	4.5	13	8.6	4.7	4.7	4.7	4.7	6.4	8.8	4.6	4.1
12	6.4	5.9	17	6.6	4.5	4.7	4.7	4.5	5.0	7.9	17	4.3
13	7.4	15	17	5.7	5.2	4.7	4.7	4.5	4.7	9.4	6.6	9.1
14	5.7	6.6	7.1	14	6.1	8.4	4.5	4.3	4.7	11	5.1	6.9
15	5.2	6.4	5.9	7.1	5.4	9.4	4.9	4.3	4.7	6.6	4.6	6.4
16	5.0	7.7	5.9	5.4	5.8	6.2	6.0	4.3	5.4	6.1	4.9	6.4
17	4.7	5.7	10	5.0	7.1	7.1	9.4	6.8	7.2	5.4	8.6	22
18	5.4	5.0	21	4.7	5.5	15	5.9	5.7	5.9	6.6	6.4	7.9
19	5.1	4.5	14	3.9	5.2	12	6.0	4.7	5.2	6.9	4.7	6.6
20	4.7	4.5	7.7	3.7	5.1	5.7	14	6.9	6.2	5.2	4.3	7.6
21	9.2	4.7	7.9	4.5	5.0	5.0	18	35	5.2	4.5	4.1	7.9
22	10	5.0	13	4.5	5.2	4.7	25	11	5.9	4.3	4.3	7.7
23	6.4	8.8	9.9	8.8	5.4	5.4	13	6.1	9.1	4.1	3.9	6.9
24	5.2	16	14	5.2	5.2	5.9	7.2	5.7	9.6	4.3	4.1	6.6
25	4.7	7.9	7.4	7.9	5.2	5.2	7.8	7.7	7.9	5.4	4.5	8.6
26	4.7	5.7	7.9	7.4	7.8	5.0	6.1	9.7	9.8	6.4	4.5	10
27	14	5.0	8.2	8.4	5.4	4.7	12	7.7	5.7	4.5	7.8	11
28	16	4.7	12	7.1	5.1	4.7	17	6.1	5.0	4.3	4.7	11
29	9.1	6.4	17	5.2	---	4.5	13	5.2	4.5	5.4	4.3	18
30	8.5	9.1	7.1	12	---	4.5	8.5	5.0	4.5	7.7	5.1	7.9
31	5.7	---	5.9	9.7	---	4.3	---	4.7	---	5.4	3.9	---
TOTAL	204.4	191.9	289.6	195.3	149.6	180.6	254.1	250.2	170.7	235.8	196.1	223.3
MEAN	6.59	6.40	9.34	6.30	5.34	5.83	8.47	8.07	5.69	7.61	6.33	7.44
MAX	16	16	21	14	7.8	15	25	35	9.8	20	21	22
MIN	4.5	4.5	4.5	3.7	4.5	4.3	4.3	4.3	4.3	4.1	3.9	3.9
AC-FT	405	381	574	387	297	358	504	496	339	468	389	443

CAL YR 1982	TOTAL	2893.5	MEAN	7.93	MAX	21	MIN	3.7	AC-FT	5740
WTR YR 1983	TOTAL	2541.6	MEAN	6.96	MAX	35	MIN	3.7	AC-FT	5040

16405500 WAIKOLU STREAM AT ALTITUDE 900 FT, NEAR KALAUPAPA

LOCATION.--Lat 21°08'43", long 156°55'18", Hydrologic Unit 20050000, on right bank 1.8 mi southwest of Haupu Bay, 2.3 mi upstream from mouth, and 5.2 mi southeast of Kalaupapa.

DRAINAGE AREA.--1.99 mi².

PERIOD OF RECORD.--May 1956 to October 1961, July 1962 to current year.

REVISED RECORDS.--WSP 1719: 1959. WSP 2137: 1965(P).

GAGE.--Water-stage recorder. Altitude of gage is 900 ft, from topographic map. Prior to July 1, 1962, at site 200 ft upstream at datum 6.14 ft higher.

REMARKS.--Records fair. Since Nov. 16, 1960, water diverted above station at times, either into or from Molokai tunnel. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--22 years (water years 1961, 1963-83), 7.31 ft³/s (5,300 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,570 ft³/s Jan. 25, 1982, gage height, 6.64 ft, from rating curve extended above 43 ft³/s on basis of slope-area measurement at gage height 5.24 ft; minimum, 0.02 ft³/s Oct. 26, 27, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 31, 1961, reached a stage of 13.62 ft, from floodmarks, former site and datum, discharge, 6,220 ft³/s, by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 590 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 27	0400	595	3.65
Dec. 18	1130	*1010	4.31

Minimum discharge, 0.27 ft³/s Sept. 30.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.1	1.1	1.4	1.6	1.1	1.0	2.1	.98	.84	.93	.95
2	1.4	1.1	1.1	1.3	1.3	1.1	1.0	2.3	.98	.84	10	.98
3	1.3	1.1	1.1	1.3	1.3	1.1	.98	1.3	.98	1.4	8.5	.98
4	1.3	1.1	1.1	1.3	1.3	1.1	.98	2.8	.98	1.3	1.2	.98
5	1.2	1.4	1.1	1.3	1.4	1.1	.98	1.9	1.1	11	.98	1.0
6	1.3	3.5	5.2	1.3	1.4	1.1	.98	1.3	1.1	4.6	.98	.98
7	1.3	1.2	1.8	1.3	1.5	1.2	3.4	4.3	1.1	3.8	.98	.98
8	1.3	1.1	1.1	1.3	1.4	1.1	24	1.1	1.1	1.4	.98	.98
9	1.3	1.1	1.1	1.3	1.3	1.1	.98	1.1	1.1	.84	.98	.98
10	1.3	1.1	1.9	1.3	1.3	1.1	.98	1.1	1.5	1.3	.92	.98
11	1.6	1.1	5.4	3.4	1.4	1.1	.98	.98	1.1	1.1	.83	.98
12	1.1	1.7	44	1.7	1.4	1.3	.84	.98	1.1	.98	4.2	.98
13	1.3	12	35	12	1.4	1.3	.84	.98	1.1	1.3	.81	1.3
14	1.2	1.1	1.4	11	1.4	2.5	.72	.98	1.1	1.7	.80	.85
15	1.2	1.2	1.1	1.7	1.2	1.3	.72	.98	1.1	.84	.79	.85
16	1.3	1.7	1.2	1.3	1.3	.99	1.1	.84	1.1	.84	.86	1.0
17	1.3	1.1	6.1	1.3	1.3	1.0	1.1	1.1	1.1	.98	1.4	6.5
18	1.3	1.2	212	1.3	1.1	6.9	.84	.84	1.1	1.1	.89	.85
19	1.1	1.2	15	2.0	1.1	2.2	.91	.84	1.1	.98	.85	.78
20	1.1	1.3	2.0	2.0	1.1	.91	4.8	12	1.1	.98	.85	.61
21	3.0	1.3	2.6	1.3	1.1	.85	5.1	38	1.1	.98	.95	.59
22	1.3	1.3	4.5	1.3	1.1	.84	6.5	1.1	.98	.98	.98	.48
23	1.1	16	45	2.1	1.0	.90	1.8	.84	1.1	.98	.97	.44
24	1.1	31	11	1.3	.95	.88	.77	.84	1.5	.98	.98	.49
25	1.1	2.7	2.1	2.9	.95	.92	.80	.98	.98	.98	.98	.88
26	1.1	1.1	2.3	1.6	1.3	.82	.91	1.3	1.3	.98	.98	.48
27	43	1.1	2.7	2.3	1.0	.97	2.7	.84	.98	.98	1.4	1.1
28	22	1.1	30	1.5	1.1	.98	6.0	.84	.84	.98	.98	.85
29	2.1	1.8	46	1.3	---	.98	3.2	.98	.84	.98	.98	4.5
30	1.5	4.5	1.9	7.4	---	.98	1.3	.98	.84	.98	.95	.30
31	1.1	---	1.6	4.2	---	.99	---	.98	---	.98	.91	---
TOTAL	103.9	99.3	489.5	78.0	35.00	40.71	77.21	87.50	32.38	48.90	49.79	34.60
MEAN	3.35	3.31	15.8	2.52	1.25	1.31	2.57	2.82	1.08	1.58	1.61	1.15
MAX	43	31	212	12	1.6	6.9	24	38	1.5	11	10	6.5
MIN	1.1	1.1	1.1	1.3	.95	.82	.72	.84	.84	.84	.79	.30
AC-FT	206	197	971	155	69	81	153	174	64	97	99	69

CAL YR 1982	TOTAL	3697.2	MEAN	10.1	MAX	430	MIN	1.1	AC-FT	7330
WTR YR 1983	TOTAL	1176.79	MEAN	3.22	MAX	212	MIN	.30	AC-FT	2330

16408000 WAIKOLU STREAM BELOW PIPELINE CROSSING, NEAR KALAUPAPA

LOCATION.--Lat 21°09'45", long 156°55'54", Hydrologic Unit 20050000, on left bank 0.7 mi upstream from mouth and 4.4 mi southeast of Molokai Lighthouse near Kalaupapa.

DRAINAGE AREA.--3.68 mi².

PERIOD OF RECORD.--July 1919 to November 1930, August 1931 to July 1932, September 1937 to January 1948, July 1948 to current year. Prior to August 1931, published as "at pipeline crossing, near Kalaupapa."

REVISED RECORDS.--WSP 1155: 1932(M), 1938-44(M), 1946-48(M). WSP 1319: 1923(M), 1930(M), 1932, 1938-40, 1945(M), 1974-81(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Nov. 19, 1930, at site 500 ft upstream at different datums. Aug. 14, 1931, to July 20, 1932, and Sept. 20, 1937, to Jan. 26, 1948, at present site at datum 1.49 ft higher, and July 30, 1948, to June 30, 1962, at present site at datum 1.00 ft higher.

REMARKS.--Records poor. Diversion above station for domestic use in Kalaupapa, and since Nov. 16, 1960, water has been diverted above station both to and from Molokai tunnel. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--23 years (water years 1961-83), 15.3 ft³/s (11,080 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,740 ft³/s Mar. 31, 1982, gage height, 7.63 ft, from rating curve extended above 59 ft³/s on basis of slope-area measurement at gage height 6.68 ft; minimum, 2.0 ft³/s Nov. 1, 2, 1925, June 5, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Oct. 27	0430	*1630	4.98
Dec. 18	1200	1440	4.83
Dec. 23	1830	780	4.20

Minimum discharge, 3.1 ft³/s Sept. 26, 27.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	9.0	9.0	10	9.4	7.1	6.5	9.0	7.7	6.2	5.4	6.2
2	9.8	9.0	8.6	10	8.6	6.8	6.2	9.4	7.7	6.2	23	6.2
3	9.4	9.0	8.3	9.8	8.3	6.5	6.2	7.7	7.4	7.1	29	6.2
4	9.4	9.0	7.4	9.8	8.3	6.8	6.0	10	7.4	7.1	8.0	6.2
5	9.4	9.0	7.4	9.4	8.3	6.8	6.0	8.3	7.4	19	7.4	6.0
6	9.4	11	11	9.4	8.3	6.8	6.0	7.7	7.4	15	7.1	6.0
7	9.4	9.0	8.6	9.0	8.0	6.8	6.2	16	7.4	12	6.5	6.0
8	9.4	9.0	7.1	9.0	8.0	7.1	41	8.0	7.1	8.0	6.5	6.2
9	9.4	9.0	7.1	9.0	8.0	6.8	6.2	7.4	6.8	7.1	6.5	6.0
10	9.4	9.0	11	9.0	8.0	6.8	6.0	7.1	7.7	7.7	6.0	6.0
11	9.8	9.0	20	13	8.0	6.5	6.5	6.8	7.1	7.1	6.2	6.0
12	9.0	9.4	74	9.8	8.0	6.8	6.8	6.8	6.8	7.1	12	6.0
13	9.4	24	66	16	8.3	6.5	6.5	6.8	6.8	7.4	6.2	6.2
14	9.0	9.4	11	29	8.0	11	6.5	6.5	6.5	8.0	6.0	5.2
15	9.0	9.0	9.4	9.8	7.7	8.6	6.2	6.5	6.5	6.5	6.0	5.0
16	9.4	9.4	8.6	9.0	8.0	7.4	7.1	6.5	6.5	6.5	15	5.0
17	9.4	8.6	12	9.0	8.0	7.4	7.7	7.1	6.8	6.2	11	15
18	9.0	8.6	327	8.6	7.4	16	6.2	6.5	6.5	7.4	8.3	5.0
19	8.6	8.6	29	9.4	7.1	11	7.1	6.5	6.5	6.5	7.4	4.7
20	8.6	8.6	11	9.4	7.4	7.7	11	24	6.5	6.2	7.1	4.5
21	16	8.6	11	8.6	7.4	7.4	13	106	6.5	6.2	6.5	5.0
22	11	8.3	15	8.6	7.7	7.4	17	12	6.5	6.0	6.0	5.2
23	9.0	24	60	10	7.4	11	8.6	9.4	6.5	6.0	6.5	4.7
24	9.0	51	26	8.6	7.4	8.0	6.5	8.6	7.4	6.0	6.2	4.7
25	8.6	13	12	10	7.4	7.4	6.2	8.6	6.5	6.2	6.2	5.4
26	8.6	9.4	11	8.6	11	7.4	6.8	9.4	7.1	6.0	6.2	4.5
27	124	9.0	11	9.8	8.0	7.1	9.0	8.3	6.2	6.0	7.4	5.0
28	38	9.0	63	8.6	7.7	6.8	20	8.0	6.2	6.0	6.2	6.2
29	11	9.8	109	8.3	---	6.2	12	8.0	6.2	6.0	6.2	12
30	10	12	15	24	---	6.2	9.0	7.7	6.2	6.0	6.2	5.2
31	9.4	---	11	13	---	6.2	---	8.0	---	6.0	6.2	---
TOTAL	440.6	350.7	997.5	335.5	225.1	238.3	276.0	368.6	205.8	230.7	260.4	181.5
MEAN	14.2	11.7	32.2	10.8	8.04	7.69	9.20	11.9	6.86	7.44	8.40	6.05
MAX	124	51	327	29	11	16	41	106	7.7	19	29	15
MIN	8.6	8.3	7.1	8.3	7.1	6.2	6.0	6.5	6.2	6.0	5.4	4.5
AC-FT	874	696	1980	665	446	473	547	731	408	458	517	360

CAL YR 1982	TOTAL	8576.2	MEAN	23.5	MAX	554	MIN	5.6	AC-FT	17010
WTR YR 1983	TOTAL	4110.7	MEAN	11.3	MAX	327	MIN	4.5	AC-FT	8150

16414000 KAUNAKAKAI GULCH AT KAUNAKAKAI

LOCATION.--Lat 21°06'21", long 157°00'34", Hydrologic Unit 20050000, on left bank 0.6 mi upstream from Molokai Ranch pipeline crossing, 1.3 mi northeast of Kaunakakai Post Office, and 1.7 mi upstream from mouth.

DRAINAGE AREA.--6.57 mi².

PERIOD OF RECORD.--December 1949 to current year. Prior to July 1958, published as Kaunakakai Stream at Kaunakakai.

REVISED RECORDS.--WSP 1289: 1950-51. WSP 1569: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 240 ft, from topographic map.

REMARKS.--Records fair. Flow has been augmented by occasional spillage from Molokai tunnel since May 1965.

AVERAGE DISCHARGE.--33 years (water years 1951-83), 1.63 ft³/s (1,180 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,060 ft³/s Oct. 31, 1961, gage height, 9.30 ft, from rating curve extended above 620 ft³/s on basis of slope-area measurements at gage heights 7.22 ft and 9.30 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 720 ft³/s Dec. 18, gage height, 5.78 ft, no other peak above base of 280 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	20	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	274	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	27	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	1.9	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.11	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	14	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	2.4	34	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.45	.13	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	11	.00	18	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.78	.00	36	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	21.78	2.85	425.43	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.70	.095	13.7	.00	.00	.00	.00	.00	.00	.00	.00	.00
MAX	11	2.4	274	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	43	5.7	844	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1982	TOTAL	1639.52	MEAN	4.49	MAX	431	MIN	.00	AC-FT	3250
WTR YR 1983	TOTAL	450.06	MEAN	1.23	MAX	274	MIN	.00	AC-FT	893

16419500 PAPIO GULCH AT HALAWA

LOCATION.--Lat 21°08'55", long 156°44'16", Hydrologic Unit 20050000, on left bank 200 ft downstream from wooden bridge on Highway 45 and 0.8 mi south of Halawa.

DRAINAGE AREA.--0.94 mi².

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft, from topographic map.

REMARKS.--Records good. Diversion above station for domestic use at Puu O Hoku Ranch. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--20 years, 0.816 ft³/s (591 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,720 ft³/s Apr. 13, 1965, gage height, 11.25 ft, from rating curve extended above 37 ft³/s on basis of slope-area measurements at gage heights 4.60 ft, 7.15 ft, and 11.25 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 355 ft³/s Dec. 23, gage height, 4.82 ft, no other peak above base of 210 ft³/s; no flow for several days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.33	.60	.52	1.1	.44	.27	.24	.21	.21	.01	.04	.00
2	.33	.56	.36	.98	.40	.27	.27	.27	.14	.01	.21	.00
3	.30	.48	.33	.88	.40	.27	.27	.24	.12	.08	2.1	.00
4	.27	.44	.33	.83	.40	.27	.30	.21	.12	.14	.68	.00
5	.40	.40	.33	.78	.40	.27	.27	.24	.10	.12	.27	.38
6	.33	.44	.48	.73	.36	.27	2.0	.30	.10	.24	.16	1.2
7	.30	.44	.40	.68	.36	.27	.60	1.3	.08	.16	.04	.80
8	.33	.36	.30	.68	.36	.27	.44	.33	.06	.06	.02	.68
9	.36	.33	.27	.64	.36	.27	.33	.21	.04	.02	.02	.16
10	.30	.52	.36	.60	.36	.27	.27	.16	.04	.01	.03	.04
11	.52	.40	.60	.92	.33	.27	.24	.14	.08	.01	.03	.03
12	.36	.36	1.7	.88	.33	.33	.24	.14	.08	.16	.03	.04
13	.44	.40	3.0	.68	.33	.56	.24	.12	.06	.06	.02	.21
14	.30	.40	.68	.78	.30	1.3	.24	.12	.06	.30	.02	.06
15	.24	.40	.40	.60	.30	.87	.24	.12	.06	.24	.01	.02
16	.24	.40	.33	.56	.27	.33	.24	.12	.06	.02	.00	.01
17	.24	.40	.36	.52	.27	.33	.27	.21	.04	.24	.14	.27
18	.30	.40	3.2	.52	.27	.33	.18	.24	.02	1.8	.14	.18
19	.27	.40	.73	.48	.27	.40	.16	.24	.01	.33	.02	.03
20	.24	.40	.44	.48	.27	.30	.18	.18	.00	.18	.02	.03
21	1.7	.60	.48	.48	.27	.27	.27	4.0	.00	.10	.06	.22
22	1.1	.44	3.1	.48	.68	.27	.24	.52	.00	.08	.08	.27
23	.40	3.2	24	.73	.44	.27	.30	.21	.09	.18	.04	.94
24	.30	3.0	6.1	.52	.33	.27	.50	.16	.24	.12	.45	.24
25	.24	.88	1.7	.48	.30	.27	.40	.14	.12	.03	.27	2.5
26	.30	.44	3.2	.44	.40	.27	.24	.16	.42	.06	.02	.96
27	12	.36	3.3	.40	.36	.24	.27	.18	.12	.08	.01	1.2
28	8.1	.33	4.2	.44	.30	.24	.24	.18	.08	.16	.01	.44
29	4.4	.40	13	.40	---	.33	.21	.12	.02	.16	.00	.80
30	1.2	1.4	1.9	1.6	---	.27	.18	.10	.01	.12	.00	.18
31	.73	---	1.3	.56	---	.24	---	.18	---	.16	.00	---
TOTAL	36.87	19.58	77.40	20.85	9.86	10.66	10.07	11.05	2.58	5.44	4.94	11.89
MEAN	1.19	.65	2.50	.67	.35	.34	.34	.36	.086	.18	.16	.40
MAX	12	3.2	24	1.6	.68	1.3	2.0	4.0	.42	1.8	2.1	2.5
MIN	.24	.33	.27	.40	.27	.24	.16	.10	.00	.01	.00	.00
AC-FT	73	39	154	41	20	21	20	22	5.1	11	9.8	24

CAL YR 1982	TOTAL	805.79	MEAN	2.21	MAX	44	MIN	.24	AC-FT	1600
WTR YR 1983	TOTAL	221.19	MEAN	.61	MAX	24	MIN	.00	AC-FT	439

16501000 PALIKEA STREAM BELOW DIVERSION DAM, NEAR KIPAHULU

LOCATION.--Lat 20°41'03", long 156°04'10", Hydrologic Unit 20020000, on left bank 50 ft downstream from old diversion dam, 2 mi northwest of Kipahulu, and 2.1 mi upstream from mouth.

DRAINAGE AREA.--6.29 mi².

PERIOD OF RECORD.--February 1927 to September 1929, December 1931 to September 1935, December 1935 to February 1938, May to October, December 1938, January 1939, August 1939 to September 1983 (discontinued). Published as Oheo Stream at elevation 1,550 ft near Kipahulu 1927-29 and as Oheo Stream below diversion dam, near Kipahulu 1930-56.

REVISED RECORDS.--WSP 1155: 1939(M). WSP 1569: Drainage area. WSP 1719: 1932-34, 1937-40, 1948, 1949-50(P). 1951, 1952-54(P), 1956-58(P). WSP 1937: 1932-38(M), 1940-47(M), 1948-49(P), 1950(M), 1951-53(P), 1956(P), 1957(M), 1958-59(P), 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 1,546 ft above mean sea level (by vertical angles). Prior to Sept. 6, 1929, at site 100 ft upstream at different datum.

REMARKS.--Records poor. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--48 years (water years, 1928, 1933-34, 1937, 1940-83), 57.4 ft³/s (41,590 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,100 ft³/s Jan. 23, 1965, gage height, 18.3 ft, from floodmarks, from rating curve extended above 3,300 ft³/s on basis of computations of peak flow over dam at gage heights 12.68 ft and 17.5 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,380 ft³/s Nov. 24, gage height 9.72 ft, no other peak above base of 3,700 ft³/s; no flow on several days in February and March.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	.39	38	.39	.01	.00	.01	90	9.6	.15	3.2	.80
2	111	.23	3.4	.45	.01	.00	.02	72	.39	37	1.9	.61
3	144	.10	1.1	.53	.01	.00	.04	53	.33	55	1.9	.45
4	133	.39	.61	.53	.01	.00	5.0	43	.70	34	63	.23
5	234	14	.53	.19	.01	.00	1.4	34	24	59	5.3	2.0
6	86	210	.27	.08	.01	.00	256	7.6	11	40	2.8	.61
7	26	31	.19	.06	.67	.01	8.7	115	1.3	29	1.9	.53
8	27	2.9	.12	.05	.02	.00	1.3	75	2.8	26	1.4	18
9	50	4.5	.10	.04	.01	.00	.53	33	4.0	9.7	.80	.61
10	38	99	.06	.02	.01	.00	.39	5.1	25	85	.61	.45
11	100	16	.05	.02	.01	.00	.80	2.7	4.7	113	4.7	16
12	34	137	.27	.04	.01	.01	12	1.9	1.1	40	365	32
13	56	128	6.2	.03	.00	.01	6.5	1.5	.53	28	14	41
14	28	37	.27	.01	.00	.00	.91	19	1.1	33	3.6	2.4
15	19	40	.10	.01	.00	.00	.70	1.4	.45	7.6	1.5	1.1
16	9.6	30	.08	.01	.00	.00	.45	12	.33	2.2	1.7	4.8
17	4.3	12	.08	.01	.00	.01	26	102	1.0	14	17	354
18	45	3.0	486	.01	.00	.01	1.1	205	1.1	34	18	96
19	5.7	.80	130	.01	.00	.00	.91	8.7	1.1	19	1.5	11
20	1.3	.53	4.6	.01	.00	.00	14	2.2	.70	1.9	.70	2.1
21	1.3	2.8	.91	.01	.00	.00	30	1.5	.94	1.5	1.0	1.6
22	1.6	1.1	22	.01	.00	.00	205	1.0	1.4	1.4	.91	30
23	5.8	101	171	.01	.00	.01	31	.70	.80	2.2	35	10
24	.39	324	172	.01	.00	.02	122	.53	.70	4.2	273	4.1
25	.33	2.5	22	.01	.00	.02	14	.45	.39	13	19	125
26	26	.80	2.5	.01	.00	.03	2.2	.23	.70	5.5	24	78
27	176	.53	107	.01	.00	.02	3.6	.15	.33	19	17	146
28	7.7	.33	11	.01	.00	.02	65	.08	.12	7.8	12	133
29	3.4	37	3.7	.01	---	.04	82	.05	.10	14	8.9	288
30	19	80	1.1	.02	---	.01	36	.03	.27	42	2.4	126
31	.70	---	.61	.01	---	.01	---	10	---	14	1.3	---
TOTAL	1486.12	1316.90	1185.85	2.62	.79	.23	927.56	898.82	96.98	792.15	905.02	1526.39
MEAN	47.9	43.9	38.3	.085	.028	.007	30.9	29.0	3.23	25.6	29.2	50.9
MAX	234	324	486	.53	.67	.04	256	205	25	113	365	354
MIN	.33	.10	.05	.01	.00	.00	.01	.03	.10	.15	.61	.23
AC-FT	2950	2610	2350	5.2	1.6	.5	1840	1780	192	1570	1800	3030

CAL YR 1982	TOTAL 35416.17	MEAN 97.0	MAX 2220	MIN .01	AC-FT 70250				
WTR YR 1983	TOTAL 9139.43	MEAN 25.0	MAX 486	MIN .00	AC-FT 18130				

HAWAII, ISLAND OF MAUI

16508000 HANAWI STREAM NEAR NAHIKU

LOCATION.--Lat 20°48'37", long 156°07'00", Hydrologic Unit 20020000, on left bank 200 ft upstream from Koolau ditch intake and trail, 1.9 mi southwest of Nahiku, and 4.5 mi southeast of Keanae.

DRAINAGE AREA.--3.49 mi².

PERIOD OF RECORD.--January 1914 to January 1916, November 1921 to current year. Monthly discharge only April to June 1915, published in WSP 1319.

REVISED RECORDS.--WSP 1045: 1922-43(M). WSP 1569: Drainage area. WSP 1719: 1915(M), 1922, 1924-25, 1927, 1930-35, 1937, 1939-40, 1942-43.

GAGE.--Water-stage recorder. Datum of gage is 1,318 ft above mean sea level (by vertical angles). Prior to Nov. 1, 1921, at site 50 ft downstream at datum 0.12 ft lower.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--61 years (water years 1923-83), 23.1 ft³/s (16,740 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 5,570 ft³/s Jan. 18, 1916, gage height, 11.6 ft, present site and datum, from rating curve extended above 814 ft³/s by test model of station site; minimum, 1.2 ft³/s Oct. 17, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,800 ft³/s Dec. 18, gage height, 6.59 ft, no other peak above base of 1,700 ft³/s; minimum, 1.6 ft³/s Mar. 10-12.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	4.5	3.9	4.2	6.9	1.7	1.7	65	48	4.4	10	4.5
2	100	4.3	3.8	4.0	2.8	1.7	1.9	58	17	5.6	9.8	4.1
3	55	4.1	3.7	3.8	2.5	1.7	1.8	40	11	8.1	7.2	4.5
4	106	4.3	3.5	3.8	2.4	1.7	1.7	47	8.0	14	10	3.9
5	47	4.5	3.5	3.5	2.4	1.7	1.6	15	6.3	28	9.4	4.4
6	17	11	3.4	3.4	2.3	1.7	1.6	21	6.4	30	9.6	5.1
7	9.5	5.6	4.2	3.3	2.3	1.7	1.7	60	6.3	23	9.9	5.4
8	7.9	4.2	3.4	3.3	2.1	1.7	7.0	12	14	15	6.8	11
9	9.0	4.1	3.3	3.2	2.1	1.7	2.9	7.1	8.7	9.1	5.6	4.6
10	9.2	5.8	3.2	3.2	2.0	1.6	2.2	5.6	17	18	5.0	6.4
11	16	4.8	3.7	3.1	2.0	1.5	2.0	6.1	10	19	8.3	13
12	15	40	14	3.2	2.0	2.0	1.9	6.0	6.5	17	113	34
13	16	82	20	3.0	2.1	2.4	1.8	6.0	6.0	15	12	41
14	9.2	46	5.2	3.8	2.0	1.7	1.8	6.2	8.4	21	6.6	10
15	8.4	27	4.0	3.3	2.0	1.8	17	5.8	5.5	12	6.0	12
16	7.6	18	3.7	3.0	2.0	1.7	4.1	6.0	5.7	8.6	7.1	20
17	7.1	7.4	4.4	2.9	2.0	2.4	14	9.5	7.4	8.5	6.4	154
18	11	5.8	582	2.8	1.9	4.7	3.5	8.1	6.0	22	8.0	108
19	7.8	5.0	119	2.7	2.0	5.1	2.5	6.4	6.1	9.6	5.6	18
20	6.5	4.6	16	2.7	1.9	2.4	42	6.0	5.4	6.6	4.8	9.8
21	7.3	4.6	10	2.6	1.9	2.0	22	20	5.9	5.7	4.7	11
22	9.7	4.3	11	2.6	2.1	1.9	82	12	8.2	5.3	4.4	67
23	7.7	148	14	2.7	2.0	3.1	14	9.8	6.2	5.4	4.2	13
24	6.2	160	51	2.5	1.9	2.3	31	12	5.7	6.5	6.6	8.3
25	5.7	8.9	16	2.5	1.9	2.4	8.4	22	5.2	11	4.9	106
26	5.3	4.6	17	2.5	1.8	2.0	9.1	24	4.9	11	6.1	21
27	26	4.3	8.4	2.5	1.8	1.9	33	16	4.3	13	5.8	13
28	7.2	4.0	13	2.5	1.8	1.8	84	9.1	4.0	8.8	7.8	13
29	5.9	7.6	7.3	2.4	---	1.8	69	9.1	4.3	8.6	6.9	29
30	5.3	4.8	5.3	2.5	---	1.7	45	6.9	5.9	12	5.3	116
31	4.8	---	4.5	4.2	---	1.7	---	12	---	8.3	4.9	---
TOTAL	628.3	644.1	965.4	95.7	62.9	65.2	512.2	549.7	264.3	390.1	322.7	871.0
MEAN	20.3	21.5	31.1	3.09	2.25	2.10	17.1	17.7	8.81	12.6	10.4	29.0
MAX	106	160	582	4.2	6.9	5.1	84	65	48	30	113	154
MIN	4.8	4.0	3.2	2.4	1.8	1.5	1.6	5.6	4.0	4.4	4.2	3.9
AC-FT	1250	1280	1910	190	125	129	1020	1090	524	774	640	1730

CAL YR 1982	TOTAL	16272.3	MEAN	44.6	MAX	1170	MIN	2.8	AC-FT	32280
WTR YR 1983	TOTAL	5371.6	MEAN	14.7	MAX	582	MIN	1.5	AC-FT	10650

16512000 KOOLAU DITCH AT NAHIKU WEIR, NEAR NAHIKU

LOCATION.--Lat 20°48'56", long 156°07'15", Hydrologic Unit 20020000, on right bank between Kapaula and Waiohue Gulches, 1.8 mi southwest of Nahiku, and 3.8 mi southeast of Keanae.

PERIOD OF RECORD.--February 1919 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft above mean sea level. Prior to Apr. 28, 1922, nonrecording gage at same site and datum.

REMARKS.--Records good. Ditch diverts water from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--64 years, 34.1 ft³/s (24,710 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 104 ft³/s Mar. 17, 1980; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 89 ft³/s Sept. 22, 30; minimum daily, 6.3 ft³/s Mar. 11.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	23	22	24	23	7.3	7.1	82	63	21	42	21
2	78	22	20	23	12	7.0	8.4	81	58	26	41	20
3	73	21	19	21	11	7.0	8.3	79	49	34	35	20
4	74	21	18	20	10	7.0	7.4	77	43	47	43	18
5	77	21	17	19	9.8	7.0	7.0	64	37	64	40	19
6	66	42	17	18	9.7	6.8	7.1	55	36	75	39	22
7	51	26	20	17	9.6	6.6	7.7	72	33	63	40	22
8	45	21	16	17	9.9	6.6	33	61	54	52	33	37
9	46	20	16	16	9.2	6.6	13	46	42	41	28	22
10	45	26	15	16	9.0	6.4	11	40	58	60	25	26
11	62	22	17	15	9.3	6.3	9.6	38	45	67	27	40
12	59	53	45	15	9.1	9.1	9.0	34	35	59	86	63
13	62	74	55	15	9.3	12	8.8	32	33	58	49	75
14	46	71	26	17	9.1	7.6	8.3	31	39	64	34	42
15	42	71	20	15	8.8	7.7	36	28	30	52	33	45
16	38	60	18	14	8.6	7.5	15	27	30	40	38	42
17	35	39	20	14	8.6	10	39	43	33	42	34	88
18	45	33	78	13	8.4	18	16	38	29	66	35	88
19	37	29	78	13	8.1	18	12	30	28	48	29	68
20	32	26	52	12	8.0	10	57	28	26	37	26	50
21	35	26	44	12	7.7	8.4	57	69	27	31	25	49
22	39	24	50	12	8.8	7.8	76	50	33	29	23	89
23	33	34	42	12	8.5	11	52	40	28	28	22	63
24	29	68	75	11	7.3	10	70	44	27	30	30	45
25	27	39	56	11	7.3	12	40	60	25	38	24	77
26	25	27	64	11	7.7	9.0	40	63	24	41	28	75
27	48	25	44	11	7.4	8.4	62	60	22	46	27	66
28	33	23	49	11	7.4	7.9	83	41	21	39	31	65
29	28	33	40	11	---	7.6	81	40	22	37	28	83
30	25	26	30	12	---	7.4	77	35	24	45	24	89
31	23	---	27	16	---	7.4	---	49	---	38	23	---
TOTAL	1421	1046	1110	464	262.6	271.4	958.7	1537	1054	1418	1042	1529
MEAN	45.8	34.9	35.8	15.0	9.38	8.75	32.0	49.6	35.1	45.7	33.6	51.0
MAX	78	74	78	24	23	18	83	82	63	75	86	89
MIN	23	20	15	11	7.3	6.3	7.0	27	21	21	22	18
AC-FT	2820	2070	2200	920	521	538	1900	3050	2090	2810	2070	3030

CAL YR 1982	TOTAL	16878	MEAN	46.2	MAX	93	MIN	13	AC-FT	33480
WTR YR 1983	TOTAL	12113.7	MEAN	33.2	MAX	89	MIN	6.3	AC-FT	24030

16518000 WEST WAILUAIKI STREAM NEAR KEANAE

LOCATION.--Lat 20°49'16", long 156°08'37", Hydrologic Unit 20020000, on left bank 500 ft upstream from Koolau ditch crossing and trail bridge, and 2.8 mi south of Keanae Post Office.

DRAINAGE AREA.--3.66 mi².

PERIOD OF RECORD.--January 1914 to December 1915, May 1916 to October 1917, November 1921 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1569. Drainage area. WSP 2137: 1915-16(M), 1923-25(M), 1929-31(M), 1934-35(M), 1937-39(M), 1941-43(M), 1946-47(M), 1948(P), 1949(M), 1952-53(M), 1955-56(M), 1959-60(M). WSP 2137: 1960(P), 1961(M), 1963(M).

GAGE.--Water-stage recorder. Datum of gage is 1,343.1 ft above mean sea level (by vertical angles). Prior to Oct. 3, 1974, at present site at datum 0.50 ft higher.

REMARKS.--Records good. No diversion above station. Water is diverted by Koolau ditch, 500 ft below station, for domestic supply and irrigation of sugarcane in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--63 years (water years 1915, 1917, 1923-83), 35.3 ft³/s (25,570 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,900 ft³/s Jan. 14, 1923, gage height, 13.5 ft, from floodmarks, from rating curve extended above 650 ft³/s; minimum, 0.5 ft³/s July 26, 1922.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 3,040 ft³/s Dec. 18, gage height, 9.08 ft, no other peak above base of 1,900 ft³/s; minimum, 1.2 ft³/s Mar. 12.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	6.2	6.3	8.4	19	1.5	1.6	102	61	5.4	13	4.9
2	161	5.6	5.8	7.5	4.4	1.5	2.1	89	23	6.8	19	4.5
3	68	5.3	5.4	6.8	3.3	1.4	1.7	65	19	8.8	11	6.8
4	112	7.2	5.0	6.4	2.9	1.4	1.6	76	12	18	14	4.3
5	50	6.5	4.7	5.6	2.7	1.4	1.5	32	9.7	42	12	7.1
6	27	15	4.5	5.3	2.5	1.4	1.6	38	10	54	14	6.5
7	16	6.7	7.3	5.0	2.3	1.4	1.8	86	9.4	38	14	7.3
8	14	5.0	4.7	4.7	2.3	1.4	8.3	25	20	21	9.2	19
9	15	5.0	4.2	4.3	2.2	1.5	3.7	16	12	13	7.6	7.2
10	16	6.7	4.3	4.0	2.1	1.5	2.2	13	21	23	6.7	9.3
11	20	5.7	7.3	4.2	2.0	1.3	2.0	12	13	24	11	21
12	21	53	28	5.0	2.0	1.7	1.9	9.8	9.4	23	120	55
13	24	106	41	3.8	2.1	5.2	1.8	8.9	9.0	22	20	64
14	13	69	9.1	14	2.1	2.2	1.6	8.1	12	29	11	17
15	12	41	6.8	5.0	2.1	2.4	39	6.9	7.5	19	10	18
16	10	27	5.6	3.8	2.0	2.4	15	7.3	8.1	13	11	31
17	8.9	13	9.3	3.5	2.2	5.2	51	9.8	9.5	13	8.7	179
18	15	10	836	3.3	2.0	16	11	7.5	7.8	38	11	135
19	9.6	8.5	188	3.1	1.9	12	7.3	6.0	8.7	14	7.3	31
20	7.7	8.0	36	3.0	1.8	3.6	82	5.6	7.1	10	6.4	18
21	12	11	19	2.9	1.8	2.4	51	50	8.2	8.5	6.4	16
22	19	9.0	18	2.8	2.2	2.1	116	21	11	8.2	5.4	72
23	11	195	23	2.9	2.2	6.8	30	14	8.0	8.4	5.0	40
24	7.9	154	55	2.6	1.8	3.2	51	23	7.7	9.3	8.4	24
25	7.2	18	24	2.6	1.7	2.8	15	61	6.9	14	5.7	122
26	6.7	11	30	2.5	1.6	2.2	18	56	6.4	15	7.4	36
27	51	9.0	26	2.8	1.6	1.9	61	32	5.4	17	6.1	20
28	16	7.7	31	2.7	1.5	1.8	129	16	5.1	11	9.9	18
29	10	11	18	2.3	---	1.7	114	14	5.7	11	8.6	35
30	8.5	7.3	12	3.4	---	1.6	86	10	8.3	16	6.5	171
31	7.0	---	9.6	21	---	1.6	---	20	---	11	5.8	---
TOTAL	878.5	843.4	1484.9	155.2	78.3	94.5	909.7	940.9	361.9	564.4	412.1	1199.9
MEAN	28.3	28.1	47.9	5.01	2.80	3.05	30.3	30.4	12.1	18.2	13.3	40.0
MAX	161	195	836	21	19	16	129	102	61	54	120	179
MIN	6.7	5.0	4.2	2.3	1.5	1.3	1.5	5.6	5.1	5.4	5.0	4.3
AC-FT	1740	1670	2950	308	155	187	1800	1870	718	1120	817	2380

CAL YR 1982	TOTAL	20315.6	MEAN	55.7	MAX	1470	MIN	3.6	AC-FT	40300
WTR YR 1983	TOTAL	7923.7	MEAN	21.7	MAX	836	MIN	1.3	AC-FT	15720

16523000 KOOLAU DITCH NEAR KEANAE

LOCATION.--Lat 20°49'53", long 156°10'30", Hydrologic Unit 20020000, on right bank on west side of Keanae Valley, 2.7 mi southwest of Keanae School, and 5.1 mi southeast of Kailua.

PERIOD OF RECORD.--January 1910 to December 1912, November 1917 to February 1918, April 1918 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,237.7 ft above mean sea level (by plane-table traverse). Jan. 1, 1910, to Dec. 31, 1912, nonrecording gage at same site and datum.

REMARKS.--Records good. Ditch diverts at altitude 1,260 ft from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui. Ditch is regulated for short periods on several days. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--67 years (water years 1911-12, 1918-83), 101 ft³/s (73,170 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 266 ft³/s Apr. 19, 1935; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 212 ft³/s Dec. 19; minimum daily, 17 ft³/s Mar. 11.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186	60	60	73	98	19	20	204	168	59	136	58
2	209	57	56	67	39	19	24	202	164	78	136	56
3	204	55	53	63	34	19	22	198	137	100	104	61
4	206	60	51	61	31	18	20	203	119	144	141	52
5	208	60	49	55	30	18	19	187	100	168	122	65
6	186	134	47	52	29	18	19	171	104	202	127	63
7	143	69	59	50	28	18	20	201	93	182	128	67
8	125	55	47	49	28	18	110	180	167	159	94	124
9	136	53	45	47	27	18	37	138	121	118	78	64
10	140	72	44	46	25	18	27	115	162	180	71	84
11	180	59	61	45	25	17	24	111	127	182	90	149
12	171	170	146	50	25	23	23	98	95	185	209	187
13	182	205	171	43	26	46	22	90	91	178	155	197
14	129	203	73	81	25	23	21	84	119	184	99	136
15	113	198	59	48	24	24	131	73	80	159	98	147
16	98	176	52	42	24	23	67	74	85	120	124	123
17	89	107	66	40	25	45	172	123	99	130	98	210
18	132	86	206	39	23	101	65	97	82	180	113	208
19	98	74	212	37	22	79	48	73	82	143	79	188
20	79	69	181	36	22	32	178	66	74	103	70	154
21	112	78	159	35	21	24	182	195	80	88	69	133
22	144	69	169	34	26	23	204	158	102	84	62	202
23	96	94	123	36	25	56	169	123	80	82	59	190
24	75	198	201	33	21	34	193	128	76	90	94	161
25	69	141	174	32	20	35	124	191	70	128	66	189
26	66	83	197	31	21	27	129	195	68	132	84	192
27	143	71	170	33	20	24	182	188	61	156	74	181
28	110	65	164	32	20	22	210	132	58	121	98	181
29	81	104	141	30	---	21	207	127	65	109	85	198
30	70	70	96	35	---	20	202	99	81	150	69	204
31	63	---	81	101	---	20	---	138	---	111	64	---
TOTAL	4043	2995	3413	1456	784	902	2871	4362	3010	4205	3096	4224
MEAN	130	99.8	110	47.0	28.0	29.1	95.7	141	100	136	99.9	141
MAX	209	205	212	101	98	101	210	204	168	202	209	210
MIN	63	53	44	30	20	17	19	66	58	59	59	52
AC-FT	8020	5940	6770	2890	1560	1790	5690	8650	5970	8340	6140	8380

CAL YR 1982	TOTAL	47055	MEAN	129	MAX	212	MIN	20	AC-FT	93330
WTR YR 1983	TOTAL	35361	MEAN	96.9	MAX	212	MIN	17	AC-FT	70140

16531000 KULA DIVERSION FROM HAIPUAENA STREAM NEAR OLINDA

LOCATION.--Lat 20°48'24", long 156°13'27", Hydrologic Unit 20020000, on left bank of Haipuaena Stream, 3.4 mi east of Olinda, and 6.2 mi south of Kailua.

PERIOD OF RECORD.--July 1945 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir since Apr. 2, 1975. Altitude of gage is 4,320 ft, from topographic map.

REMARKS.--Records good except those above 6.6 ft³/s, which are poor. Water is diverted from Haipuaena Stream at station for domestic use and irrigation of truck crops in the Olinda and Kula areas. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--38 years, 0.758 ft³/s (549 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 10 ft³/s Nov. 6, 1976, July 2, 1982; no flow Nov. 4, 1964, Dec. 3, 5, 1970, Mar. 27 to Apr. 1, Apr. 10-14, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 8.8 ft³/s Apr. 28; minimum daily, 0.01 ft³/s on many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	.19	.25	.25	1.2	.01	.03	7.0	2.0	.16	.48	.14
2	7.6	.16	.19	.19	.25	.01	.03	5.8	1.3	.44	2.8	.43
3	3.8	.14	.14	.16	.14	.01	.03	3.2	.60	.44	1.3	1.2
4	2.8	.14	.14	.14	.10	.01	.03	2.8	.44	1.2	1.7	.75
5	2.1	.14	.12	.12	.07	.01	.03	1.3	.40	3.2	.66	2.8
6	2.3	.40	.09	.10	.04	.01	1.7	1.9	.32	3.1	.78	1.2
7	2.1	.28	.09	.08	.03	.01	.54	4.7	.28	2.1	.84	1.2
8	2.1	.16	.10	.07	.02	.01	.28	3.1	.40	.66	.84	2.9
9	2.0	.12	.10	.05	.01	.01	.16	2.0	.25	.44	.97	.60
10	1.2	.10	.10	.04	.01	.01	.12	1.1	.40	.84	.25	.40
11	2.5	.10	.19	.03	.01	.01	.12	.60	.40	.97	.39	.72
12	3.6	3.8	1.2	.03	.01	.01	.12	.40	.25	.54	6.7	3.0
13	3.2	5.8	4.4	.03	.01	.03	.12	.28	.19	.48	1.2	5.1
14	.97	5.5	.60	.10	.01	.01	.12	.36	.44	1.2	.54	1.1
15	.66	2.0	.28	.12	.01	.05	.95	.78	.32	.91	.32	.84
16	.48	.97	.19	.07	.01	.09	1.6	.78	.19	.40	.25	2.0
17	.36	.60	.32	.04	.01	.28	5.4	.58	.16	.36	.19	6.6
18	.78	.36	2.9	.03	.01	1.4	1.2	.97	.14	1.3	.19	3.8
19	.72	.28	1.3	.02	.01	1.2	.67	.60	.14	.60	.16	1.8
20	.36	.28	1.1	.02	.01	.28	5.1	.32	.14	.28	.14	.78
21	.68	1.5	1.1	.02	.01	.14	4.9	2.9	.12	.19	1.6	.54
22	1.4	.78	1.7	.01	.01	.09	7.6	1.6	.19	.14	.78	.91
23	.66	2.2	1.9	.01	.01	.10	1.8	.84	.22	.19	.44	2.0
24	.36	4.2	6.0	.01	.01	1.3	1.4	1.8	.16	.36	1.5	1.7
25	.22	1.4	1.5	.01	.01	1.8	.78	6.1	.14	.28	.78	2.8
26	.19	.66	1.4	.01	.01	.66	.84	4.4	.10	.32	.40	1.8
27	3.1	.40	.97	.01	.01	.22	4.9	1.9	.07	.72	.28	1.2
28	1.2	.36	1.0	.01	.01	.14	8.8	.97	.05	.72	.28	1.3
29	.66	.66	1.0	.01	---	.12	7.8	.54	.04	.72	.28	2.2
30	.40	.40	.48	.01	---	.07	6.6	.44	.06	1.3	.25	5.6
31	.28	---	.36	1.1	---	.05	---	3.6	---	.60	.19	---
TOTAL	54.88	34.08	31.21	2.90	2.05	8.15	63.77	63.66	9.91	25.16	27.48	57.41
MEAN	1.77	1.14	1.01	.094	.073	.26	2.13	2.05	.33	.81	.89	1.91
MAX	7.6	5.8	6.0	1.1	1.2	1.8	8.8	7.0	2.0	3.2	6.7	6.6
MIN	.19	.10	.09	.01	.01	.01	.03	.28	.04	.14	.14	.14
AC-FT	109	68	62	5.8	4.1	16	126	126	20	50	55	114

CAL YR 1982	TOTAL	651.65	MEAN	1.79	MAX	10	MIN	.04	AC-FT	1290
WTR YR 1983	TOTAL	380.66	MEAN	1.04	MAX	8.8	MIN	.01	AC-FT	755

16538000 SPRECKELS DITCH AT HAIPUAENA WEIR, NEAR HUELO

LOCATION.--Lat 20°51'15", long 156°11'25", Hydrologic Unit 20020000, on right bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.7 mi west of Keanae, and 4.5 mi southeast of Huelo.

PERIOD OF RECORD.--April 1922 to current year. Published as "at Haipuaena, near Huelo" 1930-35.

REVISED RECORDS.--WSP 770: 1932-33.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,470.96 ft above mean sea level (East Maui Irrigation Co. bench mark). Apr. 29, 1922, to Feb. 19, 1930, at same site at different datum. Feb. 20, 1930, to Oct. 25, 1935, at site 100 ft upstream at different datum.

REMARKS.--Records good. Spreckels ditch diverts from all streams between the Nuaailua and the Kailua above Koolau ditch east of the Puohokamoa, and below Koolau ditch west of the Puohokamoa. About 6 ft^3/s was diverted above station to East Maui Irrigation Co. powerplant at Kolea Gulch prior to June 30, 1961, when the plant was abandoned. Water used for domestic supply and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since termination of powerplant diversion).--22 years (water years 1962-83), 29.5 ft^3/s (21,370 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 150 ft^3/s Feb. 10, 1955, Feb. 18, 1956; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 120 ft^3/s Dec. 18; minimum daily, 2.2 ft^3/s Mar. 11.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	10	11	15	22	2.6	4.0	100	68	12	35	11
2	97	9.4	10	13	6.4	2.6	5.1	97	48	16	49	11
3	67	8.9	9.4	12	5.2	2.4	6.5	88	34	23	26	18
4	71	11	8.8	12	4.7	2.4	9.5	102	24	49	44	9.3
5	74	12	8.2	10	4.4	2.4	6.0	57	19	71	27	24
6	44	41	7.7	9.5	4.2	2.4	19	54	25	84	29	17
7	27	13	7.2	8.8	4.0	2.3	8.9	96	20	59	35	19
8	34	9.3	6.7	8.3	3.8	2.3	25	51	64	49	20	46
9	40	8.8	6.5	7.7	3.8	2.3	8.4	32	32	29	16	13
10	37	12	6.6	7.4	3.6	2.3	6.7	23	57	58	14	21
11	57	9.8	21	7.1	3.4	2.2	6.6	21	35	55	36	50
12	61	64	59	11	3.4	4.2	4.9	19	22	55	103	84
13	64	90	57	6.7	3.4	41	4.4	18	26	46	35	83
14	29	78	13	24	3.7	9.8	4.1	17	34	61	21	33
15	25	63	9.5	9.6	3.2	11	65	15	19	38	25	42
16	20	44	8.5	6.6	3.5	6.7	31	16	22	25	38	39
17	17	21	15	6.0	4.5	18	70	28	25	35	22	109
18	43	17	120	5.7	3.6	49	18	25	18	78	26	104
19	23	15	112	5.3	3.2	30	15	16	19	37	17	60
20	16	14	51	5.1	3.1	8.3	96	12	15	22	14	32
21	45	20	46	4.8	2.9	5.7	58	101	17	18	21	26
22	47	15	52	4.8	5.2	5.0	88	50	29	18	14	70
23	22	27	40	5.9	5.5	20	43	31	17	16	11	47
24	16	62	74	4.7	3.5	8.6	72	40	15	18	28	32
25	14	29	45	4.6	3.0	27	27	75	13	32	14	83
26	13	15	69	4.5	2.9	12	33	82	12	34	22	72
27	39	13	46	4.9	2.8	6.3	74	65	11	46	15	45
28	25	12	53	5.8	2.8	5.3	105	30	11	36	24	46
29	16	27	31	4.3	---	5.5	97	33	15	26	18	73
30	13	14	20	6.8	---	4.6	91	22	22	45	14	109
31	11	---	17	37	---	4.1	---	55	---	26	13	---
TOTAL	1179	785.2	1041.1	278.9	125.7	308.3	1102.1	1471	788	1217	826	1428.3
MEAN	38.0	26.2	33.6	9.00	4.49	9.95	36.7	47.5	26.3	39.3	26.6	47.6
MAX	97	90	120	37	22	49	105	102	68	84	103	109
MIN	11	8.8	6.5	4.3	2.8	2.2	4.0	12	11	12	11	9.3
AC-FT	2340	1560	2070	553	249	612	2190	2920	1560	2410	1640	2830

CAL YR 1982	TOTAL	14568.1	MEAN	39.9	MAX	120	MIN	5.7	AC-FT	28900
WTR YR 1983	TOTAL	10550.6	MEAN	28.9	MAX	120	MIN	2.2	AC-FT	20930

16541000 KOOLAU DITCH AT HAIPUAENA, NEAR HUELO

LOCATION.--Lat 20°51'17", long 156°11'19", Hydrologic Unit 20020000, on right bank at Haipuaena Stream, 1,000 ft upstream from intake at Puohokamoa Stream, 3.3 mi southeast of Kailua, and 4.5 mi southeast of Huelo.

PERIOD OF RECORD.--April 1932 to current year.

GAGE.--Water-stage recorder and Parshall flume. Altitude of gage is 1,240 ft, from topographic map. Prior to Mar. 21, 1933, at datum 1.94 ft lower, and Mar. 21, 1933, to Mar. 20, 1935, at datum 0.25 ft lower, than present datum.

REMARKS.--Records good. Ditch is extension of Wailoa ditch east of Alo Stream; it receives water from Makapipi ditch at Hanawi Stream and diverts from nearly all streams from there west to the Alo. Water is used for power, domestic supply, and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--51 years, 116 ft³/s (84,040 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 300 ft³/s July 1, 17, 1963; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 262 ft³/s Apr. 28; minimum daily, 17 ft³/s Mar. 11.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	206	62	63	76	103	19	20	250	185	62	136	59
2	250	60	58	70	40	19	24	245	169	80	146	56
3	217	58	55	64	34	18	22	226	138	100	108	63
4	225	62	52	62	30	18	20	256	122	150	143	52
5	226	63	49	57	29	18	19	191	104	183	122	67
6	190	132	47	54	28	18	19	180	107	219	127	67
7	145	73	60	51	27	18	19	239	97	193	130	68
8	130	57	46	49	27	18	109	184	170	163	100	131
9	138	54	43	47	26	18	37	139	124	121	84	67
10	138	75	41	45	25	18	26	117	167	182	76	85
11	183	61	59	44	25	17	24	113	129	186	95	148
12	172	173	162	51	24	22	22	101	99	187	251	209
13	192	232	183	43	25	49	21	93	94	179	159	222
14	129	216	78	83	25	22	21	87	121	187	101	138
15	116	202	61	49	24	24	153	76	85	160	95	148
16	101	184	54	42	23	22	68	78	89	123	121	131
17	93	115	69	40	25	45	188	124	103	134	99	237
18	133	93	250	38	23	96	69	101	86	202	110	242
19	102	80	254	37	22	85	49	77	86	146	81	199
20	84	72	191	36	21	31	217	70	78	107	71	157
21	111	83	161	35	21	24	194	232	83	94	71	135
22	159	73	176	34	25	22	236	164	105	89	64	218
23	102	88	130	36	25	53	175	126	84	86	60	196
24	80	212	221	32	21	34	219	131	80	94	92	164
25	73	143	178	32	20	36	128	207	74	128	67	199
26	69	89	213	31	20	27	131	216	72	133	84	216
27	142	75	175	32	20	23	201	197	64	156	75	184
28	113	68	175	31	20	22	262	135	61	125	96	182
29	85	107	147	29	---	21	249	129	68	112	86	218
30	74	75	102	34	---	20	238	102	83	149	70	239
31	66	---	86	95	---	20	---	153	---	114	65	---
TOTAL	4244	3137	3639	1459	778	897	3180	4739	3127	4344	3185	4497
MEAN	137	105	117	47.1	27.8	28.9	106	153	104	140	103	150
MAX	250	232	254	95	103	96	262	256	185	219	251	242
MIN	66	54	41	29	20	17	19	70	61	62	60	52
AC-FT	8420	6220	7220	2890	1540	1780	6310	9400	6200	8620	6320	8920

CAL YR 1982	TOTAL	52123	MEAN	143	MAX	281	MIN	28	AC-FT	103400
WTR YR 1983	TOTAL	37226	MEAN	102	MAX	262	MIN	17	AC-FT	73840

16541500 MANUEL LUIS DITCH AT PUOHOKAMOA GULCH, NEAR HUELO

LOCATION.--Lat 20°51'48", long 156°10'49", Hydrologic Unit 20020000, on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.2 mi west of Keanae, and 4.4 mi southeast of Huelo.

PERIOD OF RECORD.--December 1917 to November 1924, January 1925 to current year.

REVISED RECORDS.--WSP 1719: 1918-30.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft, from topographic map.

REMARKS.--Records good. Ditch is extension of Center ditch and picks up water from streams between the Kolea and the Waikamoi for irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--64 years (water years, 1919-24, 1926-83), 8.26 ft³/s (5,980 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 142 ft³/s Jan. 3, 1927; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 89 ft³/s Dec. 18; minimum daily, 0.06 ft³/s Mar. 3-11.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	.37	.38	1.4	.35	.09	.11	16	22	.40	1.2	.43
2	49	.33	.33	1.2	.23	.07	.12	13	3.8	.51	3.2	.38
3	7.1	.30	.30	1.0	.19	.06	.11	4.1	2.0	.62	1.4	.39
4	12	.39	.29	1.0	.19	.06	.09	34	1.9	.61	2.6	.34
5	5.8	.39	.24	.85	.18	.06	.09	1.9	1.8	6.3	1.4	.36
6	2.6	1.1	.24	.72	.14	.06	.13	9.2	1.7	2.4	1.1	.37
7	1.7	.51	.24	.64	.14	.06	.14	56	1.4	2.2	1.1	.40
8	1.5	.33	.23	.58	.14	.06	1.3	5.7	2.8	1.8	.96	1.1
9	1.5	.31	.19	.53	.14	.06	.27	3.2	1.5	1.0	.83	.38
10	1.4	.43	.21	.53	.13	.06	.16	2.0	2.2	1.9	.75	.34
11	3.4	.35	.37	.49	.12	.06	.14	1.8	1.4	3.2	.80	.55
12	2.2	7.3	11	.59	.09	.54	.12	1.5	1.2	1.9	47	12
13	3.7	41	2.8	.43	.11	2.2	.10	1.3	1.1	1.5	1.4	24
14	1.7	6.5	.56	.56	.13	.67	.09	1.2	1.7	1.4	.75	1.3
15	1.4	2.9	.41	.40	.10	.62	20	.97	1.1	1.3	.68	.96
16	1.2	1.2	.35	.33	.11	.26	.27	.96	1.0	1.1	1.5	7.6
17	1.1	.68	.47	.30	.14	.33	.92	3.3	1.1	1.7	1.1	77
18	1.3	.61	89	.25	.09	.76	.21	1.8	.91	26	1.0	47
19	.99	.54	33	.24	.09	.81	.15	1.2	.81	2.7	.74	4.7
20	.83	.52	1.6	.24	.09	.29	14	.99	.81	1.3	.69	1.6
21	3.7	.60	1.4	.21	.09	.21	.77	38	.83	1.1	.71	1.3
22	1.9	.51	2.3	.19	.17	.19	25	6.9	.91	1.0	.57	10
23	.98	.62	7.3	1.4	.20	.25	1.1	3.5	.75	.96	.53	3.7
24	.83	2.5	13	.36	.10	.25	19	2.6	.73	.98	.94	2.1
25	.73	.62	2.5	.29	.09	.25	1.2	2.3	.65	1.2	.61	59
26	.66	.44	5.8	.27	.09	.20	.98	3.9	.64	.98	.68	17
27	.83	.37	3.3	.24	.09	.19	15	3.5	.55	1.3	.59	6.2
28	.62	.36	9.5	.21	.09	.14	53	1.6	.47	2.7	.69	5.0
29	.50	.78	2.8	.19	---	.14	41	1.5	.45	1.2	.58	10
30	.45	.51	1.9	.34	---	.13	6.1	1.3	.45	2.0	.56	63
31	.40	---	1.6	.41	---	.13	---	10	---	1.2	.49	---
TOTAL	146.02	73.37	193.61	16.39	3.82	9.26	201.67	235.22	58.66	74.46	77.15	358.50
MEAN	4.71	2.45	6.25	.53	.14	.30	6.72	7.59	1.96	2.40	2.49	11.9
MAX	49	41	89	1.4	.35	2.2	53	56	22	26	47	77
MIN	.40	.30	.19	.19	.09	.06	.09	.96	.45	.40	.49	.34
AC-FT	290	146	384	33	7.6	18	400	467	116	148	153	711

CAL YR 1982	TOTAL	5016.15	MEAN	13.7	MAX	134	MIN	.18	AC-FT	9950
WTR YR 1983	TOTAL	1448.13	MEAN	3.97	MAX	89	MIN	.06	AC-FT	2870

16587000 HONOPOU STREAM NEAR HUELO

LOCATION.--Lat 20°53'20", long 156°15'20", Hydrologic Unit 20020000, on left bank 75 ft upstream from Wailoa ditch intake, 2.2 mi southwest of Huelo, and 2.5 mi west of Kailua.

DRAINAGE AREA.--0.64 mi².

PERIOD OF RECORD.--December 1910 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1219: 1914(M), 1916-50(M). WSP 1249: 1948-50(P). WSP 1569: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,208 ft above mean sea level (by vertical angles). Prior to June 19, 1914, nonrecording gage at same site and datum.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--72 years (water years 1912-83), 4.69 ft³/s (3,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,710 ft³/s Nov. 18, 1930, gage height, 7.28 ft from rating curve extended above 110 ft³/s by test of model of station site; minimum, 0.02 ft³/s several days in 1933, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 162 ft³/s Dec. 18, gage height, 2.76 ft, no peak above base of 270 ft³/s; minimum, 0.30 ft³/s Mar. 7-12.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	1.3	1.7	3.3	1.1	.38	.54	7.3	7.2	1.6	2.4	1.5
2	8.3	1.2	1.7	3.0	.84	.38	.54	6.5	4.1	1.6	3.4	1.3
3	3.3	1.2	1.6	2.8	.84	.38	.54	6.9	3.2	1.8	2.7	1.3
4	2.8	1.3	1.6	2.8	.84	.38	.54	13	3.0	2.5	3.3	1.2
5	2.8	1.2	1.5	2.7	.74	.38	.54	7.8	3.0	4.1	2.4	1.2
6	2.5	2.0	1.5	2.5	.74	.38	.54	7.4	3.0	3.3	2.3	1.1
7	2.3	1.3	1.7	2.4	.64	.30	.54	21	3.0	3.1	3.6	1.2
8	2.3	1.2	1.5	2.3	.64	.30	1.5	8.5	4.3	3.2	2.3	1.7
9	2.3	1.1	1.3	2.1	.64	.30	.54	6.9	3.0	2.3	2.1	1.1
10	2.4	1.2	1.5	2.6	.54	.30	.46	5.8	4.5	2.8	2.0	1.2
11	5.0	1.1	2.1	2.1	.54	.30	.46	5.1	3.5	3.2	2.8	1.6
12	3.2	2.1	5.0	2.0	.54	1.3	.38	4.5	2.5	3.3	9.7	2.2
13	4.0	7.7	3.6	1.7	.54	3.6	.38	4.1	2.7	2.8	3.3	4.1
14	2.8	3.3	1.8	2.1	.54	2.4	.38	3.7	3.5	3.0	2.8	1.6
15	2.5	3.2	1.6	1.6	.54	1.6	3.6	3.2	2.5	2.5	2.7	1.7
16	2.5	2.7	1.5	1.5	.74	.84	.74	3.2	2.5	2.1	3.5	1.8
17	2.4	2.1	1.7	1.5	.74	1.1	1.3	4.9	2.7	3.3	2.8	13
18	2.5	1.8	24	1.5	.64	2.1	.74	5.2	2.4	8.8	2.8	6.8
19	2.3	1.7	5.7	1.3	.54	1.7	.54	3.0	2.3	3.9	2.4	2.8
20	2.1	1.7	3.7	1.2	.54	.84	1.6	2.8	2.1	2.8	2.3	2.3
21	2.4	1.8	4.3	1.2	.54	.74	1.3	26	2.1	2.7	2.3	2.1
22	2.3	1.7	4.3	1.1	.64	.74	6.0	7.6	2.3	2.7	2.1	2.3
23	2.0	1.6	5.6	2.1	.54	1.1	2.1	5.6	2.0	2.5	2.1	2.0
24	1.8	5.1	15	1.1	.54	.84	7.1	4.9	1.8	2.4	2.1	1.8
25	1.7	2.4	6.5	.96	.46	.74	2.5	4.7	1.8	2.8	2.0	5.4
26	1.6	1.8	6.5	.96	.46	.64	2.4	4.7	1.7	3.0	2.1	4.7
27	2.3	1.8	4.9	.96	.38	.54	3.5	5.6	1.6	3.2	1.8	3.0
28	1.8	1.8	5.7	.84	.38	.54	10	3.9	1.6	4.2	2.3	3.8
29	1.6	2.4	4.7	.84	---	.54	9.2	3.5	1.6	2.5	1.7	6.5
30	1.5	2.0	3.9	1.5	---	.54	6.5	3.2	1.7	2.8	1.7	25
31	1.5	---	3.7	1.2	---	.54	---	3.7	---	2.3	1.6	---
TOTAL	82.0	62.8	131.4	55.76	17.40	26.76	67.00	204.2	83.2	93.1	83.4	107.3
MEAN	2.65	2.09	4.24	1.80	.62	.86	2.23	6.59	2.77	3.00	2.69	3.58
MAX	8.3	7.7	24	3.3	1.1	3.6	10	26	7.2	8.8	9.7	25
MIN	1.5	1.1	1.3	.84	.38	.30	.38	2.8	1.6	1.6	1.6	1.1
AC-FT	163	125	261	111	35	53	133	405	165	185	165	213

CAL YR 1982	TOTAL	3004.22	MEAN	8.23	MAX	284	MIN	.96	AC-FT	5960
WTR YR 1983	TOTAL	1014.32	MEAN	2.78	MAX	26	MIN	.30	AC-FT	2010

16588000 WAILOA DITCH AT HONOPOU, NEAR HUELO

LOCATION.--Lat 20°53'20", long 156°15'19", Hydrologic Unit 20020000, on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mi west of Lupi, and 2.2 mi southwest of Huelo.

PERIOD OF RECORD.--November 1922 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,208 ft above mean sea level (by vertical angles).

REMARKS.--Records good. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from there west to Halehaku Gulch at altitude of about 1,200 ft. Water is used for domestic supply, power, and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--60 years (water years 1924-83), 171 ft³/s (123,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 328 ft³/s Nov. 24, 1981; no flow Jan. 24-27, 1923.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 314 ft³/s May 4, 7; minimum daily, 2.5 ft³/s Jan. 20.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	268	107	114	147	178	31	38	298	297	114	267	109
2	297	100	104	135	69	30	44	302	288	143	242	104
3	285	96	96	122	58	30	45	307	255	165	231	121
4	284	105	91	120	53	30	50	314	237	197	279	94
5	284	112	87	108	51	29	40	303	205	243	241	122
6	279	223	83	101	49	29	62	298	218	284	245	130
7	254	131	95	96	47	28	62	314	193	281	253	120
8	234	97	80	91	46	28	158	303	280	241	200	211
9	255	92	75	86	44	28	78	293	246	197	165	119
10	253	124	75	94	42	28	54	254	288	246	146	153
11	288	102	107	84	42	27	50	236	267	264	205	244
12	279	236	241	96	41	46	44	212	204	256	305	257
13	285	295	250	78	41	168	42	177	199	240	273	271
14	258	285	146	159	42	85	40	176	263	256	210	258
15	228	285	109	94	39	92	192	153	179	273	205	257
16	199	271	95	73	40	50	107	157	187	233	262	210
17	178	206	129	28	46	105	240	244	215	247	214	297
18	223	169	257	3.1	39	158	132	236	173	287	228	293
19	206	145	169	2.7	37	175	99	163	172	273	165	282
20	156	133	180	2.5	36	73	237	139	153	220	144	268
21	207	159	169	26	35	53	225	310	155	188	154	230
22	259	140	186	58	43	48	289	296	215	177	131	276
23	191	127	187	82	49	95	226	267	164	168	117	272
24	147	177	168	59	36	76	295	250	149	179	193	249
25	131	142	144	56	34	88	209	291	134	233	132	276
26	122	133	148	56	34	80	221	295	130	248	178	290
27	212	131	160	55	33	52	256	294	114	272	148	281
28	200	119	150	59	34	46	288	263	108	241	192	283
29	154	189	149	52	---	44	284	253	130	222	165	293
30	131	138	147	72	---	41	297	204	152	282	134	302
31	115	---	147	167	---	39	---	248	---	227	122	---
TOTAL	6862	4769	4338	2462.3	1338	1932	4404	7850	5970	7097	6146	6672
MEAN	221	159	140	79.4	47.8	62.3	147	253	199	229	198	222
MAX	297	295	257	167	178	175	297	314	297	287	305	302
MIN	115	92	75	2.5	33	27	38	139	108	114	117	94
AC-FT	13610	9460	8600	4880	2650	3830	8740	15570	11840	14080	12190	13230

CAL YR 1982	TOTAL	73877	MEAN	202	MAX	320	MIN	63	AC-FT	146500
WTR YR 1983	TOTAL	59840.3	MEAN	164	MAX	314	MIN	2.5	AC-FT	118700

16589000 NEW HAMAKUA DITCH AT HONOPOU, NEAR HUELO

LOCATION.--Lat 20°53'28", long 156°15'22", Hydrologic Unit 20020000, on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, and 2.1 mi southwest of Huelo.

PERIOD OF RECORD.--January 1918 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,170 ft above mean sea level (by vertical angles). Prior to May 14, 1921, at site 300 ft upstream at different datum. May 14, 1921, to Mar. 18, 1962, at present site at datum 1.00 ft higher.

REMARKS.--Records good. Ditch diverts from streams between Waikamoi Stream and Halehaku Gulch above Center and Lowrie ditches for irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--65 years, 36.1 ft³/s (26,150 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 182 ft³/s Nov. 2, 1967; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 160 ft³/s May 7; minimum daily, 0.02 ft³/s Dec. 29, 30.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	1.4	1.2	.04	15	.34	.33	154	105	1.0	22	1.2
2	150	1.2	1.1	.04	1.1	.32	.37	155	89	1.9	56	1.1
3	131	1.0	.99	.03	1.1	.32	.33	154	21	18	19	1.2
4	100	1.4	.93	1.1	.90	.27	.31	159	11	106	66	.98
5	138	1.1	.86	2.4	.85	.26	.26	140	3.6	96	6.8	1.5
6	88	51	.87	2.1	.80	.25	11	91	4.0	144	5.7	3.3
7	10	1.7	.89	2.0	.75	.21	.88	160	3.0	119	37	1.0
8	4.2	.97	.80	1.8	.74	.21	63	140	92	109	2.6	63
9	53	.90	.79	1.7	.68	.16	.71	40	36	56	2.1	1.3
10	20	1.0	.79	4.8	.62	.09	.40	5.1	83	127	1.9	1.2
11	125	.88	1.9	2.4	.62	.09	.32	4.3	21	136	4.8	65
12	77	65	86	1.9	.61	1.6	.26	3.6	2.9	139	153	113
13	120	144	93	1.6	.56	79	.26	18	2.6	127	71	149
14	17	115	2.1	2.3	.56	12	.24	8.0	33	123	3.0	21
15	3.4	120	1.4	1.5	.53	13	93	2.3	2.9	63	2.3	38
16	2.6	83	1.2	3.3	.54	.75	18	2.5	2.7	3.8	36	11
17	2.3	3.0	1.3	36	.64	7.1	137	55	3.0	40	3.7	153
18	45	1.5	108	59	.52	65	13	14	2.4	110	6.3	149
19	14	1.3	7.3	57	.49	45	.59	2.9	2.2	68	2.1	117
20	2.1	1.2	.03	56	.44	.94	131	2.3	2.0	3.3	1.9	24
21	18	1.3	.03	37	.43	.71	146	145	2.1	2.7	2.0	2.8
22	57	1.2	.03	1.6	.43	.62	154	101	2.4	2.4	1.7	93
23	4.9	11	8.4	5.9	.55	20	134	14	1.8	2.2	1.5	61
24	2.2	139	19	1.5	.44	.78	147	21	1.7	2.1	7.4	16
25	2.7	87	19	1.2	.39	12	78	128	1.5	26	1.8	92
26	2.6	23	19	1.1	.42	1.3	61	139	1.5	37	1.9	135
27	51	3.0	7.7	1.1	.38	.50	126	133	1.3	71	1.6	97
28	17	1.2	.03	1.0	.38	.45	158	19	1.1	55	9.6	78
29	2.0	31	.02	.94	---	.39	158	9.8	1.1	11	1.7	143
30	1.7	1.5	.02	1.4	---	.37	151	3.2	7.3	57	1.4	152
31	1.5	---	.03	1.8	---	.32	---	72	---	3.5	1.3	---
TOTAL	1331.2	895.75	384.71	291.55	31.47	264.35	1784.26	2096.0	544.1	1860.9	535.1	1785.58
MEAN	42.9	29.9	12.4	9.40	1.12	8.53	59.5	67.6	18.1	60.0	17.3	59.5
MAX	150	144	108	59	15	79	158	160	105	144	153	153
MIN	1.5	.88	.02	.03	.38	.09	.24	2.3	1.1	1.0	1.3	.98
AC-FT	2640	1780	763	578	62	524	3540	4160	1080	3690	1060	3540

CAL YR 1982	TOTAL	15647.07	MEAN	42.9	MAX	156	MIN	.02	AC-FT	31040
WTR YR 1983	TOTAL	11804.97	MEAN	32.3	MAX	160	MIN	.02	AC-FT	23420

16592000 LOWRIE DITCH AT HONOPOU GULCH, NEAR HUELO

LOCATION.--Lat 20°54'57", long 156°15'08", Hydrologic Unit 20020000, on left bank 0.2 mi downstream from siphon across Honopou Stream, 1.6 mi west of Huelo, and 2.7 mi northwest of Kailua.

PERIOD OF RECORD.--January 1910 to March 1927, February 1930 to current year. Published as "at Opana weir, near Huelo" 1910-27.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 598.0 ft above mean sea level. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 mi downstream at different datum.

REMARKS.--Records good. Lowrie ditch receives water from Center ditch at Nailiilihaele Stream and diverts from additional stream westward to Maliko Gulch for irrigation in central Maui. Ditch flow regulated at times. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--69 years (water years 1911-26, 1931-83), 36.6 ft^3/s (26,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 116 ft^3/s Oct. 31, 1921; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 93 ft^3/s Apr. 28; minimum daily, 0.97 ft^3/s Jan. 2.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	9.3	26	1.0	15	3.9	4.7	81	71	12	23	12
2	92	12	24	.97	14	3.8	4.8	81	59	13	35	8.5
3	72	15	14	6.5	14	3.8	4.7	81	28	12	24	9.0
4	51	28	7.1	17	9.9	3.6	4.3	85	30	34	33	7.8
5	78	18	6.8	28	6.8	3.5	4.1	70	27	26	22	7.9
6	58	14	7.0	17	6.6	3.3	5.8	34	20	72	22	7.6
7	30	10	17	22	6.2	3.2	11	82	24	60	23	7.9
8	29	18	17	12	11	3.2	13	78	36	36	22	19
9	38	26	10	11	7.1	3.2	8.3	47	29	19	22	12
10	25	13	7.5	15	6.1	3.1	6.0	26	43	40	18	10
11	69	9.3	10	30	5.8	2.9	4.8	23	23	61	15	12
12	48	22	62	24	5.6	11	4.5	24	23	45	81	30
13	77	85	68	18	5.5	39	4.0	27	22	36	41	76
14	33	59	22	16	6.3	15	3.6	20	25	37	21	24
15	24	66	21	10	5.6	16	45	13	15	45	22	24
16	22	44	20	9.4	6.1	14	28	15	14	29	25	26
17	20	15	17	10	7.3	11	56	33	16	37	22	90
18	32	19	90	15	5.5	12	31	22	14	71	23	85
19	35	21	46	15	5.1	25	29	24	14	47	15	60
20	32	16	3.0	14	4.9	15	58	27	14	28	10	23
21	33	17	9.3	13	4.7	13	54	89	17	29	11	21
22	43	16	25	8.7	5.1	11	84	78	19	26	13	29
23	25	14	17	32	6.3	8.1	49	45	22	24	14	39
24	15	49	3.0	16	5.1	8.4	77	35	23	22	16	22
25	12	23	2.1	13	4.5	8.9	38	61	21	24	14	59
26	23	7.5	2.0	14	4.8	8.8	32	74	16	20	13	78
27	22	7.4	2.0	13	4.3	8.7	49	73	12	22	12	58
28	13	8.4	1.7	10	4.1	7.6	93	31	21	31	12	58
29	11	26	1.5	7.9	---	5.3	90	24	20	25	18	80
30	10	21	1.1	11	---	4.9	79	23	17	30	20	80
31	9.6	---	1.0	14	---	4.8	---	54	---	25	17	---
TOTAL	1126.6	708.9	561.1	444.47	193.3	285.0	975.6	1480	735	1038	679	1075.7
MEAN	36.3	23.6	18.1	14.3	6.90	9.19	32.5	47.7	24.5	33.5	21.9	35.9
MAX	92	85	90	32	15	39	93	89	71	72	81	90
MIN	9.6	7.4	1.0	.97	4.1	2.9	3.6	13	12	12	10	7.6
AC-FT	2230	1410	1110	882	383	565	1940	2940	1460	2060	1350	2130

CAL YR 1982	TOTAL	10385.16	MEAN	28.5	MAX	99	MIN	.83	AC-FT	20600
WTR YR 1983	TOTAL	9302.67	MEAN	25.5	MAX	93	MIN	.97	AC-FT	18450

16594000 HAIKU DITCH AT HONOPOU GULCH, NEAR KAILUA

LOCATION.--Lat 20°55'07", long 156°14'58", Hydrologic Unit 20020000, on right bank on west side of Honopou Gulch, 160 ft below new Government Road, 2.5 mi northwest of Kailua, and 5.0 mi east of Haiku.

PERIOD OF RECORD.--January 1910 to December 1928, February 1930 to current year. Published as "at Peahi weir, near Huelo" prior to July 1919, as "at Manawai Gulch, near Peahi" July 1919 to December 1928, and as "at Kapalalaea Gulch, near Huelo" February 1930 to January 1940. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 421.54 ft above mean sea level. Prior to Oct. 7, 1914, at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, at site 2.9 mi downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, at site 0.9 mi downstream at different datum.

REMARKS.--Records good. Ditch diverts from all streams between Naililihaele Stream and Maliko Gulch for irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--68 years (water years 1911, 1914, 1916-28, 1931-83), 24.4 ft³/s (17,680 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 209 ft³/s Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 99 ft³/s Apr. 28; minimum daily, 0.08 ft³/s Oct. 27, 28.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	.63	.94	3.5	1.4	.80	1.0	96	41	1.2	1.8	1.2
2	93	.65	.91	3.5	1.3	.79	1.1	91	22	1.4	3.3	1.2
3	44	.62	.87	3.5	1.3	.78	1.0	86	2.6	1.4	2.9	1.2
4	28	.78	.84	3.5	1.2	.75	.95	78	2.7	2.4	4.5	1.1
5	51	.87	.79	3.6	1.2	.75	.85	31	2.3	10	2.2	1.1
6	26	.98	.78	3.4	1.1	.75	.98	5.0	1.0	60	1.9	1.1
7	3.3	.77	1.3	3.3	1.1	.72	.95	63	.21	47	1.8	1.2
8	2.4	.64	1.1	3.1	1.1	.74	.92	41	.18	7.8	1.7	1.3
9	2.6	.69	1.1	2.6	1.1	.73	.84	5.4	1.6	2.2	1.7	1.1
10	2.5	.86	1.1	2.3	1.1	.71	.82	4.0	21	3.8	1.6	1.1
11	43	.64	1.2	2.4	1.0	.70	.83	3.7	2.2	33	1.6	1.1
12	13	3.3	35	2.3	1.0	2.8	.79	3.3	1.8	2.4	79	2.3
13	65	81	43	1.9	1.0	5.8	.78	3.1	1.8	2.0	18	76
14	3.2	25	2.3	2.0	1.0	2.0	.73	2.8	1.9	1.9	1.9	2.0
15	2.7	39	1.5	1.8	1.0	1.7	28	2.5	1.7	3.5	1.7	1.5
16	2.4	2.7	1.4	1.8	1.1	1.4	1.3	2.2	1.7	1.8	1.9	2.1
17	2.3	1.5	1.6	1.7	1.1	1.5	18	2.7	1.6	2.0	1.9	93
18	2.2	1.4	73	1.7	1.0	1.7	1.3	2.9	1.5	57	1.9	74
19	2.2	1.3	20	1.6	.99	1.6	1.1	2.1	1.6	19	1.8	23
20	2.2	1.3	49	1.6	1.0	1.3	53	1.9	1.6	2.4	1.7	1.7
21	2.3	1.5	31	1.5	.94	1.2	23	83	1.9	2.1	1.9	1.5
22	3.7	1.3	.26	1.5	1.0	1.1	89	49	1.6	2.0	1.6	7.7
23	2.1	1.3	26	2.8	1.1	1.1	13	4.1	1.6	2.0	1.5	8.8
24	1.3	16	3.9	1.5	.99	1.1	64	3.5	1.6	2.0	1.9	1.3
25	.45	4.1	3.8	1.4	.97	1.1	2.0	25	1.5	2.1	1.6	53
26	.20	1.2	3.8	1.3	.97	1.0	1.5	61	1.5	1.8	1.6	64
27	.08	1.0	3.8	1.3	.84	.98	15	42	1.3	1.9	1.5	3.4
28	.08	1.0	3.8	1.3	.83	.95	99	3.0	1.3	2.0	1.4	4.9
29	.30	2.0	3.8	1.3	---	.92	98	2.8	1.3	1.9	1.4	62
30	.34	1.1	3.6	1.7	---	.94	93	2.4	1.3	2.3	1.5	83
31	.40	---	3.6	1.6	---	1.0	---	34	---	1.8	1.3	---
TOTAL	421.25	195.13	325.09	68.3	29.73	39.41	612.74	837.4	126.89	284.1	152.0	577.9
MEAN	13.6	6.50	10.5	2.20	1.06	1.27	20.4	27.0	4.23	9.16	4.90	19.3
MAX	93	81	73	3.6	1.4	5.8	99	96	41	60	79	93
MIN	.08	.62	.26	1.3	.83	.70	.73	1.9	.18	1.2	1.3	1.1
AC-FT	836	387	645	135	59	78	1220	1660	252	564	301	1150

CAL YR 1982	TOTAL	7920.75	MEAN	21.7	MAX	110	MIN	.06	AC-FT	15710
WTR YR 1983	TOTAL	3669.94	MEAN	10.1	MAX	99	MIN	.08	AC-FT	7280

16599500 OPANA TUNNEL AT KAILIILI

LOCATION.--Lat 20°51'04", long 156°16'17", Hydrologic Unit 20020000, on left bank at tunnel outlet, 0.3 mi north of Kailiili, and 2.7 mi east of Makawao.

PERIOD OF RECORD.--May 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,340 ft, from topographic map.

REMARKS.--Records fair. Tunnel diverts from Opana Gulch for domestic use in the Kokomo, Makawao and Pukalani areas. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--18 years, 3.08 ft³/s (2,230 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18 ft³/s Mar. 31, 1982; minimum daily, 0.11 ft³/s Nov. 5-10, 1973, Oct. 5, 6, 25, 26, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 11 ft³/s Dec. 19, minimum daily, 0.28 ft³/s Mar. 8-11, Apr. 2, 3, 5.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	1.6	1.8	3.5	1.7	.36	.31	9.0	6.2	.37	1.3	.71
2	9.7	1.5	1.7	3.3	1.2	.35	.28	8.9	4.9	.58	1.8	.69
3	7.2	1.4	1.6	3.1	1.0	.32	.28	7.9	3.6	.80	2.4	.72
4	5.1	1.4	1.6	3.0	.92	.32	.29	7.8	3.1	1.1	3.2	.67
5	4.3	1.3	1.5	2.8	.85	.32	.28	6.2	2.7	2.3	2.2	.69
6	4.1	1.6	1.4	2.6	.79	.32	.33	5.5	2.5	6.0	2.0	.79
7	3.3	1.4	1.7	2.4	.75	.32	.77	7.9	2.3	4.9	1.9	.78
8	3.0	1.2	1.5	2.3	.71	.28	1.1	5.9	2.7	3.2	1.9	1.7
9	3.4	1.1	1.4	2.2	.68	.28	.96	4.9	2.3	2.3	1.4	1.1
10	3.1	1.1	1.3	2.1	.64	.28	.56	4.0	2.7	2.5	1.2	.97
11	4.1	1.1	1.4	2.0	.62	.28	.42	3.5	2.4	2.6	1.4	1.4
12	4.7	2.3	2.1	2.0	.58	.40	.35	3.1	2.1	2.3	8.4	2.7
13	5.6	8.4	3.1	1.9	.58	.85	.31	2.8	1.9	2.1	4.7	5.9
14	3.7	6.6	1.9	2.7	.53	.76	.28	2.6	1.9	2.9	2.7	2.5
15	2.9	5.6	1.5	2.1	.52	.91	.52	2.4	1.8	3.0	2.1	1.9
16	2.6	3.7	1.4	1.8	.63	.46	.60	2.3	1.6	2.1	1.8	2.3
17	2.3	2.6	1.6	1.7	.75	.49	3.4	2.4	1.5	1.8	1.6	10
18	2.3	2.2	10	1.6	.56	.99	1.9	2.6	1.4	3.5	1.5	8.1
19	2.2	1.9	11	1.5	.52	1.6	1.1	2.4	1.3	2.5	1.3	4.1
20	2.0	1.8	8.0	1.4	.46	.81	4.7	2.2	1.2	1.8	1.2	2.7
21	2.1	2.3	5.9	1.4	.46	.50	6.2	4.4	1.1	1.5	1.2	2.2
22	2.3	2.2	5.4	1.3	.44	.39	9.1	4.2	1.6	1.5	1.1	1.9
23	1.9	1.9	5.4	1.3	.42	.52	5.4	3.2	2.3	1.4	1.1	1.8
24	1.8	9.3	10	1.2	.41	.46	3.6	3.1	2.0	1.3	1.1	1.7
25	1.6	6.1	7.4	1.2	.41	.71	2.3	6.8	1.4	1.4	1.0	3.7
26	1.6	3.7	5.9	1.2	.36	.69	1.8	8.0	.99	1.4	.99	4.0
27	4.3	2.6	5.2	1.2	.36	.48	3.9	5.3	.70	1.5	.90	2.4
28	3.6	2.2	5.0	1.1	.36	.40	9.0	3.9	.48	1.4	.98	2.2
29	2.4	2.5	5.0	1.0	---	.37	9.0	3.3	.37	1.4	.93	3.2
30	1.9	2.1	4.3	1.2	---	.34	8.6	2.9	.40	1.6	.87	6.3
31	1.7	---	3.8	1.3	---	.32	---	5.2	---	1.4	.78	---
TOTAL	106.0	84.7	120.8	59.4	18.21	15.88	77.64	144.6	61.44	64.45	56.95	79.82
MEAN	3.42	2.82	3.90	1.92	.65	.51	2.59	4.66	2.05	2.08	1.84	2.66
MAX	9.7	9.3	11	3.5	1.7	1.6	9.1	9.0	6.2	6.0	8.4	10
MIN	1.6	1.1	1.3	1.0	.36	.28	.28	2.2	.37	.37	.78	.67
AC-FT	210	168	240	118	36	31	154	287	122	128	113	158

CAL YR 1982	TOTAL	1782.48	MEAN	4.88	MAX	18	MIN	.79	AC-FT	3540
WTR YR 1983	TOTAL	889.89	MEAN	2.44	MAX	11	MIN	.28	AC-FT	1770

16618000 KAHAKULOA STREAM NEAR HONOKOHAU
(National stream-quality accounting network station)

LOCATION.--Lat 20°58'54", long 156°33'26", Hydrologic Unit 20020000, on right bank 0.5 mi downstream from Kapuna Stream, 1.3 mi south of Kahakuloa, 2.0 mi west of Puu Makawana, and 4.3 mi southeast of Honokohau.

DRAINAGE AREA.--3.47 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1939 to August 1943, September 1947 to November 1970, December 1974 to current year. Records for January 1913 to December 1914 (fragmentary) at site 1.0 mi upstream not equivalent owing to difference in drainage areas.

REVISED RECORDS.--WSP 1319: 1948, 1949(M). WSP 1569: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 330 ft, from topographic map.

REMARKS.--Records good. No diversion above station.

AVERAGE DISCHARGE.--34 years (1940-42, 1948-70, 1976-83), 17.2 ft³/s (12,460 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,800 ft³/s Nov. 25, 1970, gage height, 10.57 ft from flood-marks, from rating curve extended above 510 ft³/s, on basis of slope-area measurements at gage heights 6.70 ft, 8.48 ft and 10.57 ft; minimum, 3.0 ft³/s Feb. 9-11, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 456 ft³/s Dec. 29, gage height, 5.05 ft, no peak above base of 500 ft³/s; minimum, 5.0 ft³/s Sept. 2.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	7.9	8.3	10	8.0	6.1	5.8	10	12	5.7	11	5.3
2	31	7.7	7.6	9.6	6.8	6.0	5.7	17	26	8.2	36	5.2
3	13	7.5	7.5	9.0	6.6	5.8	7.6	9.1	7.6	9.5	19	8.0
4	11	7.5	7.2	12	6.5	5.8	8.8	18	6.8	8.0	13	5.4
5	17	7.7	7.3	9.2	6.5	5.8	17	9.6	9.1	9.6	11	5.8
6	9.8	13	6.9	8.5	6.4	5.8	10	15	7.1	20	7.4	7.1
7	9.9	8.2	13	8.4	6.4	5.7	6.4	131	6.8	12	7.6	8.8
8	22	7.4	7.4	8.1	6.4	5.7	18	24	12	11	7.0	16
9	20	7.2	6.9	7.8	6.2	5.7	7.3	11	7.3	8.2	6.2	6.1
10	10	7.1	8.9	7.7	6.2	5.7	6.2	8.2	15	7.1	5.8	6.0
11	25	7.1	58	7.6	6.2	5.7	6.0	8.5	10	8.6	7.9	7.2
12	39	14	125	8.4	6.2	12	5.9	7.4	7.9	7.7	18	16
13	37	22	34	8.5	6.1	24	6.0	7.1	6.9	8.3	7.5	33
14	11	10	12	27	6.0	15	5.7	7.5	19	9.0	6.1	8.5
15	9.5	12	9.0	8.2	6.0	12	16	6.8	7.7	7.1	5.7	10
16	8.8	13	8.8	7.6	6.2	8.9	7.5	7.5	7.5	6.3	15	29
17	8.3	8.1	15	7.4	6.4	14	18	20	8.6	25	8.5	67
18	9.6	7.5	105	7.4	6.0	35	6.9	11	7.1	28	7.1	19
19	9.3	7.2	17	7.1	6.0	18	8.8	7.7	6.8	14	6.0	16
20	8.0	7.1	9.9	7.1	6.0	7.7	8.4	6.6	10	7.8	5.6	40
21	51	8.4	25	6.9	5.8	6.8	8.3	109	7.8	6.5	6.4	16
22	23	8.2	55	7.0	7.8	6.4	14	18	11	6.2	8.2	30
23	9.4	54	44	24	9.4	17	9.3	9.3	7.1	6.2	5.6	13
24	8.3	63	71	7.9	6.6	10	22	13	8.7	6.5	32	8.5
25	8.0	13	41	7.1	6.0	9.3	8.7	8.5	8.8	9.4	7.1	19
26	7.8	8.7	81	7.0	17	7.3	12	10	7.5	8.7	11	28
27	44	8.7	20	8.6	7.0	6.7	11	25	7.2	18	7.0	16
28	18	8.3	70	8.6	6.7	6.6	20	9.0	6.2	24	6.1	16
29	11	22	95	7.0	---	6.2	18	12	5.9	9.1	5.9	18
30	9.3	12	15	12	---	6.0	9.7	8.6	5.8	9.3	5.9	28
31	8.2	---	12	8.7	---	5.8	---	8.0	---	7.0	5.5	---
TOTAL	537.2	395.5	1003.7	291.4	193.4	298.5	315.0	573.4	277.2	332.0	312.1	511.9
MEAN	17.3	13.2	32.4	9.40	6.91	9.63	10.5	18.5	9.24	10.7	10.1	17.1
MAX	51	63	125	27	17	35	22	131	26	28	36	67
MIN	7.8	7.1	6.9	6.9	5.8	5.7	5.7	6.6	5.8	5.7	5.5	5.2
AC-FT	1070	784	1990	578	384	592	625	1140	550	659	619	1020

CAL YR 1982	TOTAL	10194.0	MEAN	27.9	MAX	383	MIN	5.9	AC-FT	20220
WTR YR 1983	TOTAL	5041.3	MEAN	13.8	MAX	131	MIN	5.2	AC-FT	10000

HAWAII, ISLAND OF MAUI

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT											
12...	1300	11	71	7.2	20.0	8.0	9.2	102	35	5100	18
DEC											
13...	1200	21	43	7.2	19.5	5.5	9.2	101	51	2700	10
FEB											
01...	1330	6.8	83	7.5	18.5	.90	9.5	102	5	810	22
APR											
04...	1400	7.5	80	6.6	21.0	.80	9.3	106	59	1000	21
JUN											
27...	1330	7.0	76	6.5	23.0	.60	8.8	103	20	650	19
AUG											
08...	1315	6.7	72	7.3	22.0	.50	8.5	98	6	1200	19

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT										
12...	0	3.7	2.2	7.0	44	.7	.9	21	6.0	10
DEC										
13...	0	2.0	1.3	5.5	52	.8	.7	13	6.0	6.6
FEB										
01...	0	4.5	2.7	7.5	41	.7	.9	26	<5.0	10
APR										
04...	0	4.1	2.5	7.7	44	.8	.9	27	3.0	10
JUN										
27...	0	3.7	2.3	7.2	44	.7	.9	24	2.0	9.6
AUG										
08...	0	3.7	2.4	7.2	44	.7	.9	23	2.6	9.6

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT											
12...	<.10	17	58	60	.08	.12	.080	.50	.040	.040	.010
DEC											
13...	<.10	10	45	40	.06	.15	.090	1.60	.050	.050	<.010
FEB											
01...	<.10	20	63	--	.09	.17	.060	.50	.030	.040	.030
APR											
04...	<.10	20	55	65	.08	.11	.110	.30	.020	.030	.040
JUN											
27...	<.10	18	52	58	.07	<.10	<.060	.30	.020	.030	.050
AUG											
08...	<.10	18	54	59	.07	<.10	.080	1.00	.070	.040	.040

< Actual value is known to be less than the value shown.

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT 12...	1300	60	1	7	1	<1	<1	<3	3	41	<1
FEB 01...	1330	10	1	8	<1	<1	<1	<3	5	16	<1
APR 04...	1400	20	<1	5	<1	<1	<1	<3	5	19	4
AUG 08...	1315	40	<1	8	<1	<1	<1	<3	5	21	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT 12...	<4	<1	.2	<10	<1	<1	<1	23	<6.0	<3
FEB 01...	6	2	<.1	<10	<1	<1	<1	27	<6.0	5
APR 04...	8	3	<.1	<10	2	<1	<1	26	<6.0	5
AUG 08...	6	4	<.1	<10	<1	<1	<1	26	<6.0	5

DATE	TIME	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 12...	1300	0	.00	100
DEC 13...	1200	6	.34	100
FEB 01...	1330	0	.00	100
APR 04...	1400	0	.00	100
JUN 27...	1330	2	.04	100
AUG 08...	1315	2	.04	100

< Actual value is known to be less than the value shown.

16620000 HONOKOHAU STREAM NEAR HONOKOHAU

LOCATION.--Lat 20°57'48", long 156°35'22", Hydrologic Unit 20020000, on right bank 1,000 ft upstream from intake of Honokohau ditch and 4.1 mi southeast of Honokohau.

DRAINAGE AREA.--4.11 mi².

PERIOD OF RECORD.--September, November, and December 1911 (combined flow of stream and ditch below point of diversion), March 1913 to September 1920, May 1922 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1937: Drainage area. WDR HI-79-1: 1927-48(M), 1949-78(P).

GAGE.--Water-stage recorder and masonry control. Altitude of gage is 870 ft, from topographic map. Prior to Mar. 7, 1913, nonrecording gage at site just below Honokohau ditch intake at different datum.

REMARKS.--Records good. No diversion above station. All medium and low flow, together with the inflow from two development tunnels below station, is diverted into Honokohau ditch. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--67 years (water years 1914-19, 1923-83) 39.5 ft³/s (28,620 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,120 ft³/s revised, Dec. 14, 1942, gage height, 8.40 ft from rating curve extended above 547 ft³/s, on basis of slope-area measurement at gage height 6.76 ft; minimum, 8.4 ft³/s May 1, 1945, Jan. 5, 1946.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,500 ft³/s Nov. 23, gage height, 5.56 ft, no other peak above base of 1,100 ft³/s; minimum, 14 ft³/s Apr. 10-15, Sept. 4, 5.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	24	22	21	21	16	15	38	61	15	31	15
2	77	23	21	21	18	16	15	56	50	35	54	15
3	33	23	21	21	18	16	17	38	18	32	29	20
4	51	23	20	24	18	16	15	122	79	26	53	14
5	64	28	20	22	18	16	22	29	68	53	26	17
6	33	65	20	21	17	15	17	45	26	46	22	19
7	35	24	29	20	17	15	15	190	17	30	22	44
8	61	23	20	20	17	15	17	56	40	35	19	41
9	64	22	20	20	17	15	15	24	26	22	16	16
10	42	22	22	20	17	15	14	20	66	30	15	17
11	79	23	64	20	17	15	14	39	27	42	25	26
12	78	62	167	20	17	16	14	21	20	30	88	50
13	84	79	63	19	17	18	14	48	35	25	19	59
14	32	40	24	29	17	18	14	25	45	34	16	20
15	28	37	21	20	17	20	44	21	18	18	16	23
16	33	36	22	19	17	20	32	23	23	17	55	53
17	28	23	48	19	17	27	56	68	23	30	24	169
18	47	22	280	19	17	52	17	20	18	66	22	104
19	28	22	38	19	17	32	22	17	18	43	17	21
20	25	22	25	19	17	16	56	18	24	18	15	19
21	54	23	60	19	16	15	33	77	20	16	18	48
22	44	22	70	18	17	15	57	24	29	17	23	39
23	29	104	86	20	17	36	48	17	18	20	18	19
24	25	94	102	18	16	22	96	21	25	20	62	17
25	24	26	34	19	16	21	22	22	21	30	18	47
26	24	22	43	18	18	17	28	30	30	26	25	46
27	92	23	28	19	16	18	36	27	17	39	19	61
28	43	23	60	19	16	17	82	17	15	37	21	46
29	26	58	88	18	---	16	58	18	15	21	16	75
30	24	30	24	20	---	15	25	17	16	24	18	103
31	24	---	22	21	---	15	---	24	---	18	15	---
TOTAL	1411	1068	1584	622	480	596	930	1212	908	915	837	1263
MEAN	45.5	35.6	51.1	20.1	17.1	19.2	31.0	39.1	30.3	29.5	27.0	42.1
MAX	92	104	280	29	21	52	96	190	79	66	88	169
MIN	24	22	20	18	16	15	14	17	15	15	15	14
AC-FT	2800	2120	3140	1230	952	1180	1840	2400	1800	1810	1660	2510

CAL YR 1982	TOTAL	22422	MEAN	61.4	MAX	612	MIN	16	AC-FT	44470
WTR YR 1983	TOTAL	11826	MEAN	32.4	MAX	280	MIN	14	AC-FT	23460

16638500 KAHOMA STREAM AT LAHAINA

LOCATION.--Lat 20°53'10", long 156°40'36", Hydrologic Unit 20020000, on right bank 0.2 mi west of Kelawea, 0.6 mi northeast of Lahaina, 0.6 mi downstream from Kanaha Stream, and 0.9 mi upstream from mouth.

DRAINAGE AREA.--5.22 mi².

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2137: 1963-65(P).

GAGE.--Water-stage recorder. Altitude of gage is 90 ft, from topographic map.

REMARKS.--Records fair. Diversion above station by Pioneer Mill Co. for irrigation of sugarcane. Diversion from Kanaha Stream above station by Maui County Board of Water Supply for domestic use. Recording rain gage located at station. Observation of specific conductance, pH, and water temperature made during the year is published elsewhere in this report.

AVERAGE DISCHARGE.--20 years (water years 1964-83), 3.53 ft³/s (2,560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,490 ft³/s July 11, 1965, gage height, 11.03 ft, from rating curve extended above 332 ft³/s on basis of slope-area measurements at gage heights 7.39 ft, 7.58 ft, 8.07 ft, 9.12 ft, and 11.03 ft; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 572 ft³/s Dec. 18, gage height, 7.17 ft, no peak above base of 590 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	.00	.00	.00	.00	.00	.00	.00	.97	.00	.00	.00
2	.27	.00	.00	.00	.00	.00	.00	3.2	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.26	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	1.9	.00	.00	.00	.00
5	.09	.00	.00	.00	.00	.00	.00	.00	.00	3.2	.00	.00
6	.00	.05	.00	.00	.00	.00	.00	.00	.00	1.7	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.61	.00	.00	.00	.50
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	17	.00	.00	.00	.00	.00	.00	.00	.00	11	.00
13	.66	22	3.0	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.42	.01
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	22
18	.00	.00	173	.00	.00	.00	.00	.00	.00	.00	.00	1.8
19	.00	.00	6.3	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	8.1	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	16	.00	.00	.00	.00	.00
23	.00	.00	33	.00	.00	.00	14	.00	.00	.00	.00	.00
24	.00	20	17	.00	.00	.00	7.9	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	5.3	.00	.00	.00	.00	.00	2.5	.00	.00	.00	.00	.00
29	.00	.00	.02	.00	---	.00	.42	.00	.00	.00	.00	.01
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	42.88	59.05	232.32	.00	.00	.00	48.99	5.97	.97	4.90	11.42	24.33
MEAN	1.38	1.97	7.49	.00	.00	.00	1.63	.19	.032	.16	.37	.81
MAX	36	22	173	.00	.00	.00	16	3.2	.97	3.2	11	22
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	85	117	461	.00	.00	.00	97	12	1.9	9.7	23	48

CAL YR 1982	TOTAL	2518.20	MEAN	6.90	MAX	262	MIN	.00	AC-FT	4990
WTR YR 1983	TOTAL	430.83	MEAN	1.18	MAX	173	MIN	.00	AC-FT	855

16700000 WAIAKEA STREAM NEAR MOUNTAIN VIEW

LOCATION.--Lat 19°38'30", long 155°10'28", Hydrologic Unit 20010000, on left bank 200 ft upstream from Olaa Flume Road, 7.3 mi northwest of Mountain View, and 8.0 mi southwest of Hilo Post Office.

DRAINAGE AREA.--17.4 mi².

PERIOD OF RECORD.--September 1930 to current year. Prior to July 1960, published as "at middle flume house, near Mountain View."

REVISED RECORDS.--WSP 2137: 1939(M), 1942(M), 1944-45(M), 1947(M), 1949(P), 1950-51(M), 1952-53(P), 1955(P), 1956(M), 1957-58(P), 1960(M).

GAGE.--Water-stage recorder and combined Parshall flume and concrete-weir control. Datum of gage is 1,934 ft above mean sea level (by stadia survey). Prior to Jan. 21, 1938, at datum 0.23 ft lower.

REMARKS.--Records good. No diversion above station. Large part of flow comes from 3 tunnels. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--53 years, 11.8 ft³/s (8,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 565 ft³/s Mar. 14, 1942, Aug. 26, 1970, from rating curve extended above 160 ft³/s; maximum gage height, 4.45 ft Aug. 26, 1970; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56 ft³/s June 4, gage height, 2.87 ft, no peak above base of 100 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	5.4	3.7	4.8	.28	.00	.00	9.3	9.0	6.2	5.1	10
2	11	5.1	3.4	4.6	.20	.00	.00	14	9.9	6.3	4.8	9.9
3	12	4.8	3.2	4.3	.20	.00	.00	16	9.0	6.4	4.7	9.4
4	11	4.5	3.1	4.1	.16	.00	.00	20	12	7.5	4.7	9.7
5	11	4.3	3.0	3.8	.12	.00	.00	23	13	7.3	4.4	9.3
6	11	4.0	2.9	3.6	.08	.00	.00	22	14	7.7	4.1	9.3
7	11	3.9	2.7	3.3	.05	.00	.00	24	14	8.9	4.0	8.7
8	11	3.6	2.4	3.2	.05	.00	.00	23	14	8.5	3.8	8.2
9	12	3.4	2.4	3.0	.05	.00	.00	24	14	8.7	3.6	7.8
10	11	3.3	2.1	2.8	.03	.00	.00	23	14	9.6	3.4	7.5
11	11	3.3	2.0	2.7	.03	.00	.00	21	14	9.8	3.3	7.8
12	13	4.8	1.8	2.4	.03	.00	.76	19	13	9.6	14	7.5
13	13	5.5	1.7	2.4	.03	.00	.28	17	13	9.7	12	11
14	12	5.7	1.6	2.0	.03	.00	.40	16	12	9.6	11	9.4
15	12	5.6	1.4	1.9	.03	.00	6.0	15	11	9.4	9.8	8.5
16	11	5.1	1.8	1.7	.01	.00	.95	14	10	9.2	9.4	7.5
17	11	4.8	1.5	1.6	.03	.00	2.3	13	9.9	8.7	9.4	11
18	10	4.7	7.5	1.5	.03	.00	1.3	13	9.2	8.2	9.4	18
19	9.6	4.5	8.3	1.4	.01	.00	.95	14	8.7	7.6	8.9	16
20	9.6	4.3	5.6	1.2	.00	.00	3.5	13	7.9	7.2	8.5	16
21	8.9	5.1	4.8	1.1	.00	.00	3.7	12	7.3	6.7	8.3	15
22	8.3	4.8	4.5	1.0	.00	.00	4.4	11	7.0	6.4	8.1	15
23	7.6	4.6	4.3	.95	.00	.00	5.0	10	6.7	6.2	7.7	14
24	7.2	4.5	4.2	.85	.00	.00	5.2	9.4	6.2	5.8	12	13
25	6.9	4.3	3.9	.80	.00	.00	4.6	8.8	5.7	5.8	11	13
26	6.7	4.1	6.7	.70	.00	.00	4.3	8.3	5.4	6.2	11	12
27	7.0	3.8	6.7	.60	.00	.00	4.1	7.7	5.1	6.3	9.9	13
28	6.9	3.7	6.1	.52	.00	.00	6.9	7.2	4.9	6.3	11	14
29	6.3	3.8	5.7	.44	---	.00	6.9	6.7	7.5	5.8	12	24
30	6.1	4.0	5.3	.40	---	.00	7.1	6.7	5.8	5.6	11	22
31	5.7	---	5.1	.32	---	.00	---	7.5	---	5.3	11	---
TOTAL	302.8	133.3	119.4	63.98	1.45	.00	68.64	448.6	293.2	232.5	251.3	357.5
MEAN	9.77	4.44	3.85	2.06	.052	.00	2.29	14.5	9.77	7.50	8.11	11.9
MAX	13	5.7	8.3	4.8	.28	.00	7.1	24	14	9.8	14	24
MIN	5.7	3.3	1.4	.32	.00	.00	.00	6.7	4.9	5.3	3.3	7.5
AC-FT	601	264	237	127	2.9	.00	136	890	582	461	498	709

CAL YR 1982	TOTAL	5359.75	MEAN	14.7	MAX	65	MIN	.65	AC-FT	10630
WTR YR 1983	TOTAL	2272.67	MEAN	6.23	MAX	24	MIN	.00	AC-FT	4510

16700900 OLAA FLUME SPRING NEAR KAUMANA

LOCATION.--Lat 19°41'59", long 155°11'13", Hydrologic Unit 20010000, on left bank 58 ft downstream from tunnel entrance, 3.3 mi northwest of Kaumana School, and 6.5 mi southwest of Hilo Post Office.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,970 ft, from topographic map.

REMARKS.--Records good. County of Hawaii, Department of Water Supply, diverts by 16 inch pipeline 50 ft above station for domestic use in the Kaumana and Piihonua areas since Oct. 2, 1978. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--9 years, 8.45 ft³/s (6,120 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 43 ft³/s Jan. 8, 1975; minimum daily, 0.02 ft³/s Mar. 24, 26-30, Apr. 1, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 14 ft³/s May 3; minimum daily, 0.02 ft³/s Mar. 24, 26-30, Apr. 1.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	.36	.15	.43	.13	.09	.02	11	2.8	2.9	2.6	4.4
2	3.7	.26	.11	.26	.11	.09	.03	13	2.9	3.2	2.3	3.3
3	3.5	.22	.09	.13	.15	.09	.03	14	2.7	3.3	2.3	2.5
4	4.9	.22	.07	.13	.13	.07	.04	13	2.9	3.9	2.3	1.9
5	4.6	.22	.07	.11	.13	.07	.04	12	7.7	4.9	2.3	1.5
6	4.2	.22	.07	.11	.13	.05	.04	13	12	3.9	2.3	1.4
7	3.9	.22	.07	.11	.13	.05	.07	12	12	5.8	2.3	1.4
8	3.9	.22	.09	.09	.13	.05	.05	12	11	7.3	2.3	1.3
9	4.4	.13	.09	.09	.13	.05	.05	12	9.0	6.2	2.3	1.3
10	5.6	.07	.09	.11	.13	.04	.05	12	7.7	5.4	2.4	1.3
11	5.3	.07	.09	.22	.13	.04	.05	11	6.0	6.2	1.5	1.3
12	4.4	.09	.09	.46	.13	.04	.07	9.5	4.8	6.0	1.6	1.4
13	5.3	.70	.09	.22	.11	.04	.07	7.5	3.7	4.4	11	1.4
14	6.4	2.9	.09	.11	.11	.04	.07	6.2	3.2	4.2	10	1.9
15	5.1	3.4	.10	.11	.11	.04	.13	5.3	2.8	3.8	9.7	1.7
16	3.9	1.9	.15	.11	.18	.04	3.1	4.2	2.7	3.1	7.3	1.6
17	3.2	2.3	.10	.11	.22	.04	2.8	3.5	2.6	2.6	5.3	1.6
18	2.8	2.5	2.0	.11	.26	.05	3.4	3.5	2.5	2.3	4.2	7.1
19	2.7	1.7	2.5	.13	.22	.05	2.2	5.4	2.5	2.5	3.9	10
20	2.2	1.0	1.5	.13	.18	.05	2.1	5.8	2.5	2.6	3.5	9.9
21	1.7	1.0	1.5	.13	.13	.04	3.2	4.9	2.5	2.6	2.6	9.2
22	1.3	2.9	2.0	.13	.11	.03	2.8	3.8	2.5	2.6	2.1	7.1
23	.80	2.5	.80	.13	.11	.03	4.9	3.3	2.5	2.6	1.9	5.6
24	.43	1.9	.46	.13	.11	.02	5.3	2.9	2.5	2.6	2.3	4.8
25	.26	.80	.43	.13	.11	.03	4.2	2.8	2.5	2.6	7.3	3.9
26	.26	.32	.29	.15	.11	.02	3.7	2.7	2.3	2.7	6.4	4.4
27	.22	.11	2.7	.18	.11	.02	3.3	2.6	2.3	2.8	5.6	5.1
28	.29	.05	2.7	.18	.11	.02	3.1	2.5	2.3	2.8	4.4	5.6
29	.15	.05	.70	.15	---	.02	6.6	2.5	2.5	2.8	6.4	8.8
30	.15	.07	1.0	.15	---	.02	8.6	2.5	3.2	2.7	6.9	10
31	.40	---	1.3	.18	---	.03	---	2.5	---	2.7	5.6	---
TOTAL	89.86	28.40	21.49	4.92	3.85	1.36	60.11	218.9	129.1	114.0	132.9	122.7
MEAN	2.90	.95	.69	.16	.14	.044	2.00	7.06	4.30	3.68	4.29	4.09
MAX	6.4	3.4	2.7	.46	.26	.09	8.6	14	12	7.3	11	10
MIN	.15	.05	.07	.09	.11	.02	.02	2.5	2.3	2.3	1.5	1.3
AC-FT	178	56	43	9.8	7.6	2.7	119	434	256	226	264	243

CAL YR 1982	TOTAL	2095.01	MEAN	5.74	MAX	18	MIN	.05	AC-FT	4160
WTR YR 1983	TOTAL	927.59	MEAN	2.54	MAX	14	MIN	.02	AC-FT	1840

16700950 LYMAN SPRINGS NO. 2 NEAR PIIHONUA

LOCATION.--Lat 19°42'02", long 155°10'36", Hydrologic Unit 20010000, on right bank 3 ft downstream from tunnel entrance, 2.7 mi southwest of Piihonua, and 5.8 mi southwest of Hilo Post Office.

PERIOD OF RECORD.--February 1981 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,700 ft, from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18 ft³/s Jan. 26, 1982; minimum daily, 0.03 ft³/s Mar. 23, 24, 31, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 10 ft³/s Sept. 29; minimum daily, 0.03 ft³/s Mar. 23, 24, 31.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	4.0	4.0	3.6	.86	.15	.20	7.6	4.9	5.0	4.5	5.0
2	5.5	3.9	3.8	3.6	.75	.13	.15	8.2	4.6	5.1	4.4	4.9
3	5.5	3.9	3.8	3.5	.70	.11	.15	7.6	4.6	5.0	4.1	4.8
4	5.0	3.9	3.6	3.5	.66	.11	.52	9.0	5.2	5.6	4.8	4.7
5	5.0	3.8	3.6	3.4	.65	.11	.38	8.5	6.2	5.0	4.4	4.6
6	5.0	3.8	3.5	3.4	.60	.09	.60	6.5	6.1	5.5	4.4	4.8
7	5.0	3.7	3.4	3.1	.57	.09	.87	7.4	5.6	5.6	4.2	4.5
8	5.0	3.6	3.3	2.9	.53	.09	.70	7.0	5.4	5.5	4.0	4.6
9	5.5	3.5	3.1	2.7	.52	.09	.60	7.4	5.3	5.3	3.9	4.7
10	5.0	4.2	3.1	4.4	.51	.07	.52	6.1	5.2	5.7	3.4	4.4
11	5.5	3.9	3.0	4.4	.47	.07	.47	5.8	5.1	5.5	3.2	4.9
12	5.5	4.8	2.9	3.6	.47	.07	.87	5.6	4.9	5.2	9.6	4.5
13	5.5	5.3	2.5	3.5	.43	.07	.76	5.4	4.8	5.5	5.9	5.8
14	5.5	5.8	2.2	3.4	.42	.07	1.0	5.6	4.8	5.3	5.4	4.7
15	5.5	5.0	2.0	3.3	.39	.07	6.7	5.2	4.7	5.2	5.2	4.6
16	5.0	4.4	2.1	3.0	.38	.05	4.2	5.1	4.5	5.0	5.1	4.4
17	5.0	4.2	2.3	2.8	.39	.05	5.6	4.9	4.4	4.8	5.1	6.6
18	5.0	4.3	4.4	2.5	.42	.05	4.7	5.7	4.2	4.6	5.3	9.3
19	4.5	4.2	4.5	2.2	.42	.04	4.5	5.6	4.2	4.5	5.0	6.2
20	4.5	4.4	3.9	1.7	.42	.04	5.7	5.3	4.2	4.5	4.9	5.8
21	4.5	5.4	3.8	1.5	.38	.04	5.1	5.1	4.2	4.7	4.8	5.6
22	4.5	4.7	3.8	1.3	.34	.04	6.5	4.9	4.2	4.5	4.7	5.5
23	4.2	4.5	3.6	1.3	.30	.03	6.0	4.8	4.3	4.5	4.8	5.4
24	4.1	4.3	3.8	1.3	.29	.03	5.6	4.7	3.9	4.5	7.2	5.3
25	4.1	4.2	3.6	1.1	.24	.14	5.2	4.7	3.9	4.6	5.3	5.7
26	4.1	4.0	6.5	1.0	.24	.11	5.1	4.4	3.8	5.1	5.1	5.6
27	4.4	4.0	5.1	1.1	.20	.09	5.1	4.4	3.5	5.2	5.0	6.5
28	4.1	3.9	4.4	1.2	.20	.07	6.1	4.4	4.2	5.0	5.8	6.4
29	4.0	4.1	4.2	1.1	---	.05	5.7	4.5	5.4	4.7	5.9	10
30	4.0	4.4	4.0	1.0	---	.04	6.1	4.7	4.5	4.6	5.3	7.1
31	4.0	---	3.9	.93	---	.03	---	5.3	---	4.7	5.1	---
TOTAL	149.5	128.1	111.7	77.33	12.75	2.29	95.69	181.4	140.8	155.5	155.8	166.9
MEAN	4.82	4.27	3.60	2.49	.46	.074	3.19	5.85	4.69	5.02	5.03	5.56
MAX	5.5	5.8	6.5	4.4	.86	.15	6.7	9.0	6.2	5.7	9.6	10
MIN	4.0	3.5	2.0	.93	.20	.03	.15	4.4	3.5	4.5	3.2	4.4
AC-FT	297	254	222	153	25	4.5	190	360	279	308	309	331

CAL YR 1982	TOTAL	2130.1	MEAN	5.84	MAX	18	MIN	2.0	AC-FT	4230
WTR YR 1983	TOTAL	1377.76	MEAN	3.77	MAX	10	MIN	.03	AC-FT	2730

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA

LOCATION.--Lat 19°42'56", long 155°09'12", Hydrologic Unit 20010000, on right bank 0.2 mi downstream from Hookelekele Stream, 0.9 mi west of Piihonua, and 4.1 mi west of Hilo Post Office. Prior to Nov. 16, 1977, at opposite site on left bank.

DRAINAGE AREA.--230 mi², of which 81 mi² probably is noncontributing.

PERIOD OF RECORD.--July 1928 to July 1940, October 1940 to December 1947, April 1948 to current year. Monthly discharge only July 1928, published in WSP 1319. Prior to July 1960, published as "above Hilo Boarding School ditch intake, near Hilo."

REVISED RECORDS.--WSP 865: 1929-36(M). WSP 965: 1941. WDR HI-80-1: 1929-79(P). WDR HI-81-1: 1940(M).

GAGE.--Water-stage recorder. Altitude of gage is 1,090 ft, from topographic map. Prior to Nov. 16, 1977, at opposite site on left bank at same datum.

REMARKS.--Records fair. Hawaii County Board of Water Supply diverts about 6 ft³/s above station for domestic supply. Kapehu ditch diverted from Kapehu Stream into Wailuku River above station 1938-63. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--52 years (water years 1929-39, 1942-47, 1949-83), 283 ft³/s (205,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,200 ft³/s, revised, Aug. 11, 1940, gage height, 28.6 ft, from floodmarks, from rating curve extended above 13,000 ft³/s; minimum, 0.15 ft³/s Jan. 20, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,900 ft³/s Aug. 12, gage height, 9.40 ft, no peak above base of 8,700 ft³/s; minimum, 0.22 ft³/s Mar. 20-23.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	47	62	46	1.5	.25	.47	660	197	122	45	93
2	161	47	40	40	1.1	.25	.37	1020	62	103	41	78
3	209	37	32	35	.94	.25	.36	765	60	105	40	71
4	148	34	28	33	.91	.25	.29	877	113	165	63	59
5	134	31	26	28	.81	.25	.29	714	382	120	40	57
6	149	29	23	24	.75	.25	.96	443	445	121	32	66
7	148	29	22	22	.71	.25	41	596	261	250	30	50
8	124	26	20	21	.54	.26	20	531	201	165	27	45
9	173	25	19	21	.46	.26	7.8	538	201	146	23	45
10	285	53	18	86	.44	.26	4.3	476	151	165	21	46
11	176	64	17	149	.42	.26	2.0	279	127	191	20	65
12	176	66	17	39	.40	.26	7.9	215	101	137	1040	57
13	379	260	16	28	.39	.26	12	171	84	144	554	131
14	227	230	15	24	.43	.26	4.5	156	82	127	282	81
15	171	197	14	22	.36	.26	376	128	68	111	178	58
16	133	116	20	19	.34	.25	105	104	56	88	128	48
17	115	85	25	17	.32	.24	123	92	53	76	99	107
18	116	70	203	16	.36	.23	81	134	49	66	116	1240
19	98	59	495	14	.35	.25	55	136	44	56	106	448
20	78	62	113	13	.34	.22	112	126	40	48	79	301
21	70	136	66	12	.32	.22	94	99	34	52	70	208
22	68	121	50	9.8	.32	.22	231	88	34	47	74	178
23	57	74	43	8.2	.34	.22	389	79	34	45	74	163
24	50	57	56	7.0	.44	.25	265	65	36	47	462	137
25	52	48	50	6.6	.32	.35	178	58	29	51	249	129
26	47	41	335	6.3	.27	.35	119	52	26	66	151	206
27	278	35	245	4.1	.26	.30	82	46	23	96	116	346
28	190	30	146	2.5	.26	.30	185	44	23	80	142	377
29	81	48	100	2.2	---	.32	225	42	172	63	214	1450
30	124	73	71	1.6	---	.28	298	40	78	52	149	715
31	62	---	56	1.4	---	.26	---	89	---	58	115	---
TOTAL	4459	2230	2443	758.7	14.40	8.09	3020.24	8863	3266	3163	4780	7055
MEAN	144	74.3	78.8	24.5	.51	.26	101	286	109	102	154	235
MAX	379	260	495	149	1.5	.35	389	1020	445	250	1040	1450
MIN	47	25	14	1.4	.26	.22	.29	40	23	45	20	45
AC-FT	8840	4420	4850	1500	29	16	5990	17580	6480	6270	9480	13990

CAL YR 1982	TOTAL 130822.3	MEAN 358	MAX 6000	MIN 4.3	AC-FT 259500
WTR YR 1983	TOTAL 40060.43	MEAN 110	MAX 1450	MIN .22	AC-FT 79460

16713000 WAILUKU RIVER AT HILO
(National stream-quality accounting network station)

LOCATION.--Lat 19°43'43", long 155°05'40", Hydrologic Unit 20010000, on right bank 500 ft upstream from Wailuku bridge and 0.2 mi west of Hilo Post Office.

DRAINAGE AREA.--256 mi², of which 81 mi² probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1977 to September 1979, June 1980 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 80 ft, from topographic map.

REMARKS.--Records good. Hilo Electric Light Co. diverts above station for Hydro-plant use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,500 ft³/s Nov. 17, 1979, gage height, 34.57 ft, from floodmarks and from rating curve extended above 6,840 ft³/s on basis of slope-area measurements at gage heights 23.30 ft and 34.57 ft; minimum, 4.6 ft³/s July 17, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,100 ft³/s Aug. 12, gage height, 10.45 ft, no peak above base of 9,500 ft³/s; minimum, 9.6 ft³/s Feb. 11.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	340	41	69	45	20	16	22	1100	153	202	30	139
2	310	37	27	36	18	16	22	1750	76	123	25	117
3	424	28	24	29	17	16	21	1350	51	134	26	88
4	289	30	62	27	16	15	20	1600	119	284	49	68
5	255	32	57	37	15	15	21	1350	554	175	26	73
6	280	27	52	30	14	15	21	910	702	171	22	89
7	280	26	51	24	14	14	127	1160	400	471	28	51
8	226	34	40	22	13	14	64	1040	301	268	25	44
9	340	53	38	23	12	14	40	950	301	235	27	44
10	560	100	32	110	11	14	26	900	212	268	44	58
11	346	157	30	354	10	14	23	572	171	346	43	99
12	325	131	32	32	19	13	32	452	116	220	2240	89
13	685	540	31	25	23	12	57	370	83	255	950	282
14	435	470	28	37	22	12	34	340	82	214	470	147
15	328	349	26	52	22	11	824	255	57	188	268	87
16	250	136	38	45	22	11	168	198	42	130	180	75
17	210	79	61	39	22	11	190	171	41	104	128	235
18	206	52	307	37	22	12	105	242	35	80	164	2290
19	166	32	971	30	20	13	39	255	28	65	148	830
20	117	71	186	28	20	12	157	214	24	52	85	568
21	93	231	79	25	19	13	162	164	24	53	74	414
22	98	175	42	24	19	18	399	134	30	50	88	352
23	70	73	24	21	18	17	710	110	42	46	83	322
24	63	54	45	26	21	18	488	81	33	52	738	250
25	69	38	45	29	19	18	280	66	23	56	438	230
26	58	26	581	27	17	19	190	58	20	93	250	414
27	297	23	533	26	17	20	141	52	24	147	177	636
28	347	23	295	24	17	19	369	45	27	112	226	673
29	91	87	166	22	---	19	463	41	395	71	428	2370
30	166	93	103	21	---	19	588	34	72	43	262	1110
31	67	---	66	20	---	18	---	115	---	46	186	---
TOTAL	7791	3248	4141	1327	499	468	5803	16079	4238	4754	7928	12244
MEAN	251	108	134	42.8	17.8	15.1	193	519	141	153	256	408
MAX	685	540	971	354	23	20	824	1750	702	471	2240	2370
MIN	58	23	24	20	10	11	20	34	20	43	22	44
AC-FT	15450	6440	8210	2630	990	928	11510	31890	8410	9430	15730	24290

CAL YR 1982	TOTAL	224964	MEAN	616	MAX	9510	MIN	19	AC-FT	446200
WTR YR 1983	TOTAL	68520	MEAN	188	MAX	2370	MIN	10	AC-FT	135900

16713000 WAILUKU RIVER AT HILO--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1977 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: March 1977 to September 1979. June 1980 to current year.

INSTRUMENTATION.--Automatic pumping sediment sampler since March 1977.

REMARKS.--In addition to the sediment sampler record, water-quality samples were collected at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 292 mg/L Sept. 21, 1980; minimum daily mean, 0 mg/L on several days in 1981, 1982, and 1983.
SEDIMENT DISCHARGE: Maximum daily, 14,100 tons Feb. 20, 1979; minimum daily, 0 ton on several days in 1981, 1982, and 1983.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 63 mg/L Aug. 12; minimum daily mean, 0 mg/L on several days in February and March.
SEDIMENT DISCHARGE: Maximum daily, 669 tons Aug. 12, minimum daily, 0 ton on several days in February and March.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT 25...	1000	64	68	7.3	18.5	1.0	9.3	100	62	430	23
DEC 13...	1000	30	69	7.8	19.5	.50	9.1	99	89	1400	26
FEB 22...	0945	19	85	7.2	20.5	.20	9.0	100	12	1400	34
APR 12...	0730	24	76	7.1	21.5	.60	8.8	100	48	1900	30
JUN 21...	0945	22	70	7.4	22.5	.60	8.6	100	58	600	26
AUG 16...	0945	196	43	6.8	21.0	1.0	8.9	101	120	880	15

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT 25...	0	4.6	2.7	3.6	25	.3	.5	26	<5.0	4.8
DEC 13...	0	5.2	3.1	4.0	25	.4	.6	31	<5.0	4.9
FEB 22...	0	6.6	4.3	4.8	23	.4	.6	37	3.0	6.3
APR 12...	0	5.9	3.7	4.2	23	.3	.6	34	3.7	5.1
JUN 21...	0	5.1	3.1	4.3	26	.4	.5	28	3.2	5.1
AUG 16...	0	2.9	1.8	2.8	29	.3	.4	17	3.0	3.6

< Actual value is known to be less than the value shown.

16713000 WAILUKU RIVER AT HILO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
OCT 25...	<.10	15	45	--	.06	.17	<.060	1.30	.020	.010	<.010
DEC 13...	<.10	15	46	--	.06	.16	<.060	<.10	.010	.010	<.010
FEB 22...	<.10	16	60	65	.08	.15	.150	.10	.290	.290	.290
APR 12...	<.10	15	45	59	.06	.16	.190	.30	.020	.010	.030
JUN 21...	<.10	16	52	55	.07	.20	.210	.60	.010	.010	.010
AUG 16...	<.10	11	27	36	.04	.14	.020	.40	<.010	.030	.010

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
DEC 13...	1000	20	<1	5	<1	<1	<1	<3	<1	19	<1
FEB 22...	0945	30	1	6	<1	<1	<1	<3	1	36	<1
JUN 21...	0945	20	26	6	1	<1	<1	<3	<1	31	2
AUG 16...	0945	40	<1	5	<1	<1	<1	<3	7	60	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
DEC 13...	6	<1	<.1	<10	<1	<1	<1	35	<6.0	<3
FEB 22...	12	3	<.1	<10	<1	<1	<1	43	<6.0	6
JUN 21...	<4	2	<.1	<10	2	<1	<1	33	<6.0	<3
AUG 16...	<4	5	<.1	<10	<1	<1	<1	21	<6.0	7

DATE	TIME	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 25...	1000	2	.35	100
DEC 13...	1000	2	.16	100
FEB 22...	0945	1	.05	--
APR 12...	0730	1	.06	100
JUN 21...	0945	0	.00	100
AUG 16...	0945	4	2.1	100

< Actual value is known to be less than the value shown.

16713000 WAILUKU RIVER AT HILO--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	57	52	54	---	---	---	60	56	58
2	---	---	---	62	57	60	---	---	---	64	60	62
3	---	---	---	64	61	62	---	---	---	67	63	65
4	---	---	---	67	64	65	---	---	---	69	66	67
5	---	---	---	68	66	67	---	---	---	70	69	70
6	---	---	---	68	66	67	---	---	---	70	67	68
7	---	---	---	69	66	67	---	---	---	70	67	68
8	---	---	---	70	68	69	---	---	---	71	68	70
9	---	---	---	70	64	67	---	---	---	73	71	72
10	---	---	---	65	62	64	---	---	---	76	61	73
11	---	---	---	63	60	61	---	---	---	59	41	44
12	---	---	---	---	---	---	---	---	---	54	44	48
13	---	---	---	---	---	---	---	---	---	59	51	55
14	---	---	---	---	---	---	71	69	70	67	60	63
15	---	---	---	---	---	---	72	69	70	65	55	59
16	---	---	---	---	---	---	78	69	71	61	56	58
17	---	---	---	---	---	---	75	67	69	64	60	62
18	---	---	---	---	---	---	68	29	64	69	63	65
19	---	---	---	---	---	---	23	20	21	69	66	67
20	---	---	---	---	---	---	31	24	28	73	68	69
21	---	---	---	---	---	---	39	31	36	73	69	70
22	---	---	---	---	---	---	47	39	43	72	70	71
23	---	---	---	---	---	---	53	47	51	74	72	73
24	---	---	---	---	---	---	58	53	56	74	73	74
25	---	---	---	---	---	---	56	51	53	74	73	74
26	---	---	---	---	---	---	55	27	45	74	72	73
27	67	43	61	---	---	---	33	26	29	75	73	74
28	39	32	34	---	---	---	40	33	36	76	73	75
29	42	35	38	---	---	---	45	39	43	76	74	75
30	44	39	42	---	---	---	51	46	48	77	74	75
31	51	44	48	---	---	---	56	51	53	77	75	76
MONTH	67	32	45	70	52	64	78	20	49	77	41	67
		FEBRUARY			MARCH			APRIL			MAY	
1	78	76	77	88	85	87	91	90	91	35	28	31
2	79	76	78	88	85	87	91	88	89	30	23	27
3	79	77	78	88	86	87	91	89	91	34	28	30
4	80	77	79	88	86	87	92	90	91	33	29	31
5	81	77	79	88	86	87	92	90	91	35	32	33
6	81	78	80	88	86	87	92	89	91	39	34	37
7	81	77	80	88	86	87	99	88	90	40	30	35
8	82	78	80	88	86	88	90	85	87	35	31	33
9	84	78	81	89	87	88	85	80	83	36	33	35
10	83	79	82	94	87	88	80	76	78	37	31	33
11	83	79	81	89	87	88	77	73	75	43	37	40
12	84	81	82	89	88	89	76	72	74	45	42	44
13	84	81	82	90	88	89	73	68	70	47	45	46
14	84	82	83	90	88	89	69	67	68	48	47	48
15	84	82	83	90	88	89	68	30	45	50	48	49
16	84	82	83	91	88	89	35	31	33	53	50	52
17	84	83	84	90	87	89	38	35	36	55	53	54
18	85	83	84	91	88	89	41	37	39	56	52	55
19	86	83	85	91	88	89	44	41	42	52	50	51
20	86	83	85	90	88	89	45	41	43	50	48	50
21	87	83	85	91	89	90	43	42	42	53	50	52
22	87	84	85	91	89	90	43	35	42	56	53	55
23	87	84	86	91	88	90	33	28	29	59	56	57
24	86	85	85	91	89	90	33	30	32	62	58	60
25	87	84	86	91	89	90	38	33	36	64	61	63
26	87	85	86	91	89	90	43	38	41	66	64	65
27	87	85	86	94	89	90	47	43	45	69	66	67
28	87	85	86	93	90	92	49	41	46	70	67	69
29	---	---	---	92	90	91	39	34	36	71	69	70
30	---	---	---	92	90	91	36	34	35	73	70	71
31	---	---	---	92	90	91	---	---	---	74	62	69
MONTH	87	76	83	94	85	89	99	28	60	74	23	49

16713000 WAILUKU RIVER AT HILO--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	63	56	60	48	41	44	63	61	62	51	46	49
2	60	58	59	46	43	45	67	63	65	54	51	53
3	63	59	61	46	43	44	72	67	69	57	54	56
4	63	57	60	46	43	44	73	70	72	61	57	59
5	54	31	46	44	43	43	69	65	67	62	59	61
6	30	26	27	45	42	43	69	66	67	62	60	62
7	36	29	33	45	36	41	74	69	72	63	60	62
8	41	36	39	39	35	37	75	73	74	68	63	66
9	42	40	41	43	38	41	74	72	73	72	67	69
10	44	42	43	45	43	44	73	70	72	76	68	70
11	47	43	45	44	41	43	69	67	68	76	65	69
12	50	47	49	44	41	42	69	14	39	76	63	69
13	54	50	52	47	44	46	28	16	22	73	53	61
14	59	53	56	49	48	49	35	28	32	63	52	57
15	65	56	59	51	48	49	41	35	38	62	56	58
16	63	59	61	54	50	52	46	41	44	75	58	64
17	65	63	64	56	53	55	50	46	48	81	58	69
18	66	64	65	59	56	58	52	50	51	47	16	23
19	68	65	67	62	59	61	53	50	52	37	27	32
20	71	67	69	64	62	63	55	52	53	41	37	39
21	73	70	71	66	63	65	57	55	56	46	41	44
22	75	73	74	66	64	65	57	56	56	48	45	47
23	74	70	72	68	65	66	59	56	58	49	47	48
24	70	68	69	68	67	67	58	25	44	54	48	50
25	70	68	69	68	66	67	33	25	29	55	51	53
26	73	70	71	68	62	65	41	33	37	51	45	47
27	75	72	74	62	56	59	46	41	44	47	35	40
28	78	75	76	56	54	55	49	46	48	39	32	35
29	76	46	58	56	54	55	47	39	43	37	18	22
30	48	45	46	60	56	58	42	39	40	33	21	28
31	---	---	---	63	60	62	47	42	44	---	---	---
MONTH	78	26	58	68	35	53	75	14	53	81	16	52
YEAR	99	14	61									

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	22.5	21.5	22.0	---	---	---	20.0	19.5	20.0
2	---	---	---	23.0	21.5	22.0	---	---	---	20.5	19.5	20.0
3	---	---	---	23.0	21.5	22.0	---	---	---	20.5	19.5	20.0
4	---	---	---	22.5	21.5	22.0	---	---	---	21.0	20.0	20.5
5	---	---	---	22.5	21.5	21.5	---	---	---	21.0	20.0	20.5
6	---	---	---	22.5	21.0	21.5	---	---	---	20.5	19.5	20.0
7	---	---	---	22.5	21.0	21.5	---	---	---	20.5	19.5	20.0
8	---	---	---	22.0	21.0	21.5	---	---	---	20.5	19.5	20.0
9	---	---	---	22.0	21.0	21.5	---	---	---	21.0	19.5	20.0
10	---	---	---	21.5	21.0	21.0	---	---	---	20.5	19.5	20.0
11	---	---	---	21.0	20.5	20.5	---	---	---	19.5	19.0	19.0
12	---	---	---	---	---	---	---	---	---	20.5	19.0	19.5
13	---	---	---	---	---	---	---	---	---	20.5	19.0	19.5
14	---	---	---	---	---	---	21.0	20.0	20.5	21.0	19.5	20.0
15	---	---	---	---	---	---	21.0	20.0	20.5	20.5	19.5	20.0
16	---	---	---	---	---	---	20.5	20.0	20.0	20.0	19.0	19.5
17	---	---	---	---	---	---	20.5	19.5	20.0	20.0	19.0	19.5
18	---	---	---	---	---	---	20.5	18.5	20.0	20.0	19.5	19.5
19	---	---	---	---	---	---	18.5	18.0	18.0	20.5	19.5	19.5
20	---	---	---	---	---	---	18.0	18.0	18.0	20.5	19.0	19.5
21	---	---	---	---	---	---	18.5	18.0	18.5	20.5	19.0	19.5
22	---	---	---	---	---	---	19.5	18.5	19.0	20.5	19.0	19.5
23	---	---	---	---	---	---	19.5	19.0	19.5	20.5	19.0	20.0
24	---	---	---	---	---	---	20.0	19.5	19.5	20.5	19.0	19.5
25	---	---	---	---	---	---	20.0	19.5	20.0	20.5	19.0	20.0
26	---	---	---	---	---	---	20.0	20.0	20.0	20.0	19.5	20.0
27	22.0	21.0	21.5	---	---	---	20.0	19.5	20.0	20.5	19.5	20.0
28	21.0	20.5	21.0	---	---	---	20.5	20.0	20.0	20.5	19.5	20.0
29	21.5	21.0	21.5	---	---	---	20.0	19.5	20.0	20.5	19.0	20.0
30	22.0	21.5	22.0	---	---	---	20.0	19.5	19.5	20.5	19.0	19.5
31	22.5	21.5	22.0	---	---	---	20.0	19.5	19.5	20.5	19.5	19.5
MONTH	22.5	20.5	21.5	23.0	20.5	21.5	21.0	18.0	19.5	21.0	19.0	20.0

16713000 WAILUKU RIVER AT HILO--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	20.5	19.5	20.0	22.5	20.0	21.0	24.0	21.5	22.5	18.5	18.0	18.0
2	20.5	19.0	19.5	22.5	20.0	21.0	23.5	21.5	22.5	18.5	17.5	18.0
3	20.0	19.5	19.5	22.0	20.0	21.0	23.5	21.5	22.5	19.0	18.0	18.5
4	20.5	19.0	19.5	22.0	20.0	21.0	24.0	21.5	22.5	19.0	18.5	19.0
5	20.5	19.5	20.0	21.5	20.0	20.5	23.0	22.0	22.5	19.0	18.5	18.5
6	20.5	19.5	20.0	22.0	20.0	20.5	22.5	21.5	22.0	19.5	18.0	19.0
7	21.0	19.0	20.0	22.0	20.0	21.0	22.5	21.5	22.0	19.5	19.0	19.0
8	21.5	19.0	20.0	22.0	20.0	20.5	22.5	21.5	22.0	19.5	18.5	19.0
9	21.5	19.5	20.0	22.5	20.0	21.0	22.5	21.5	22.0	19.5	18.5	19.0
10	21.5	19.5	20.0	23.0	20.5	21.5	23.0	21.0	22.0	20.5	19.0	19.5
11	21.0	19.5	20.0	23.5	20.5	21.5	22.0	21.0	21.5	20.5	20.0	20.0
12	21.0	19.5	20.0	23.5	20.5	22.0	22.5	21.0	21.5	21.0	20.0	20.5
13	21.0	19.5	20.0	23.5	21.0	22.0	22.0	21.5	21.5	20.5	20.0	20.5
14	21.0	19.5	20.0	23.0	21.0	22.0	23.0	21.5	22.0	20.5	20.0	20.0
15	21.5	19.5	20.0	23.0	21.0	21.5	22.0	19.5	20.5	20.5	20.0	20.5
16	21.5	19.5	20.5	22.5	20.5	21.5	20.0	19.0	19.5	21.0	20.0	20.5
17	20.5	20.0	20.5	22.5	20.5	21.0	20.0	19.5	20.0	21.5	20.5	21.0
18	21.5	20.0	20.5	23.0	20.5	21.5	19.5	19.0	19.5	21.0	20.5	21.0
19	21.5	20.0	20.5	22.5	20.5	21.0	21.0	19.0	20.0	21.0	20.0	20.5
20	22.0	20.0	20.5	23.0	20.5	21.5	20.0	19.0	19.5	21.0	20.0	20.5
21	22.0	20.0	21.0	23.0	20.5	21.5	20.0	19.0	19.5	21.5	20.5	21.0
22	22.5	20.0	21.0	23.5	20.5	22.0	20.0	19.0	19.5	21.0	21.0	21.0
23	22.5	20.5	21.0	22.0	21.0	21.5	19.5	18.5	19.0	21.0	20.5	21.0
24	22.0	20.5	21.0	22.5	21.0	21.5	20.0	19.0	19.5	21.5	20.5	21.0
25	22.5	20.5	21.5	23.0	21.0	22.0	20.0	19.5	20.0	21.5	20.5	21.0
26	22.5	20.0	21.0	23.5	21.0	22.0	20.0	19.5	20.0	22.0	20.5	21.0
27	22.5	20.5	21.5	22.5	21.5	22.0	20.0	19.5	19.5	22.0	20.5	21.0
28	22.5	21.0	21.5	23.5	21.0	21.5	19.5	18.5	19.0	22.0	21.0	21.5
29	---	---	---	24.0	21.5	22.5	18.0	18.0	18.0	23.0	21.0	21.5
30	---	---	---	23.5	21.5	22.0	18.5	18.0	18.5	23.0	21.5	22.0
31	---	---	---	23.5	21.0	22.0	---	---	---	22.0	21.5	22.0
MONTH	22.5	19.0	20.5	24.0	20.0	21.5	24.0	18.0	20.5	23.0	17.5	20.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	21.5	21.0	21.0	22.0	21.0	21.5	24.5	22.5	23.5	21.5	21.0	21.0
2	21.5	20.5	21.0	21.0	21.0	21.0	25.0	---	---	22.0	21.0	21.5
3	22.5	21.0	22.0	21.0	20.5	21.0	25.0	23.0	23.5	22.5	21.5	22.0
4	22.5	21.5	21.5	21.5	21.0	21.0	24.5	23.5	23.5	23.0	22.0	22.5
5	21.5	21.0	21.5	22.0	21.0	21.5	25.0	23.5	24.0	23.5	22.5	23.0
6	20.5	20.0	20.5	22.0	21.5	22.0	24.5	---	---	23.5	---	---
7	21.0	20.0	20.5	22.0	21.0	21.5	24.0	22.5	23.0	24.0	---	---
8	21.5	20.5	21.0	21.5	21.0	21.0	24.5	22.5	23.0	24.0	---	---
9	21.5	21.0	21.5	21.5	21.0	21.5	24.0	22.5	23.0	24.5	23.0	23.5
10	21.5	21.0	21.0	21.5	21.0	21.5	24.0	22.5	23.0	24.0	---	---
11	21.5	20.5	21.0	21.5	21.0	21.5	24.0	22.5	23.0	23.5	---	---
12	21.5	21.0	21.5	22.5	21.5	22.0	23.0	---	---	23.0	---	---
13	22.0	21.0	21.5	22.0	21.5	22.0	20.5	20.0	20.0	22.5	---	---
14	22.5	21.5	22.0	22.0	21.5	21.5	21.0	20.0	20.5	22.0	---	---
15	23.0	22.0	22.5	22.0	21.5	22.0	21.5	21.0	21.0	22.0	---	---
16	23.5	22.0	22.5	22.5	21.5	22.0	22.0	---	---	22.5	---	---
17	23.5	22.0	22.5	22.5	22.0	22.5	22.5	21.5	22.0	22.5	---	---
18	23.5	22.0	22.5	23.0	22.0	22.5	22.0	22.0	22.0	22.0	---	---
19	24.0	22.0	22.5	23.5	22.5	23.0	22.5	21.5	22.0	20.5	---	---
20	24.5	22.0	23.0	24.0	22.5	23.0	22.5	21.5	22.0	20.5	---	---
21	23.5	22.0	22.5	23.0	22.5	22.5	22.5	---	---	21.5	20.5	21.0
22	23.5	22.0	22.5	22.5	22.0	22.5	22.5	22.0	22.0	21.5	21.0	21.0
23	23.0	22.0	22.5	23.0	22.0	22.0	22.5	22.0	22.5	21.0	21.0	21.0
24	24.0	22.0	23.0	23.0	22.0	22.5	22.5	21.0	22.0	22.0	20.5	21.5
25	24.5	22.5	23.0	23.0	22.0	22.5	21.5	---	---	22.0	21.5	21.5
26	25.0	22.5	23.5	23.0	22.0	22.5	22.0	21.0	21.5	22.0	21.0	21.5
27	24.5	22.5	23.5	22.5	22.0	22.0	22.0	21.5	21.5	22.0	21.5	21.5
28	25.0	22.5	23.5	22.5	21.5	22.0	22.0	21.5	21.5	22.0	21.0	21.5
29	23.0	22.0	22.5	22.5	21.5	22.0	21.5	21.0	21.5	22.0	20.5	21.0
30	22.5	21.5	22.0	23.5	22.0	22.5	22.0	21.0	21.5	20.5	20.0	20.5
31	---	---	---	23.5	22.0	22.5	21.5	21.5	21.5	---	---	---
MONTH	25.0	20.0	22.0	24.0	20.5	22.0	25.0	20.0	22.0	24.5	20.0	21.5
YEAR	25.0	17.5	21.0									

16713000 WAILUKU RIVER AT HILO--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	340	3	2.8	41	3	.33	69	1	.19
2	310	4	3.3	37	5	.50	27	1	.07
3	424	3	3.4	28	4	.30	24	1	.06
4	289	3	2.3	30	4	.32	62	1	.17
5	255	3	2.1	32	4	.35	57	1	.15
6	280	2	1.5	27	3	.22	52	2	.28
7	280	2	1.5	26	3	.21	51	2	.28
8	226	2	1.2	34	4	.37	40	3	.32
9	340	2	1.8	53	5	.72	38	1	.10
10	560	4	6.0	100	4	1.1	32	1	.09
11	346	4	3.7	157	3	1.3	30	1	.08
12	325	3	2.6	131	3	1.1	32	1	.09
13	685	4	7.4	540	8	12	31	2	.17
14	435	3	3.5	470	8	10	28	2	.15
15	328	2	1.8	349	6	5.7	26	2	.14
16	250	2	1.4	136	3	1.1	38	2	.21
17	210	2	1.1	79	2	.43	61	3	.49
18	206	2	1.1	52	1	.14	307	10	8.3
19	166	2	.90	32	2	.17	971	10	26
20	117	2	.63	71	2	.38	186	5	2.5
21	93	2	.50	231	8	5.0	79	4	.85
22	98	2	.53	175	7	3.3	42	3	.34
23	70	2	.38	73	5	.99	24	2	.13
24	63	2	.34	54	3	.44	45	3	.36
25	69	2	.37	38	2	.21	45	3	.36
26	58	2	.31	26	1	.07	581	14	22
27	297	5	4.0	23	1	.06	533	12	17
28	347	4	3.7	23	1	.06	295	9	7.2
29	91	3	.74	87	1	.23	166	7	3.1
30	166	4	1.8	93	1	.25	103	4	1.1
31	67	3	.54	---	---	---	66	3	.53
TOTAL	7791	---	63.24	3248	---	47.35	4141	---	92.81
		JANUARY			FEBRUARY			MARCH	
1	45	2	.24	20	1	.05	16	1	.04
2	36	2	.19	18	1	.05	16	1	.04
3	29	1	.08	17	1	.05	16	1	.04
4	27	1	.07	16	1	.04	15	1	.04
5	37	1	.10	15	1	.04	15	1	.04
6	30	1	.08	14	1	.04	15	1	.04
7	24	1	.06	14	0	.00	14	1	.04
8	22	1	.06	13	0	.00	14	1	.04
9	23	1	.06	12	0	.00	14	1	.04
10	110	3	.89	11	0	.00	14	1	.04
11	354	35	33	10	0	.00	14	1	.04
12	32	10	.86	19	2	.10	13	0	.00
13	25	8	.54	23	2	.12	12	0	.00
14	37	7	.70	22	2	.12	12	0	.00
15	52	7	.98	22	2	.12	11	0	.00
16	45	5	.61	22	1	.06	11	0	.00
17	39	4	.42	22	1	.06	11	0	.00
18	37	4	.40	22	1	.06	12	0	.00
19	30	3	.24	20	1	.05	13	0	.00
20	28	2	.15	20	1	.05	12	0	.00
21	25	2	.14	19	1	.05	13	0	.00
22	24	2	.13	19	1	.05	18	1	.05
23	21	2	.11	18	1	.05	17	1	.05
24	26	2	.14	21	1	.06	18	1	.05
25	29	2	.16	19	1	.05	18	1	.05
26	27	2	.15	17	1	.05	19	1	.05
27	26	2	.14	17	1	.05	20	1	.05
28	24	2	.13	17	1	.05	19	1	.05
29	22	1	.06	---	---	---	19	1	.05
30	21	1	.06	---	---	---	19	1	.05
31	20	1	.05	---	---	---	18	1	.05
TOTAL	1327	---	41.00	499	---	1.42	468	---	0.94

16713000 WAILUKU RIVER AT HILO--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	22	1	.06	1100	3	8.9	153	5	2.1
2	22	1	.06	1750	4	19	76	4	.82
3	21	1	.06	1350	3	11	51	4	.55
4	20	1	.05	1600	3	13	119	4	1.3
5	21	1	.06	1350	3	11	554	8	12
6	21	1	.06	910	2	4.9	702	10	19
7	127	5	1.7	1160	2	6.3	400	8	8.6
8	64	4	.69	1040	2	5.6	301	8	6.5
9	40	3	.32	950	2	5.1	301	5	4.1
10	26	2	.14	900	2	4.9	212	3	1.7
11	23	2	.12	572	1	1.5	171	3	1.4
12	32	2	.17	452	1	1.2	116	3	.94
13	57	2	.31	370	1	1.0	83	2	.45
14	34	2	.18	340	1	.92	82	2	.44
15	824	20	44	255	1	.69	57	2	.31
16	168	5	2.3	198	2	1.1	42	2	.23
17	190	5	2.6	171	2	.92	41	3	.33
18	105	4	1.1	242	4	2.6	35	3	.28
19	39	3	.32	255	6	4.1	28	2	.15
20	157	4	1.7	214	5	2.9	24	2	.13
21	162	2	.87	164	5	2.2	24	2	.13
22	399	3	3.2	134	5	1.8	30	2	.16
23	710	3	5.8	110	4	1.2	42	3	.34
24	488	2	2.6	81	4	.87	33	2	.18
25	280	2	1.5	66	5	.89	23	2	.12
26	190	2	1.0	58	7	1.1	20	1	.05
27	141	2	.76	52	8	1.1	24	2	.13
28	369	2	2.0	45	8	.97	27	2	.15
29	463	2	2.5	41	6	.66	395	12	13
30	588	2	3.2	34	4	.37	72	10	1.9
31	---	---	---	115	4	1.2	---	---	---
TOTAL	5803	---	79.43	16079	---	118.99	4238	---	77.49
		JULY			AUGUST			SEPTEMBER	
1	202	7	3.8	30	2	.16	139	2	.75
2	123	5	1.7	25	2	.14	117	2	.63
3	134	5	1.8	26	2	.14	88	1	.24
4	284	5	3.8	49	2	.26	68	1	.18
5	175	4	1.9	26	2	.14	73	4	.79
6	171	5	2.3	22	2	.12	89	1	.24
7	471	6	7.6	28	2	.15	51	1	.14
8	268	6	4.3	25	2	.14	44	1	.12
9	235	7	4.4	27	2	.15	44	1	.12
10	268	5	3.6	44	3	.36	58	1	.16
11	346	4	3.7	43	3	.35	99	2	.53
12	220	3	1.8	2240	63	669	89	2	.48
13	255	3	2.1	950	10	26	282	2	1.5
14	214	4	2.3	470	3	3.8	147	2	.79
15	188	3	1.5	268	3	2.2	87	2	.47
16	130	2	.70	180	3	1.5	75	2	.41
17	104	2	.56	128	2	.69	235	5	3.2
18	80	2	.43	164	2	.89	2290	25	210
19	65	3	.53	148	2	.80	830	3	6.7
20	52	3	.42	85	2	.46	568	2	3.1
21	53	3	.43	74	1	.20	414	2	2.2
22	50	2	.27	88	1	.24	352	2	1.9
23	46	2	.25	83	1	.22	322	2	1.7
24	52	3	.42	738	8	16	250	2	1.4
25	56	2	.30	438	4	4.7	230	2	1.2
26	93	3	.75	250	2	1.4	414	2	2.2
27	147	3	1.2	177	2	.96	636	2	3.4
28	112	3	.91	226	2	1.2	673	4	7.3
29	71	2	.38	428	2	2.3	2370	20	128
30	43	2	.23	262	2	1.4	1110	5	15
31	46	2	.25	186	2	1.0	---	---	---
TOTAL	4754	---	54.63	7928	---	737.07	12244	---	394.85
YEAR	68520		1709.22						

16717000 HONOLII STREAM NEAR PAPAIKOU
(Hydrologic bench-mark station)

LOCATION.--Lat 19°46'00", long 155°09'16", Hydrologic Unit 20010000, on left bank 0.7 mi downstream from Pohakupaa Stream, 4.1 mi west of Papaikou, and 4.8 mi northwest of Hilo Post Office.

DRAINAGE AREA.--11.6 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1911 to March 1913 (published as "at Kaiwiki, near Hilo"), February 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,540 ft, from topographic map. Prior to Aug. 27, 1911, nonrecording gage and Aug. 27, 1911, to Mar. 24, 1913, water-stage recorder, at site 0.5 mi upstream at different datum.

REMARKS.--Records good. No diversion above station. During period 1911-13, Honolii ditch diverted an average of about 3.2 ft³/s above station for fluming cane and domestic use.

AVERAGE DISCHARGE.--17 years, 127 ft³/s (92,010 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s May 23, 1978, gage height, 20.00 ft, from floodmarks and from rating curve extended above 4,610 ft³/s on basis of slope-area measurement at gage height 20.00 ft; minimum, 0.8 ft³/s Jan. 31, 1912.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,680 ft³/s Aug. 12, gage height, 12.09 ft, no other peak above base of 4,400 ft³/s; minimum, 6.0 ft³/s Mar. 30, 31.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	34	52	34	10	7.3	6.4	419	64	116	44	48
2	69	26	36	32	9.5	7.2	7.2	639	50	81	37	42
3	122	24	40	27	9.1	7.2	9.7	357	42	74	33	39
4	75	22	31	26	9.0	7.0	7.8	524	49	123	35	33
5	71	21	26	25	8.7	7.0	7.7	312	144	75	36	34
6	80	20	23	22	8.6	7.0	38	152	145	83	31	49
7	83	24	22	21	8.5	7.0	77	341	85	174	33	34
8	68	23	21	20	8.4	7.0	34	228	73	98	30	34
9	104	22	20	20	8.1	6.8	24	197	81	88	23	36
10	188	44	18	142	8.1	6.8	16	162	63	108	18	57
11	86	69	17	87	7.8	6.8	13	88	58	120	19	74
12	82	58	19	32	7.8	6.8	57	79	46	80	1340	56
13	171	188	18	25	7.8	6.7	41	73	41	98	228	123
14	93	154	18	20	7.7	6.6	34	86	47	80	98	64
15	68	119	18	19	7.5	6.5	635	67	37	73	62	46
16	57	64	39	18	7.5	6.5	90	53	31	59	51	38
17	54	51	40	17	7.9	6.7	153	50	35	53	41	236
18	59	45	406	16	7.6	6.7	83	77	36	48	61	1110
19	53	39	442	15	7.5	6.8	63	73	33	43	57	135
20	46	64	98	14	7.3	6.5	129	58	31	38	39	98
21	44	82	60	14	7.3	6.3	108	48	26	39	37	76
22	46	68	48	13	7.4	6.3	230	44	36	40	41	70
23	39	46	40	13	7.5	6.5	262	42	48	45	44	75
24	36	38	52	12	7.5	6.7	179	37	38	56	283	61
25	43	33	51	11	7.5	7.0	95	41	28	67	96	76
26	47	28	266	11	7.3	6.6	77	39	25	77	61	112
27	97	25	136	11	7.3	6.6	69	35	22	93	53	207
28	23	24	83	10	7.3	6.4	211	34	23	81	107	183
29	23	55	56	10	---	6.4	179	34	157	62	135	930
30	24	86	45	9.8	---	6.1	208	32	65	49	76	210
31	22	---	38	9.8	---	6.1	---	66	---	51	58	---
TOTAL	2138	1596	2279	756.6	223.5	207.9	3143.8	4487	1659	2372	3307	4386
MEAN	69.0	53.2	73.5	24.4	7.98	6.71	105	145	55.3	76.5	107	146
MAX	188	188	442	142	10	7.3	635	639	157	174	1340	1110
MIN	22	20	17	9.8	7.3	6.1	6.4	32	22	38	18	33
AC-FT	4240	3170	4520	1500	443	412	6240	8900	3290	4700	6560	8700

CAL YR 1982	TOTAL	59987.5	MEAN	164	MAX	3270	MIN	8.3	AC-FT	119000
WTR YR 1983	TOTAL	26555.8	MEAN	72.8	MAX	1340	MIN	6.1	AC-FT	52670

HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIKOU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT 25...	0900	48	55	7.0	17.0	1.3	9.2	100	44	200	26
DEC 13...	0915	18	--	7.2	17.0	.70	9.2	100	34	300	33
FEB 22...	0900	7.5	--	7.0	18.5	.30	8.9	100	4	420	51
APR 12...	0915	66	42	7.0	18.5	.90	8.9	100	130	1100	19
JUN 21...	0900	23	57	7.4	19.0	1.0	8.8	100	4	690	25
AUG 16...	0900	49	35	6.8	17.0	1.2	9.2	100	59	290	14

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT 25...	1	4.0	3.9	2.5	17	.2	.3	25	<5.0	3.1
DEC 13...	0	7.0	3.8	3.8	20	.3	.4	40	<5.0	3.4
FEB 22...	0	11	5.6	4.8	17	.3	.5	60	1.4	3.6
APR 12...	5	4.6	1.8	2.6	23	.3	.4	14	6.7	3.6
JUN 21...	0	5.3	2.8	3.2	22	.3	.3	27	2.4	3.3
AUG 16...	0	2.8	1.6	2.2	26	.3	.2	15	3.9	2.9

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
OCT 25...	<.10	2.2	37	--	.05	<.10	.060	1.10	<.010	.020	<.010
DEC 13...	<.10	19	61	--	.08	<.10	.110	<.10	.030	.030	<.010
FEB 22...	<.10	27	76	90	.10	<.10	.220	.30	.020	.020	.020
APR 12...	<.10	6.6	27	35	.04	<.10	.260	.50	.020	.020	.030
JUN 21...	<.10	14	44	48	.06	<.10	.210	.50	.040	.030	.020
AUG 16...	<.10	8.3	22	31	.03	<.10	.030	.50	--	.050	.010

< Actual value is known to be less than the value shown.

16717000 HONOLII STREAM NEAR PAPAIKOU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
DEC 13...	0915	30	<1	5	<1	<1	<1	<3	2	88	2
APR 12...	0915	40	<1	5	<1	<1	<1	<3	2	87	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
DEC 13...	6	2	<.1	<10	<1	1	<1	46	<6.0	4
APR 12...	<4	7	<.1	<10	<1	<1	<1	21	<6.0	25

DATE	TIME	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM DISSOLVED, EXTRACTION (UG/L)
FEB 22...	0900	<1.5	<.4	.9	<.4	.9	<.4	.04	.17

DATE	TIME	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 25...	0900	0	.00	100
DEC 13...	0915	2	.10	100
FEB 22...	0900	1	.02	100
APR 12...	0915	2	.36	100
JUN 21...	0900	0	.00	100
AUG 16...	0900	2	.26	100

< Actual value is known to be less than the value shown.

HAWAII, ISLAND OF HAWAII

16720000 KAWAINUI STREAM NEAR KAMUELA

LOCATION.--Lat 20°05'18", long 155°40'58", Hydrologic Unit 20010000, on left bank 250 ft upstream from Upper Hamakua ditch intake and 4.5 mi north of Kamuela.

DRAINAGE AREA.--1.58 mi².

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,060 ft, from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--19 years, 14.3 ft³/s (10,650 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,160 ft³/s Nov. 18, 1979, gage height, 10.03 ft, from rating curve extended above 53 ft³/s on basis of computations of peak flow over dam and slope-area measurement at gage height 10.03 ft; minimum, 0.01 ft³/s Jan. 20, 21, 24-28, Feb. 20-22, 1977, Dec. 16-20, 1977, Feb. 23, 24, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 440 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 18	1800	*888	6.42
May 31	1330	553	5.41

Minimum discharge, 0.07 ft³/s Mar. 11-14.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	.59	2.5	1.4	5.3	.11	27	100	25	22	20	3.0
2	9.0	.45	1.7	1.4	1.8	.10	22	68	8.2	26	8.5	5.0
3	3.9	.38	1.2	1.1	1.2	.09	7.0	51	31	21	5.7	14
4	2.4	.39	.89	1.1	.87	.09	2.6	75	8.0	57	31	3.5
5	1.9	.39	.65	1.2	.64	.09	1.7	24	13	32	20	3.5
6	1.7	.56	.51	1.3	.44	.09	1.3	16	22	93	9.4	8.0
7	2.9	.61	24	1.2	.33	.09	.94	82	12	54	10	45
8	6.5	.42	4.7	1.2	.27	.09	26	30	27	47	4.7	25
9	32	.34	2.7	.83	.21	.08	6.6	6.8	8.7	24	2.9	26
10	27	.43	1.7	.59	.19	.08	2.6	4.2	24	27	2.2	23
11	28	1.9	1.9	.45	.17	.07	1.9	11	7.9	17	10	22
12	43	7.3	6.1	.37	.16	.07	8.0	12	5.9	11	55	14
13	39	51	2.4	.31	.14	.07	5.3	43	6.3	45	24	32
14	9.4	80	5.1	.41	.15	.07	23	37	12	61	7.0	7.2
15	3.4	23	3.8	2.9	.15	.12	65	12	3.6	29	3.1	4.1
16	2.1	17	65	1.3	.13	.13	10	13	15	28	2.8	8.0
17	1.6	8.9	11	.71	3.1	.85	43	17	18	20	3.1	33
18	7.4	2.9	175	.49	3.6	11	13	6.7	12	17	9.6	75
19	2.9	1.8	139	.36	1.5	18	21	3.1	24	8.0	4.1	22
20	1.7	3.2	28	.29	.82	3.7	33	2.3	5.0	3.8	2.4	11
21	1.6	34	32	.24	.48	1.9	15	2.1	14	4.9	6.7	11
22	8.7	6.4	21	.21	.32	1.2	51	5.7	23	7.5	3.7	3.6
23	2.3	2.3	21	.19	.24	5.9	31	5.7	19	12	2.6	2.8
24	1.5	34	36	.17	.20	12	18	5.0	7.1	27	31	2.1
25	1.2	7.8	7.8	.15	.16	21	13	17	5.3	44	15	20
26	.90	3.8	42	.15	.14	5.2	10	8.2	7.3	34	18	14
27	1.3	2.3	15	.15	.12	8.4	21	8.3	6.3	36	16	44
28	2.4	6.8	5.2	.17	.12	4.7	43	3.5	27	23	63	24
29	1.7	45	2.5	.16	---	4.0	59	2.9	54	8.7	21	87
30	1.2	6.3	1.7	.15	---	2.3	85	2.5	20	6.4	7.7	25
31	.82	---	1.3	.86	---	1.7	---	68	---	25	4.5	---
TOTAL	255.12	350.26	663.35	21.51	22.95	103.29	666.94	743.0	471.6	871.3	424.7	617.8
MEAN	8.23	11.7	21.4	.69	.82	3.33	22.2	24.0	15.7	28.1	13.7	20.6
MAX	43	80	175	2.9	5.3	21	85	100	54	93	63	87
MIN	.82	.34	.51	.15	.12	.07	.94	2.1	3.6	3.8	2.2	2.1
AC-FT	506	695	1320	43	46	205	1320	1470	935	1730	842	1230

CAL YR 1982	TOTAL	7374.02	MEAN	20.2	MAX	300	MIN	.17	AC-FT	14630
WTR YR 1983	TOTAL	5211.82	MEAN	14.3	MAX	175	MIN	.07	AC-FT	10340

16720300 KAWAIKI STREAM NEAR KAMUELA

LOCATION.--Lat 20°05'13", long 155°40'59", Hydrologic Unit 20010000, on right bank 0.2 mi upstream from Upper Hamakua ditch intake and 4.4 mi north of Kamuela.

DRAINAGE AREA.--0.45 mi².

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WDR HI-80-1: 1969-79(P).

GAGE.--Water-stage recorder. Altitude of gage is 4,090 ft, from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--15 years, 4.30 ft³/s (3,120 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,470 ft³/s Nov. 18, 1979, gage height, 8.32 ft, from rating curve extended above 33 ft³/s on basis of slope-area measurement at gage height 8.32 ft; minimum, 0.01 ft³/s Mar. 10-15, 1983.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 18	1800	*262	4.01
May 31	1330	191	3.54

Minimum discharge, 0.01 ft³/s Mar. 10-15.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	.54	1.0	.35	1.9	.03	7.6	25	7.8	6.3	6.2	1.1
2	3.0	.48	.76	.35	.29	.03	4.8	17	4.4	6.7	3.6	2.3
3	1.7	.42	.61	.25	.18	.03	2.2	13	9.4	5.9	2.2	5.1
4	.90	.42	.48	.25	.14	.03	.65	19	3.2	13	9.2	1.5
5	.70	.42	.48	.30	.11	.03	.36	6.5	5.5	7.2	5.7	2.6
6	.70	.54	.42	.28	.09	.03	.28	7.2	6.4	22	3.2	4.2
7	1.9	.48	4.3	.26	.07	.03	.22	22	4.6	13	3.4	13
8	5.0	.36	1.5	.25	.06	.03	6.1	7.2	7.1	12	1.7	7.5
9	8.5	.32	1.2	.22	.05	.03	2.6	2.9	3.9	6.4	.90	7.5
10	6.2	.48	.76	.20	.04	.02	.75	2.4	6.4	6.5	.65	5.7
11	7.5	.95	1.0	.19	.04	.01	.75	5.4	2.9	5.2	4.0	5.9
12	14	2.4	2.2	.18	.04	.02	4.4	4.5	1.8	4.9	12	4.4
13	8.1	13	1.0	.16	.04	.02	3.4	12	2.5	11	6.2	8.6
14	3.7	21	1.8	.21	.04	.01	11	9.2	3.7	15	2.2	2.6
15	1.9	5.5	1.6	1.2	.04	.02	16	4.2	.99	7.3	1.0	1.7
16	1.1	4.3	15	.30	.03	.02	4.9	5.4	4.4	7.7	.90	3.8
17	.50	2.5	2.5	.19	2.4	.35	12	5.3	4.4	5.5	1.2	11
18	3.2	1.2	47	.16	1.3	5.4	4.9	2.6	4.0	5.3	3.5	21
19	.90	.76	34	.14	.29	5.2	8.1	.95	6.4	3.2	1.5	6.5
20	.90	1.2	6.7	.12	.16	.90	8.9	.47	2.0	1.3	.75	3.3
21	.70	9.3	8.8	.11	.12	.32	6.2	.85	4.9	2.4	3.2	3.4
22	4.2	2.1	5.4	.10	.08	.19	11	3.2	6.8	2.8	1.7	1.7
23	1.5	1.0	5.9	.08	.06	3.2	8.0	3.2	5.4	4.6	1.2	1.2
24	1.1	7.5	7.2	.08	.05	5.2	6.2	2.6	3.2	9.6	8.0	.90
25	.76	2.2	2.4	.07	.04	5.4	4.4	5.4	2.4	11	4.5	7.2
26	.68	1.6	13	.06	.04	2.4	3.9	3.6	4.6	8.2	4.5	4.9
27	.85	1.0	4.6	.07	.04	4.4	6.8	3.6	3.4	9.6	5.2	11
28	.95	2.4	1.6	.06	.04	2.2	13	1.3	7.1	6.7	15	7.3
29	.76	11	.55	.05	---	2.9	16	1.2	11	2.9	5.1	23
30	.68	1.9	.35	.06	---	.75	24	.90	6.8	2.5	2.3	7.9
31	.54	---	.30	.28	---	.76	---	22	---	6.9	1.6	---
TOTAL	85.62	97.27	174.41	6.58	7.78	39.96	199.41	220.07	147.39	232.6	122.30	187.80
MEAN	2.76	3.24	5.63	.21	.28	1.29	6.65	7.10	4.91	7.50	3.95	6.26
MAX	14	21	47	1.2	2.4	5.4	24	25	11	22	15	23
MIN	.50	.32	.30	.05	.03	.01	.22	.47	.99	1.3	.65	.90
AC-FT	170	193	346	13	15	79	396	437	292	461	243	373

CAL YR 1982	TOTAL	2044.11	MEAN	5.60	MAX	83	MIN	.21	AC-FT	4050
WTR YR 1983	TOTAL	1521.19	MEAN	4.17	MAX	47	MIN	.01	AC-FT	3020

16720500 UPPER HAMAKUA DITCH BELOW KAWAIKI STREAM, NEAR KAMUELA

LOCATION.--Lat 20°05'15", long 155°40'42", Hydrologic Unit 2010000, on right bank 800 ft downstream from Kawaiki Stream intake and 4.4 mi north of Kamuela.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 4,020 ft, from topographic map.

REMARKS.--Records good. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--19 years, 7.21 ft³/s (5,220 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 49 ft³/s Nov. 2, 1967; no flow Nov. 18, 1979 to Oct. 23, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 15 ft³/s Dec. 19; minimum daily, 0.04 ft³/s Mar. 11-14.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	.84	3.1	1.0	6.0	.08	13	14	12	11	11	4.1
2	8.5	.72	1.8	1.0	1.9	.08	12	13	8.2	10	9.0	4.7
3	5.2	.67	1.3	.95	1.0	.08	7.1	13	12	11	6.8	10
4	3.2	.67	.89	.90	.78	.07	3.0	13	8.4	12	11	4.8
5	2.6	.67	.72	1.0	.62	.07	1.7	12	8.9	11	11	5.1
6	2.4	.72	.62	1.0	.45	.07	1.3	12	11	12	9.6	9.3
7	4.0	.84	8.9	1.3	.38	.07	.89	13	10	11	9.7	12
8	5.8	.62	5.9	1.3	.34	.06	10	12	11	11	6.2	11
9	13	.56	3.4	.89	.24	.05	7.1	7.2	9.3	11	4.1	11
10	13	.67	1.9	.72	.20	.05	3.0	5.6	11	11	3.2	11
11	14	2.5	1.8	.62	.17	.04	1.7	9.7	8.3	11	7.3	11
12	14	4.3	7.4	.56	.14	.04	8.9	10	6.8	10	12	9.9
13	13	14	3.0	.45	.10	.04	6.6	13	5.9	11	11	11
14	9.0	14	5.2	.62	.14	.04	7.7	13	10	12	7.7	7.8
15	4.4	13	4.6	3.8	.14	.08	13	11	4.7	11	4.3	5.6
16	2.9	12	14	1.3	.09	.10	8.5	9.6	6.6	11	4.0	8.2
17	2.0	9.0	9.7	.84	4.8	1.0	13	12	11	11	4.3	11
18	7.1	3.8	10	.62	4.3	9.0	10	7.7	8.6	11	8.6	12
19	3.9	2.1	15	.50	1.5	11	12	4.1	11	8.6	5.2	11
20	2.3	2.7	7.8	.42	.84	4.4	13	3.0	6.2	5.3	3.4	9.3
21	2.3	13	8.9	.38	.56	2.1	11	3.1	8.2	6.4	7.2	8.6
22	8.8	7.4	6.4	.34	.38	1.1	13	7.4	11	7.7	5.0	5.0
23	3.1	3.0	4.9	.28	.28	6.4	12	7.7	11	8.9	3.9	3.9
24	2.0	10	8.7	.24	.20	8.1	12	6.6	8.0	11	10	3.0
25	1.4	8.2	3.1	.20	.17	12	11	12	6.6	11	11	7.0
26	1.2	5.2	11	.20	.10	6.0	10	8.9	8.2	11	10	9.6
27	1.6	3.0	5.8	.20	.09	8.9	11	9.2	7.4	11	10	11
28	3.0	5.7	3.0	.24	.09	5.6	13	4.8	6.2	11	12	11
29	2.1	14	1.4	.17	---	5.4	13	4.1	11	8.6	10	12
30	1.4	7.1	1.0	.20	---	2.9	14	3.4	10	7.7	8.9	11
31	1.0	---	.84	.89	---	2.0	---	8.4	---	11	5.6	---
TOTAL	163.4	160.98	162.07	23.13	26.00	86.92	273.49	283.5	268.5	318.2	243.0	261.9
MEAN	5.27	5.37	5.23	.75	.93	2.80	9.12	9.15	8.95	10.3	7.84	8.73
MAX	14	14	15	3.8	6.0	12	14	14	12	12	12	12
MIN	1.0	.56	.62	.17	.09	.04	.89	3.0	4.7	5.3	3.2	3.0
AC-FT	324	319	321	46	52	172	542	562	533	631	482	519

CAL YR 1982	TOTAL	2633.50	MEAN	7.22	MAX	20	MIN	.42	AC-FT 5220
WTR YR 1983	TOTAL	2271.09	MEAN	6.22	MAX	15	MIN	.04	AC-FT 4500

16724800 UPPER HAMAKUA DITCH ABOVE ALAKAHI STREAM, NEAR KAMUELA

LOCATION.--Lat 20°04'31", long 155°40'26", Hydrologic Unit 20010000, on right bank 0.1 mi upstream from Alakahi Stream and 3.6 mi north of Kamuela.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,890 ft, from topographic map.

REMARKS.--Records good. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--15 years, 5.32 ft³/s (3,850 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 41 ft³/s Aug. 18, 1972; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 24 ft³/s Dec. 19; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	.14	2.2	.44	3.9	.00	11	19	15	11	11	2.7
2	8.8	.04	1.2	.37	.97	.00	11	17	8.8	9.6	8.2	2.9
3	4.4	.01	.66	.24	.29	.00	5.1	16	14	10	5.4	8.4
4	2.2	.01	.36	.22	.05	.00	1.6	18	9.2	13	12	3.2
5	1.6	.01	.21	.24	.01	.00	.70	15	8.3	11	11	3.0
6	1.8	.05	.08	.40	.01	.00	.30	14	12	14	8.8	6.9
7	3.4	.01	8.5	.66	.01	.00	.11	19	10	14	8.9	12
8	11	.00	3.8	.64	.01	.00	9.3	15	12	13	4.8	11
9	15	.00	2.2	.37	.00	.00	4.9	7.7	9.1	12	2.7	10
10	13	.00	1.1	.22	.00	.00	1.6	5.2	12	11	1.9	10
11	17	.70	1.7	.13	.00	.00	1.2	11	8.6	11	5.3	9.8
12	19	4.2	5.0	.04	.00	.00	6.6	11	6.1	10	11	8.4
13	12	16	1.9	.01	.00	.00	4.3	15	3.8	12	10	11
14	6.7	20	3.8	.07	.00	.00	7.2	15	10	13	5.1	6.5
15	2.8	15	3.4	2.3	.00	.00	14	12	4.2	13	2.7	3.8
16	1.7	14	14	.79	.00	.00	7.5	10	4.3	12	2.6	5.8
17	2.9	7.5	8.3	.29	.12	.00	13	13	11	12	3.2	9.8
18	5.9	2.7	18	.12	2.5	1.7	9.5	8.3	7.1	11	6.8	15
19	2.1	1.4	24	.02	.32	9.3	12	3.6	11	8.5	2.9	11
20	1.2	3.1	8.1	.00	.00	2.6	13	2.3	6.2	4.1	1.8	8.4
21	1.4	14	10	.01	.00	.64	11	1.9	5.5	5.1	6.1	8.1
22	8.1	5.5	5.7	.01	.00	.00	13	6.4	10	5.9	2.9	3.9
23	2.4	2.0	6.3	.01	.00	2.7	13	6.3	11	7.6	3.0	2.8
24	1.3	12	8.3	.01	.00	6.2	12	5.1	7.3	11	9.8	1.8
25	.83	7.2	2.7	.01	.00	9.8	11	11	5.7	12	9.4	5.6
26	.55	3.6	14	.01	.00	4.2	9.0	8.2	5.2	12	9.4	7.8
27	.66	2.1	5.1	.01	.00	7.0	11	8.8	7.3	12	8.6	11
28	2.0	6.1	2.3	.01	.00	3.6	15	4.0	2.9	11	12	10
29	1.0	14	1.1	.01	---	3.6	16	3.0	13	8.1	9.8	14
30	.54	5.5	.63	.02	---	1.3	19	2.3	9.8	6.0	6.7	11
31	.29	---	.42	.02	---	1.0	---	8.7	---	11	4.4	---
TOTAL	155.67	156.87	165.06	7.70	8.19	53.64	263.91	312.8	260.4	326.9	208.2	235.6
MEAN	5.02	5.23	5.32	.25	.29	1.73	8.80	10.1	8.68	10.5	6.72	7.85
MAX	19	20	24	2.3	3.9	9.8	19	19	15	14	12	15
MIN	.29	.00	.08	.00	.00	.00	.11	1.9	2.9	4.1	1.8	1.8
AC-FT	309	311	327	15	16	106	523	620	517	648	413	467

CAL YR 1982	TOTAL	2766.80	MEAN	7.58	MAX	26	MIN	.00	AC-FT	5490
WTR YR 1983	TOTAL	2154.94	MEAN	5.90	MAX	24	MIN	.00	AC-FT	4270

HAWAII, ISLAND OF HAWAII

16725000 ALAKAHI STREAM NEAR KAMUELA

LOCATION.--Lat 20°04'27", long 155°40'25", Hydrologic Unit 20010000, on right bank 25 ft upstream from upper Hamakua ditch intake and 3.5 mi north of Kamuela.

DRAINAGE AREA.--0.87 mi².

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,900 ft, from topographic map.

REMARKS.--Records good. Parker Ranch pipeline diverts from tributary 0.4 mi above station for ranch use in Kamuela area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--19 years, 6.89 ft³/s (4,990 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,170 ft³/s Nov. 18, 1979, gage height, 9.90 ft, from rating curve extended above 28 ft³/s on basis of computations of peak flow over dam and slope-area measurement at gage height 9.90 ft; minimum, 0.03 ft³/s on several days in 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 120 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)
Dec. 18	1830	*490	6.50
May 31	1500	272	5.51

Minimum discharge, 0.08 ft³/s Mar. 10, 11.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	1.3	2.9	2.1	1.9	.15	8.2	45	17	11	11	3.0
2	7.8	1.2	2.2	1.9	1.2	.15	5.4	26	6.7	11	7.1	3.4
3	5.6	1.2	1.8	1.7	.85	.14	3.0	21	18	8.1	5.8	8.7
4	4.6	1.1	1.5	1.6	.65	.13	1.5	37	5.2	24	17	3.6
5	2.4	1.0	1.4	1.5	.50	.14	.75	8.2	8.1	10	11	5.4
6	2.2	1.1	1.3	1.5	.46	.13	.46	9.1	10	31	6.7	7.5
7	4.0	1.1	7.3	1.5	.40	.13	.28	43	6.0	26	6.8	22
8	7.6	.99	3.9	1.4	.40	.13	5.3	13	9.3	21	4.4	15
9	17	.91	2.8	1.3	.40	.13	3.0	4.2	4.7	12	2.8	10
10	11	.92	2.2	1.2	.40	.11	1.4	3.5	8.1	8.8	2.3	9.1
11	13	1.4	2.2	1.2	.32	.09	.86	6.6	4.3	8.0	5.0	8.4
12	23	2.6	4.4	1.1	.32	.09	3.5	6.1	3.2	7.1	16	7.6
13	19	20	2.8	1.0	.32	.09	3.3	17	3.3	19	10	15
14	7.8	40	2.8	1.0	.32	.09	13	15	6.0	24	5.8	5.9
15	5.7	9.9	2.8	2.5	.29	.09	29	5.7	2.9	15	3.1	3.6
16	4.7	6.7	20	1.7	.29	.09	4.7	6.2	6.3	14	2.6	5.3
17	2.7	5.1	5.8	1.2	1.8	.11	19	6.7	7.5	9.7	2.4	21
18	5.4	3.3	74	1.0	3.1	2.6	5.7	4.2	5.2	9.1	5.1	30
19	5.1	2.5	66	.90	1.4	6.5	8.8	2.8	10	6.6	3.8	10
20	2.8	2.2	15	.80	.75	2.2	13	2.3	3.7	3.8	2.4	6.8
21	2.8	16	15	.70	.46	.85	7.4	2.2	5.6	4.5	4.9	6.1
22	8.0	5.0	8.7	.60	.36	.37	15	4.8	11	4.8	3.9	3.6
23	4.6	3.0	11	.60	.26	1.3	10	4.4	7.9	7.3	2.7	2.9
24	2.3	10	15	.55	.26	2.8	6.3	3.6	4.3	15	11	2.1
25	1.9	4.5	5.0	.55	.22	5.9	4.8	6.6	3.7	19	7.7	11
26	1.7	3.5	26	.50	.22	2.8	4.3	4.6	5.0	14	7.3	7.2
27	1.9	2.7	8.9	.50	.15	3.7	8.2	5.2	5.1	18	7.5	14
28	2.7	3.2	5.1	.46	.15	2.9	19	2.9	9.4	11	23	9.6
29	1.8	16	3.3	.46	---	2.9	25	2.5	21	6.2	9.9	41
30	1.6	4.3	2.6	.46	---	1.8	41	2.1	15	5.2	5.6	13
31	1.4	---	2.2	.50	---	.89	---	36	---	10	4.1	---
TOTAL	188.5	172.72	325.9	33.98	18.15	39.50	271.15	357.5	233.5	394.2	218.7	311.8
MEAN	6.08	5.76	10.5	1.10	.65	1.27	9.04	11.5	7.78	12.7	7.05	10.4
MAX	23	40	74	2.5	3.1	6.5	41	45	21	31	23	41
MIN	1.4	.91	1.3	.46	.15	.09	.28	2.1	2.9	3.8	2.3	2.1
AC-FT	374	343	646	67	36	78	538	709	463	782	434	618

CAL YR 1982	TOTAL	3926.10	MEAN	10.8	MAX	150	MIN	.36	AC-FT	7790
WTR YR 1983	TOTAL	2565.60	MEAN	7.03	MAX	74	MIN	.09	AC-FT	5090

16726000 UPPER HAMAKUA DITCH ABOVE WAIMEA RESERVOIR DIVERSION, NEAR KAMUELA

LOCATION.--Lat 20°03'31", long 155°37'40", Hydrologic Unit 20010000, on left bank 120 ft upstream from diversion intake leading to Waimea Reservoir and 3.7 mi northeast of Kamuela Post Office.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,020 ft, from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts from Kawainui, Kawaiki, and Alakahi Streams for use in vicinity of Kamuela. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--9 years, 9.96 ft³/s (7,220 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 48 ft³/s Apr. 6, 1977, and Jan. 13, 1979; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 43 ft³/s Dec. 19; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	.99	5.4	2.5	5.1	.00	21	40	25	16	15	10
2	8.5	.80	3.2	2.2	1.8	.00	20	33	19	15	12	10
3	6.5	.67	2.2	1.8	.80	.00	8.4	31	27	14	11	15
4	5.0	.57	1.6	1.7	.49	.00	2.1	37	17	22	21	12
5	3.5	.50	1.4	1.5	.32	.00	1.1	27	17	16	15	14
6	3.0	.52	1.1	1.5	.23	.00	.53	25	23	25	14	15
7	5.0	.52	15	1.8	.18	.00	.36	37	19	24	12	28
8	8.5	.42	9.7	1.6	.13	.00	20	28	22	22	10	20
9	20	.35	5.2	1.3	.07	.00	7.7	16	16	18	9.0	15
10	15	.29	3.1	1.1	.13	.00	1.8	11	19	13	12	12
11	15	.48	5.5	.94	.07	.00	1.0	20	14	12	20	12
12	20	.90	13	.82	.01	.00	7.0	21	10	12	15	25
13	12	15	4.9	.70	.00	.00	6.7	26	9.1	20	12	15
14	6.9	38	5.3	.71	.00	.00	14	29	17	21	10	12
15	5.6	23	4.9	4.4	.00	.10	40	22	7.7	18	9.0	10
16	5.0	19	21	2.0	.00	.12	17	18	12	18	8.5	25
17	4.5	15	14	1.1	11	.13	34	24	18	17	12	40
18	4.4	6.8	25	.77	13	5.8	21	16	13	16	9.0	20
19	4.6	4.1	43	.59	1.7	22	23	8.0	18	11	8.0	15
20	4.1	3.3	14	.48	.70	5.4	35	5.9	10	8.8	10	14
21	4.0	22	16	.42	.44	1.8	23	5.3	9.9	8.8	9.0	12
22	10	14	21	.36	.27	.75	25	19	16	8.5	8.5	15
23	4.5	5.6	14	.32	.20	3.4	24	16	15	10	16	8.4
24	3.3	18	28	.27	.14	11	20	11	12	17	12	5.5
25	2.2	24	14	.24	.03	20	16	24	11	24	10	11
26	1.7	11	40	.22	.01	8.1	16	18	12	20	12	12
27	1.8	5.1	24	.24	.00	14	21	18	12	24	14	19
28	3.8	5.7	12	.28	.00	9.3	30	8.5	8.9	16	30	22
29	2.7	24	5.8	.17	---	7.1	32	6.6	20	11	18	32
30	1.6	12	3.8	.20	---	3.4	37	5.3	17	9.2	15	22
31	1.3	---	2.9	.88	---	1.2	---	19	---	11	12	---
TOTAL	201.5	272.61	380.0	33.11	36.82	113.60	525.69	625.6	466.6	498.3	401.0	497.9
MEAN	6.50	9.09	12.3	1.07	1.31	3.66	17.5	20.2	15.6	16.1	12.9	16.6
MAX	20	38	43	4.4	13	22	40	40	27	25	30	40
MIN	1.3	.29	1.1	.17	.00	.00	.36	5.3	7.7	8.5	8.0	5.5
AC-FT	400	541	754	66	73	225	1040	1240	926	988	795	988

CAL YR 1982	TOTAL	5195.56	MEAN	14.2	MAX	45	MIN	.29	AC-FT	10310
WTR YR 1983	TOTAL	4052.73	MEAN	11.1	MAX	43	MIN	.00	AC-FT	8040

NOTE.--No gage-height record Aug. 5 to Sept. 21.

HAWAII, ISLAND OF HAWAII

16727000 UPPER HAMAKUA DITCH ABOVE PUUKAPU RESERVOIR, NEAR KAMUELA

LOCATION.--Lat 20°02'53", long 155°37'17", Hydrologic Unit 20010000, on right bank 25 ft downstream from pipe railed bridge and 4.0 mi northeast of Kamuela Post Office.

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,890 ft, from topographic map.

REMARKS.--Records fair. Ditch diverts above into 60 mg Waimea Reservoir for use in vicinity of Kamuela. Observations of specific conductance, pH, aand water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--6 years, 1.62 ft³/s (1,170 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 29 ft³/s Nov. 11, 12, 19, 1980; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 7.1 ft³/s Nov. 25; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	.00	2.5	1.6	.16	.00	.47	.00	.00	.00	.00	.02
2	3.4	.00	.30	1.5	.00	.00	.05	.00	.00	.00	.00	.02
3	.96	.00	.05	.45	.00	.00	.04	.00	.00	.00	.00	.02
4	.21	.00	.00	.03	.00	.00	.02	.00	.00	.00	.00	.02
5	.05	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.02
6	.04	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.02
7	.03	.00	1.0	.00	.00	.00	.00	.00	.00	.00	.00	.02
8	.03	.00	1.8	.00	.00	.00	1.9	.00	.00	.00	.00	.02
9	4.7	.00	1.8	.00	.00	.00	3.5	.00	.00	.00	.00	.02
10	4.2	.00	.96	.00	.00	.00	3.5	.00	.00	.00	.00	.02
11	2.1	.00	.30	.00	.00	.00	3.4	.00	.00	.00	.00	.02
12	5.2	.00	1.6	.00	.00	.00	3.4	.00	.00	.00	.00	.02
13	5.3	1.6	1.5	.00	.00	.00	4.0	.00	.00	.00	.00	.02
14	2.4	5.3	1.3	.00	.00	.00	5.0	.00	.00	.00	.00	.02
15	.75	5.3	1.6	.04	.00	.00	3.0	.00	.00	.00	.00	.02
16	.40	5.2	1.7	.00	.00	.00	2.0	.00	.00	.00	.00	.02
17	.24	2.4	1.6	.00	.04	.00	1.0	.00	.00	.00	.00	.02
18	.02	.21	1.9	.00	.14	.06	.50	.00	.00	.00	.00	.02
19	.00	1.4	2.1	.00	.00	.10	.30	.00	.00	.00	.00	.02
20	.00	.70	1.9	.00	.00	.00	.20	.00	.00	.00	.00	.02
21	.00	6.6	1.9	.00	.00	.00	.10	.00	.00	.00	.00	.02
22	.98	6.6	1.8	.00	.00	.00	.05	.00	.00	.00	.00	.02
23	.00	3.4	1.9	.00	.00	.00	.00	.00	.00	.00	.00	.02
24	.00	5.2	1.9	.00	.00	.48	.00	.00	.00	.00	.00	.02
25	.00	7.1	1.9	.00	.00	.75	.00	.00	.00	.00	.00	.02
26	.00	3.6	1.9	.00	.00	.00	.00	.00	.00	.00	.01	.02
27	.00	2.6	1.8	.00	.00	.21	.00	.00	.00	.00	.01	.02
28	.17	2.1	1.8	.00	.00	.02	.00	.00	.00	.00	.02	.02
29	.04	3.4	1.7	.00	---	.00	.00	.00	.00	.00	.02	.02
30	.00	3.0	1.7	.00	---	.00	.00	.00	.00	.00	.02	.02
31	.00	---	1.6	.13	---	.00	---	.00	---	.00	.02	---
TOTAL	31.92	65.71	43.81	3.79	.34	1.62	32.43	.00	.00	.00	.10	.60
MEAN	1.03	2.19	1.41	.12	.012	.052	1.08	.00	.00	.00	.003	.020
MAX	5.3	7.1	2.5	1.6	.16	.75	5.0	.00	.00	.00	.02	.02
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
AC-FT	63	130	87	7.5	.7	3.2	64	.00	.00	.00	.2	1.2

CAL YR 1982	TOTAL	970.94	MEAN	2.66	MAX	14	MIN	.00	AC-FT	1930
WTR YR 1983	TOTAL	180.32	MEAN	.49	MAX	7.1	MIN	.00	AC-FT	358

16756000 KOHAKOHAU STREAM NEAR KAMUELA

LOCATION.--Lat 20°02'38", long 155°41'10", Hydrologic Unit 20010000, on left bank 0.6 mi upstream from Oolamakapehu Gulch and 1.7 mi northwest of Kamuela.

DRAINAGE AREA.--2.51 mi².

PERIOD OF RECORD.--March 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,273 ft above mean sea level (by stadia survey by State Department of Land and Natural Resources). Prior to Jan. 11, 1967, at site 0.5 mi upstream at different datum.

REMARKS.--Records good. Parker Ranch pipeline diverts above station at altitude 4,250 ft. Hawaii Division of Water and Land Development diverts by pipeline 0.3 mi above station at altitude 3,400 ft for domestic use in the Kamuela and Kawaihae areas since Aug. 20, 1973. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--27 years, 8.77 ft³/s (6,350 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,880 ft³/s Aug. 7, 1958, gage height, 10.76 ft, site and datum then in use, from rating curve extended above 70 ft³/s by test of model of station site, no flow at times in 1968, 1971-83.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 583 ft³/s Dec. 18, gage height, 4.89 ft, from rating curve extended above 46 ft³/s on basis of computation of flow over dam at gage height 6.20 ft, no other peak above base of 310 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	.00	2.2	2.1	.00	.00	.64	67	20	16	14	3.1
2	4.1	.00	1.5	1.9	.00	.00	.00	48	8.8	12	8.2	2.8
3	2.6	.00	1.1	1.6	.00	.00	.00	37	20	9.6	5.2	5.9
4	2.0	.00	.72	1.5	.00	.00	.00	56	5.4	39	17	3.8
5	1.7	.00	.10	1.1	.00	.00	.00	18	6.0	17	19	2.9
6	1.4	.00	.00	.20	.00	.00	.00	11	12	54	7.5	8.0
7	.65	.00	23	.00	.00	.00	.00	59	6.4	45	6.7	8.1
8	.00	.00	4.9	.00	.00	.00	.00	26	12	31	4.5	38
9	7.0	.00	2.5	.00	.00	.00	.00	6.8	5.2	23	3.5	11
10	7.4	.00	1.6	.00	.00	.00	.00	.97	8.8	14	2.8	12
11	1.1	.00	1.3	.00	.00	.00	.00	.41	5.5	12	2.9	8.9
12	21	.00	3.1	.00	.00	.00	.00	5.1	3.5	7.2	12	5.9
13	32	9.6	1.6	.00	.00	.00	.00	20	3.0	30	21	17
14	5.5	49	1.4	.00	.00	.00	5.5	27	5.2	41	6.2	6.0
15	3.4	15	1.3	.00	.00	.00	36	7.7	2.9	28	3.6	3.8
16	2.5	5.1	29	.00	.00	.00	.22	5.2	5.3	16	2.7	3.9
17	1.9	3.8	8.1	.00	.00	.00	16	7.3	8.4	14	2.4	12
18	2.2	2.4	116	.00	.00	.00	6.1	4.5	5.1	11	2.7	51
19	1.9	1.6	104	.00	.00	.00	8.3	3.2	12	6.5	3.3	16
20	1.5	1.2	31	.00	.00	.00	17	2.5	4.5	4.2	2.2	11
21	1.3	19	25	.00	.00	.00	6.4	1.9	4.7	3.9	2.1	4.5
22	2.9	5.7	12	.00	.00	.00	22	2.2	13	3.7	2.4	2.9
23	1.9	2.6	13	.00	.00	.00	19	2.3	12	4.5	2.1	2.4
24	1.3	18	40	.00	.00	.00	6.5	2.5	4.8	12	4.1	1.9
25	.52	4.2	8.0	.00	.00	.00	4.9	5.5	3.8	33	9.1	4.0
26	.00	2.6	34	.00	.00	.00	4.7	4.1	4.5	25	5.7	5.6
27	.00	1.8	24	.00	.00	.00	8.6	4.6	4.9	28	5.0	19
28	.00	1.5	9.5	.00	.00	.00	25	2.6	4.8	17	26	14
29	.00	19	4.0	.00	---	.00	38	1.9	34	7.5	25	54
30	.00	4.1	3.0	.00	---	.00	61	1.5	17	4.6	5.5	18
31	.00	---	2.4	.00	---	.00	---	20	---	13	3.9	---
TOTAL	110.47	166.20	509.32	8.40	.00	.00	285.86	461.78	263.5	582.7	238.3	357.4
MEAN	3.56	5.54	16.4	.27	.00	.00	9.53	14.9	8.78	18.8	7.69	11.9
MAX	32	49	116	2.1	.00	.00	61	67	34	54	26	54
MIN	.00	.00	.00	.00	.00	.00	.00	.41	2.9	3.7	2.1	1.9
AC-FT	219	330	1010	17	.00	.00	567	916	523	1160	473	709

CAL YR 1982	TOTAL	4897.78	MEAN	13.4	MAX	241	MIN	.00	AC-FT	9710
WTR YR 1983	TOTAL	2983.93	MEAN	8.18	MAX	116	MIN	.00	AC-FT	5920

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA

LOCATION.--Lat 20°02'48", long 155°39'58", Hydrologic Unit 20010000, on right bank 160 ft upstream from Marine Dam, 0.4 mi east of Puu Ohu, and 1.6 mi north of Kamuela.

DRAINAGE AREA.--1.18 mi².

PERIOD OF RECORD.--May 1947 to current year.

REVISED RECORDS.--WSP 1569: Drainage area. WSP 1937: 1948(M), 1949-51(P), 1952(M), 1954(M), 1955, 1956-57(P), 1958-60.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,460 ft, from topographic map.

REMARKS.--Records good. Diversion above station for livestock and domestic use. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--36 years, 8.90 ft³/s (6,450 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,410 ft³/s Nov. 18, 1979, gage height, 6.84 ft, from rating curve extended above 120 ft³/s on basis of computations of flow over dam at gage heights 5.46 ft and 5.96 ft; minimum, 0.59 ft³/s Oct. 3-6, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 408 ft³/s Dec. 18, gage height, 4.02 ft, no other peak above base of 180 ft³/s; minimum, 0.94 ft³/s Mar. 12-14, 16.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	3.1	3.5	3.2	3.3	1.3	8.3	55	18	13	13	4.0
2	7.8	3.0	2.9	3.0	2.4	1.3	5.8	26	13	12	8.8	4.1
3	5.3	2.9	2.8	2.9	2.2	1.3	3.4	25	25	9.8	7.4	8.4
4	4.4	2.8	2.6	2.8	2.0	1.2	2.2	48	8.4	21	19	4.8
5	4.3	2.8	2.5	2.8	2.0	1.2	1.8	15	9.8	12	15	9.6
6	4.3	3.0	2.4	2.6	1.9	1.2	1.6	13	15	32	8.6	12
7	4.3	2.8	15	2.6	1.9	1.2	1.4	53	8.9	29	8.5	24
8	4.9	2.7	5.8	2.8	1.9	1.1	6.5	20	12	24	6.0	21
9	12	2.6	4.1	2.6	1.8	1.1	4.0	7.4	7.5	16	4.8	11
10	9.9	2.7	3.2	2.6	1.8	1.0	2.4	5.8	9.9	9.2	4.2	9.9
11	7.9	2.5	4.1	2.5	1.7	1.0	1.9	8.3	7.0	8.4	8.1	8.3
12	21	2.6	6.9	2.4	1.7	1.0	3.2	9.0	5.5	8.6	18	7.0
13	19	9.2	3.6	2.4	1.6	.94	3.2	19	5.8	20	12	14
14	7.0	41	4.0	2.6	1.6	.97	14	18	8.1	21	7.6	7.2
15	5.0	9.5	3.6	3.8	1.6	1.1	29	8.9	5.1	17	5.4	5.0
16	4.1	6.0	12	2.9	1.6	1.0	6.2	7.9	7.7	16	4.7	5.9
17	3.7	5.3	5.8	2.6	4.8	1.2	16	9.8	9.4	14	4.1	11
18	3.9	3.6	93	2.4	5.1	4.7	7.0	7.2	6.3	13	5.4	40
19	3.7	3.2	86	2.4	2.6	11	8.7	4.9	8.6	7.5	4.8	11
20	3.4	3.3	18	2.3	2.2	3.0	16	4.1	5.1	6.0	3.8	8.1
21	3.8	12	16	2.3	1.9	1.9	7.9	3.8	4.9	5.7	5.1	6.4
22	9.9	5.8	11	2.3	1.7	1.5	14	6.3	9.5	5.9	4.8	5.6
23	4.8	3.5	13	2.2	1.7	1.6	11	7.0	8.2	6.6	4.1	5.1
24	3.9	5.8	19	2.2	1.5	1.8	6.8	6.3	5.5	16	9.8	4.4
25	3.6	7.8	8.9	2.2	1.5	2.8	6.0	13	5.3	23	8.1	4.4
26	3.5	5.1	41	2.2	1.4	2.5	7.1	8.4	6.6	19	7.0	4.4
27	3.6	3.5	17	2.3	1.4	4.3	11	8.5	6.2	23	6.0	3.5
28	3.5	3.5	8.1	2.1	1.3	4.1	21	5.1	6.2	15	18	3.4
29	3.4	12	4.6	2.0	---	3.0	26	4.2	18	8.3	11	3.3
30	3.2	5.3	3.8	2.1	---	2.2	49	3.8	13	6.1	5.4	3.4
31	3.2	---	3.3	2.5	---	1.8	---	15	---	11	4.4	---
TOTAL	187.8	178.9	427.5	78.6	58.1	65.31	302.4	446.7	279.5	449.1	252.9	270.2
MEAN	6.06	5.96	13.8	2.54	2.07	2.11	10.1	14.4	9.32	14.5	8.16	9.01
MAX	21	41	93	3.8	5.1	11	49	55	25	32	19	40
MIN	3.2	2.5	2.4	2.0	1.3	.94	1.4	3.8	4.9	5.7	3.8	3.3
AC-FT	373	355	848	156	115	130	600	886	554	891	502	536

CAL YR 1982	TOTAL	4613.4	MEAN	12.6	MAX	163	MIN	2.4	AC-FT	9150
WTR YR 1983	TOTAL	2997.01	MEAN	8.21	MAX	93	MIN	.94	AC-FT	5940

HAWAII ISLAND OF HAWAII

16759000 HAUANI GULCH NEAR KAMUELA

LOCATION.--Lat 20°02'28", long 155°39'05", Hydrologic Unit 20010000, on left bank 800 ft downstream from small tributary and 1.8 mi northeast of Kamuela.

DRAINAGE AREA.--0.47 mi².

PERIOD OF RECORD.--March 1956 to current year. Prior to July 1960, published as Hauani Stream near Kamuela.

GAGE.--Water-stage recorder. Concrete control since Feb. 27, 1963. Datum of gage is 3,117.42 ft above mean sea level (Hawaii County Board of Water Supply bench mark).

REMARKS.--Records good. Diversion above station for livestock and domestic use. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--27 years, 1.58 ft³/s (1,140 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 822 ft³/s Nov. 18, 1979, gage height, 4.56 ft, from rating curve extended above 11 ft³/s on basis of slope-conveyance study; maximum gage height, 4.65 ft Oct. 23, 1957; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 162 ft³/s Dec. 18, gage height, 3.06 ft, no other peak above base of 78 ft³/s; minimum, 0.02 ft³/s Mar. 10-14.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	.23	.28	.34	.26	.03	.46	13	1.9	1.6	1.7	.41
2	.89	.23	.23	.29	.14	.03	.55	5.7	1.9	1.2	1.1	.44
3	.47	.23	.21	.26	.10	.03	.19	4.9	5.3	1.2	.94	.79
4	.41	.23	.19	.26	.09	.03	.10	10	1.1	3.9	3.3	.40
5	.38	.23	.18	.23	.08	.03	.08	2.7	1.6	2.3	2.0	1.6
6	.38	.23	.17	.23	.08	.03	.06	2.1	2.0	7.3	1.1	1.4
7	.38	.23	2.2	.22	.08	.03	.05	11	1.1	6.1	1.0	3.7
8	.40	.22	.53	.20	.06	.03	.92	3.7	1.8	4.5	.72	2.6
9	.99	.21	.29	.18	.06	.03	.23	1.2	.93	2.6	.58	1.1
10	.94	.20	.22	.18	.06	.02	.11	.89	1.2	1.4	.49	1.1
11	.62	.20	.57	.17	.06	.02	.08	1.0	.75	1.2	1.4	.86
12	2.4	.21	.88	.16	.06	.02	.14	.94	.53	1.2	2.9	.70
13	2.3	1.4	.29	.15	.06	.02	.23	1.9	.77	3.3	1.5	1.3
14	.69	11	.33	.18	.06	.02	3.8	2.5	.97	4.1	.82	.65
15	.51	1.5	.32	.34	.06	.05	5.8	1.1	.48	3.1	.57	.50
16	.42	.71	2.3	.18	.06	.05	.92	.89	1.1	2.1	.50	.49
17	.38	.60	.70	.15	.34	.06	2.9	1.1	1.2	1.9	.45	1.7
18	.38	.34	29	.13	.28	.23	.89	.89	.91	2.2	.60	5.9
19	.36	.26	23	.12	.12	.55	1.1	.50	1.3	.98	.46	.95
20	.34	.24	3.9	.12	.08	.13	2.5	.37	.61	.77	.39	.71
21	.33	1.1	3.0	.12	.06	.07	1.0	.34	.82	.67	.47	.71
22	.75	.50	1.6	.12	.05	.05	1.7	.72	1.5	.69	.42	.97
23	.38	.28	2.3	.11	.04	.06	1.4	.84	1.1	.98	.37	.70
24	.33	.33	3.3	.10	.04	.06	.85	.56	.77	4.5	.99	.48
25	.31	.55	1.2	.10	.03	.12	.72	1.3	.91	5.5	.84	1.2
26	.31	.37	11	.10	.03	.18	.96	.76	.94	3.6	.75	1.3
27	.36	.25	3.5	.12	.03	.49	1.6	.92	.73	3.6	.62	2.6
28	.36	.23	1.4	.13	.03	.37	3.8	.45	.59	2.2	3.1	3.8
29	.33	1.9	.66	.10	---	.15	5.3	.36	1.9	1.1	1.3	12
30	.26	.47	.46	.11	---	.10	12	.32	1.5	.91	.60	3.5
31	.24	---	.37	.14	---	.07	---	1.1	---	1.6	.47	---
TOTAL	18.07	24.68	94.58	5.34	2.50	3.16	50.44	74.05	38.21	78.30	32.45	54.56
MEAN	.58	.82	3.05	.17	.089	.10	1.68	2.39	1.27	2.53	1.05	1.82
MAX	2.4	11	29	.34	.34	.55	12	13	5.3	7.3	3.3	12
MIN	.24	.20	.17	.10	.03	.02	.05	.32	.48	.67	.37	.40
AC-FT	36	49	188	11	5.0	6.3	100	147	76	155	64	108

CAL YR 1982	TOTAL	933.63	MEAN	2.56	MAX	50	MIN	.10	AC-FT	1850
WTR YR 1983	TOTAL	476.34	MEAN	1.31	MAX	29	MIN	.02	AC-FT	945

HAWAII, ISLAND OF HAWAII

16764000 HILEA GULCH TRIBUTARY NEAR HONUAPO

LOCATION.--Lat 19°10'27", long 155°35'58", Hydrologic Unit 20010000, on right bank 0.5 mi upstream from mouth, 6.6 mi northwest of Honuapo, and 6.7 mi west of Punaluu.

DRAINAGE AREA.--9.17 mi².

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,940 ft, from topographic map.

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--17 years, 8.48 ft³/s (6,140 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,400 ft³/s Mar. 18, 1980, gage height, 8.00 ft, from rating curve extended above 75 ft³/s; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 426 ft³/s Oct. 5, gage height, 4.42 ft, no peak above base of 600 ft³/s; no flow for many days.

DISCHARGE (CUBIC FEET/SECOND) WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	.73	.13	.05	.00	.00	.00	4.2	2.1	.58	.17	4.2
2	1.4	.93	.16	.05	.00	.00	.00	2.2	.77	.54	.14	.96
3	1.4	.57	.15	.00	.00	.00	.00	.48	.46	.39	.11	.47
4	27	.50	.21	.00	.00	.00	.00	.17	32	.20	.07	1.4
5	57	.36	.17	.00	.00	.00	.00	1.1	44	.14	.04	38
6	10	.41	.18	.00	.00	.00	.00	.50	11	.06	.01	11
7	6.7	.33	.18	.00	.00	.00	.00	.34	1.8	.06	.01	1.1
8	35	.31	.17	.00	.00	.00	.00	.43	5.4	.05	.00	.60
9	17	.32	.17	.00	.00	.00	.00	1.7	2.1	.05	.04	.43
10	14	13	.17	2.6	.00	.00	.00	.90	.93	.22	.12	.30
11	30	.65	.17	.95	.00	.00	.00	.29	.68	.29	.00	1.5
12	23	.30	.17	.40	.00	.00	.08	.11	3.2	.23	.09	5.9
13	9.8	.25	.16	.26	.00	.00	.01	.39	2.5	.25	1.2	1.1
14	2.0	.24	.16	.06	.00	.00	.00	.78	.80	.13	1.5	1.8
15	5.3	.22	.15	.00	.00	.00	.00	.56	.56	.06	2.5	.77
16	3.9	.21	.15	.00	.00	.00	.00	.20	.45	.05	.64	.49
17	10	.21	.15	.00	.00	.00	.00	.02	.26	.10	.37	.56
18	2.6	.14	.14	.00	.00	.00	.00	.42	.19	1.8	1.2	3.7
19	1.1	.16	.14	.00	.00	.00	.00	.40	.17	.73	1.7	3.3
20	.81	.39	.14	.00	.00	.00	.00	.16	.16	14	.75	1.2
21	.72	3.1	.14	.00	.00	.00	.00	.02	.14	3.9	1.1	.57
22	1.9	.44	.14	.00	.00	.00	.00	.17	.33	5.7	.76	.55
23	.95	2.2	.14	.00	.00	.00	.00	.20	.52	1.5	3.6	.49
24	.75	1.6	.13	.00	.00	.00	.15	.00	.42	.63	19	.84
25	1.1	.28	.57	.00	.00	.00	.04	.00	.24	.47	1.3	15
26	1.1	.23	8.8	.00	.00	.00	.00	.00	1.3	.60	.56	1.9
27	.99	.20	1.9	.00	.00	.00	.00	.00	.66	2.5	.33	1.6
28	.74	.11	.31	.00	.00	.00	.00	.00	.30	1.9	.22	1.0
29	3.9	.11	.17	.00	---	.00	.00	.13	.55	.73	.16	5.6
30	2.0	.14	.15	.00	---	.00	.00	.17	.62	.53	.22	1.5
31	.59	---	.10	.00	---	.00	---	.39	---	.34	.45	---
TOTAL	274.25	28.64	15.77	4.37	.00	.00	.28	16.43	114.61	38.73	38.36	107.83
MEAN	8.85	.95	.51	.14	.00	.00	.009	.53	3.82	1.25	1.24	3.59
MAX	57	13	8.8	2.6	.00	.00	.15	4.2	44	14	19	38
MIN	.59	.11	.10	.00	.00	.00	.00	.00	.14	.05	.00	.30
AC-FT	544	57	31	8.7	.00	.00	.6	33	227	77	76	214

CAL YR 1982	TOTAL	3505.44	MEAN	9.60	MAX	412	MIN	.10	AC-FT	6950
WTR YR 1983	TOTAL	639.27	MEAN	1.75	MAX	57	MIN	.00	AC-FT	1270

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of base flow or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1983

Station No.	Station name	Location	Drainage area mi²	Period of record	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Kauai				
16011000	Waiakoali Stream near Waimea	Lat 22°07'42", long 159°37'27", 0.3 mi upstream from mouth and 12 mi northeast of Waimea.	1.58	1909-13≠, 1914-17, 1919-25≠, 1961-62, 1964, 1966-70, 1972-83	10-27-82 2-18-83 6-28-83 8-29-83	10.7 2.43 2.69 2.53
16012000	Kauaikinana Stream near Waimea	Lat 22°08'12", long 159°37'58", 0.6 mi upstream from mouth and 12 mi northeast of Waimea.	.84	1911-13, 1915-17, 1919-25≠, 1961-62, 1964, 1966-83	10-27-82 2-18-83 6-28-83 8-29-83	1.74 1.89 1.95 1.85
16029500	Hokihana Stream near Waimea	Lat 21°59'38", long 159°40'07", 500 ft upstream from mouth and 2.5 mi north of Waimea.	4.83	1962, 1964-83	10-12-82 2-14-83	.80 2.21
16030000	Peekauai ditch near Waimea	Lat 21°58'43", long 159°39'37", on right bank 0.8 mi upstream from Makaweli River and 1.6 mi north of Waimea Post Office.	-	1911-19, 1979-83	10-12-82 2-14-83 6- 6-83	1.73 1.19 1.97
16058500	South Fork Wailua River near rock quarry	Lat 22°01'44", long 159°25'03", 7.5 mi upstream from mouth and 4.6 mi northwest of Lihue.	20.2	1974-83	2- 8-83 3-11-83	4.05 4.40
16102000	China ditch near Hanalei	Lat 22°11'10", long 159°28'00", on left bank just below intake and 3.0 mi southeast of Hanalei.	-	1913-19≠, 1977-83	2-11-83	1.34
		Hawaii, Island of Oahu				
16201000	Right Branch of North Fork Kaukonahua Stream near Wahiawa	Lat 21°31'11", long 157°56'53", 200 ft above confluence with Left Branch and 4.5 mi east of Leilehua High School in Wahiawa.	1.17	1913-53≠, 1960-62, 1966, 1968-83	1-14-83 2-14-83 4-15-83 9-12-83	2.50 .47 .38 2.70
16214000	Pearl Harbor Springs at Waiawa, near Pearl City	Lat 21°23'36", long 157°59'11", 0.7 mi west of Pearl City and 1.5 mi east of Waipahu Post Office.	-	1931-34≠, 1937-64≠, 1967-68, 1970-83	4-26-83	17.8
16224000	Pearl Harbor Springs at Kalauao, near Aiea	Lat 21°23'05", long 157°56'46", 300 ft downstream from Highway 90 and 0.8 mi west of Aiea Post Office.	-	1931-62≠, 1964-65≠, 1966-68, 1970-83	4-25-83	19.6
16264100	Kahanaiki Stream at Highway 61, near Kailua	Lat 21°22'49", long 157°46'06", at bridge on Highway 61 and 1.9 mi southwest of Kailua Post Office.	1.45	1960-63, 1965-66, 1971-81, 1983	3- 8-83 9-21-83	1.80 .75

≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during water year 1983--Continued

Station No.	Station name	Location	Drainage area mi²	Period of record	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Oahu--Continued				
16283400	Kahaluu Stream near Kahaluu	Lat 21°27'14", long 157°50'17", 600 ft above Ahuimanu Stream and 0.6 mi south of Kahaluu.	1.29	1962-63, 1966, 1972-81, 1983	3- 8-83 9-24-83	4.56 2.14
16295995	Kahana Stream at Mauka trail crossing, near Kahana	Lat 21°32'17", long 157°53'29", 1.8 mi upstream from main bridge on Kamehameha Highway and 2.8 mi southwest of Kaaawa School.	3.18	1960-62, 1966, 1971-72, 1974-81, 1983	4- 8-83 9-19-83	16.6 16.2
16297000	Kawa Stream near Kahana	Lat 21°32'33", long 157°53'00", 0.1 mi above confluence with Kahana Stream and 1.0 mi south of Kahana.	2.09	1914-17≠, 1958b, 1961-62, 1966, 1971-72, 1974-81, 1983	4- 8-83 9-19-83	2.89 2.08
		Hawaii, Island of Molokai				
16403400	Kapuhi Stream at altitude 1,000 ft, near Pelekunu	Lat 21°07'50", long 156°53'02", 500 ft upstream from Kawailena Stream, 2.2 mi south of former village of Pelekunu, and 5.4 mi north of Kamalo.	.51	1968-83	11- 5-82 2-11-83 8-16-83	1.83 1.03 1.74
16403500	Kawailena Stream near Pelekunu	Lat 20°07'52", long 156°53'05", 800 ft upstream from mouth, 2.2 mi south of former village of Pelekunu, and 5.5 mi north of Kamalo.	.65	1968-83	11- 5-82 2-11-83 8-16-83	1.86 2.44 1.69
16403600	Kapuhi Stream near Pelekunu	Lat 21°07'57", long 156°52'56", on left bank 400 ft downstream from Kawailena Stream, 2.1 mi south of former village of Pelekunu, and 5.6 mi north of Kamalo.	1.20	1968-70≠, 1974-83	11- 5-82 2-11-83	4.47 3.18
16403700	Kawainui Stream at altitude 1,000 ft, near Pelekunu	Lat 20°07'46", long 156°52'31", 400 ft upstream from Kawaipoko Stream, 2.4 mi south of former village of Pelekunu, and 5.4 mi north of Kamalo.	.79	1968-83	11- 5-82 2-11-83 8-17-83	3.98 1.82 7.51
16403800	Kawaipoko Stream near Pelekunu	Lat 21°07'48", long 156°52'30", 300 ft upstream from mouth, 2.4 mi south of former village of Pelekunu, and 5.4 mi north of Kamalo.	.26	1968-83	11- 5-82 2-11-83 8-17-83	.98 .47 1.43
**16403900	Kawainui Stream near Pelekunu	Lat 21°07'59", long 156°52'38", on right bank 900 ft upstream from confluence with Kapuhi Stream, 2.1 mi south of former village of Pelekunu, and 5.7 mi north of Kamalo.	1.17	1968-79≠, 1980-83	11- 5-82 2-11-83	7.13 2.59

** Also a water-quality partial-record station.
≠ Operated as a continuous-record gaging station.
b Gage height only

Crest-stage partial-record stations

Prior to 1973, crest-stage partial-record station records for the State of Hawaii were published in an annual progress report entitled "An Investigation of Floods in Hawaii." The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements or peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1983

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Annual Maximum Gage height (feet)	Annual Maximum Discharge (ft³/s)
		Hawaii, Island of Kauai					
16038000	Waimea River at Waimea	Lat 21°57'23", long 159°39'59", 150 ft upstream from highway bridge at Waimea and 0.2 mi upstream from mouth.	86.5	1944-83b	10-30-82	8.74	-
16052000	Hanapepe River at Hanapepe	Lat 21°54'47", long 159°35'33", 400 ft upstream from bridge on Highway 50 and 0.5 mi upstream from mouth.	26.6	1950-83b	10-30-82	5.92	-
16052500	Lawai Stream near Koloa	Lat 21°54'11", long 159°30'21", on right bank at private road bridge, 0.9 mi upstream from mouth, and 2.4 mi southwest of Koloa.	6.62	1962-63, 1964-72≠, 1973-83	10-30-82	6.20	2,270
16055000	Huleia Stream near Lihue	Lat 21°57'20", long 159°25'23", at highway bridge, 3.7 mi southwest of Lihue, and 4.5 mi upstream from mouth.	17.6	1912-15≠, 1962-67, 1968-70≠, 1971-83	10-30-82	16.64	11,980
16071800	Wailua River near Kapaa	Lat 22°03'00", long 159°20'26", at State Park 600 ft upstream from highway bridge, 850 ft upstream from mouth, and 2.5 mi southwest of Kapaa.	52.6	1962-83b	10-30-82	6.04	-
16073500	Konohiki Stream near Kapaa	Lat 22°04'01", long 159°20'21", at culvert on private road, 1.8 mi upstream from mouth, and 2.4 mi southwest of Kapaa High School.	3.38	1964-67, 1970-83	10-30-82	11.05	960
16081200	Akulikuli Stream near Kapaa	Lat 22°06'25", long 159°22'07", at Kahuna road crossing, 800 ft upstream from mouth, and 3.5 mi northwest of Kapaa armory.	.40	1964-83	10-30-82	7.64	780
16084500	Kapaa Stream at old highway crossing, near Kealia	Lat 22°06'28", long 159°19'52", at abutment of old highway bridge, 100 ft upstream from road crossing, 1.4 mi northwest of Kealia, and 2.1 mi upstream from mouth.	14.0	1962-83	10-30-82	18.02	17,600
16085000	Homaikawaa Stream near Kealia	Lat 22°07'23", long 159°18'12", at culvert on Highway 56, 1.6 mi southeast of Anahola School, and 1.6 mi north of Kealia.	.85	1964-83	10-30-82	6.58	800
16097900	Puukumu Stream near Kilauea	Lat 22°13'01", long 159°25'18", at culvert on Highway 56, 0.8 mi northwest of Kilauea School, and 0.9 mi upstream from mouth.	.91	1964-68, 1971-83	10-30-82	5.70	213
16104200	Hanalei River at Highway 56 bridge near Hanalei	Lat 22°12'50", long 159°28'43", at highway bridge, 1.6 mi northeast of Hanalei, and 2.4 mi upstream from mouth.	21.0	1963-83b	10-30-82	11.97	-
16130000	Nahomalu Valley near Mana	Lat 22°02'41", long 159°45'17", on left bank 1.1 mi northeast of Mana, and 5.3 mi northwest of Kekaha School.	3.81	1962-63, 1964-71≠, 1972-83	10-30-82	7.07	2,070

≠ Operated as a continuous-record gaging station.
b Gage height only.

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Annual Maximum Gage height (feet)	Annual Maximum Discharge (ft³/s)
		Hawaii, Island of Oahu					
16210500	Kaukonahua Stream at Waialua	Lat 21°33'56", long 158°07'26", 0.2 mi upstream from Highway 99, 0.4 mi southeast of Waialua High School, and 1.3 mi southwest of Weed Circle.	38.7	1963, 1968-83	10-29-82	22.33	4,180
16211200	Poamoho Stream at Waialua	Lat 21°34'00", long 158°06'40", at culvert crossing of Kaheaka Road, 0.2 mi upstream from Highway 83, and 1.1 mi east of Waialua High School.	10.9	1967-83	10-29-82	13.84	a1,200
16211300	Makaleha Stream near Waialua	Lat 21°33'49", long 158°09'21", 1.0 mi southwest of Dillingham Ranch and 1.9 mi southwest of sugar mill at Waialua.	4.15	1958-63, 1964-65≠, 1966-83	12-23-82	5.54	476
16211400	Manini Gulch at Kaena	Lat 21°34'50", long 158°15'12", 180 ft upstream from Highway 99, 1.7 mi west of Camp Erdman, and 2.0 mi east of Kaena Point.	1.08	1974-83	12-23-82	13.48	450
16211500	Makua Stream at Makua	Lat 21°31'59", long 158°13'49", on left bank 20 ft upstream from old concrete highway ford, 140 ft downstream from Farrington Highway box culvert, 0.1 mi north of Makua cemetery, and 4.5 mi southeast of Kaena Point lighthouse.	4.28	1958-83	10-27-82	-	a400
16211700	Makaha Stream at Makaha	Lat 21°28'47", long 158°12'31", 0.9 mi upstream from Farrington Highway and 1.1 mi north of junction of Farrington Highway and Makaha Valley Road.	5.25	1966-83	10-27-82	6.54	a500
16211800	Kaupuni Stream at altitude 372 ft, near Waianae	Lat 21°28'20", long 158°09'26", at abandoned diversion dam, 2.6 mi northeast of Waianae cemetery, and 2.8 mi northeast of junction of Waianae Valley Road and Farrington Highway.	3.58	1961-72≠, 1973-83	10-27-82	5.30	a350
16212200	Mailiilii Stream near Waianae	Lat 21°27'34", long 158°08'05", at bridge at Lualualei Naval Reservation and 3.4 mi east of cemetery near Waianae.	1.51	1958-83	10-27-82	2.14	564
16212300	Nanakuli Stream at Nanakuli	Lat 21°23'08", long 158°08'11", 0.7 mi upstream from Highway 90 and 0.6 mi northeast of Nanakuli Post Office.	3.98	1968-83	10-27-82	-	a500
16212450	Kaloi Gulch tributary near Honouliuli	Lat 21°22'41", long 158°03'45", at culvert on private road, 1.8 mi west of Honouliuli, and 2.8 mi northwest of Ewa Post Office.	1.70	1968-83	10-27-82	-	a100
16212500	Honouliuli Stream near Waipahu	Lat 21°22'40", long 158°02'10", at bridge on Farrington Highway and 1.8 mi west of Waipahu Post Office.	11.0	1956-83	10-27-82	3.08	578
16212601	Waikele Stream at Wheeler Field	Lat 21°28'44", long 158°03'07", at culvert 0.3 mi west of east-west runway at Wheeler Field and 1.9 mi southwest of Wahiawa Post Office.	6.35	1958, 1960-83	10-27-82	6.04	299
16212700	Waikakalaua Stream near Wahiawa	Lat 21°27'50", long 158°01'38", 0.2 mi downstream from Kamehameha Highway and 2.4 mi south of Wahiawa Post Office.	7.49	1958-83	10-27-82	5.33	172
16212750	Huliwai Gulch near Kunia Camp	Lat 21°26'43", long 158°03'47", 200 ft upstream from Highway 75 and 1.2 mi south of Kunia Camp.	.84	1974-83	10-27-82	-	a30

≠ Operated as a continuous-record gaging station.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Oahu--Continued					
16223000	Waimalu Stream near Aiea	Lat 21°23'48", long 157°56'56", 1,300 ft upstream from bridge on Moanalua Road and 1.2 mi northwest of Aiea High School.	5.97	1952-70≠, 1973-83	10-28-82	3.35	1,840
16228000	Moanalua Stream near Honolulu	Lat 21°22'53", long 157°52'22", on left bank 1.8 mi northeast of Tripler Hospital and 5.0 mi north of Honolulu Post Office.	2.73	1927-78≠, 1979-83	10-28-82	4.94	700
**16228200	Moanalua Stream near Aiea	Lat 21°22'37", long 157°53'03", on right bank 1.1 mi northeast of Tripler Hospital and 2.9 mi east of Aiea sugar refinery.	3.34	1969-83	10-28-82	4.56	962
16228600	Moanalua Stream at Tripler Hospital	Lat 21°21'52", long 157°54'05", on right bank 0.5 mi west of Tripler Hospital and 1.6 mi northeast of Aliamanu School.	4.44	1971-83	10-28-82	15.20	1,170
16228900	Kalihi Stream near Kaneohe	Lat 21°22'35", long 157°49'32", on right bank 800 ft downstream from Likelike Highway and 2.8 mi southwest of Castle High School in Kaneohe.	.60	1967-71≠, 1972-83	10-28-82	2.56	187
16235400	Waolani Stream at Honolulu	Lat 21°20'00", long 157°51'04", at Wyllie Street bridge and 1.8 mi northeast of Honolulu Post Office.	1.28	1958-83	12-23-82	1.01	132
16237500	Pauoa Stream at Honolulu	Lat 21°19'18", long 157°51'03", at Lusitana Street bridge and 1.1 mi northeast of Honolulu Post Office.	1.43	1958-83	12-23-82	.29	a150
16247100	Manoa-Palolo Drainage Canal at Moiliili	Lat 21°17'24", long 157°49'17", on left bank at Kaimuki High School, 0.3 mi downstream from confluence of Manoa and Palolo Streams, and 0.6 mi upstream from point of discharge into Ala Wai Canal.	9.35	1968-83	12-23-82	5.00	1,030
16247500	Wailupe Gulch at Aina Haina	Lat 21°17'46", long 157°45'29", at Ani Street bridge and 1.0 mi upstream from Kalanianaole Highway in Aina Haina.	2.35	1958-83	10-27-82	-	a400
16247900	Kuliouou Valley at Kuliouou	Lat 21°17'50", long 157°43'35", at Kuliouou, 300 ft downstream of single-lane wooden bridge, and 0.6 mi upstream from Highway 72.	1.18	1958-59, 1970-83	12-23-82	29.92	220
16248800	Inoaole Stream at Waimanalo	Lat 21°29'31", long 157°42'40", 30 ft upstream from culvert on Hihimanu Street and 0.8 mi northwest of Waimanalo Post Office.	1.21	1958-83	10-28-82	3.45	a50
16249000	Waimanalo Stream at Waimanalo	Lat 21°21'12", long 157°43'52", on right bank 40 ft upstream from Highway 72 and 2.3 mi northwest of Waimanalo Post Office.	2.16	1967-70≠, 1971-83	10-28-82	5.92	a600
16249100	Kaelepulu Stream tributary at Kailua	Lat 21°21'44", long 157°44'22", 30 ft upstream from Kalanianaole Highway, 1.6 mi northwest of Waimanalo School, and 2.4 mi south of Kailua Post Office.	.16	1963-83	10-28-82	2.74	87
16260500	Maunawili Stream at Highway 61, near Kailua	Lat 21°22'51", long 157°45'48", on right bank at downstream side of bridge on Highway 61, 0.6 mi west of Maunawili School, and 1.6 mi southwest of Kailua Post Office.	5.34	1958-67, 1968-71≠, 1972-83	10-28-82	6.38	a400

** Also a water-quality partial-record station.
≠ Operated as a continuous-record gaging station.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Oahu--Continued					
16264800	Kawainui Canal at Kailua	Lat 21°24'15", long 157°45'28", at head of canal and 1.2 mi northwest of Kailua Post Office.	11.0	1957-60, 1963-64, 1967-83b	10-28-82	2.31	-
16265000	Kawa Stream at Kaneohe	Lat 21°24'32", long 157°47'36", 50 ft upstream from bridge on Kaneohe Bay Drive at Kaneohe, 0.2 mi northeast of Castle High School, and 0.6 mi upstream from mouth.	1.19	1965, 1968-74, 1977-83	10-28-82	7.05	785
**16270900	Luluku Stream at altitude 200 ft, near Kaneohe	Lat 21°23'42", long 157°48'46", on left bank 0.5 mi upstream from mouth, 1.4 mi southwest of Castle High School, and 1.9 mi south of Kaneohe Post Office.	.44	1967-71≠, 1972-75, 1977-83	10-28-82	-	a250
16274499	Keaahala Stream at Kamehameha Highway, at Kaneohe	Lat 21°25'12", long 157°48'15", 35 ft upstream from bridge on Kamehameha Highway in Kaneohe.	.62	1959-83	10-28-82	3.36	a100
16279500	Heeia Stream at Kaneohe	Lat 21°25'17", long 157°49'01", 60 ft downstream from culvert on Kahekili Highway, 0.7 mi west of Kaneohe Post Office, and 0.8 mi southwest of Heeia.	1.80	1965-66, 1968-83	10-28-82	6.09	a300
16283480	Ahuimanu Stream near Kahaluu	Lat 21°27'04", long 157°50'13", at bridge on Ahuimanu Road and 0.8 mi south of Kahaluu.	2.31	1963-83	10-28-82	7.50	a650
16304500	Kaluanui Stream at Hauula	Lat 21°35'57", long 157°54'24", on left downstream wingwall of concrete bridge, 1.2 mi southeast of cemetery in Hauula, and 1.4 mi northeast of Sacred Falls.	2.12	1958-83	10-27-82	2.75	670
16310501	Malaekahana Stream at altitude 30 ft, near Kahuku	Lat 21°39'47", long 157°57'11", at abandoned plantation railroad bridge, 1.1 mi southwest of junction of plantation road and Highway 83, and 1.2 mi south of Kahuku Hospital.	4.05	1958-83	10-27-82	5.44	152
16311000	Oio Stream near Kahuku	Lat 21°41'32", long 157°59'48", 0.6 mi southwest of junction of plantation road and Highway 83 and 2.7 mi west of Kahuku Hospital.	2.13	1958-83	10-27-82	8.12	a150
16317800	Kaunala Gulch near Sunset Beach	Lat 21°40'59", long 158°02'12", on downstream left bank wingwall of road bridge on Highway 83 near Sunset Beach and 2.9 mi northeast of Waimea.	1.98	1973-83	12-23-82	4.77	a80
16318000	Paumalu Gulch at Sunset Beach	Lat 21°40'19", long 158°02'28", 0.4 mi upstream from Highway 83 at Sunset Beach and 2.2 mi northeast of Waimea.	2.59	1968-83	10-27-82	3.92	a200
16331000	Waimea Gulch near Kawailoa Camp	Lat 21°37'29", long 158°04'58", at culvert on Ashley Road, 0.1 mi upstream from Highway 83, and 1.1 mi north of Kawailoa Camp.	2.23	1968-83	10-27-82	2.56	89
16340000	Anahulu River near Haleiwa	Lat 21°35'28", long 158°04'45", 1.7 mi southeast of junction of Emerson Road and Kamehameha Highway and 2.5 mi east of Waialua School at Haleiwa.	13.5	1958-83	10-27-82	6.48	2,190
16350000	Opaeula Stream near Haleiwa	Lat 21°35'09", long 158°06'01", 0.6 mi upstream from Kamehameha Highway and 2.1 mi northeast of Waialua.	5.96	1956-83	10-27-82	11.67	a1,700

** Also a water-quality partial-record station.
≠ Operated as a continuous-record gaging station.
a Estimated.
b Gage height only.

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Annual Maximum Gage height (feet)	Annual Maximum Discharge (ft³/s)
		Hawaii, Island of Molokai					
16411300	Kakaako Gulch at Highway 46, near Mauna Loa	Lat 21°08'49", long 157°11'36", at Highway 46, 1.6 mi northeast of Mauna Loa, and 1.8 mi upstream from Kamakahi Gulch.	0.55	1964-83	-	-	No flow
16411320	Kakaako Gulch above Kamakahi Gulch, near Mauna Loa	Lat 21°10'11", long 157°11'56", 0.1 mi upstream from Kamakahi Gulch, 1.7 mi downstream from Highway 46, and 2.5 mi northeast of Mauna Loa.	1.40	1964-83	12-23-82	-	a1
16411400	Kakaako Gulch near Mauna Loa	Lat 21°10'39", long 157°12'31", on left bank 1.0 mi downstream from Kamakahi Gulch, and 3.0 mi north of Mauna Loa School.	5.34	1963-72≠, 1973-83	12-23-82	1.82	28
16411600	Kaunala Gulch near Mauna Loa	Lat 21°07'01", long 157°15'43", at Sand Haul Road, 3.2 mi east of Laau Point lighthouse, and 3.3 mi southwest of Mauna Loa.	.28	1964-83	10-27-82	1.14	15
16411640	Halena Gulch near Mauna Loa	Lat 21°05'53", long 157°13'47", 2.7 mi southwest of Mauna Loa and 5.5 mi east of Laau Point.	2.07	1965-83	10-27-82	2.07	199
16411800	Kaluapeelua Gulch at Hoolehua	Lat 21°09'55", long 157°04'22", 0.4 mi south of Hoolehua and 2.1 mi west of Kualapuu.	1.46	1964-83	-	-	No flow
16413500	Manawainui Gulch near Kualapuu	Lat 21°07'42", long 157°03'25", at bridge on Highway 46, 0.5 mi south of Holomua School, and 2.3 mi southwest of Kualapuu.	10.4	1965-83	12-18-82	5.70	214
16415400	Wawaia Gulch at Kamalo	Lat 21°03'25", long 156°52'20", at Highway 45, 0.3 mi upstream from mouth, and 0.5 mi northeast of Kamalo.	2.12	1964-83	12-23-82	1.18	284
16419000	Pohakupili Gulch near Halawa	Lat 21°07'59", long 156°44'15", at Highway 45, 0.5 mi upstream from mouth, and 1.9 mi south of Halawa.	.48	1964-83	12-23-82	6.60	170
		Hawaii, Island of Maui					
16500100	Kepuni Gulch near Kahikinui House	Lat 20°37'21", long 156°15'16", on right bank 120 ft upstream from bridge on Highway 31, 400 ft upstream from Kamole Gulch, 1.1 mi east of Kahikinui House, and 8.5 mi west of Kaupo.	1.91	1963-72≠, 1973-83	4- 7-83	8.78	1,130
16500300	Hawelewele Gulch near Kaupo	Lat 20°38'01", long 156°11'08", 700 ft upstream from Piilani Highway 31 and 3.9 mi west of Kaupo.	11.3	1967-83	11-24-82	11.49	6,140
16500800	Kukuiula Gulch near Kipahulu	Lat 20°39'18", long 156°04'44", at Highway 31, 1.3 mi west of Kipahulu, and 3.2 mi east of Kaupo.	.76	1963-68≠, 1969-83	11-24-82	4.96	a80
16502400	Pukuilua Gulch near Hana	Lat 20°42'00", long 156°00'14", at Highway 31, 0.4 mi southwest of Puuiki, and 4.0 mi south of Hana.	.48	1963-83	11-24-82	1.46	28
16502800	Moomoonui Gulch at Hana	Lat 20°44'37", long 155°59'18", at Highway 31 just downstream from Moomooiki Gulch and 1.0 mi south of Hana.	.90	1963-83	9-17-83	8.83	441

≠ Operated as a continuous-record gaging station.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Annual Maximum Gage height (feet)	Annual Maximum Discharge (ft³/s)
		Hawaii, Island of Maui--Continued					
16502900	Kawaipapa Gulch at Hana	Lat 20°46'08", long 156°00'04", 1,000 ft upstream from Highway 36 and 0.3 mi northwest of Hana Hospital.	5.83	1965-83	12-18-82	6.22	2,160
16603300	Unnamed gulch at Maliko Bay	Lat 20°56'26", long 156°21'04", at Hana Highway, 0.5 mi west of Maliko Bay, and 1.3 mi north of Hamakuapoko.	.43	1963-83	-	-	No flow
16603700	Kalialinui Gulch tributary near Pukalani	Lat 20°49'02", long 156°19'44", at Lower Kula Road and 1.4 mi south of Pukalani.	1.17	1967-83	11-24-82	1.14	6.6
16603800	Kaluapulani Gulch tributary near Pukalani	Lat 20°48'52", long 156°18'32", at Haleakala Highway, 1.5 mi west of Olinda Prison Camp, and 2.3 mi southeast of Pukalani.	.45	1963-83	11-24-82	1.59	29
16603850	Kalialinui Gulch near Kahului	Lat 20°52'47", long 156°26'06", 600 ft upstream from Hansen Road, 0.5 mi northeast of Puunene Hospital, and 2.5 mi southeast of Kahului Post Office.	17.9	1967-83	-	-	No flow
16607000	Iao Stream at Wailuku	Lat 20°53'38", long 156°30'27", 560 ft upstream from Market Street bridge at Wailuku and 1.9 mi upstream from mouth.	8.24	1951≠, 1952-83	12-23-82	4.54	2,600
16616500	Unnamed gulch at Maluhia Camp	Lat 20°57'26", long 156°31'41", at Kahekili Highway, 0.6 mi east of Maluhia Camp, and 1.8 mi northwest of Waihee.	.12	1964-83	-	-	No flow
16619700	Poelua Gulch near Kahakuloa	Lat 21°00'58", long 156°34'58", at Highway 30 (bypass), 1.3 mi southeast of Nakalele Point lighthouse, and 2.2 mi northwest of Kahakuloa.	1.18	1965-83	11-23-82	5.47	102
16623400	Honokeana Gulch near Honokahua	Lat 20°59'39", long 156°40'13", at Honoapiilani Highway, 1.1 mi southwest of Honokahua, and 1.1 mi south of Hawea Point.	.59	1964-83	11-23-82	-	a2
16630200	Honokowai Stream at Honokowai	Lat 20°56'58", long 156°41'07", 0.5 mi southeast of Honokowai, and 1.1 mi northwest of Puukolii.	5.59	1962-63, 1965-83	9-17-83	2.65	120
16643300	Kauaula Stream near mouth, near Lahaina	Lat 20°52'09", long 156°39'43", 0.7 mi upstream from Honoapiilani Highway (bypass) and 1.3 mi southeast of Lahaina Lighthouse.	4.12	1960, 1962, 1964-83	12-18-82	3.48	246
16646200	Olowalu Stream at Olowalu	Lat 20°49'23", long 156°37'15", on downstream side of center pier of plantation road bridge, 0.6 mi northeast of Olowalu, and 5.5 mi southeast of Lahaina.	4.08	1962-72≠, 1973-83	12-23-82	3.95	488
16647500	Malalowaiaole Gulch near Maalaea	Lat 20°46'56", long 156°31'32", at Honoapiilani Highway, 200 ft upstream from mouth, 0.2 mi north of McGregor Point, and 1.2 mi southwest of Maalaea.	.64	1964-83	12-23-82	4.44	35
16650500	Waikapu Stream near Kihei	Lat 20°49'02", long 156°29'00", at railroad bridge beside Lower Maalaea Road, 2.5 mi northeast of Maalaea, and 2.5 mi northwest of Kihei.	6.97	1963-83	12-23-82	5.52	793

≠ Operated as a continuous-record gaging station.

Annual maximum discharge at crest-stage partial-record stations during water year 1983--Continued

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Maui--Continued					
16658500	Waiakoa Gulch tributary near Waiakoa	Lat 20°44'56", long 156°19'22", at Upper Kula Road, 1.0 mi southeast of Waiakoa, and 1.0 mi northeast of junction of Lower and Upper Kula Roads.	0.98	1964-83	12-23-82	-	a40
16659000	Waiakoa Gulch at Kihei	Lat 20°47'14", long 156°27'41", 0.3 mi northeast of Kihei and 0.4 mi upstream from mouth.	10.1	1963-83	11-23-82	5.33	51
16660000	Kulanihakoi Gulch near Kihei	Lat 20°46'06", long 156°27'03", on right bank 0.5 mi northeast of Lihue Cemetery, 0.8 mi upstream from mouth, and 1.3 mi southeast of Kihei.	14.4	1963-70≠, 1971-83	-	-	No flow
16663500	Kamaole Gulch at Kamaole	Lat 20°43'36", long 156°27'02", at Kihei Road, 350 ft upstream from mouth, and 0.2 mi south of Kamaole.	4.28	1972-83	-	-	No flow
16664000	Liilioholo Gulch at Kamaole	Lat 20°43'04", long 156°26'55", on upstream side of Kihei Road, 300 ft upstream from mouth, and 0.8 mi south of Kamaole.	4.12	1972-83	-	-	No flow
		Hawaii, Island of Hawaii					
16701300	Waiakea Stream at Hilo	Lat 19°42'38", long 155°05'02", 0.3 mi upstream from Kinoole Street bridge and 1.3 mi southeast of Hilo Post Office.	35.8	1968-83	-	-	No flow
16701400	Palai Stream at Hilo	Lat 19°40'56", long 155°04'04", at Highway 11, 300 ft south of Palai Street intersection, and 3.5 mi southeast of Hilo Post Office.	5.08	1965-83	-	-	No flow
16717400	Kalaoa Mauka Stream near Hilo	Lat 19°48'07", long 155°06'03", at culvert on Highway 19, 1.0 mi north of Papaikou, and 5.1 mi north of Hilo Post Office.	.24	1963-83	12-18-82	3.28	33
16717600	Alia Stream near Hilo	Lat 19°50'38", long 155°06'21", on left bank 10 ft downstream from culvert on Highway 19 at Pepeekeo, 2.0 mi south of Honomu, and 8.0 mi north of Hilo.	.58	1962-72≠, 1973-83	12-18-82	3.60	240
16717650	Kapehu Stream near Pepeekeo	Lat 19°51'52", long 155°06'11", at culvert on Highway 19, 1.0 mi southeast of Honomu, 2.2 mi north of Pepeekeo, and 9.4 mi north of Hilo.	1.09	1963-83	12-18-82	-	<60
16717800	Pohakupuka Stream near Papaaloa	Lat 19°57'20", long 155°11'20", on right bank 200 ft downstream from Highway 19, 2.8 mi northwest of Honohina, and 3.0 mi southwest of Papaaloa.	2.76	1963-80≠, 1983	12-18-82	5.62	606
16717850	Keehia Gulch near Ookala	Lat 20°01'08", long 155°18'45", at culvert on Highway 19, 1.7 mi west of Ookala, and 4.1 mi southeast of Paauilo.	.62	1963-83	12-18-82	4.01	125
16717920	Ahualoa Gulch at Honokaa	Lat 20°05'12", long 155°29'17", at Highway 24, 1.1 mi northwest of Honokaa Hospital, and 1.5 mi upstream from mouth.	2.27	1963-83	-	-	No flow

≠ Operated as a continuous-record gaging station.
< Less than.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1983

Station No.	Station name	Location	Drainage area mi²	Period of record	Annual Maximum Date	Annual Maximum Gage height (feet)	Annual Maximum Discharge (ft³/s)
		Hawaii, Island of Hawaii--Continued					
16717950	Honokaia Gulch tributary near Honokaa	Lat 20°02'58", long 155°32'19", at culvert, 4.8 mi southwest of Honokaa Hospital, and 5.5 mi southeast of Kukuihaele.	2.42	1963-83	-	-	No flow
16752600	Hapahapai Gulch at Kapaau	Lat 20°14'00", long 155°48'00", at Highway 27, 300 ft east of Kapaau Post Office.	1.52	1963-83	-	-	No flow
16755800	Luahine Gulch near Waimea	Lat 20°03'11", long 155°44'35", at culvert 5.1 mi northwest of Waimea and 5.7 mi east of Kawaihae.	.32	1963-83	12-18-82	2.12	35
16756500	Keanuiomano Stream near Kamuela	Lat 20°01'48", long 155°42'05", on left bank 150 ft upstream from Highway 25 at Waiaka and 2.0 mi west of Kamuela.	4.3	1964-72≠, 1973-83	12-18-82	6.75	1,460
16759040	Paiakuli Reservoir tributary near Waimea	Lat 20°02'16", long 155°38'08", at Highway 19, 2.1 mi west of Puukapu Reservoir, and 2.6 mi northeast of Waimea.	.27	1963-83	12-18-82	2.49	76
16759060	Kamakoa Gulch near Waimea	Lat 19°57'32", long 155°41'02", at bridge, 1.4 mi north of Saddle Road Junction, and 4.5 mi south of Waimea.	50.6	1963-83	7- 7-83	5.03	432
16759080	Popoo Gulch near Waikii	Lat 19°52'11", long 155°43'51", at bridge on Highway 19, 2.0 mi north of Keamuku, and 5.2 mi west of Waikii.	33.1	1963-83	9-18-83	4.46	724
16759180	Keopu Stream near Kailua	Lat 19°38'54", long 155°58'15", at county road bridge, 1.9 mi east of Kailua, and 2.3 mi northwest of Holualoa Post Office.	2.61	1962, 1965-83	4- 7-83	5.79	188
16759300	Waiaha Stream at Luawai, near Holualoa	Lat 19°38'12", long 155°55'45", on right bank at Luawai, 1.8 mi northeast of Holualoa School, and 4.2 mi southeast of Honokohau School.	8.74	1961-83	4- 7-83	2.86	67
16762000	Alapai Gulch at Naalehu	Lat 19°04'00", long 155°35'19", at debris catchment outlet of Naalehu Watershed Protection Project and 0.2 mi upstream from Highway 11 at Naalehu.	2.87	1963-83	-	-	No flow
16767000	Ninole Gulch near Punaluu	Lat 19°10'44", long 155°33'46", on right bank 300 ft downstream from forest-reserve boundary, 4.6 mi northwest of Punaluu, and 6.0 mi north of Honuapo.	15.5	1966-82≠, 1983	10- 5-82	4.50	290
16770000	Hionamoa Gulch at Pahala	Lat 19°11'45", long 155°29'11", at bridge, 0.6 mi southwest of Pahala, and 4.1 mi north of Punaluu.	9.41	1963-83	9- 5-83	4.69	314
16770500	Paauau Gulch at Pahala	Lat 19°12'39", long 155°28'48", on right bank 100 ft downstream from bridge on Wood Valley Road and 0.7 mi north of Pahala.	1.74	1962-79≠, 1980-83	9- 5-83	5.12	516

≠ Operated as a continuous-record gaging station.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area mi²	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Kauai				
Lole Stream	Waiahi Stream	Lat 22°01'30", long 159°28'16", 7.5 mi northwest of Hanamaulu and 8.6 mi southwest of Wailua Bay.			3-11-83	5.96
Waiahi Stream	South Fork Wailua River	Lat 22°01'31", long 159°28'15", 7.5 mi northwest of Hanamaulu and 8.6 mi southwest of Wailua Bay.			3-11-83	13.7
Waiahi Stream	South Fork Wailua River	Lat 22°01'32", long 159°28'03", 7.3 mi northwest of Hanamaulu and 8.4 mi southwest of Wailua Bay.			3-11-83	16.5
Diversion ditch from Waiahi Stream to lower powerhouse	Diversion goes back to Wailua Stream	Lat 22°01'21", long 159°28'02", 7.3 mi northwest of Hanamaulu and 8.4 mi southwest of Wailua Bay.			3-11-83	42.6
Waiahi Kuia Aqueduct	Kuia Stream	Lat 22°01'18", long 159°27'58", 7.1 mi northwest of Hanamaulu and 8.3 mi southwest of Wailua Bay.			3-11-83	.25
Waiahi Stream	South Fork Wailua River	Lat 22°01'18", long 159°27'57", 7.1 mi northwest of Hanamaulu and 8.3 mi southwest of Wailua Bay.			3-11-83	No flow
Waiahi Stream	South Fork Wailua River	Lat 22°01'12", long 159°26'53", 6.0 mi northwest of Hanamaulu and 7.3 mi southwest of Wailua Bay.			3-11-83	3.78
Spillway from diversion ditch to lower powerhouse	Waiahi Stream	Lat 22°01'15", long 159°26'52", 6.0 mi northwest of Hanamaulu and 7.3 mi southwest of Wailua Bay.			3-11-83	4.62
Upper Lihue ditch	Kapaia Reservoir	Lat 22°01'20", long 159°26'29", 5.7 mi northwest of Hanamaulu and 6.8 mi southwest of Wailua Bay.			3-11-83	39.2
Waiahi Stream	South Fork Wailua River	Lat 22°01'18", long 159°25'48", 6.0 mi northwest of Hanamaulu and 7.2 mi southwest of Wailua Bay.			3-11-83	3.67
Unnamed tributary	Waiahi Stream	Lat 22°01'20", long 159°25'48", 6.0 mi northwest of Hanamaulu and 7.2 mi southwest of Wailua Bay.			3-11-83	.91
Hanamaulu ditch	Kapaia Reservoir	Lat 22°02'07", long 159°25'57", 5.5 mi northwest of Hanamaulu and 6.1 mi southwest of Wailua Bay.			3-11-83	45.3
South Fork Wailua River	Wailua River	Lat 22°02'06", long 159°25'58", 5.5 mi northwest of Hanamaulu and 6.1 mi southwest of Wailua Bay.			3-11-83	a.02
Waikoko Stream below dam	South Fork Wailua River	Lat 22°03'36", long 159°28'02", 8.2 mi west of Wailua Bay and 8.2 mi northwest of Hanamaulu.			3-11-83	a.30
Spillway of North Wailua ditch below Waikoko Stream	South Fork Wailua River	Lat 22°03'35", long 159°28'01", 8.2 mi west of Wailua Bay and 8.2 mi northwest of Hanamaulu.			3-11-83	a.25
Waikoko Stream	South Fork Wailua River	Lat 22°03'22", long 159°26'20", 6.4 mi west of Wailua Bay and 6.6 mi northwest of Hanamaulu.			3-11-83	a.30
Stable storm ditch	South Fork Wailua River	Lat 22°03'31", long 159°26'28", 6.6 mi west of Wailua Bay and 6.8 mi northwest of Hanamaulu.			3-11-83	29.1
Iliiliula Stream	South Fork Wailua River	Lat 22°02'32", long 159°28'32", 8.2 mi northwest of Hanamaulu and 8.8 mi west of Wailua Bay.			3-11-83	.42
Unnamed tributary	Iliiliulu Stream	Lat 22°02'32", long 159°28'31", 8.2 mi northwest of Hanamaulu and 8.8 mi west of Wailua Bay.			3-11-83	a.20

a Estimated.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area mi²	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Kauai--Continued				
Waiahi Iliiliula ditch	Waiahi Stream	Lat 22°02'33", long 159°28'29", 8.1 mi northwest of Hanamaulu and 8.8 mi west of Wailua Bay.			3-11-83	16.5
Spillway of Waiahi Iliiliula ditch	Iliiliula Stream	Lat 22°02'31", long 159°28'29", 8.1 mi northwest of Hanamaulu and 8.8 mi west of Wailua Bay.			3-11-83	a.10
Waiahi Iliiliula ditch	Waiahi Stream	Lat 22°02'17", long 159°28'11", 7.7 mi northwest of Hanamaulu and 8.4 mi west of Wailua Bay.			3-11-83	26.2
Diversion from Stable storm ditch	Waiahi Stream	Lat 22°02'08", long 159°26'01", 5.5 mi northwest of Hanamaulu and 6.1 mi southwest of Wailua Bay.			3-11-83	36.4
Stable storm ditch below dam	South Fork Wailua River	Lat 22°02'08", long 159°26'01", 5.5 mi northwest of Hanamaulu and 6.1 mi southwest of Wailua Bay.			3-11-83	a.15
South Fork Wailua River	Wailua River	Lat 22°01'45", long 159°25'01", 4.4 mi northwest of Hanamaulu, and 5.2 mi southwest of Wailua Bay.			3-11-83	4.40
South Fork Wailua River	Wailua River	Lat 22°02'30", long 159°23'49", 3.7 mi west of Wailua Bay and 3.9 mi northwest of Hanamaulu.			3-11-83	6.18
Unnamed tributary	South Fork Wailua River	Lat 22°02'21", long 159°22'57", 2.9 mi west of Wailua Bay and 3.2 mi northwest of Hanamaulu.			3-11-83	.72
Unnamed tributary	South Fork Wailua River	Lat 22°01'57", long 159°23'07", 2.9 mi northwest of Hanamaulu and 3.2 mi southwest of Wailua Bay.			3-11-83	1.77
Unnamed tributary	South Fork Wailua River	Lat 22°02'02", long 159°22'09", 2.2 mi southwest of Wailua Bay and 2.5 north of Hanamaulu.			3-11-83	1.53
Water tunnel	Makaleha Stream	Lat 22°06'25", long 159°23'27", 4.9 mi northwest of Kapaa High School and 6.0 mi west of Paliku Point.			9-20-83	1.16
Makaleha ditch tunnel		Lat 22°06'23", long 159°23'27", 4.9 mi northwest of Kapaa High School and 6.0 mi west of Paliku Point.			9-20-83	8.80
Unnamed tributary	Moalepe Stream	Lat 22°06'04", long 159°23'32", 4.9 mi west of Kapaa High School and 6.1 mi southwest of Paliku Point.			9-20-83	No flow
Diversion from Kapahi ditch		Lat 22°06'03", long 159°22'10", 3.5 mi west of Kapaa High School and 4.7 mi southwest of Paliku Point.			9-20-83	No flow
Kealia ditch		Lat 22°07'57", long 159°23'12", 5.6 mi northwest of Kapaa High School and 5.9 mi northwest of Paliku Point.			9-20-83	8.01
Kealia Stream	Kapaa Stream	Lat 22°07'56", long 159°23'12", 5.2 mi northwest of Kapaa High School and 5.9 mi northwest of Paliku Point.			9-20-83	No flow
Mimino ditch		Lat 22°07'21", long 159°20'44", 2.8 mi northwest of Kapaa High School and 3.1 mi west of Paliku Point.			9-20-83	11.6

a Estimated.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area mi²	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Kauai--Continued				
Kawano ditch		Lat 22°07'22", long 159°19'37", 2.0 mi west of Paliku Point and 2.1 mi northwest of Kapaa High School.			9-20-83	12.4
Unnamed tributary	Mimino Stream	Lat 22°06'47", long 159°21'03", 2.6 mi northwest of Kapaa High School and 3.4 mi west of Paliku Point.			9-20-83	No flow
Mimino Stream	Kealia Stream	Lat 22°06'58", long 159°20'27", 2.6 mi northwest of Kapaa High School and 2.8 mi west of Paliku Point.			9-20-83	.15
Kealia Stream	Kapaa Stream	Lat 22°06'58", long 159°20'23", 2.6 mi northwest of Kapaa High School and 2.7 mi west of Paliku Point.			9-20-83	2.05
Diversion to fish pond		Lat 22°06'42", long 159°20'14", 1.9 mi northwest of Kapaa High School and 2.6 mi west of Paliku Point.			9-20-83	.20
		Hawaii, Island of Oahu				
Kaluanui Stream	Pacific Ocean	Lat 21°34'43", long 157°55'06", 0.3 mi upstream from Sacred Falls, 2.0 mi west of Punaluu Beach Park, and 2.5 mi south of Hauula Beach Park.			6-28-83	1.25
Kaluanui Stream	Pacific Ocean	Lat 21°34'59", long 157°54'55", 0.2 mi downstream from Sacred Falls, 1.8 mi west of Punaluu Beach Park, and 2.2 mi south of Hauula Beach Park.			6-28-83	1.24
Kaluanui Stream	Pacific Ocean	Lat 21°35'09", long 157°54'49", 0.4 mi downstream from Sacred Falls, 1.7 mi west of Punaluu Beach Park, and 2.0 mi south of Hauula Beach Park.			6-28-83	1.23
Kaluanui Stream	Pacific Ocean	Lat 21°35'42", long 157°54'24", 1.2 mi downstream from Sacred Falls, 1.6 mi northwest of Punaluu Beach Park, and 1.4 mi south of Hauula Beach Park.		1982	6-28-83	.87
Kaluanui Stream	Pacific Ocean	Lat 21°36'07", long 157°54'06", 1.7 mi northeast of Sacred Falls, 1.7 mi northwest of Punaluu Beach Park, and 1.2 mi south of Hauula Beach Park.			6-28-83	No flow
Makaha Stream	Pacific Ocean	Lat 21°30'46", long 158°10'46", 1.6 mi northeast of Kaneaki Heiau and 4.1 mi northeast of junction of Farrington Highway and Makaha Valley Road.		1981-82	9-15-83	.22
Makaha Stream	Pacific Ocean	Lat 21°30'37", long 158°10'46", 1.3 mi northeast of Kaneaki Heiau and 3.7 mi northeast of junction of Farrington Highway and Makaha Valley.			8-25-83	.22
Makaha Stream	Pacific Ocean	Lat 21°30'33", long 158°10'46", 1.2 mi northeast of Kaneaki Heiau and 3.7 mi northeast of junction of Farrington Highway and Makaha Valley Road.			8-25-83 9-15-83	2.48 .19
Makaha Stream	Pacific Ocean	Lat 21°30'23", long 158°10'56", 0.9 mi northeast of Kaneaki Heiau and 3.4 mi northeast of junction of Farrington Highway and Makaha Valley Road.		1981-82	9-15-83	.20

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area mi²	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Maui				
Palikea Stream	Oheo Gulch	Lat 20°41'08", long 156°04'09", at altitude 1,560 ft, 500 ft upstream from gaging station 16501000, 0.5 mi upstream from forest boundary line, and 2.1 mi upstream from mouth.			6-30-83	0.01
Unnamed tributary	Palikea Stream	Lat 20°41'07", long 156°04'11", at altitude 1,560 ft, 10 ft upstream from confluence with Palikea Stream, 500 ft upstream from station 16501000, and 2.1 mi upstream from mouth.			6-30-83	.13
Palikea Stream	Oheo Gulch	Lat 20°40'42", long 156°03'57", at altitude 1,220 ft, at forest boundary line, 0.5 mi downstream from station 16501000, and 1.7 mi upstream from mouth.			6-30-83	.02
Palikea Stream	Oheo Gulch	Lat 20°40'36", long 156°03'52", at altitude 1,100 ft, 900 ft downstream from forest boundary line, 0.6 mi downstream from station 16501000, and 1.5 mi upstream from mouth.			6-30-83	No flow
Palikea Stream	Oheo Gulch	Lat 20°40'22", long 156°03'37", at altitude 550 ft, 0.3 mi upstream from confluence with Pipiwai Stream, 1.0 mi downstream from station 16501000, and 1.2 mi upstream from mouth.			6-30-83	No flow
Palikea Stream	Oheo Gulch	Lat 20°40'24", long 156°03'25", at altitude 480 ft, 100 ft upstream from confluence with Pipiwai Stream, 1.0 mi upstream from mouth, and 1.1 mi downstream from station 16501000.		1978	6-30-83	No flow
Pipiwai Stream	Oheo Gulch	Lat 20°40'26", long 156°03'25", at altitude 500 ft, 200 ft upstream from confluence with Palikea Stream, 0.2 mi upstream from #2 dam, and 1.0 mi upstream from mouth.		1978	6-30-83	6.44
Oheo Gulch	Pacific Ocean	Lat 20°40'13", long 156°03'14", at altitude 380 ft, 300 ft downstream from #2 dam, and 0.7 mi upstream from mouth.			6-30-83	6.16
Oheo Gulch	Pacific Ocean	Lat 20°40'07", long 156°03'06", at altitude 150 ft, 0.3 mi downstream from #2 dam, and 0.5 mi upstream from mouth.			6-30-83	No flow
Oheo Gulch	Pacific Ocean	Lat 20°40'03", long 156°02'57", at altitude 120 ft, 1,000 ft upstream from Highway bridge, and 0.3 mi upstream from mouth.			6-30-83	.92
Oheo Gulch	Pacific Ocean	Lat 20°40'00", long 156°02'43", at altitude 20 ft, 400 ft downstream from Highway bridge, and 450 ft upstream from mouth.			6-30-83	.52
Oheo Gulch	Pacific Ocean	Lat 20°39'58", long 156°02'39", at mouth and 700 ft downstream from Highway bridge.		1978	6-30-83	No flow

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area mi²	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Hawaii				
Hookelekele Stream	Wailuku River	Lat 19°42'51", long 155°09'26", 1.3 mi west of Piihonua and 4.4 mi southwest of Hilo Post Office.			3- 1-83	1.44
Hookelekele Stream	Wailuku River	Lat 19°42'49", long 155°09'21", 1.2 mi west of Piihonua and 4.4 mi southwest of Hilo Post Office.			3- 1-83	2.76
Kapehu Stream	Wailuku River	Lat 19°44'04", long 155°10'02", 2.5 mi northwest of Piihonua and 5.0 mi northwest of Hilo Post Office.			3- 1-83	4.12
Laualu Stream	Kapehu Stream	Lat 19°44'04", long 155°10'02", 2.5 mi northwest of Piihonua and 5.0 mi northwest of Hilo Post Office.			3- 1-83	.22
Kapehu Stream 16709000	Wailuku River	Lat 19°43'15", long 155°08'30", 0.3 mi northwest of Piihonua and 3.4 mi west of Hilo.	4.84	1928-37≠	3-17-83	4.39
Kapehu Stream	Wailuku River	Lat 19°43'11", long 155°08'25", 0.3 mi northwest of Piihonua and 3.4 mi west of Hilo.		1981	3- 3-83 3-17-83	6.94 4.42
Wailuku River	Pacific Ocean	Lat 19°43'06", long 155°08'19", 0.2 mi northwest of Piihonua and 3.2 mi west of Hilo.			3- 1-83 3- 3-83	8.10 7.52
Honolii Stream	Pacific Ocean	Lat 19°46'07", long 155°09'48", at altitude 1,670 ft, 4.0 mi northwest of Piihonua, and 5.5 mi north of Kaumana.			3-22-83	.20
Pohakupaa Stream	Honolii Stream	Lat 19°46'07, long 155°09'48", at altitude 1,670 ft, 4.0 mi northwest of Piihonua, and 5.5 mi north of Kaumana.			3-22-83	.65
Kapehu Stream	Pacific Ocean	Lat 19°51'42", long 155°06'26", at altitude 320 ft, 1.0 mi southeast of Honomu, and 2.0 mi northwest of Pepeekeo.			3- 2-83	1.66
Waawaa Stream	Hakalau Stream	Lat 19°53'03", long 155°09'39", at altitude 1,020 ft, 2.3 mi southwest of Hakalau, and 2.3 mi west of Wailea.			3- 2-83	.75
Hakalau Stream	Pacific Ocean	Lat 19°52'43", long 155°09'28", at altitude 850 ft, 2.3 mi southwest of Hakalau, and 2.8 mi northwest of Honomu.			3- 2-83	1.12
Kamaee Stream	Hakalau Stream	Lat 19°53'15", long 155°10'47", at altitude 1,400 ft and 3.3 mi west of Hakalau.			3-30-83	.92
Unnamed tributary	Kamaee Stream	Lat 19°53'11", long 155°10'43", at altitude 1,410 ft and 3.3 mi west of Hakalau.			3-30-83	.08
Kamaee Stream	Hakalau Stream	Lat 19°53'32", long 155°10'13", at altitude 1,110 ft, 2.7 mi west of Hakalau and 3.0 mi northwest of Wailea.			3- 2-83 3-30-83	1.87 3.14

≠ Operated as a continuous-record gaging station.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area mi²	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Hawaii--Continued				
Kamaee Stream	Hakalau Stream	Lat 19°53'41", long 155°09'19", at altitude 740 ft and 1.7 mi west of Hakalau.			3-30-83	4.63
Kamaee Stream	Hakalau Stream	Lat 19°53'52", long 155°08'51", at altitude 485 ft and 1.2 mi west of Hakalau.			3-30-83	5.22
Umauma Stream	Pacific Ocean	Lat 19°53'34", long 155°10'32", at altitude 1,190 ft, 2.7 mi southwest of Honohina, and 3.0 mi west of Hakalau.			3- 3-83	1.17
Unnamed Stream	Pacific Ocean	Lat 19°54'22", long 155°10'26", in Opea at altitude 1,030 ft, 1.8 mi southwest of Honohina, and 2.8 mi west of Hakalau Bay.			3- 3-83	.75
Nanue Stream	Pacific Ocean	Lat 19°54'51", long 155°10'44", at altitude 1,130 ft, at road crossing, 0.4 mi east of Kahuku Homesteads radio tower, and 1.7 mi southwest of Honohina.			3- 3-83	.20
Unnamed Gulch	Pacific Ocean	Lat 19°54'55", long 155°10'50", at altitude 1,130 ft, at road crossing, 0.3 mi east of Kahuku Homesteads radio tower, and 1.7 mi west of Honohina.			3- 3-83	a.05
Waikaumalo Stream	Pacific Ocean	Lat 19°55'23", long 155°11'08", at altitude 1,130 ft, 1.5 mi southwest of Waikaumalo Park, and 1.9 mi west of Honohina.			3- 3-83	.10
Unnamed Tributary	Waikaumalo Stream	Lat 19°55'16", long 155°11'04", at altitude 1,080 ft, 1.5 mi southwest of Waikaumalo Park, and 1.8 mi west of Honohina.			3- 3-83	.52
Kaoheanu Stream	Pohakupuka Stream	Lat 19°56'05", long 155°12'24", at altitude 1,340 ft, 2.4 mi south of Kapehu, and 2.4 mi southwest of Haiku Point.			3- 4-83	.01
Paeohe Stream	Pacific Ocean	Lat 19°56'58", long 155°12'49", at altitude 1,030 ft, 1.1 mi southwest of Maulua Bay, and 2 mi south of Papaaloa.			3- 4-83	No flow
Unnamed Gulch	Paeohe Stream	Lat 19°56'52", long 155°12'45", at altitude 1,065 ft, 1.1 mi southwest of Maulua Bay, and 2.4 mi southeast of Papaaloa.			3- 4-83	No flow
Kapehu Stream	Pacific Ocean	Lat 19°56'47", long 155°13'20", at altitude 1,370 ft, 1.7 mi southwest of Maulua Bay, and 2.1 mi south of Papaaloa.			3- 4-83	No flow
Pahale Stream	Pacific Ocean	Lat 19°57'05", long 155°13'47", at altitude 1,450 ft, 2.0 mi southwest of Kuku Point, and 2.1 mi south of Laupahoehoe School.			3- 4-83	No flow
Ahoa Stream	Haakoa Stream	Lat 19°57'04", long 155°13'58", at altitude 1,550 ft, 2.0 mi southwest of Papaaloa, and 2.2 mi west of Maulua Bay.			3- 4-83	No flow

a Estimated.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

Stream	Tributary to	Location	Drainage area mi²	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Hawaii--Continued				
Haakoa Stream	Pacific Ocean	Lat 19°57'12", long 155°14'08", at altitude 1,510 ft at road crossing, and 2.0 mi southwest of Papaaloa.			3- 4-83	No flow
Kaiwilahilahi Stream	Pacific Ocean	Lat 19°57'22", long 155°14'25", at altitude 1,550 ft, 1.9 mi southwest of Laupahoehoe School, and 2.5 mi west of Kuku Point.			3- 4-83	No flow
Kihalani Stream	Pacific Ocean	Lat 19°57'38", long 155°14'37", at altitude 1,520 ft, 1.7 mi southwest of Laupahoehoe School, and 2.6 mi west of Kuku Point.			3- 4-83	No flow
Kuwaikahi Stream	Pacific Ocean	Lat 19°57'44", long 155°14'55", at altitude 1,590 ft, 1.8 mi southwest of Laupahoehoe School, and 3 mi west of Kuku Point.			3- 4-83	No flow
Manowaiopae Stream	Pacific Ocean	Lat 19°57'47", long 155°15'03", at altitude 1,630 ft, 1.8 mi southwest of Laupahoehoe School, and 2.4 mi south of Laupahoehoe Point.			3- 4-83	No flow
Kilau Stream	Pacific Ocean	Lat 19°58'03", long 155°15'24", at altitude 1,530 ft, 2.0 mi southwest of Laupahoehoe School, and 3.4 mi west of Kuku Point.			3- 4-83	No flow
Laupahoehoe Stream	Pacific Ocean	Lat 19°58'13", long 155°16'31", at altitude 1,860 ft, 3.0 mi southwest of Laupahoehoe School, and 4.5 mi west of Kuku Point.			3- 4-83	No flow
Kapili Stream	Laupahoehoe Stream	Lat 19°58'14", long 155°15'36", at altitude 1,530 ft, 2.1 mi southwest of Laupahoehoe School, and 3.6 mi west of Kuku Point.			3- 4-83	No flow
Waipio Stream	Wailoa Stream	Lat 20°04'46", long 155°37'30", at altitude 390 ft, 4.4 mi southwest of Kukuihaele, and 4.9 mi northeast of Kamuela Post Office.			3- 9-83	9.79
Wailoa Stream 16732200	Pacific Ocean	Lat 20°05'31", long 155°37'00", at altitude 150 ft, 0.1 mi below gaging station, 16732200, and 3.4 mi southwest of Kukuihaele.	14.3	1964-69≠	3- 9-83	24.4
Waikoloa Stream	Waiulaula Gulch	Lat 20°03'34", long 155°40'14", at altitude 3,700 ft and 2.5 mi north of Kamuela Post Office.			3- 7-83	.60

≠ Operated as a continuous-record gaging station.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

ISLAND OF KAUAI

Kapaa Stream seepage investigation

Discharge measurements were made on Sept. 20, 1983, on Kapaa Stream and tributaries and diversion to determine channel gains and losses. The reach was 6.4 mi in length. Measurements were made during a period of constant base flow.

Kapaa Stream mile	Stream	Location	Meas. disch. (ft^3/s)	Gain or loss	Water temp. (°C)
7.6	Seepage from dam	Lat 22°06'23", long 159°23'28", 4.9 mi west of Kapaa High School and 5.9 mi southwest of Paliku Point.	a0.09	-	-
7.6	Makaleha Stream	Lat 22°06'23", long 159°23'28", 4.9 mi west of Kapaa High School and 5.9 mi southwest of Paliku Point.	a.15	-	-
7.6	Moalepe Stream	Lat 22°06'11", long 159°23'22", 4.8 mi west of Kapaa High School and 5.9 mi southwest of Paliku Point.	2.87	-	21.0
7.4	Kapahi Stream	Lat 22°06'17", long 159°23'10", 4.6 mi west of Kapaa High School and 5.7 mi southwest of Paliku Point.	.27	-	20.5
6.6	Kapahi ditch	Gaging station near Kealia (16079000).	4.00	-	-
6.6	Kapaa Stream	Lat 22°06'14", long 159°22'26", 3.8 mi west of Kapaa High School and 5.0 mi southwest of Paliku Point.	a.07	+.69	-
6.4	Unnamed tributary	Lat 22°06'08", long 159°22'37", 3.7 mi west of Kapaa High School and 5.0 mi southwest of Paliku Point.	a.03	-	-
6.4	Unnamed tributary	Lat 22°06'08", long 159°22'23", 3.7 mi west of Kapaa High School and 5.0 mi southwest of Paliku Point.	.41	-	-
5.8	Akulikuli Stream	Crest-stage station near Kapaa (16081200).	.75	-	22.0
5.6	Kapaa Stream	Lat 22°06'24", long 159°20'58", 3.3 mi northwest of Kapaa High School and 4.4 mi west of Paliku Point.	1.50	+.24	21.0
5.6	Overflow pipe from Akulikuli water tunnel	Lat 22°06'26", long 159°21'59", 3.3 mi northwest of Kapaa High School and 4.4 mi west of Paliku Point.	a.20	-	-
3.5	Unnamed right tributary	Lat 22°06'32", long 159°20'47", 2.2 northwest of Kapaa High School and 3.1 west of Paliku Point.	a.10	-	-
3.4	Kapaa Stream	Lat 22°06'34", long 159°20'46", 2.2 northwest of Kapaa High School, and 3.1 mi west of Paliku Point.	1.32	-.48	22.0
2.7	do.	Lat 22°06'30", long 159°20'22", 1.8 mi northwest of Kapaa High School and 2.8 west of Paliku Point.	1.79	+.47	25.0
2.6	Kealia Stream	Lat 22°06'31", long 159°20'21", 1.8 mi northwest of Kapaa High School and 2.7 mi west of Paliku Point.	2.02	-	25.0
2.2	Kapaa Stream	Lat 22°06'22", long 159°20'01", 1.4 mi northwest of Kapaa High School and 2.4 mi southwest of Paliku Point.	3.52	-.29	25.0
1.2	Unnamed right tributary	Lat 22°06'06", long 159°19'17", 0.7 mi northwest of Kapaa High School and 1.7 mi southwest of Paliku Point.	a.08	-	-

a Estimated.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1983

ISLAND OF HAWAII

Kapehu Stream seepage investigation

Discharge measurements were made on Sept. 14, 1983, on Kapehu Stream and tributaries to determine channel gains and losses. The reach was 4.1 mi in length. Measurements were made during a period of constant base flow.

Kapehu Stream mile	Stream	Location	Meas. disch. (ft^3/s)	Gain or loss	Water temp. (°C)
4.1	Kapehu Stream	Lat 19°50'28", long 155°08'43", at altitude 1,220 ft, 0.5 mi below forest reserve boundary, and 3.8 mi west of Pepeekeo.	1.02	-	16.0
3.7	do.	Lat 19°50'37", long 155°08'22", at altitude 1,040 ft, 3.2 mi southwest of Kohola Point, and 3.4 mi west of Pepeekeo.	.98	-.04	16.0
3.0	do.	Lat 19°50'53", long 155°07'56", at altitude 800 ft, 2.7 mi southwest of Kohola Point, and 2.9 mi west of Pepeekeo.	1.51	+.53	17.0
2.3	Unnamed tributary	Lat 19°51'08", long 155°07'42", at altitude 720 ft, 2.3 mi southwest of Kohola Point, and 2.7 mi west of Pepeekeo.	.41	-	18.0
2.2	Kapehu Stream	Lat 19°51'19", long 155°07'23", at altitude 640 ft, 100 ft below plantation bridge, and 2.4 mi west of Pepeekeo.	7.28	+5.36	18.0
1.4	Unnamed tributary	Lat 19°51'24", long 155°06'50", at altitude 500 ft, 1.4 mi southwest of Kohola Point, and 1.8 mi northwest of Pepeekeo.	1.10	-	18.0
1.4	Kapehu Stream	Lat 19°51'30", long 155°06'44", at altitude 460 ft, 1.2 mi southwest of Kohola Point, and 1.7 mi northwest of Pepeekeo.	9.28	+.90	19.0
.9	do.	Lat 19°51'42", long 155°06'26", at altitude 340 ft, 0.9 mi southwest of Kohola Point, and 1.5 mi northwest of Pepeekeo.	12.5	+3.22	20.0
.3	do.	Lat 19°51'52", long 155°06'02", at altitude 150 ft, above bridge on old road just below State Highway 19, and 0.6 mi south of Kohola Point.	9.81	-2.69	20.5
.0	do.	Lat 19°52'04", long 155°05'55", at altitude 30 ft and about 50 ft above mouth of stream.	10.2	+.39	21.0

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systematically over a period of years for use in hydrologic analyses. The data are collected usually less than quarterly.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU

16228200 MOANALUA STREAM NEAR AIEA (LAT 21°22'37" LONG 157°52'58")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT				
28...	0100	335	1070	968
28...	0200	885	471	1130
28...	0300	660	491	875
29...	0800	176	231	110
29...	0815	194	448	235
OCT				
29...	0900	231	202	126
NOV				
03...	1200	176	493	234

16265500 LEFT TRIBUTARY TO RIGHT BRANCH OF KAMOOALII STREAM NEAR KANEOHE (LAT 21°23'17" LONG 157°47'39")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)
FEB							
02...	1135	.10	272	5.7	22.0	4.0	46

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
FEB						
02...	<1	.60	.50	1.1	.010	.7

16265700 KAMOOALII STREAM AT ALTITUDE 200 FT NEAR KANEOHE (LAT 21°23'12" LONG 157°47'56")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
FEB											
03...	1015	3.0	210	6.3	20.5	.50	9.4	105	33	60	1
MAY											
16...	1230	.85	187	6.0	23.0	.90	7.2	--	96	--	--
JUN											
15...	1045	.66	200	6.7	22.5	--	--	--	--	--	--
JUL											
14...	1340	.61	193	6.4	22.5	.40	7.4	87	--	--	--
AUG											
17...	1250	.40	193	6.8	22.5	.80	7.4	86	92	63	0
SEP											
29...	1130	.32	199	7.3	23.5	1.1	8.1	96	--	--	--

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

16265700 KAMOOALII STREAM AT ALTITUDE 200 FT NEAR KANEOHE--Continued

DATE	TIME	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
FEB										
03...	1015	7.3	10	15	35	.9	.9	59	<5.0	22
AUG										
17...	1250	8.8	9.9	14	32	.8	1.0	65	4.9	22

DATE	TIME	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
FEB											
03...	1015	<.10	22	112	--	.15	--	.30	.50	.80	.020
MAY											
16...	1230	--	--	--	--	--	10	.30	.20	.50	.040
JUL											
14...	1340	--	--	--	--	--	2	--	--	--	--
AUG											
17...	1250	<.10	23	113	123	.15	2	.30	.40	.70	.030
SEP											
29...	1130	--	--	--	--	--	11	--	--	--	--

DATE	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)
FEB										
03...	10	<1	29	<1	<1	<1	<3	<1	17	3
AUG										
17...	<10	<1	44	<1	<1	<1	<3	1	10	<1

DATE	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
FEB										
03...	9	6	<.1	<10	4	<1	<1	78	<6.0	<3
AUG										
17...	<4	4	<.1	<10	6	<1	<1	110	<6.0	7

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
AUG										
17...	.3	3	<.10	<.01	<.10	<.01	<.01	<.01	.02	<.01

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

16265700 KAMOOALII STREAM AT ALTITUDE 200 FT NEAR KANEOHE--Continued

DATE	TIME	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
AUG 17...	1250	<.01	<.01	<.01	<.01	<.01	<.01	.28	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
AUG 17...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01

16266500 HOOLEINAIWA STREAM AT ALTITUDE 220 FT NEAR KANEOHE (LAT 21°23'06" LONG 157°48'16")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
FEB 04...	0945	.82	109	6.4	21.0	.70	8.6	97	76	29
MAY 17...	1210	.24	112	6.4	23.0	.50	7.0	82	120	--
JUL 14...	1300	.17	133	6.2	23.5	.60	6.9	82	--	--
AUG 18...	0930	.13	122	6.7	22.5	--	6.7	78	100	--
SEP 29...	1100	.14	123	6.8	23.5	1.3	7.1	84	--	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L) AS SO4)
FEB 04...	0	4.7	4.3	9.5	41	.8	.4	34	<5.0

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
FEB 04...	13	<.10	18	63	.09	31	<.10	.30	.010
MAY 17...	--	--	--	--	--	11	<.10	.20	.010
JUL 14...	--	--	--	--	--	5	--	--	--
AUG 18...	--	--	--	--	--	2	<.10	.30	.010
SEP 29...	--	--	--	--	--	14	--	--	--

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

16266500 HOOLEINAIWA STREAM AT ALTITUDE 220 FT NEAR KANEOHE--Continued

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
FEB 04...	0945	10	<1	6	<1	<1	<1	<3	<1	32	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
FEB 04...	9	17	<.1	<10	<1	<1	<1	32	<6.0	<3

16267500 HOOLEINAIWA STREAM ABOVE CONFLUENCE OF KAMOOALII STREAM NEAR KANEOHE (LAT 21°23'15" LONG 157°48'19")

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARDNESS (MG/L AS CACO3)
FEB 04...	1145	1.2	144	6.7	22.0	2.6	8.4	97	32	43
MAY 17...	1100	.77	160	6.4	24.0	3.0	6.6	79	K10	--
JUL 14...	1110	.84	166	6.7	24.5	2.6	6.7	81	--	--
AUG 18...	1020	.60	174	7.1	25.5	2.6	6.5	80	72	55
SEP 29...	1020	.84	181	7.1	25.0	2.5	6.7	81	--	--

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)
FEB 04...	0	7.2	6.0	11	36	.7	.6	49	<5.0
AUG 18...	0	9.3	7.6	14	35	.8	.7	62	4.4

K Results based on colony count outside the acceptable range (non-ideal colony count).
< Actual value is known to be less than the value shown.

16267500 HOOLEINAIWA STREAM ABOVE CONFLUENCE OF KAMOOALII STREAM NEAR KANEOHE--Continued

DATE	TIME	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
FEB 04...	1145	14	<.10	23	87	--	.12	<1	<.10	.50	.030
MAY 17...	1100	--	--	--	--	--	--	13	<.10	.70	.030
JUL 14...	1110	--	--	--	--	--	--	6	--	--	--
AUG 18...	1020	18	.06	25	106	117	.14	5	<.10	.40	.010
SEP 29...	1020	--	--	--	--	--	--	10	--	--	--

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
FEB 04...	10	<1	6	<1	<1	<1	<3	<1	110	<1
AUG 18...	30	1	6	<1	<1	<1	<3	2	220	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
FEB 04...	10	99	<.1	<10	1	<1	<1	42	<6.0	5
AUG 18...	<4	69	<.1	<10	5	<1	<1	57	<6.0	<3

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)
FEB 04...	2.3	--	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01
AUG 18...	.8	5	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
FEB 04...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 18...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

16267500 HOOLEINAIWA STREAM ABOVE CONFLUENCE OF KAMOOALII STREAM NEAR KANEOHE--Continued

DATE	TIME	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB 04...	1145	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01
AUG 18...	1020	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01

16269500 KUOU STREAM AT ALTITUDE 220 FT NEAR KANEOHE (LAT 21°23'30" LONG 157°48'44")

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	TURBIDITY (NTU)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)
FEB 03...	1120	1.3	207	6.8	20.5	3.4	9.4	105	56	68	0
MAY 17...	1300	.69	200	6.6	22.0	2.7	7.1	--	180	--	--
JUN 15...	1245	.55	210	7.0	22.0	--	--	--	--	--	--
JUL 14...	1025	.46	218	6.8	22.0	2.5	7.5	86	--	--	--
AUG 17...	1330	.11	206	6.9	22.0	4.0	6.0	69	K38	66	0
SEP 28...	1045	.04	-	6.8	24.5	1.9	5.9	71	--	--	--

DATE	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
FEB 03...	14	8.0	16	33	.9	1.2	76	8.0	18
AUG 17...	13	8.1	15	33	.8	1.1	68	11	20

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
FEB 03...	<.10	36	136	147	.19	<1	.20	.30	.50	.020
MAY 17...	--	--	--	--	--	<1	<.10	<.10	--	.020
JUL 14...	--	--	--	--	--	7	--	--	--	--
AUG 17...	<.10	35	136	144	.19	3	<.10	.50	--	.010
SEP 28...	--	--	--	--	--	9	--	--	--	--

K Results based on colony count outside the acceptable range (non-ideal colony count).
< Actual value is known to be less than the value shown.

16269500 KUOU STREAM AT ALTITUDE 220 FT NEAR KANEOHE--Continued

DATE	TIME	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
FEB 03...	1120	10	<1	9	<1	<1	<1	<3	<1	460	<1
AUG 17...	1330	<10	1	7	<1	<1	<1	<3	2	230	<1

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
FEB 03...	10	62	<.1	<10	1	<1	<1	71	<6.0	<3
AUG 17...	4	91	<.1	<10	9	<1	<1	74	<6.0	6

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)
FEB 03...	1.0	--	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01
AUG 17...	.5	2	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
FEB 03...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 17...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB 03...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01
AUG 17...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01

< Actual value is known to be less than the value shown.

16270900 LULUKU STREAM AT ALTITUDE 220 FT NEAR KANEOHE (LAT 21°23'42" LONG 157°48'46")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)
FEB 03...	1245	1.4	155	7.0	20.0	.80	9.6	107	68	46
MAY 18...	1000	.62	149	6.7	21.5	1.2	7.6	87	--	--
SEP 28...	1015	.29	167	6.3	26.0	.90	8.4	103	86	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3	SULFATE DIS-SOLVED (MG/L AS SO4)
FEB 03...	0	8.5	5.9	13	38	.9	1.1	51	<5.0

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
FEB 03...	16	<.10	28	102	.14	<1	.20	.20	.40	.030
MAY 18...	--	--	--	--	--	13	<.10	.30	--	.030
SEP 28...	--	--	--	--	--	8	<.10	.20	--	.020

DATE	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)
FEB 03...	100	10	1	1	100	5	<10	<1	<1

DATE	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
FEB 03...	<1	<10	<1	2	<3	<1	<1	60	20	<1

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

16270900 LULUKU STREAM AT ALTITUDE 220 FT NEAR KANEOHB--Continued

DATE	TIME	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)
FEB 03...	1245	<1	<10	10	10	9	.1	<.1	<1	<10	5

DATE	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
FEB 03...	<1	<1	<1	<1	<1	52	<6.0	10	5

DATE	CARBON, ORGANIC TOTAL (MG/L AS C)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
FEB 03...	.6	<1	<.10	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
FEB 03...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB 03...	<.01	<.10	<.10	<.01	<1	<.01	<.01	<.01	<.01	<.01

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212604158012700 DRAIN A NEAR MILILANI TOWN (LAT 21°26'04" LONG 158°01'27")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV										
23...	0855	22	112	8.0	--	48	71	K54000	--	--
23...	0910	95	39	8.0	--	48	53	K290000	--	--
23...	0950	30	78	7.9	--	12	18	K124000	17	5.3
23...	0955	--	--	--	--	--	--	K35500	--	--
23...	1550	75	78	6.9	--	35	73	--	--	--
23...	1605	66	48	7.2	--	50	50	--	--	--
23...	1825	140	82	7.6	--	55	72	--	--	--
23...	1840	117	99	7.2	--	55	34	--	--	--
DEC										
06...	0850	128	22	7.2	--	22	33	50000	--	--
06...	0855	95	27	--	22.0	20	36	48000	--	--
06...	0905	56	32	7.4	--	22	26	52000	--	--
06...	0930	56	37	7.5	--	14	22	27000	--	--
06...	0950	22	49	7.6	--	12	25	38000	--	--
23...	1040	30	163	--	--	33	130	--	--	--
23...	1042	30	182	--	--	33	170	--	--	--
23...	1045	30	161	--	--	30	170	--	--	--
23...	1300	22	87	7.2	--	40	54	48000	--	--
23...	1305	22	88	7.2	--	25	51	27000	--	--
23...	1310	47	72	7.1	--	25	62	K65000	--	--
23...	1315	500	42	7.2	--	25	50	K65000	--	--
23...	1400	75	34	7.1	--	30	<10	28000	--	--
23...	1410	95	40	7.1	--	48	<10	28000	--	--
23...	1500	22	48	7.2	--	18	<10	23000	--	--
27...	1145	15	90	--	--	17	100	K240000	--	--
27...	1147	30	76	--	--	18	120	K300000	--	--
27...	1150	38	74	--	--	20	98	K150000	--	--
27...	1155	22	75	--	--	18	84	K120000	--	--
27...	1205	15	72	--	--	19	74	66000	--	--
APR										
02...	1140	30	122	7.3	--	75	150	--	--	--
02...	1147	30	124	7.4	--	65	170	--	--	--
02...	1155	15	119	7.3	--	17	180	--	--	--
04...	1435	38	136	7.3	--	100	270	--	--	--
04...	1440	117	94	7.4	--	120	260	--	--	--
04...	1455	107	46	7.5	--	39	36	--	--	--
JUL										
18...	1555	22	86	--	--	25	140	--	--	--
18...	1600	15	73	--	--	26	170	--	--	--
18...	1640	30	55	--	--	25	97	--	--	--
AUG										
03...	0330	--	--	--	--	--	--	E15000	--	--
03...	0342	--	--	--	--	--	--	E29000	--	--
03...	0355	--	--	--	--	--	--	E28000	--	--
SEP										
17...	0250	15	267	--	--	360	370	--	--	--
17...	0550	15	182	--	--	17	150	--	--	--
17...	0605	85	110	--	--	62	110	--	--	--
17...	0610	47	91	--	--	23	68	--	--	--

K Results based on colony count outside the acceptable range (non-ideal colony count).
< Actual value is known to be less than the value shown.
E Estimated value.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212604158012700 DRAIN A NEAR MILILANI TOWN--Continued

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
NOV										
23...	--	--	--	--	68	.09	52	--	--	--
23...	--	--	--	--	22	.03	160	--	--	--
23...	1.0	8.1	.9	2.8	45	.06	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	40	.05	107	--	--	--
23...	--	--	--	--	25	.03	81	--	--	--
23...	--	--	--	--	44	.06	142	--	--	--
23...	--	--	--	--	60	.08	67	--	--	--
23...										
DEC										
06...	--	--	--	--	26	.04	136	--	--	--
06...	--	--	--	--	21	.03	100	.10	.12	.100
06...	--	--	--	--	26	.04	77	--	--	--
06...	--	--	--	--	26	.04	38	--	--	--
06...	--	--	--	--	33	.05	27	--	--	--
23...	--	--	--	--	--	--	145	--	--	--
23...	--	--	--	--	--	--	412	--	--	--
23...	--	--	--	--	--	--	78	--	--	--
23...	--	--	--	--	69	.09	28	--	--	--
23...	--	--	--	--	52	.07	28	--	--	--
23...	--	--	--	--	41	.06	83	--	--	--
23...	--	--	--	--	27	.04	354	--	--	--
23...	--	--	--	--	31	.04	81	--	--	--
23...	--	--	--	--	28	.04	20	--	--	--
23...	--	--	--	--	35	.05	17	--	--	--
23...	--	--	--	--	66	.09	332	--	--	--
27...	--	--	--	--	51	.07	236	.10	.14	.140
27...	--	--	--	--	52	.07	121	--	--	--
27...	--	--	--	--	50	.07	193	--	--	--
27...	--	--	--	--	50	.07	124	--	--	--
27...										
APR										
02...	--	--	--	--	84	.11	392	--	--	--
02...	--	--	--	--	75	.10	518	--	--	--
02...	--	--	--	--	--	--	482	--	--	--
04...	--	--	--	--	--	--	482	--	--	--
04...	--	--	--	--	--	--	626	--	--	--
04...	--	--	--	--	23	.03	140	--	--	--
JUL										
18...	--	--	--	--	55	.08	331	--	--	--
18...	--	--	--	--	50	.07	1170	--	--	--
18...	--	--	--	--	36	.05	517	--	--	--
SEP										
17...	--	--	--	--	--	--	2420	--	--	--
17...	--	--	--	--	105	.14	554	--	--	--
17...	--	--	--	--	61	.08	348	--	--	--
17...	--	--	--	--	50	.07	665			

212604158012700 DRAIN A NEAR MILILANI TOWN--Continued

DATE	TIME	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)
DEC											
06...	0855	.090	1.1	1.2	1.4	1.20	.00	1.3	1.3	.250	.140
27...	1147	.160	3.2	1.4	1.7	3.30	1.7	1.6	3.4	.640	.160

DATE	TIME	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
NOV									
23...	0855	--	--	<10	--	--	--	--	200
23...	0910	--	--	<10	--	--	--	--	200
23...	0950	14	1	<10	<1	<3	10	92	100
23...	1550	--	--	<10	--	--	--	--	200
23...	1605	--	--	<10	--	--	--	--	100
23...	1825	--	--	<10	--	--	--	--	300
23...	1840	--	--	<10	--	--	--	--	100
DEC									
06...	0850	--	--	<10	--	--	--	--	<100
06...	0855	--	--	<10	--	--	--	--	<100
06...	0905	--	--	<10	--	--	--	--	<100
06...	0930	--	--	<10	--	--	--	--	<100
06...	0950	--	--	<10	--	--	--	--	<100
23...	1040	--	--	<10	--	--	--	--	200
23...	1042	--	--	<10	--	--	--	--	300
23...	1045	--	--	<10	--	--	--	--	300
23...	1300	--	--	<10	--	--	--	--	200
23...	1305	--	--	<10	--	--	--	--	200
23...	1310	--	--	<10	--	--	--	--	200
23...	1315	--	--	<10	--	--	--	--	500
23...	1400	--	--	<10	--	--	--	--	<100
23...	1410	--	--	<10	--	--	--	--	<100
23...	1500	--	--	<10	--	--	--	--	<100
27...	1145	--	--	<10	--	--	--	--	400
27...	1147	--	--	<10	--	--	--	--	300
27...	1150	--	--	<10	--	--	--	--	300
27...	1155	--	--	<10	--	--	--	--	200
27...	1205	--	--	<10	--	--	--	--	100
APR									
02...	1140	--	--	<10	--	--	--	--	600
02...	1147	--	--	<10	--	--	--	--	1100
02...	1155	--	--	<10	--	--	--	--	800
04...	1435	--	--	<10	--	--	--	--	1100
04...	1440	--	--	<10	--	--	--	--	1600
04...	1455	--	--	<10	--	--	--	--	100
JUL									
18...	1555	--	--	<10	--	--	--	--	600
18...	1600	--	--	<10	--	--	--	--	600
18...	1640	--	--	<10	--	--	--	--	500
SEP									
17...	0250	--	--	<10	--	--	--	--	1400
17...	0550	--	--	<10	--	--	--	--	600
17...	0605	--	--	<10	--	--	--	--	500
17...	0610	--	--	<10	--	--	--	--	400

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212604158012700 DRAIN A NEAR MILILANI TOWN--Continued

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV								
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	<10	4	3	<.1	<10	42	<6.0	14
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.1	--	--	--	--
DEC								
06...	--	--	--	.4	--	--	--	--
06...	--	--	--	.1	--	--	--	--
06...	--	--	--	.4	--	--	--	--
06...	--	--	--	.1	--	--	--	--
06...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
27...	--	--	--	.2	--	--	--	--
27...	--	--	--	.1	--	--	--	--
27...	--	--	--	.2	--	--	--	--
27...	--	--	--	.2	--	--	--	--
27...	--	--	--	.2	--	--	--	--
APR								
02...	--	--	--	.9	--	--	--	--
02...	--	--	--	.7	--	--	--	--
02...	--	--	--	2.0	--	--	--	--
04...	--	--	--	.3	--	--	--	--
04...	--	--	--	.9	--	--	--	--
04...	--	--	--	.3	--	--	--	--
JUL								
18...	--	--	--	.1	--	--	--	--
18...	--	--	--	.2	--	--	--	--
18...	--	--	--	.1	--	--	--	--
SEP								
17...	--	--	--	.6	--	--	--	--
17...	--	--	--	.2	--	--	--	--
17...	--	--	--	.2	--	--	--	--
17...	--	--	--	.2	--	--	--	--

DATE	TIME	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)
NOV										
23...	0950	--	<.10	.02	.10	<.01	<.01	<.01	.36	<.01
DEC										
06...	0855	1	<.10	.13	2.2	<.01	<.01	<.01	1.1	.03
27...	1147	3	<.10	<.01	.40	<.01	.01	<.01	3.6	.01

< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212604158012700 DRAIN A NEAR MILILANI TOWN--Continued

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
NOV										
23...	<.01	<.01	<.01	.01	<.01	.01	1.7	<.01	<.01	<.01
DEC										
06...	<.01	<.01	<.01	.58	<.01	.02	.24	<.01	<.01	<.01
27...	<.01	<.01	<.01	.01	.01	<.01	.22	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV										
23...	<.01	<.10	<.10	<.01	<1	<.01	.15	<.01	<.01	.01
DEC										
06...	<.01	<.10	<.10	<.01	<1	<.01	--	--	--	--
27...	<.01	<.10	<.10	<.01	<1	<.01	--	--	--	--

212553158011000 DRAIN B NEAR MILILANI TOWN (LAT 21°25'53" LONG 158°01'10")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TUR-BID-ITY (NTU)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	HARD-NESS (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV									
23...	0915	14	47	--	50	60	K66000	--	--
23...	0920	5.4	68	--	50	61	--	--	--
23...	0930	7.0	42	--	27	38	K37000	26	8.2
23...	0935	--	--	--	--	--	K51000	--	--
23...	0940	--	--	--	--	--	K99500	--	--
23...	1550	5.4	64	--	4.5	35	--	--	--
23...	1600	9.2	74	--	3.0	40	--	--	--
23...	1610	11	60	--	3.5	33	--	--	--
23...	1625	5.4	53	--	5.6	29	--	--	--
23...	1840	22	104	--	7.2	45	--	--	--
23...	1850	19	63	--	6.0	37	--	--	--
23...	1905	7.0	92	--	17	24	--	--	--
23...	1925	11	98	--	26	26	--	21	6.1
23...	1945	3.8	100	--	16	21	--	--	--
DEC									
06...	0840	9.0	23	7.4	3.5	45	10000	--	--
06...	0850	19	25	7.5	10	34	17000	--	--
06...	0900	9.0	23	7.4	3.5	45	25300	--	--
23...	1320	46	39	7.2	20	58	32000	--	--
23...	1335	19	38	7.1	39	22	54000	--	--
23...	1350	25	40	7.0	38	20	56000	--	--
23...	1405	35	32	6.8	32	14	K67000	--	--
23...	1420	16	30	6.8	17	10	27000	--	--
23...	1435	14	39	6.9	20	24	--	--	--
23...	1450	11	38	7.0	18	20	27000	--	--
23...	1505	7.0	38	7.0	13	20	--	--	--
23...	1520	3.8	40	7.0	14	24	K20000	--	--
APR									
04...	1445	16	82	--	18	160	--	--	--
04...	1500	22	34	--	18	62	--	--	--

K Results based on colony count outside the acceptable range (non-ideal colony count).
< Actual value is known to be less than the value shown.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212553158011000 DRAIN B NEAR MILILANI TOWN--Continued

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
NOV									
23...	--	--	--	--	27	.04	67	--	--
23...	--	--	--	--	--	--	68	--	--
23...	1.3	3.8	.3	8.2	29	.04	30	<.10	<.10
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	42	.06	--	--	--
23...	--	--	--	--	44	.06	37	--	--
23...	--	--	--	--	39	.05	--	--	--
23...	--	--	--	--	31	.04	29	<.10	<.10
23...	--	--	--	--	64	.09	150	--	--
23...	--	--	--	--	43	.06	70	--	--
23...	--	--	--	--	59	.08	342	--	--
23...	--	--	--	--	62	.08	50	--	--
23...	1.3	9.3	.9	4.0	57	.08	19	--	--
23...	--	--	--	--					
DEC									
06...	--	--	--	--	9	.01	96	--	--
06...	--	--	--	--	17	.02	78	--	--
06...	--	--	--	--	9	.01	96	--	--
23...	--	--	--	--	28	.04	191	--	--
23...	--	--	--	--	33	.05	84	--	--
23...	--	--	--	--	33	.05	58	--	--
23...	--	--	--	--	25	.03	37	--	--
23...	--	--	--	--	29	.04	25	--	--
23...	--	--	--	--	31	.04	10	--	--
23...	--	--	--	--	29	.04	3	--	--
23...	--	--	--	--	26	.04	7	--	--
23...	--	--	--	--	--	--	8	--	--
23...	--	--	--	--					
APR									
04...	--	--	--	--	51	.07	330	--	--
04...	--	--	--	--	--	--	129	--	--

DATE	TIME	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)
NOV										
23...	0930	.080	<.060	1.5	--	1.60	.90	.70	.270	.070
23...	1625	.110	.100	1.6	.80	1.70	.80	.90	.170	.060

DATE	TIME	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)
NOV									
23...	0915	--	--	<10	--	--	--	--	100
23...	0920	--	--	<10	--	--	--	--	300
23...	0930	29	<1	<10	<1	15	30	1900	110
23...	1550	--	--	<10	--	--	--	--	100
23...	1600	--	--	<10	--	--	--	--	200
23...	1610	--	--	<10	--	--	--	--	100
23...	1625	--	--	<10	--	--	--	--	<100
23...	1840	--	--	<10	--	--	--	--	100
23...	1850	--	--	<10	--	--	--	--	<100
23...	1905	--	--	<10	--	--	--	--	100
23...	1925	17	<1	<10	<1	<3	<10	140	<100
23...	1945	--	--	<10	--	--	--	--	<100
DEC									
06...	0840	--	--	<10	--	--	--	--	100
06...	0850	--	--	<10	--	--	--	--	<100
06...	0900	--	--	<10	--	--	--	--	<100
23...	1320	--	--	<10	--	--	--	--	500
23...	1335	--	--	<10	--	--	--	--	<100
23...	1350	--	--	<10	--	--	--	--	<100
23...	1405	--	--	<10	--	--	--	--	<100
23...	1420	--	--	<10	--	--	--	--	<100
23...	1435	--	--	<10	--	--	--	--	<100
23...	1450	--	--	<10	--	--	--	--	<100
23...	1505	--	--	<10	--	--	--	--	<100
23...	1520	--	--	<10	--	--	--	--	
APR									
04...	1445	--	--	<10	--	--	--	--	500
04...	1500	--	--	<10	--	--	--	--	300

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212553158011000 DRAIN B NEAR MILILANI TOWN--Continued

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
NOV								
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	110	5	360	.1	<10	57	11	110
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	<10	14	3	.1	<10	46	<6.0	40
23...	--	--	--	.1	--	--	--	--
DEC								
06...	--	--	--	.1	--	--	--	--
06...	--	--	--	.1	--	--	--	--
06...	--	--	--	.1	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.3	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.2	--	--	--	--
23...	--	--	--	.1	--	--	--	--
23...	--	--	--	.1	--	--	--	--
APR								
04...	--	--	--	.2	--	--	--	--
04...	--	--	--	.1	--	--	--	--

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)
NOV										
23...	0930	<.10	.03	.40	<.01	.01	<.01	.15	.01	<.01

DATE	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
NOV										
23...	<.01	<.01	.02	<.01	.01	.08	.03	<.01	<.01	<.01

DATE	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV									
23...	<.10	<.10	<.01	<1	<.01	.21	<.01	.04	.01

< Actual value is known to be less than the value shown.

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF KAUAI

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16010000 - KAWAIKOI STREAM NR WAIMEA, KAUAI, HI (LAT 22 08 09 LONG 159 37 22)					
OCT , 1982					
14...	1135	7.9	28	5.7	18.0
DEC					
21...	1115	42	34	5.9	14.0
FEB , 1983					
18...	1230	6.4	38	5.8	15.0
APR , 1983					
19...	1210	27	38	5.9	16.0
JUN					
28...	1250	11	45	6.2	16.5
AUG					
29...	1035	9.8	64	6.9	18.0
16014000 - KOKEE DITCH NR WAIMEA, KAUAI, HI (LAT 22 06 42 LONG 159 40 43)					
OCT , 1982					
14...	1415	12	35	6.3	17.5
16036000 - MAKAWELI RIVER NR WAIMEA, KAUAI, HI (LAT 21 58 31 LONG 159 38 55)					
OCT , 1982					
13...	1435	69	90	6.8	24.0
DEC					
13...	1250	100	77	7.5	19.0
FEB , 1983					
17...	1400	21	145	7.3	18.5
APR , 1983					
12...	1420	18	95	7.2	21.0
JUN					
29...	1335	20	108	7.2	21.0
SEP					
08...	1120	52	60	7.3	19.0
16049000 - HANAPEPE RIVER BL MANUAHI STR NR ELEELE, KAUAI, HI (LAT 21 57 29 LONG 159 33 13)					
OCT , 1982					
13...	1040	58	90	6.3	21.0
DEC					
14...	1045	74	95	7.3	18.5
FEB , 1983					
17...	0940	20	95	7.2	17.0
APR , 1983					
12...	1020	20	72	7.1	20.0
JUN					
29...	1105	29	95	7.3	20.0
SEP					
09...	1035	88	74	7.0	20.0
16060000 - SF WAILUA RIVER NR LIHUE, KAUAI, HI (LAT 22 02 24 LONG 159 22 58)					
OCT , 1982					
01...	1500	70	90	6.1	23.5
NOV					
03...	1500	581	56	6.4	19.0
DEC					
08...	1535	82	100	7.0	19.5
JAN , 1983					
07...	1035	54	105	5.5	21.0
FEB					
08...	1220	6.2	85	7.4	19.0
MAR					
01...	1440	9.1	105	7.2	22.5
APR , 1983					
05...	1415	7.8	128	7.0	20.5
MAY					
02...	1345	47	120	7.0	20.0
JUN					
01...	1355	12	120	7.3	20.0
JUL					
06...	1440	16	80	7.0	21.0
AUG					
03...	0915	137	84	7.3	24.0
31...	1355	16	95	7.3	20.5
16061000 - NORTH WAILUA DITCH NR LIHUE, KAUAI, HI (LAT 22 03 56 LONG 159 28 14)					
OCT , 1982					
04...	0820	21	67	5.8	18.5
NOV					
02...	1240	5.5	66	6.4	20.0
MAR , 1983					
01...	1335	17	69	7.6	19.0
APR					
04...	1345	18	75	7.1	19.0
MAY					
02...	1330	25	58	7.4	18.0
JUN , 1983					
02...	1350	24	65	6.9	18.5
JUL					
05...	1315	28	49	7.0	20.0
AUG					
01...	1220	22	78	7.7	20.0
SEP					
01...	1320	21	70	7.6	19.0
16061200 - N WAILUA DITCH BL WAIKOKO STR NR LIHUE, KAUAI, HI (LAT 22 03 34 LONG 159 28 00)					
OCT , 1982					
20...	1200	22	69	7.4	20.0
DEC					
02...	1050	12	68	7.2	19.5
22...	1015	4.9	90	6.8	18.0
JAN , 1983					
20...	1050	3.1	83	5.9	17.0
FEB					
23...	1105	18	45	6.9	17.5
MAR					
21...	1020	16	77	7.3	19.0
APR					
20...	1140	22	78	7.2	19.5
MAY , 1983					
20...	0920	28	60	6.9	19.0
JUN					
20...	1055	28	77	7.4	19.0
JUL					
20...	1120	33	65	7.4	22.0
AUG					
25...	0955	30	62	7.4	19.0
SEP					
22...	1015	27	65	7.3	19.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF KAUAI--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16062000 - STABLE STORM DITCH NR LIHUE, KAUAI, HI (LAT 22 04 09 LONG 159 26 46)					
OCT , 1982					
20...	0930	.05	82	6.5	22.0
NOV					
23...	0935	.20	42	6.5	21.5
FEB , 1983					
23...	1005	29	86	7.4	18.0
MAR					
21...	0920	26	75	7.4	18.0
APR					
20...	0950	35	75	7.3	20.0
MAY , 1983					
20...	1145	54	68	7.0	20.0
JUN					
20...	0930	35	85	7.3	19.0
JUL					
20...	0920	.71	72	7.4	21.0
AUG					
23...	0950	24	75	7.0	19.0
SEP					
21...	0945	18	77	7.1	20.0
16063000 - NF WAILUA RIVER AT ALT 650 FT NR LIHUE, KAUAI, HI (LAT 22 04 02 LONG 159 26 21)					
OCT , 1982					
04...	1105	48	81	5.7	19.0
NOV					
02...	0925	98	76	6.4	19.5
DEC					
06...	1100	53	80	7.3	19.0
JAN , 1983					
05...	1110	42	80	7.4	19.0
FEB					
08...	0930	29	80	7.4	16.5
MAR					
01...	1120	1.9	90	7.0	23.0
APR , 1983					
05...	1020	2.5	85	7.2	19.0
MAY					
02...	1020	115	83	7.2	20.0
JUN					
01...	0950	23	83	7.2	19.0
JUL					
05...	1015	70	64	7.3	19.5
AUG					
01...	1015	83	68	7.5	20.0
31...	1030	45	75	7.1	19.5
16068000 - EB OF NF WAILUA RIVER NR LIHUE, KAUAI, HI (LAT 22 04 19 LONG 159 25 05)					
OCT , 1982					
26...	1020	25	105	7.0	19.5
NOV					
23...	1105	--	68	6.8	21.5
DEC					
28...	1000	39	85	6.9	20.0
JAN , 1983					
27...	0910	--	72	6.8	18.0
FEB					
23...	1020	15	105	7.0	19.0
MAR					
28...	1045	11	110	7.3	22.0
APR , 1983					
26...	1035	24	90	7.0	19.5
MAY					
25...	0945	20	95	7.0	20.0
JUN					
27...	1330	25	90	7.1	21.5
JUL					
26...	1020	31	92	7.3	23.0
AUG					
26...	0745	33	98	7.2	20.0
SEP					
27...	0935	28	98	7.0	22.5
16069000 - WAILUA DITCH NR KAPAA, KAUAI, HI (LAT 22 04 34 LONG 159 24 04)					
OCT , 1982					
20...	1425	24	80	7.3	19.5
NOV					
23...	1235	2.4	75	7.0	23.0
DEC					
21...	0930	1.2	95	6.2	19.0
JAN , 1983					
20...	1330	20	90	7.2	21.0
FEB					
23...	1410	22	85	7.2	21.0
MAR					
21...	1210	13	90	7.0	20.0
APR , 1983					
20...	1440	21	92	7.0	19.5
MAY					
20...	1430	28	100	7.2	21.0
JUN					
20...	1410	24	95	7.4	21.0
JUL					
20...	1355	29	75	7.1	26.5
AUG					
23...	1235	28	100	7.3	20.5
SEP					
21...	1120	30	98	7.3	21.5
16071000 - NF WAILUA RIVER NR KAPAA, KAUAI, HI (LAT 22 03 08 LONG 159 22 22)					
OCT , 1982					
05...	1005	169	75	6.6	20.0
NOV					
18...	1040	112	100	7.5	21.0
FEB , 1983					
16...	1030	8.1	185	7.1	20.0
APR , 1983					
21...	1045	6.7	120	7.0	18.5
JUN					
27...	1040	20	95	7.0	22.0
SEP					
13...	1105	33	100	7.4	19.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF KAUAI--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16071500 - LEFT BRANCH OPAEKAA STREAM NR KAPAA, KAUAI, HI (LAT 22 04 44 LONG 159 23 55)					
OCT , 1982					
05...	1250	2.8	85	6.7	21.0
NOV					
18...	1255	3.7	85	6.9	20.5
FEB , 1983					
10...	0955	1.6	95	6.9	18.5
APR , 1983					
14...	1030	.75	104	7.0	23.0
JUN					
07...	0945	.82	100	7.2	22.5
AUG					
09...	0930	2.3	90	7.2	22.5
16077000 - MAKALEHA DITCH NR KEALIA, KAUAI, HI (LAT 22 07 06 LONG 159 22 04)					
OCT , 1982					
20...	1105	7.5	102	6.8	20.0
NOV					
22...	1020	.60	108	7.2	20.5
DEC					
20...	0950	5.2	110	7.3	18.0
JAN , 1983					
20...	1120	10	115	7.6	19.0
FEB					
24...	1050	11	115	7.2	20.0
MAR					
22...	0930	8.6	105	7.2	18.5
APR , 1983					
20...	1120	14	90	6.7	19.0
MAY					
20...	1015	23	52	6.5	22.0
JUN					
21...	1230	14	90	7.4	21.5
JUL					
20...	1145	1.5	95	7.2	21.0
AUG					
22...	1235	12	95	7.2	19.5
SEP					
20...	1115	8.2	91	7.2	21.0
16079000 - KAPAHI DITCH NR KEALIA, KAUAI, HI (LAT 22 06 09 LONG 159 22 28)					
OCT , 1982					
20...	0935	6.9	110	7.2	20.0
JAN , 1983					
20...	0950	6.0	135	7.4	18.5
FEB					
24...	0900	3.8	125	7.4	20.0
MAR					
22...	1400	3.9	115	7.4	20.0
APR					
20...	0915	7.3	100	6.5	20.0
MAY , 1983					
20...	0915	16	60	6.4	20.0
JUN					
21...	1410	5.5	95	7.4	21.0
JUL					
20...	1305	.14	95	7.5	27.0
AUG					
23...	1455	17	95	7.2	19.5
SEP					
20...	0855	4.0	93	7.2	20.5
16080000 - KAPAA STR AT KAPAHI DITCH INTK NR KAPAA, KAUAI, HI (LAT 22 06 15 LONG 159 22 29)					
OCT , 1982					
04...	0940	26	92	5.5	20.5
NOV					
01...	0930	67	81	6.5	21.0
29...	1005	24	110	7.3	20.5
JAN , 1983					
03...	0955	21	118	7.5	20.5
16087000 - ANAHOLA DITCH WASTEWAY NR KEALIA, KAUAI, HI (LAT 22 08 16 LONG 159 22 28)					
OCT , 1982					
04...	1050	.14	64	5.4	22.5
NOV					
01...	1055	10	60	6.3	21.0
29...	1155	2.8	80	6.5	20.0
JAN , 1983					
03...	1130	6.6	82	6.9	20.0
FEB					
08...	1045	.06	85	6.3	18.5
28...	1030	.04	80	6.5	19.0
APR , 1983					
01...	1015	.07	100	6.8	21.0
MAY					
03...	1005	.04	72	6.7	21.0
JUL					
01...	1000	.14	84	7.0	23.0
AUG					
02...	1105	.08	64	6.5	23.0
SEP					
02...	1210	.07	84	6.8	25.0
16088000 - ANAHOLA DITCH AB KANEHA RES NR KEALIA, KAUAI, HI (LAT 22 08 10 LONG 159 22 28)					
OCT , 1982					
20...	1320	5.7	70	6.6	20.5
NOV					
22...	1240	1.2	65	6.6	20.5
DEC					
20...	1205	3.9	80	7.3	17.5
JAN , 1983					
20...	1320	3.7	85	7.1	18.0
FEB					
24...	1315	1.3	90	7.0	20.0
MAR					
22...	1115	.79	92	7.1	20.0
APR , 1983					
20...	1330	4.4	80	7.1	19.0
MAY					
20...	1130	30	40	6.8	21.0
JUN					
21...	0915	7.2	78	7.2	20.0
JUL					
20...	0945	9.9	69	7.2	21.0
AUG					
22...	1110	3.3	90	7.2	19.5
SEP					
21...	1020	14	75	7.3	21.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF KAUAI--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16089000 - ANAHOLA STREAM NR KEALIA, KAUAI, HI (LAT 22 09 05 LONG 159 21 17)					
OCT , 1982					
04...	1245	8.4	105	5.8	23.5
NOV					
01...	1500	56	83	6.5	22.0
DEC					
06...	1435	97	72	6.9	19.5
JAN , 1983					
03...	1345	16	110	7.3	21.0
FEB					
08...	1410	63	110	7.2	21.0
28...	1145	6.0	120	7.5	19.5
APR					
01...	1230	3.6	125	7.2	23.0
MAY , 1983					
03...	1315	8.6	115	7.8	22.5
JUN					
03...	1120	8.4	110	7.8	20.0
JUL					
01...	1225	4.3	118	7.1	24.0
AUG					
02...	1330	11	90	7.5	23.0
SEP					
02...	1010	10	100	7.4	19.0
16093200 - ANAHOLA STREAM AT ANAHOLA, KAUAI, HI (LAT 22 08 42 LONG 159 18 59)					
OCT , 1982					
06...	0955	27	98	6.3	22.0
NOV , 1982					
17...	1055	28	145	7.4	22.0
16097500 - HALAULANI STR AT ALT 400 FT NR KILAUEA, KAUAI, HI (LAT 22 10 54 LONG 159 25 17)					
OCT , 1982					
05...	1035	16	66	6.1	20.5
NOV					
15...	1000	8.4	100	6.9	19.5
FEB , 1983					
15...	1110	5.8	108	6.7	18.0
APR , 1983					
13...	1135	4.8	110	7.2	21.0
JUN					
02...	1245	8.3	90	7.0	21.5
AUG					
10...	1230	9.8	90	7.4	22.5
16100000 - HANALEI TUNNEL OUTLET NR LIHUE, KAUAI, HI (LAT 22 05 02 LONG 159 27 50)					
OCT , 1982					
01...	1050	6.1	75	6.2	19.0
NOV					
03...	1035	40	38	6.5	19.0
DEC					
08...	1120	10	77	7.0	15.5
JAN , 1983					
04...	1205	8.1	80	7.3	17.5
FEB					
07...	1040	5.6	80	6.8	16.0
MAR					
01...	1115	26	80	7.2	16.0
APR , 1983					
04...	1105	23	78	7.2	18.0
MAY					
02...	1100	42	58	7.2	17.0
JUN					
02...	1020	37	57	7.2	18.5
JUL					
06...	1040	33	56	7.2	19.0
AUG					
03...	1155	58	38	7.9	21.0
SEP					
01...	1040	25	42	7.1	18.0
16103000 - HANALEI RIVER NR HANALEI, KAUAI, HI (LAT 22 11 31 LONG 159 27 57)					
OCT , 1982					
08...	1025	164	90	6.6	20.0
NOV					
16...	1000	134	95	6.9	20.0
FEB , 1983					
11...	1140	89	90	7.2	19.0
APR , 1983					
11...	1145	49	100	7.4	22.5
JUN					
01...	1030	150	85	7.0	21.5
AUG					
08...	1105	182	90	7.7	21.5
16108000 - WAINIHA RIVER NEAR HANALEI, KAUAI, HI (LAT 22 08 20 LONG 159 33 38)					
OCT , 1982					
07...	1145	119	42	5.7	19.0
DEC					
16...	1315	101	64	7.4	18.5
MAR , 1983					
18...	1135	57	52	6.4	18.0
MAY , 1983					
19...	1225	58	68	7.2	19.0
AUG					
24...	1245	118	40	7.2	20.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16200000 - NF KAUKONAHUA STR AB RB NR WAHIAWA, OAHU, HI (LAT 21 31 09 LONG 157 56 53)											
NOV , 1982						JUN , 1983					
09...	1345	7.6	46	6.8	21.0	02...	1410	8.8	39	6.9	20.0
JAN , 1983						JUL					
14...	1345	3.5	44	7.0	18.5	20...	1445	16	41	6.7	23.0
FEB						SEP					
14...	1425	.57	62	7.1	20.0	12...	1345	7.6	48	6.9	20.0
APR											
15...	1535	.38	46	6.8	23.5						
16208000 - S F KAUKONAHUA STR AT E PUMP RE WAHIAWA, OAHU, HI (LAT 21 29 32 LONG 157 59 54)											
NOV , 1982						JUN , 1983					
29...	1200	7.4	70	6.6	21.5	06...	1515	8.2	48	6.8	25.0
JAN , 1983						JUL					
07...	1350	5.1	57	6.7	21.0	22...	1200	17	54	6.6	23.5
FEB						SEP					
18...	1310	.96	75	6.7	20.0	09...	0935	15	39	6.6	22.0
APR											
20...	1125	9.0	46	6.5	20.0						
16211600 - MAKAHA STREAM NR MAKAHA, OAHU, HI (LAT 21 30 16 LONG 158 10 59)											
NOV , 1982						JUN , 1983					
16...	1210	.94	120	7.2	20.0	01...	1430	.63	145	7.2	21.0
JAN , 1983						JUL					
06...	1245	3.0	130	7.3	19.5	26...	1325	.38	150	7.3	21.5
FEB						SEP					
23...	1435	.96	105	7.2	20.5	15...	1555	.29	160	7.2	21.0
APR											
18...	1530	.82	--	7.4	20.0						
16212800 - KIPAPA STREAM NR WAHIAWA, OAHU, HI (LAT 21 28 13 LONG 157 57 40)											
NOV , 1982						MAY , 1983					
04...	1430	21	55	6.3	22.0	31...	1545	.22	66	6.9	28.0
JAN , 1983						JUL					
10...	1235	1.1	67	7.1	21.0	19...	1155	9.4	45	6.7	24.0
FEB						SEP					
10...	1200	.20	77	6.9	19.5	14...	1350	1.5	60	7.0	27.0
16216000 - WAIAWA STREAM NR PEARL CITY, OAHU, HI (LAT 21 23 57 LONG 157 58 51)											
OCT , 1982						MAY , 1983					
08...	1130	32	210	7.1	24.5	18...	1425	2.1	940	7.4	25.0
JAN , 1983						JUL					
25...	1450	2.8	950	7.3	22.0	21...	1125	9.9	320	7.0	25.0
MAR						AUG					
30...	1240	2.6	800	7.8	25.0	31...	1215	1.8	850	7.2	25.0
16226000 - NORTH HALAWA STREAM NR AIEA, OAHU, HI (LAT 21 23 46 LONG 157 53 37)											
DEC , 1982						AUG , 1983					
06...	1120	1.3	105	7.1	21.0	30...	1220	.07	140	6.9	23.0
JUL , 1983											
14...	1235	2.9	125	7.2	23.0						
16232000 - NUUANU STR BL RES 2 WASTEWAY NR HONOLULU, OAHU, HI (LAT 21 20 57 LONG 157 49 40)											
OCT , 1982						MAY , 1983					
05...	1510	5.4	120	7.1	23.0	16...	1535	1.2	125	7.4	22.0
DEC						JUL					
02...	1605	3.0	130	7.3	22.0	20...	1000	2.0	130	7.3	23.0
JAN , 1983						AUG					
24...	1545	4.8	120	7.4	21.0	29...	1620	1.6	120	7.1	23.0
MAR											
23...	1500	1.9	125	7.5	22.5						

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16238500 - WAIHI STREAM AT HONOLULU, OAHU, HI (LAT 21 19 55 LONG 157 48 12)											
OCT , 1982						MAY , 1983					
04...	1530	1.2	140	7.0	22.5	20...	0955	.62	160	7.1	21.0
NOV						JUL					
22...	1430	1.6	150	6.8	19.5	20...	1510	4.2	140	7.2	22.5
JAN , 1983						SEP					
27...	1150	.94	170	7.1	19.0	12...	1200	1.8	150	7.1	22.0
16240500 - WAIAKEAKUA STREAM AT HONOLULU, OAHU, HI (LAT 21 19 53 LONG 157 48 08)											
OCT , 1982						MAY , 1983					
04...	1345	4.7	130	7.5	21.5	19...	1445	3.2	140	7.4	21.5
JAN , 1983						JUL					
27...	1040	4.3	130	7.4	19.5	20...	1235	4.9	125	7.4	22.0
MAR						SEP					
23...	1300	2.8	130	7.4	21.0	12...	1045	3.1	130	7.2	21.5
16254000 - MAKAWAO STREAM NEAR KAILUA, OAHU, HI (LAT 21 21 49 LONG 157 46 02)											
OCT , 1982						MAY , 1983					
07...	1455	3.0	210	7.7	23.5	20...	1225	2.4	194	6.9	22.5
FEB , 1983						JUL					
04...	1020	7.4	190	7.7	22.0	20...	1355	2.4	190	6.9	22.5
APR						SEP					
05...	1150	2.9	180	7.6	22.5	16...	0930	2.6	169	7.6	22.5
16283600 - SF WAIHEE STR NR HEEIA, OAHU, HI (LAT 21 26 47 LONG 157 52 12)											
DEC , 1982						JUN , 1983					
10...	1215	.34	120	7.5	19.5	01...	1225	.64	120	7.5	20.0
FEB , 1983						JUL					
16...	1100	.27	120	7.7	19.5	27...	0850	.62	120	7.5	20.0
APR						SEP					
06...	1010	.22	120	7.5	19.0	14...	0840	.45	110	7.2	19.0
16283700 - NF WAIHEE STREAM NR HEEIA, OAHU, HI (LAT 21 26 48 LONG 157 52 18)											
FEB , 1983						JUL , 1983					
16...	1135	.63	135	7.7	19.5	27...	1020	1.0	140	6.7	19.5
APR						SEP					
06...	1250	.43	130	7.5	19.5	14...	1000	.72	130	6.9	19.5
JUN											
01...	1335	.98	140	6.8	19.5						
16284200 - WAIHEE STREAM NR KAHALUU, OAHU, HI (LAT 21 27 04 LONG 157 51 36)											
OCT , 1982						MAY , 1983					
05...	1300	15	140	7.7	21.0	24...	1435	5.9	150	6.9	21.0
FEB , 1983						JUL					
16...	1350	6.7	165	7.7	20.0	27...	1420	5.4	140	6.7	21.0
APR						SEP					
06...	1445	5.8	160	7.6	20.0	14...	1445	4.4	155	7.9	21.5
16294900 - WAIKANE STREAM AT ALT 75 FT AT WAIKANE, OAHU, HI (LAT 21 30 00 LONG 157 51 54)											
MAY , 1983						JUL , 1983					
03...	1130	2.7	180	7.4	22.0	28...	1350	2.5	190	7.0	23.0
JUN						SEP					
08...	1100	2.9	167	6.9	21.5	20...	1135	2.3	180	7.0	23.0
16296500 - KAHANA STR AT ALT 30 FT NR KAHANA, OAHU, HI (LAT 21 32 37 LONG 157 53 07)											
APR , 1983						JUL , 1983					
08...	1430	18	140	6.9	21.5	25...	1340	22	120	6.8	22.5
JUN											
08...	1455	22	120	6.3	22.5						

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16303000 - PUNALUU STREAM NR PUNALUU, OAHU, HI (LAT 21 33 33 LONG 157 54 06)											
DEC , 1982						APR , 1983					
15...	1100	26	120	7.2	20.0	01...	1050	11	130	7.6	20.5
FEB , 1983						SEP					
15...	1230	15	125	7.7	20.0	15...	1220	10	120	7.5	21.5
16304200 - KALUANUI STREAM NR PUNALUU, OAHU, HI (LAT 21 35 22 LONG 157 54 38)											
DEC , 1982						JUN , 1983					
14...	1150	1.8	70	6.8	20.5	28...	1415	1.1	57	--	23.5
APR , 1983						JUL					
07...	0855	.39	70	6.8	19.5	25...	0910	1.2	57	6.2	21.5
JUN											
07...	1235	.84	55	6.2	22.5						
16325000 - KAMANANUI STR AT PUPUKEA MIL RD NR MAUNAWAI, OAHU HI (LAT 21 37 25 LONG 158 01 04)											
NOV , 1982						JUL , 1983					
08...	1520	7.3	59	6.7	23.0	28...	1500	1.3	70	6.9	28.0
JAN , 1983						SEP					
17...	1500	5.2	71	6.9	22.0	09...	1400	2.7	60	7.1	24.5
JUL											
01...	1435	.72	70	7.0	27.0						
16330000 - KAMANANUI STREAM AT MAUNAWAI, OAHU, HI (LAT 21 38 20 LONG 158 03 27)											
NOV , 1982						JUN , 1983					
18...	1510	6.4	85	7.1	23.0	06...	1230	3.6	80	7.0	26.0
JAN , 1983						JUL					
04...	1200	14	80	7.2	22.0	18...	1345	4.9	74	7.1	25.0
FEB						SEP					
17...	1205	2.7	95	7.2	21.0	07...	1700	1.1	87	7.0	26.0
APR											
14...	1525	1.1	104	7.3	25.0						
16345000 - OPAEULA STREAM NR WAHIAWA, OAHU, HI (LAT 21 33 55 LONG 158 00 10)											
NOV , 1982						JUN , 1983					
19...	1105	3.3	52	6.7	21.5	03...	1245	3.4	42	6.7	24.5
JAN , 1983						JUL					
12...	1150	45	30	6.8	18.5	27...	1100	2.3	48	6.5	24.5
FEB						SEP					
22...	1430	.41	58	6.8	22.0	14...	1030	2.8	44	6.5	24.0
APR											
13...	1510	4.4	48	6.7	25.5						

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF MOLOKAI

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16403900 - KAWAINUI STREAM NR PELEKUNU, MOLOKAI, HI (LAT 21 07 59 LONG 156 52 38)					
NOV , 1982					
05...	1020	7.1	112	7.3	20.0
16404200 - PILIPILILAU STREAM NR PELEKUNU, MOLOKAI, HI (LAT 21 08 08 LONG 156 53 09)					
NOV , 1982					
04...	1500	.99	150	7.4	20.5
FEB , 1983					
11...	1245	1.2	148	7.5	17.5
MAY , 1983					
16...	1100	1.1	150	7.6	19.5
AUG					
16...	1140	.83	104	7.3	22.0
16405100 - MOLOKAI TUNNEL AT EAST PORTAL, MOLOKAI, HI (LAT 21 08 38 LONG 156 55 16)					
OCT , 1982					
19...	0945	2.0	--	--	19.0
DEC					
08...	0945	2.6	--	--	16.0
JAN , 1983					
25...	1000	3.2	--	--	18.0
MAR					
08...	1030	1.5	--	--	18.0
APR , 1983					
19...	1010	2.0	--	--	17.5
JUN					
10...	1445	11	--	--	19.5
JUL					
27...	0955	2.1	--	--	18.0
SEP					
07...	0920	1.5	--	--	20.0
16405300 - MOLOKAI TUNNEL AT WEST PORTAL, MOLOKAI, HI (LAT 21 07 27 LONG 156 59 50)					
OCT , 1982					
19...	1640	5.0	106	7.3	18.0
DEC					
08...	1620	5.2	95	7.3	17.5
JAN , 1983					
25...	1705	15	66	7.2	18.5
MAR					
08...	1710	4.3	112	7.5	18.5
APR , 1983					
19...	1530	4.8	102	7.6	18.0
JUN					
11...	0900	6.1	84	7.3	19.0
JUL					
27...	1600	4.5	100	6.0	18.0
SEP					
07...	1505	4.4	106	7.5	19.0
16405500 - WAIKOLU STR AT ALT 900 FT NR KALAUPAPA, MOLOKAI, HI (LAT 21 08 43 LONG 156 55 18)					
OCT , 1982					
19...	1320	1.1	106	7.4	18.5
DEC					
08...	1315	.94	104	7.3	18.5
JAN , 1983					
25...	1400	6.5	58	7.2	20.0
MAR					
08...	1300	1.2	104	7.8	20.0
APR , 1983					
19...	1200	.84	104	7.6	19.0
JUN					
10...	1410	2.3	104	7.7	20.0
JUL					
27...	1430	.98	102	6.1	20.0
SEP					
07...	1200	.88	102	7.6	20.0
16408000 - WAIKOLU STR BL PIPE CROSS NR KALAUPAPA, MOLOKAI, HI (LAT 21 09 45 LONG 156 55 54)					
OCT , 1982					
19...	1240	8.0	118	7.2	21.5
DEC					
08...	1350	7.1	114	7.4	19.0
JAN , 1983					
25...	1345	9.5	116	7.3	20.0
MAR					
08...	1220	7.7	116	7.5	22.0
APR , 1983					
19...	1130	7.9	116	7.7	19.5
JUN					
10...	0910	7.9	116	7.3	20.0
JUL					
27...	1035	6.3	118	6.5	21.0
SEP					
07...	1120	6.0	118	7.6	21.5
16419500 - PAPIO GULCH AT HALAWA, MOLOKAI, HI (LAT 21 08 55 LONG 156 44 16)					
OCT , 1982					
10...	1750	.33	140	6.8	22.0
DEC					
06...	1400	.48	134	7.0	20.0
JAN , 1983					
24...	1250	.48	132	6.7	19.5
MAR					
07...	1205	.26	142	6.6	19.0
APR , 1983					
18...	1130	.18	142	6.7	19.5
JUN					
07...	1020	.07	149	6.5	21.0
JUL					
25...	1530	.03	150	6.1	22.0
SEP					
06...	1145	1.6	94	6.2	22.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF MAUI

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16501000 - PALIKEA STREAM BL DIV DAM NR KIPAHULU, MAUI, HI (LAT 20 41 03 LONG 156 04 10)					
OCT , 1982					
07...	1100	16	25	6.7	18.5
NOV					
18...	1130	2.7	34	7.1	18.0
JAN , 1983					
06...	1120	.07	44	6.6	20.0
MAY , 1983					
11...	1005	2.6	41	6.6	19.0
JUN					
30...	1000	.09	47	6.5	22.0
AUG					
18...	1030	41	28	6.3	19.0
16508000 - HANAWI STREAM NEAR NAHIKU, MAUI, HI (LAT 20 48 37 LONG 156 07 00)					
OCT , 1982					
06...	1550	12	24	6.8	20.0
NOV					
17...	1630	6.9	35	7.3	18.0
JAN , 1983					
05...	1535	3.5	44	7.4	19.0
FEB					
18...	0930	2.0	48	7.0	17.0
APR , 1983					
01...	1005	1.6	48	6.7	19.0
MAY					
12...	1030	2.9	41	7.2	19.0
JUN					
29...	1250	4.0	43	7.4	20.5
AUG					
19...	0945	5.8	42	6.4	19.5
16512000 - KOOLAU DITCH AT NAHIKU WEIR NR NAHIKU, MAUI, HI (LAT 20 48 56 LONG 156 07 15)					
OCT , 1982					
06...	1600	61	37	6.7	19.5
NOV					
17...	1520	38	41	7.2	19.0
JAN , 1983					
05...	1610	18	50	7.4	19.0
FEB					
16...	1525	8.1	50	8.2	19.5
MAR , 1983					
30...	1700	7.3	50	6.8	20.0
MAY					
10...	1655	39	44	6.3	19.0
JUN					
29...	1300	21	45	7.7	20.5
AUG					
17...	1630	33	44	5.9	20.0
16518000 - WEST WAILUAIKI STREAM NEAR KEANAE, MAUI, HI (LAT 20 49 16 LONG 156 08 37)					
OCT , 1982					
06...	1325	23	27	6.6	19.0
NOV					
17...	1330	13	32	7.1	18.5
JAN , 1983					
05...	1305	6.4	47	7.2	17.0
FEB					
16...	1305	1.9	47	7.2	17.5
MAR , 1983					
30...	1405	1.6	44	6.6	20.0
MAY					
10...	1305	13	35	6.4	19.0
JUN					
29...	0930	6.0	44	7.0	20.0
AUG					
17...	1555	8.3	39	5.9	20.0
16523000 - KOOLAU DITCH NR KEANAE, MAUI, HI (LAT 20 49 53 LONG 156 10 30)					
OCT , 1982					
06...	1220	191	29	6.7	19.0
NOV					
17...	1045	107	39	7.1	18.5
JAN , 1983					
05...	1210	56	49	7.4	18.5
FEB					
16...	1000	23	54	7.2	17.0
MAR , 1983					
30...	1155	20	52	6.6	19.0
MAY					
10...	1000	120	40	6.4	18.5
JUN					
29...	1020	65	47	7.2	20.0
AUG					
17...	1140	106	44	6.0	20.0
16531000 - KULA DIV FROM HAIPUAENA STR NR OLINDA, MAUI, HI (LAT 20 48 24 LONG 156 13 27)					
OCT , 1982					
04...	1130	1.3	13	6.3	14.5
NOV					
15...	1100	1.8	19	5.4	13.0
JAN , 1983					
04...	1405	.14	15	6.0	13.0
FEB					
14...	1115	.01	20	6.8	13.0
MAR , 1983					
29...	1035	.10	22	6.2	13.0
MAY					
17...	1045	.54	18	6.8	13.5
JUL					
05...	1100	2.8	19	5.6	15.0
AUG					
16...	1015	.26	16	6.2	15.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF MAUI--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16538000 - SPRECKELS DITCH AT HAIPUAENA WEIR NR HUELO, MAUI, HI (LAT 20 51 15 LONG 156 11 25)											
OCT , 1982						APR , 1983					
08...	1100	22	31	6.9	20.0	05...	1440	5.3	40	6.7	21.5
NOV						MAY					
19...	1335	15	38	6.6	19.5	18...	1250	21	35	6.9	19.0
JAN , 1983						JUL					
07...	1150	8.7	38	7.2	18.5	06...	1525	85	31	6.4	20.0
FEB						AUG					
22...	1450	4.1	47	7.3	19.0	18...	1420	31	34	6.8	21.0
16541000 - KOOLAU DITCH AT HAIPUAENA NR HUELO, MAUI, HI (LAT 20 51 17 LONG 156 11 19)											
OCT , 1982						APR , 1983					
08...	1400	117	40	6.7	20.0	05...	1210	19	51	6.5	19.5
NOV						MAY					
26...	1200	90	37	6.9	18.5	18...	1500	104	47	7.3	20.0
JAN , 1983						JUL					
07...	1410	56	51	7.2	18.0	06...	1250	199	33	6.7	20.0
FEB						AUG					
22...	1210	21	54	7.1	18.0	18...	1300	149	41	7.1	20.0
16541500 - MANUEL LUIS DITCH AT PUOHOKAMOA GL NR HUELO, MAUI, HI (LAT 20 51 48 LONG 156 10 59)											
OCT , 1982						APR , 1983					
08...	1045	1.6	55	7.2	21.0	01...	1330	.09	68	6.2	21.0
NOV						MAY					
19...	1115	.53	59	6.5	20.5	18...	1125	2.0	46	6.6	20.0
JAN , 1983						JUL					
07...	1220	.62	60	6.9	20.0	06...	1040	2.1	46	6.5	21.0
FEB						AUG					
18...	1310	.09	68	6.8	20.0	19...	1310	.74	55	5.9	20.0
16587000 - HONOPOU STREAM NR HUELO, MAUI, HI (LAT 20 53 20 LONG 156 15 20)											
OCT , 1982						MAR , 1983					
26...	1005	1.6	54	7.2	21.0	28...	1445	.54	55	6.6	22.0
NOV						MAY					
18...	1345	1.8	52	6.9	19.5	25...	1350	4.5	53	6.3	18.5
DEC						JUL					
27...	1120	5.1	50	6.7	18.5	07...	1550	2.7	49	6.7	22.0
JAN , 1983						AUG					
13...	1200	1.6	55	6.8	18.0	19...	1200	2.3	53	6.7	21.5
FEB											
15...	1210	.54	56	7.3	18.0						
16588000 - WAILOA DITCH AT HONOPOU NR HUELO, MAUI, HI (LAT 20 53 20 LONG 156 15 19)											
OCT , 1982						APR , 1983					
04...	1630	284	24	6.5	19.0	08...	1110	223	41	6.8	18.5
NOV						MAY					
24...	1420	194	27	6.6	19.0	25...	1445	290	35	6.4	17.5
JAN , 1983						JUL					
13...	1110	76	52	7.0	17.5	07...	1450	285	33	6.6	20.0
FEB						AUG					
15...	1115	28	54	7.2	16.5	19...	1025	163	42	6.7	19.5
16589000 - NEW HAMAKUA DITCH AT HONOPOU NR HUELO, MAUI, HI (LAT 20 53 28 LONG 156 15 22)											
OCT , 1982						APR , 1983					
04...	1010	108	32	6.7	18.5	08...	1405	104	41	6.5	19.0
NOV						MAY					
24...	1115	139	22	6.8	19.0	25...	1230	144	36	6.6	17.5
JAN , 1983						JUL					
13...	1415	1.4	60	7.0	19.0	07...	1205	142	33	6.5	19.5
FEB						AUG					
15...	1330	.45	65	7.4	19.5	19...	1430	2.2	56	6.7	23.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF MAUI--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16592000 - LOWRIE DITCH AT HONOPOU GULCH NR HUELO, MAUI, HI (LAT 20 54 57 LONG 156 15 08)											
OCT , 1982						APR , 1983					
05...	1345	78	35	6.6	22.0	07...	1210	9.3	64	6.6	21.5
NOV						MAY					
23...	1340	14	62	7.3	22.0	20...	1300	27	98	7.3	23.0
JAN , 1983						JUL					
14...	1305	14	68	7.3	20.5	06...	1610	44	43	6.6	22.0
FEB						AUG					
24...	1305	4.6	80	7.2	21.0	15...	1250	22	50	6.1	23.5
16594000 - HAIKU DITCH AT HONOPOU GULCH NR KAILUA, MAUI, HI (LAT 20 55 07 LONG 156 14 58)											
OCT , 1982						APR , 1983					
05...	1030	35	28	6.7	21.0	07...	1000	.94	108	6.5	22.0
NOV						MAY					
23...	1115	1.3	102	6.9	22.0	20...	1115	1.8	60	6.5	22.5
JAN , 1983						JUL					
14...	1105	2.0	98	6.8	20.5	06...	1240	33	44	6.5	22.0
FEB						AUG					
24...	1045	.97	111	6.9	21.0	15...	1120	1.8	90	6.4	23.0
16599500 - OPANA TUNNEL NR KAILIILI, MAUI, HI (LAT 20 51 04 LONG 156 16 17)											
OCT , 1982						MAR , 1983					
04...	1500	5.6	29	6.7	19.0	29...	1410	.37	68	6.3	18.5
NOV						MAY					
15...	1440	5.1	29	6.0	17.0	17...	1415	2.2	49	7.2	18.0
JAN , 1983						JUL					
04...	1405	3.0	47	5.8	18.0	05...	1400	2.3	45	6.6	20.0
FEB						AUG					
14...	1400	.58	65	6.7	17.0	16...	1300	1.8	41	6.0	19.0
16620000 - HONOKOHAU STREAM NR HONOKOHAU, MAUI, HI (LAT 20 57 48 LONG 156 35 22)											
OCT , 1982						APR , 1983					
01...	1245	43	59	7.1	19.0	06...	1130	16	69	6.7	20.0
NOV						MAY					
22...	1315	22	69	7.5	19.0	19...	1305	16	60	7.2	23.0
JAN , 1983						JUL					
13...	1250	19	71	6.5	18.5	07...	1310	28	51	6.7	19.5
MAR						AUG					
01...	1200	16	74	7.2	19.0	23...	1245	16	58	7.3	21.5
16638500 - KAHOMA STREAM AT LAHAINA, MAUI, HI (LAT 20 53 10 LONG 156 40 36)											
APR , 1983											
28...	1200	10	49	7.1	20.0						

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF HAWAII

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16700000 - WAIAKEA STREAM NR MOUNTAIN VIEW, HAWAII, HI (LAT 19 38 30 LONG 155 10 28)					
OCT , 1982					
27...	0905	6.6	40	7.0	17.0
NOV					
23...	1250	4.6	42	7.1	17.0
DEC					
28...	1440	6.0	43	7.1	16.0
JAN , 1983					
26...	1105	.70	54	7.0	16.0
APR					
26...	1355	4.4	40	7.0	17.0
MAY , 1983					
25...	1255	8.8	38	6.8	17.0
JUN					
28...	0925	4.7	41	7.0	17.0
AUG					
25...	1305	11	42	7.0	17.0
SEP					
26...	1415	12	40	7.1	17.0
16700900 - OLAA FLUME SPRING NR KAUMANA, HAWAII, HI (LAT 19 41 59 LONG 155 11 13)					
OCT , 1982					
04...	0950	6.6	32	6.8	17.0
DEC					
22...	1040	2.3	42	6.8	17.0
JAN , 1983					
21...	1035	.09	54	6.7	17.0
APR					
21...	1000	3.4	40	6.7	17.5
MAY , 1983					
26...	1435	2.9	37	6.9	17.0
JUN					
28...	1245	2.6	39	6.5	17.0
AUG					
10...	1420	2.3	38	6.8	17.0
SEP					
19...	1345	11	34	6.7	16.0
16700950 - LYMAN SPRINGS NO. 2 NEAR PIIHONUA, HAWAII, HI (LAT 19 42 02 LONG 155 10 36)					
OCT , 1982					
20...	1115	4.5	34	6.9	17.0
NOV					
16...	1150	4.5	33	6.9	18.0
JAN , 1983					
17...	1035	2.8	35	7.0	18.0
MAR					
01...	1200	.18	42	7.0	18.0
MAY , 1983					
26...	1130	4.4	35	6.9	18.0
JUN					
28...	1010	3.2	36	6.4	18.0
AUG					
10...	1015	3.3	34	6.5	17.0
16704000 - WAILUKU RIVER AT PIIHONUA,HAWAII,HI (LAT 19 42 56 LONG 155 09 12)					
NOV					
03...	0930	38	35	7.0	18.0
JAN					
26...	1340	6.4	48	7.4	19.5
FEB					
24...	0950	.34	60	7.7	21.5
MAR					
29...	0925	.30	62	7.2	22.0
MAY					
25...	1435	59	32	7.0	19.0
JUN					
21...	1430	33	34	7.0	20.0
AUG					
22...	1450	69	35	7.2	19.0
16720000 - KAWAINUI STREAM NR KAMUELA, HAWAII, HI (LAT 20 05 18 LONG 155 40 58)					
OCT , 1982					
01...	1140	2.4	26	6.5	15.0
JAN , 1983					
06...	1220	1.2	22	6.7	14.0
MAR					
10...	1010	.08	39	7.0	15.0
MAY , 1983					
17...	1200	12	27	6.4	13.0
AUG					
03...	1335	4.1	23	5.6	15.0
16720300 - KAWAIKI STREAM NEAR KAMUELA, HAWAII, HI (LAT 20 05 13 LONG 155 40 59)					
OCT , 1982					
01...	1000	.90	24	6.3	15.0
JAN , 1983					
06...	1105	.25	31	6.5	15.0
MAR					
10...	1025	.03	41	6.3	15.5
MAY , 1983					
17...	1100	3.7	26	6.7	13.0
AUG					
03...	1240	1.6	24	5.8	15.0
16720500 - UPPER HAMAKUA DITCH BL KAWAIKI STR NR KAMUELA, HAWAII, HI (LAT 20 05 15 LONG 155 40 42)					
OCT , 1982					
01...	0950	3.5	25	6.3	15.0
21...	0940	1.6	25	6.7	14.0
JAN , 1983					
06...	1400	1.3	24	6.8	15.0
MAR					
10...	0935	.05	33	6.7	15.0
MAY					
17...	1000	12	26	6.7	13.0
JUN , 1983					
30...	1300	11	21	5.3	16.0
AUG					
03...	1155	5.8	24	5.8	15.0
SEP					
09...	1315	11	23	4.8	16.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF HAWAII--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)
16724800 - UP HAMAKUA DITCH AB ALAKAHI STR NR KAMUELA, HAWAII, HI (LAT 20 04 31 LONG 155 40 26)					
OCT , 1982					
01...	0845	3.0	24	6.7	15.0
JAN , 1983					
06...	1530	.68	23	6.8	16.0
MAY					
05...	0930	15	25	6.5	13.0
JUL , 1983					
21...	1015	6.5	25	6.0	15.0
AUG					
03...	1525	3.9	24	5.7	15.0
SEP					
09...	1455	11	21	4.9	16.5
16725000 - ALAKAHI STREAM NEAR KAMUELA, HAWAII, HI (LAT 20 04 27 LONG 155 40 25)					
OCT , 1982					
01...	0810	5.2	27	6.4	15.0
JAN , 1983					
06...	1625	.54	28	6.6	16.0
MAR					
10...	0815	.13	65	6.7	14.5
MAY					
05...	1000	9.6	24	6.5	13.0
JUL , 1983					
21...	1035	5.6	26	6.3	15.0
SEP					
13...	1250	17	22	5.2	16.0
29...	1345	70	17	5.0	17.5
16726000 - UP HAMAKUA DITCH AB WAIMEA RES DIV NR KAMUELA, HAWAII, HI (LAT 20 03 31 LONG 155 37 40)					
OCT , 1982					
13...	1020	16	28	6.6	15.0
DEC					
14...	1115	4.4	30	6.6	13.0
JAN , 1983					
25...	1225	.25	35	6.9	15.0
MAR					
29...	1230	9.0	29	6.7	15.0
MAY , 1983					
24...	1030	11	24	6.7	16.0
JUL					
18...	1230	15	26	6.4	15.0
AUG					
05...	0830	18	24	6.2	14.0
SEP					
21...	1420	11	25	6.3	15.0
16727000 - UPPER HAMAKUA D AB PUUKAPU RES NR KAMUELA, HAWAII, HI (LAT 20 02 53 LONG 155 37 17)					
OCT , 1982					
08...	1440	.01	39	6.9	20.5
DEC					
14...	1245	1.2	25	6.8	13.0
SEP , 1983					
21...	1450	.02	34	6.5	16.0
16756000 - KOHAKOHAU STREAM NEAR KAMUELA, HAWAII, HI (LAT 20 02 38 LONG 155 41 10)					
DEC , 1982					
14...	0900	1.2	27	6.3	12.0
MAY , 1983					
05...	1100	21	24	6.5	14.0
JUN					
16...	1005	2.2	28	6.6	15.0
JUL , 1983					
21...	1135	4.0	28	6.7	14.0
SEP					
21...	1235	4.1	25	6.2	14.0
16758000 - WAIKOLOA STR AT MARINE DAM NR KAMUELA, HAWAII, HI (LAT 20 02 48 LONG 155 39 58)					
OCT , 1982					
21...	1350	3.5	35	6.9	16.0
DEC					
14...	0940	4.0	36	6.7	13.0
JAN , 1983					
25...	1110	2.2	40	6.8	14.0
MAR					
07...	1310	1.2	60	7.3	16.5
MAY , 1983					
05...	1140	15	30	6.7	14.0
JUN					
16...	1055	4.3	32	6.8	15.0
JUL					
21...	1235	6.0	25	6.4	15.0
SEP					
21...	1050	6.4	26	6.2	16.0
16759000 - HAUANI GULCH NEAR KAMUELA, HAWAII, HI (LAT 20 02 28 LONG 155 39 05)					
OCT , 1982					
29...	1000	.34	28	6.9	16.0
JAN , 1983					
25...	0925	.10	28	6.8	15.0
MAR					
10...	1440	.02	32	7.1	22.0
29...	1055	.16	30	6.9	15.0
MAY , 1983					
24...	0855	.64	28	6.3	15.0
JUL					
21...	1405	.72	30	6.4	16.0
AUG					
05...	1015	2.5	24	6.2	15.0
16764000 - HILEA GULCH TRIBUTARY NEAR HONUAPO, HAWAII, HI (LAT 19 10 27 LONG 155 35 58)					
OCT , 1982					
05...	1245	1.0	37	6.9	17.0
JAN , 1983					
05...	1210	.01	46	6.8	18.0
MAY					
19...	1010	.40	50	6.7	17.0
JUN , 1983					
29...	1025	.83	50	6.8	15.0
AUG					
23...	1045	.52	46	6.7	17.0

HAWAII, ISLAND OF KAUAI

220354159205601. Local number, 2-0320-01.
LOCATION.--Lat 22°03'54", long 159°20'56", Hydrologic Unit 20070000, in Wailua Houselots, Wailua. Owner: Kauai County, Department of Water.
AQUIFER.--Koloa Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled basal water-table well, diameter 8 in, depth 240 ft, cased to 193 ft, open end.
DATUM.--Land-surface datum is 155 ft above mean sea level. Measuring point: Top edge of steel pump-base at breather hole, 155.98 ft above mean sea level.
REMARKS.--Water-quality records for 1960, 1966, 1972-80 are available in files of district office. Water pumped from this well is used frequently for public supply.
PERIOD OF RECORD.--February 1960, June 1973 to September 1975, November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.04 ft above mean sea level, Feb. 17, 1960; lowest measured, 3.31 ft below mean sea level, May 27, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	12.78	NOV 19	13.62	FEB 17	11.90	APR 21	11.05	JUN 7	13.02	AUG 2	13.46

HAWAII, ISLAND OF OAHU

212154158015201. Local number, 3-2101-03.
LOCATION.--Lat 21°21'54", long 158°01'52", Hydrologic Unit 20060000, in Honouliuli. Owner: Hawaii Meat Co.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation artesian basal water-table well, diameter 10 in, depth 355 ft, cased to 165 ft, open hole. Water overflows casing at 13.53 ft above mean sea level since 1978.
DATUM.--Land-surface datum is 11 ft above mean sea level. Measuring point: Top of horizontal flange below petcock, 13.31 ft above mean sea level.
PERIOD OF RECORD.--
WATER LEVEL: April 1910 to June 1921, September 1923 to current year.
WATER QUALITY: 1910-16, 1920-21, 1923-75, 1978-81 are available in files of district office.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.16 ft above mean sea level, April 1918; lowest measured, 11.16 ft above mean sea level, Sept. 2, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	17.70	JAN 28	20.89	APR 26	19.12	MAY 25	17.94	JUL 26	16.63	SEP 9	16.25
DEC 8	21.66										

212238157561101. Local number, 3-2256-10.
LOCATION.--Lat 21°22'38", long 157°56'11", Hydrologic Unit 20060000, in Pearl Harbor Navy Reservation near Kamehameha Highway, Aiea. Owner: U.S. Navy.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled artesian basal water-table well, diameter 12 in, depth 173 ft, cased to 143 ft, open hole.
DATUM.--Land-surface datum is 10 ft above mean sea level. Measuring point: Top of 10-inch stilling pipe for water-level recorder, 26.15 ft above mean sea level.
REMARKS.--Recording gage installed Sept. 9, 1968. Water-quality records for 1923, 1928-30, 1934-68, 1972, 1974-75 are available in files of district office.
PERIOD OF RECORD.--January 1928 to February 1931, September 1934 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.90 ft above mean sea level, Jan. 16, 1928; lowest, 12.97 ft above mean sea level, Oct. 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	17.98	18.92	19.53	19.95	19.66	19.26	18.73	18.35	17.83	17.27	16.62	16.11
10	17.99	19.02	19.57	19.94	19.60	19.15	18.73	18.33	17.67	17.26	16.54	16.04
15	17.92	19.03	19.72	19.77	19.63	19.07	18.60	18.25	17.58	17.12	16.43	15.88
20	17.99	19.06	19.67	19.72	19.61	19.06	18.67	18.05	17.49	16.88	16.35	15.90
25	18.09	19.39	19.76	19.76	19.43	18.90	18.60	17.96	17.46	16.80	16.27	15.85
EOM	18.61	19.50	19.95	19.73	19.42	18.70	18.48	17.88	17.28	16.71	16.19	15.84

WTR YEAR 1983 MAX 20.06 JAN 2, 1983 MIN 15.77 SEP 27-30, 1983

HAWAII, ISLAND OF OAHU-Continued

212927158014801. Local number, 3-2901-07.
LOCATION.--Lat 21°29'27", long 158°01'48", Hydrologic Unit 20060000, at Kamehameha Highway and Wilikina Drive, Wahiawa. Owner: U.S. Army.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Dug domestic high-level water-table well, size 8 x 8 ft, length of 30-degree inclined shaft 1,148 ft.
DATUM.--Land-surface datum is 850 ft above mean sea level. Measuring point: Top of pump chamber floor at recorder, 287.00 ft above mean sea level.
REMARKS.--Recorder is located on the pump chamber floor at the bottom of shaft. Recording gage installed November 1938. Water pumped from this well is used continually for public supply.
PERIOD OF RECORD.--
WATER LEVEL: August 1936 to current year.
WATER QUALITY: 1966-72, 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 284.40 ft above mean sea level, May 12, 1969; lowest, 269.52 ft above mean sea level, Dec. 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	280.59	281.04	281.19	281.21	281.43	281.38	281.14	280.60	279.85	279.52	279.15	278.54
10	280.69	281.18	281.22	281.28	281.55	281.42	281.11	280.59	279.73	279.55	279.06	278.56
15	281.06	281.05	281.06	281.32	281.07	281.29	280.59	280.49	279.68	279.43	278.95	278.50
20	280.66	281.19	281.12	281.42	281.47	281.35	280.94	280.43	279.69	279.39	278.87	278.38
25	280.55	280.68	281.12	281.52	281.46	281.23	280.52	280.30	279.53	279.31	278.77	278.38
EOM	280.75	281.12	281.19	281.46	281.00	281.17	280.73	279.98	279.38	279.19	278.73	278.23

Note: Well being pumped throughout the year.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
NONPUMPING VALUES

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	281.24	NOV 24	281.49	FEB 1	281.58	APR 1	281.28	JUN 1	279.96	AUG 1	279.34
NOV 1	281.20	DEC 1	281.12	MAR 1	281.58	MAY 1	280.88	JUL 13	279.68	SEP 1	278.85
NOV 23	281.67	JAN 1	281.37								

Note: Water levels are measured after all pumps being shut off for 2 hours.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
NOV 29...	1005	170	22.5	18	JUN 07...	1000	175	22.0	16
JAN 13...	1000	165	22.0	18	JUL 22...	0950	165	22.0	17
MAR 02...	0945	210	22.0	18	SEP 28...	0845	170	22.0	17
APR 19...	0930	170	22.0	17					

HAWAII, ISLAND OF OAHU--Continued

213327157524401. Local number, 3-3352-01.
LOCATION.--Lat 21°33'27", long 157°52'44", Hydrologic Unit 20060000, at mouth of Kahana Valley, and 700 ft southwest of Kamehameha Highway (Highway 83), Kahana. Owner: Mary E. Foster Estate.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICES.--Drilled artesian basal water-table well, diameter 10 in, depth 441 ft, cased to 177 ft, open hole.
DATUM.--Land-surface datum is 6 ft above mean sea level. Measuring point: Top of "T", 7.31 ft above mean sea level.
PERIOD OF RECORD.--
WATER LEVEL: April 1935 to current year.
WATER QUALITY: 1935 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.3 ft above mean sea level, Mar. 29, 1966; lowest measured, 14.39 ft above mean sea level, Sept. 9, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	19.11	DEC 15	20.24	FEB 17	19.89	APR 11	20.46	SEP 26	14.71

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT 19...	1100	270	23.0	34	JUN 22...	1115	260	23.0	31
DEC 15...	1320	260	23.0	33	JUL 26...	1450	250	23.5	32
APR 11...	1240	260	23.0	33	SEP 26...	1200	260	22.0	33

213446158104901. Local number, 3-3410-08.
LOCATION.--Lat 21°34'46", long 158°10'49", Hydrologic Unit 20060000, near Dillingham Air Force Base south of Farrington Highway, Mokuleia. Owner: Waialua Sugar Co., Inc.
AQUIFER.--Basalt of Waianae Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation artesian basal water-table well, diameter 1.0 mi, depth 447 ft, cased to 447 ft, perforated 410 to 447 ft.
DATUM.--Land-surface datum is 16 ft above mean sea level. Measuring point: Top of 12-inch stilling well, 20.53 ft above mean sea level.
REMARKS.--Recording gage was operated January 1963 to February 1972. Present one-inch galvanized pipe was installed inside of existing 6-inch well, and space between the two casings grouted on Sept. 13, 1948.
PERIOD OF RECORD.--
WATER LEVEL: January 1919 to current year.
WATER QUALITY: 1919 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.98 ft above mean sea level, Jan. 5, 1969; lowest measured, 16.08 ft above mean sea level, Aug. 6, 1929.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 28	19.26	APR 22	18.78	JUN 29	19.04	AUG 1	19.23	SEP 30	19.15

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
DEC 03...	1525	860	22.0	210	JUN 29...	1500	860	22.5	200
JAN 18...	1400	850	22.0	210	AUG 01...	1010	800	22.0	200
FEB 28...	1510	800	22.0	200	SEP 30...	1330	890	21.5	200
APR 22...	1345	760	22.0	200					

HAWAII, ISLAND OF OAHU--Continued

214125158013401. Local number, 3-4101-03.
LOCATION.--Lat 21°41'25", long 158°01'34", Hydrologic Unit 20060000, on Kamehameha Highway at Waialee. Owner: State of Hawaii.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation artesian basal water-table well, diamter 8 in, depth 61 ft, cased to 36 ft, open hole.
DATUM.--Land-surface datum is 22 ft above mean sea level. Measuring point: Top of 4-inch pipe, 21.89 ft above mean sea level.
REMARKS.--Water-quality records for 1929-74 are available in files of district office.
PERIOD OF RECORD.--February 1929 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.60 ft above mean sea level, Nov. 14, 1932; lowest measured, 10.97 ft above mean sea level, July 1, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	14.58	FEB 8	14.89	APR 11	14.81	JUN 3	14.91	JUL 22	14.60	SEP 23	14.49

HAWAII, ISLAND OF MOLOKAI

210425156483001. Local number, 4-0448-02.
LOCATION.--Lat 21°04'25", long 156°48'30", Hydrologic Unit 20050000, 100 ft north of Highway 45, and 0.8 mi west of Pukoo. Owner: P. Friel.
AQUIFER.--East Molokai Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Dug observation basal water-table well, 4 x 6 ft, depth 22 ft.
DATUM.--Land-surface datum is 19 ft above mean sea level. Measuring point: Top of 2 x 2 in steel plate bolted to top of concrete well wall, 21.23 ft above mean sea level.
REMARKS.--Recording gage was operated Aug. 8, 1970 to Jan. 22, 1973. Water-quality records for 1970-1973 are available in files of district office.
PERIOD OF RECORD.--August 1970 to September 1975, November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.11 ft above mean sea level, Nov. 26, 1970; lowest measured, 3.67 ft above mean sea level, Feb. 8, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	4.34	JAN 24	4.65	APR 18	3.99	JUN 7	4.09	JUL 25	4.18	SEP 6	4.19
DEC 6	4.56	MAR 7	4.34								

210605157012001. Local number, 4-0601-01.
LOCATION.--Lat 21°06'05", long 157°01'20", Hydrologic Unit 20050000. in Kaunakakai Gulch, Kaunakakai. Owner: State of Hawaii.
AQUIFER.--Basalt of East Molokai Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 12 in, depth 59 ft, cased to 20 ft, open hole.
DATUM.--Land-surface datum in 51 ft above mean sea level. Measuring point: Top of 15-inch surface casing, 51.95 ft above mean sea level.
PERIOD OF RECORD.--
WATER LEVEL: May 1954 to current year.
WATER QUALITY: 1954 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.30 ft above mean sea level, Jan. 20, 1969; lowest measured, 1.6 ft above mean sea level, Dec. 5, 1964.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	2.78	JAN 27	2.99	APR 18	2.65	JUN 7	2.74	JUL 26	2.71	SEP 9	2.81
DEC 9	2.85	MAR 10	2.92								

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT 21...	0815	310	24.0	28	APR 18...	1410	300	24.5	26
DEC 09...	0855	320	24.0	29	JUN 07...	1545	310	24.5	30
JAN 27...	1130	290	24.0	17	JUL 26...	1230	320	24.5	32
MAR 10...	0745	300	24.0	23	SEP 09...	0755	330	24.5	36

HAWAII, ISLAND OF MAUI

203912156255901. Local number, 6-3925-01.
LOCATION.--Lat 20°39'12", long 156°25'59", Hydrologic Unit 20020000, 0.75 mi east of Makena. Owner: State of Hawaii.
AQUIFER.--Hana Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in, depth 382 ft, cased to 363 ft, open hole.
DATUM.--Land-surface datum is 352 ft above mean sea level. Measuring point: Top of 2-inch pipe attached to the casing cover, 352.29 ft above mean sea level.
REMARKS.--Water-quality records for 1964 are available in files of district office.
PERIOD OF RECORD.--August 1964, June 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.47 ft above mean sea level, Aug. 24, 1964; lowest measured, 0.41 ft below mean sea level, May 4, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	-0.03	JAN 17	0.14	APR 13	-0.17	MAY 26	-0.28	JUL 12	-0.20	AUG 23	-0.09
DEC 1	.30	MAR 1	.14								

204827156242201. Local number, 6-4824-01.
LOCATION.--Lat 20°48'27", long 156°24'22", Hydrologic Unit 20020000, on Waiakoa Road 1,000 ft south of intersection with Kalaloa Gulch, and 4 mi east of Kihei. Owner: State of Hawaii.
AQUIFER.--Kula Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 12 in, depth 647 ft, cased to 598 ft, screened 598 to 638 ft, open hole.
DATUM.--Land-surface datum is 593 ft above mean sea level. Measuring point: Top of 3-inch pipe attached to the steel casing cover, 594.75 ft above mean sea level.
REMARKS.--Water-quality records for 1971, 1973 are available in files of district office.
PERIOD OF RECORD.--March 1971, May 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.20 ft above mean sea level, Jan. 17, 1974; lowest measured, 3.65 ft above mean sea level, Jan. 27, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	4.43	JAN 17	4.46	APR 12	3.86	MAY 27	4.14	JUL 11	3.73	AUG 29	3.80
NOV 30	4.60	FEB 28	4.22								

204818156310301. Local number, 6-4831-01.
LOCATION.--Lat 20°48'18", long 156°31'03", Hydrologic Unit 20020000, on sugar plantation road 0.7 mi north of Maalaea, and 0.9 mi southwest of intersection of Honoapoolani Highway and Kihei Road. Owner: State of Hawaii.
AQUIFER.--Wailuku Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in, depth 219 ft, cased to 187 ft, open hole.
DATUM.--Land-surface datum is 166 ft above mean sea level. Measuring point: Top of 8-inch casing, 166.60 ft above mean sea level.
REMARKS.--Water-quality records for 1965-67 are available in files of district office. Recording gage was operated January to July 1974.
PERIOD OF RECORD.--September 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.76 ft above mean sea level, Nov. 30, 1983; lowest measured, 4.74 ft above mean sea level, Mar. 16, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	5.56	JAN 17	5.67	APR 12	5.29	MAY 23	5.42	JUL 8	5.36	AUG 24	5.42
NOV 30	5.76	FEB 28	5.57								

204909156281401. Local number, 6-4928-02.
LOCATION.--Lat 20°48'27", long 156°28'14", Hydrologic Unit 20020000, at Puunene Airport on Mokulele Highway 2.5 mi north of intersection with Kihei Road, Kihei. Owner: Hawaiian Commercial and Sugar Co.
AQUIFER.--Honomanu Volcanic Series.
WELL CHARACTERISTICS.--Dug basal water-table well, 6 x 9 ft vertical shaft, depth 53 ft.
DATUM.--Land-surface datum is 50 ft above mean sea level. Measuring point: Top of angle iron at well, 50.08 ft above mean sea level.
REMARKS.--Recording gage installed Mar. 22, 1972. Water-quality records for 1973 are available in files of district office.
PERIOD OF RECORD.--March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.09 ft above mean sea level, Jan. 12, 1980; lowest, 3.05 ft above mean sea level, Mar. 5-6, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	4.17	4.43	4.24	4.41	4.14	3.86	3.63	3.75	3.91	3.72	3.74	3.81
10	4.22	4.29	4.21	4.34	4.06	3.85	3.58	3.87	3.84	3.74	3.78	3.73
15	4.20	4.28	4.15	4.17	4.07	3.77	3.55	3.86	3.81	3.71	3.80	3.69
20	4.18	4.28	4.19	4.16	4.08	3.78	3.60	3.82	3.72	3.74	3.72	3.71
25	4.23	4.38	4.38	4.31	3.96	3.67	3.64	3.86	3.62	3.69	3.75	3.76
EOM	4.43	4.37	4.41	4.23	3.96	3.64	3.67	3.88	3.61	3.74	3.76	3.81

WTR YEAR 1983 MAX 4.47 NOV 4, 1982 MIN 3.53 APR 15, 17, 1983

205419156304401. Local number, 6-5430-03.
LOCATION.--Lat 20°54'19", long 156°30'44", Hydrologic Unit 20020000, 2,000 ft north of Puuohala Village, and 2,700 ft northwest of Wailuku Sugar Mill reservoir. Owner: Wailuku Sugar Co.
AQUIFER.--Wailuku Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 3 in, depth 580 ft, cased with 1.5-inch diameter PVC pipe, perforated from 400 to 580 ft.
DATUM.--Land-surface datum is 415 ft above mean sea level. Measuring point: Top of 1-inch galvanized pipe, 416.75 ft above mean sea level.
REMARKS.--Recording gage installed Aug. 6, 1982.
PERIOD OF RECORD.--August 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.09 ft above mean sea level, Dec. 31, 1982; lowest, 18.02 ft above mean sea level, Sept. 16, 1983.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 10	19.60	AUG 20	19.80	AUG 31	20.01	SEP 10	20.36	SEP 20	20.55	SEP 30	20.63
AUG 15	19.68	AUG 25	19.86	SEP 5	20.19	SEP 15	20.47	SEP 25	20.61		

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	20.70	21.33	21.77	21.98	21.69	21.16	20.62	*	19.45	18.93	18.61	18.10
10	20.72	21.33	21.80	22.00	21.58	21.07	20.46	*	19.37	18.83	18.53	18.08
15	20.82	21.33	21.83	21.97	21.52	20.97	20.35	*	19.30	18.71	18.40	18.07
20	20.85	21.46	21.87	21.89	21.43	20.97	*	*	19.21	18.67	18.31	18.13
25	20.95	21.65	21.90	21.86	21.28	20.85	*	19.60	19.11	18.65	18.26	18.13
EOM	21.24	21.76	22.00	21.78	21.22	20.69	*	19.52	18.98	18.56	18.09	18.12

WTR YEAR 1983 MAX 22.09 DEC 31, 1982 MIN 18.02 SEP 16, 1983

* No record.

HAWAII, ISLAND OF MAUI--Continued

205437156310501. Local number, 6-5431-01.
LOCATION.--Lat 20°54'37", long 156°31'05", Hydrologic Unit 20020000, 2,500 ft southwest of Waiehu Village, and 1.4 mi southwest of intersection of Malaihi Road and Kahekili Highway. Owner: Wailuku Sugar Co.
AQUIFER.--Wailuku Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 3 in, depth 555 ft, cased with 1.5-inch diameter PVC pipe, perforated from 515 to 555 ft.
DATUM.--Land-surface datum is 493 ft above mean sea level. Measuring point: Top of 1.5-inch PVC pipe, 492.51 ft above mean sea level.
REMARKS.--Recording gage installed Aug. 4, 1982.
PERIOD OF RECORD.--August 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.52 ft above mean sea level, Jan. 2, 1983; lowest 15.73 ft above mean sea level, Sept. 27, 1983.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 5	17.46	AUG 15	17.58	AUG 25	17.75	SEP 5	18.06	SEP 15	18.28	SEP 25	18.40
AUG 10	17.47	AUG 20	17.69	AUG 31	17.88	SEP 10	18.21	SEP 20	18.34	SEP 30	18.36

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	18.42	18.97	19.27	19.42	19.11	18.61	18.04	17.48	17.18	16.64	16.70	16.02
10	18.47	18.94	19.32	19.42	19.00	18.53	17.93	17.42	17.10	16.85	16.67	15.94
15	18.45	18.95	19.27	19.42	18.94	18.45	17.84	17.34	17.04	16.78	16.46	15.87
20	18.48	19.11	19.30	19.38	18.87	18.40	17.74	17.24	16.95	16.78	16.46	15.86
25	18.59	19.31	19.37	19.37	18.76	18.29	17.71	17.24	16.83	16.75	16.42	15.89
EOM	18.92	19.33	19.43	19.25	18.69	18.14	17.60	17.21	16.68	16.66	16.25	15.91

WTR YEAR 1983 MAX 19.52 JAN 2, 1983 MIN 15.73 SEP 27, 1983

205552156193101. Local number, 6-5519-01.
LOCATION.--Lat 20°55'52", long 156°19'31", Hydrologic Unit 20020000, at Haiku School 1.0 mi north of Haiku, and 2.7 mi northeast of Paia. Owner: State of Hawaii.
AQUIFER.--Kula Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well diameter 8 in, depth 400 ft, cased to 363 ft, perforated 363 to 383 ft.
DATUM.--Land-surface datum is 365 ft above mean sea level. Measuring point: Top of 2.5-inch coupling pipe attached to the casing cover, 366.26 ft above mean sea level.
REMARKS.--Water-quality records for 1967, 1980 are available in files of district office.
PERIOD OF RECORD.--May 1967, December 1970, May 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.08 ft above mean sea level, Nov. 23, 1982; lowest measured, 4.75 ft above mean sea level, Mar. 7, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	5.75	JAN 14	5.76	APR 7	5.39	MAY 20	5.53	JUL 7	5.55	AUG 15	5.60
NOV 23	6.08	FEB 24	5.72								

HAWAII, ISLAND OF MAUI--Continued

205617156311101. Local number, 6-5631-01.
LOCATION.--Lat 20°56'17", long 156°31'11", Hydrologic Unit 20020000, 2,000 ft southwest of Waihee Farm, and 1.3 mi northwest of Waiehu Golf Course. Owner: Wailuku Sugar Co.
AQUIFER.--Wailuku Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 3 in, depth 300 ft, cased with 1.5-inch diameter PVC pipe, perforated from 260 to 300 ft.
DATUM.--Land-surface datum is 248 ft above mean sea level. Measuring point: Top of 1.5-inch PVC pipe, 248.05 ft above mean sea level.
REMARKS.--Recording gage installed Aug. 5, 1982.
PERIOD OF RECORD.--August 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 18.83 ft above mean sea level, Dec. 6, 1982; lowest 16.59 ft above mean sea level, Sept. 30, 1983.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 10	17.83	AUG 20	18.04	AUG 31	18.21	SEP 10	18.36	SEP 20	18.45	SEP 30	18.48
AUG 15	17.93	AUG 25	18.10	SEP 5	18.29	SEP 15	18.41	SEP 25	18.46		

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	18.51	18.68	18.76	18.74	18.66	18.38	17.98	17.58	17.36	17.05	17.04	16.86
10	18.52	18.67	18.73	18.77	18.62	18.34	17.89	17.57	17.33	17.07	17.03	16.79
15	18.54	18.65	18.67	18.73	18.60	18.25	17.83	17.53	17.28	17.10	17.01	16.72
20	18.56	18.72	18.65	18.77	18.55	18.21	17.75	17.50	17.19	17.08	16.97	16.66
25	18.58	18.74	18.67	18.78	18.48	18.11	17.70	17.47	17.14	17.05	16.94	16.65
EOM	18.65	18.77	18.72	18.73	18.44	18.01	17.63	17.39	17.09	17.06	16.92	16.62

WTR YEAR 1983 MAX 18.83 DEC 6, 1982 MIN 16.59 SEP 30, 1983

205856156400101. Local number, 6-5840-01.
LOCATION.--Lat 20°58'56", long 156°40'01", Hydrologic Unit 20020000, on sugar plantation road 0.9 mi east of Kahana, and 1.5 mi southwest of Honokahua. Owner: State of Hawaii.
AQUIFER.--Honolua Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in, depth 274 ft, cased to 274 ft, perforated 264 to 274 ft. Hole was drilled to depth of 284 ft but plugged back 10 ft with cement.
DATUM.--Land-surface datum is 257 ft above mean sea level. Measuring point: Top of 2.2-inch coupling pipe attached to casing cover, 257.34 ft above mean sea level.
REMARKS.--Recording gage installed Aug. 6, 1975. Water-quality records for 1964, 1980 are available in files of district office.
PERIOD OF RECORD.--June 1964 to July 1964, March 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.68 ft above mean sea level, Sept. 20, 1981; lowest, 2.43 ft above mean sea level Mar. 25, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	3.14	3.31	3.30	3.35	3.37	3.33	3.13	3.04	3.10	3.06	3.08	3.15
10	3.17	3.27	3.20	3.34	3.48	3.36	3.04	3.15	3.07	3.10	3.13	3.13
15	3.18	3.29	3.13	3.26	3.43	3.25	3.04	3.17	2.98	3.09	3.12	3.04
20	3.19	3.33	3.12	3.41	3.40	3.19	3.04	3.17	2.93	3.14	3.07	3.03
25	3.26	3.29	3.27	3.56	3.30	3.10	3.12	3.11	2.93	3.08	3.12	3.13
EOM	3.33	3.35	3.35	3.42	3.30	3.09	3.08	3.06	2.95	3.16	3.12	3.08

WTR YEAR 1983 MAX 3.36 JAN 25, 26, 1983 MIN 2.74 JUN 22, 1983

HAWAII, ISLAND OF HAWAII

193017154502101. Local number, 8-3080-02.
LOCATION.--Lat 19°30'17", long 154°50'21", Hydrologic Unit 20010000, 0.5 mi south of intersection of Highway 132, and Highway 137 near Pahoa. Owner: County of Hawaii.
AQUIFER.--Puna Volcanic Series, Holocene age.
WELL CHARACTERISTICS.--Dug basal water-table well, diameter 66 in depth 46 ft, with two horizontal infiltration tunnels 2 x 50 ft extending in opposite directions from 3 ft above bottom of well.
DATUM.--Land-surface datum is 39 ft above mean sea level. Measuring point: Top of steel manhole cover at 1-inch hole, 39.50 ft above mean sea level.
REMARKS.--Water pumped from this shaft is used frequently for public supply.
PERIOD OF RECORD.--
WATER LEVEL: March 1972 to August 1975, November 1975 to current year.
WATER QUALITY: 1972-81, 1983.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.16 ft above mean sea level, Dec. 6, 1982; lowest measured, 1.71 ft above mean sea level, July 11, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 6	4.16	FEB 14	a2.76	APR 6	a3.18	JUN 17	a2.82	AUG 17	a2.72

a Well being pumped.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
FEB 14...	1220	1000	25.0	140	JUN 17...	1320	1150	25.0	170
APR 06...	1040	1100	25.0	180	AUG 17...	1245	1150	25.5	180

193339154594801. Local number, 8-3389-01.
LOCATION.--Lat 19°33'39", long 154°59'48", Hydrologicc Unit 20010000, 4.9 mi southeast of Keaau on Orchid Land Estate subdivision. Owner: County of Hawaii.
AQUIFER.--Puna Volcanic Series, Holocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in, depth 475 ft, cased to 403 ft, perforated 403 to 475 ft.
DATUM.--Land-surface datum is 427 ft above mean sea level. Measuring point: Top of casing, 428.14 ft above mean sea level.
REMARKS.--Water-quality records for 1961 are available in files of district office.
PERIOD OF RECORD.--September 1974 to Septembsr 1975, November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.37 ft above mean sea level, Mar. 26, 1979; lowest measured, 15.99 ft above mean sea level, Apr. 25, 1978

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 6	18.29	FEB 14	17.97	APR 6	17.18	JUN 17	16.67	AUG 19	16.98

194134155005601. Local number, 8-4100-01.
LOCATION.--Lat 19°41'34", long 155°00'56", Hydrologic Unit 20010000, 5.5 mi southeast of Hilo Post Office, and 5.0 mi northeast of Keaau. Owner: Hawaiian Paradise Corporation.
AQUIFER.--Kau Volcanic Series, Holocene age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 10 in, depth 55 ft, cased to 39 ft, perforated 39 to 55 ft.
DATUM.--Land-surface datum is 45 ft above mean sea level. Measuring point: Top of casing, 46.84 ft above mean sea level.
PERIOD OF RECORD.--
WATER LEVEL: November 1971 to August 1975, November 1975 to current year.
WATER QUALITY: 1971, 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.73 ft above mean sea level, Apr. 9, 1980; lowest measured, 2.24 ft above mean sea level, Mar. 9, 1972.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 1	5.21	APR 5	5.53	JUN 15	4.22	SEP 1	5.38

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
FEB 01...	0935	1150	18.5	310	JUN 15...	1045	1350	18.5	360
APR 05...	0940	1200	19.0	330	SEP 01...	1300	1500	20.0	380

195947155485801. Local number, 8-5948-01.
LOCATION.--Lat 19°59'47", long 155°48'58", Hydrologic Unit 20010000, 0.7 mi east of Hapuna Beach Park, and 3.1 mi southeast of Kawaihae. Owner: State of Hawaii.
AQUIFER.--Hamakua Volcanic Series, Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 10 in, depth 268 ft, cased to 246 ft, screened 246 to 266 ft.
DATUM.--Land-surface datum is 244 ft above mean sea level. Measuring point: Hole in pumpbase, 246.47 ft above mean sea level.
REMARKS.--Water pumped from this well is used frequently for irrigation.
PERIOD OF RECORD.--
WATER LEVEL: April 1970, March 1973 to August 1975, October 1975 to current year.
WATER QUALITY: 1970, 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.27 ft above mean sea level, Jan. 15, 1982; lowest measured, 1.4 ft, above mean sea level, June 22, 1973, June 3, 1974.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TRO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	3.99	FEB 18	3.95	APR 13	3.81	JUN 7	3.77	AUG 1	3.64	SEP 22	4.09

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
DEC 15...	1300	1650	25.5	460	JUN 07...	1350	1750	25.5	460
FEB 18...	1350	1700	25.5	450	AUG 01...	1305	1800	26.0	460
APR 13...	1320	1700	25.5	460	SEP 22...	1320	1700	26.0	460

HAWAII, ISLAND OF HAWAII--Continued

200132155471001. Local number, 8-6147-01.
LOCATION.--Lat 20°01'32", long 155°47'10", Hydrologic Unit 20010000, on Highway 26, 3.1 mi east of Kawaihae and 2.8 mi northeast of Hapuna Beach Park. Owner: State of Hawaii.
AQUIFER.--Pololu Volcanic Series, Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in, depth 1,008 ft, cased to 997 ft, perforated 997 to 1,008 ft. Hole was drilled to 1,040 ft but was finally plugged back to 1,008 ft.
DATUM.--Land-surface datum is 982 ft above mean sea level. Measuring point: Top of pipe coupling on casing cover 983.1 ft.
REMARKS.--Water-quality records for 1963-64 are available in files of district office.
PERIOD OF RECORD.--June to July 1963, June 1973 to August 1975, October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.2 ft above mean sea level, Aug. 23, 1978, lowest measured, 4.4 ft above mean sea level Sept. 20, 1976.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 7	5.93	FEB 18	5.74	APR 13	5.70	JUN 7	5.75	AUG 1	6.03	SEP 22	6.15

201603155521801. Local number, 8-7652-01.
LOCATION.--Lat 20°16'03", long 155°52'18", Hydrologic Unit 20010000, 0.3 mi west of Upolu Point Airfield, 3.1 mi northwest of Hawi, and 1.9 mi west of Hoea Camp. Owner: Kohala Corporation.
AQUIFER.--Pololu Volcanic Series, Pleistocene age.
WELL CHARACTERISTICS.--Dug observation basal water-table well.
DATUM.--Land-surface datum is 7.43 ft above mean sea level. Measuring point: Top of 4-inch steel I-beam placed across sump, 7.75 ft above mean sea level.
PERIOD OF RECORD.--
WATER LEVEL: March 1973 to August 1975, October 1975 to current year.
WATER QUALITY: 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.09 ft above mean sea level, Aug. 22, 1974; lowest measured, 1.45 ft above mean sea level, July 9, 1975, Jan. 16, 1980.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	2.40	FEB 15	2.48	APR 13	2.05	JUN 3	2.17	JUL 27	2.08	SEP 27	2.75
DEC 15	2.57										

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT 14...	1005	2200	22.0	590	JUN 03...	1200	2200	21.5	600
DEC 15...	1050	2000	21.5	580	JUL 27...	1320	2300	23.0	640
FEB 15...	1240	2100	22.0	560	SEP 27...	1445	2100	22.0	570
APR 13...	1120	2100	21.5	560					

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
			HAWAII, ISLAND OF KAUAI					
220018159444701	2-0044-10	22 00 18	159 44 47	82-10-15	1115	580	23.5	84
				82-12-09	1120	580	22.5	82
				83-02-22	1100	580	23.5	80
				83-04-18	1100	580	23.5	82
				83-06-14	1300	580	23.0	82
				83-08-30	1150	570	24.5	80
220018159444702	2-0044-13	22 00 18	159 44 47	82-10-15	1115	480	24.0	90
				82-12-09	1120	480	23.0	80
				83-02-22	1100	460	24.5	74
				83-04-18	1105	470	24.5	78
				83-06-14	1300	580	23.0	83
				83-08-30	1145	540	24.0	79
220019159444801	2-0044-14	22 00 19	159 44 48	82-10-15	1115	550	24.0	97
				82-12-09	1120	520	22.5	88
				83-02-22	1100	520	24.5	86
				83-04-18	1110	530	24.0	94
				83-08-30	1040	530	24.5	78
220016159442701	2-0044-15	22 00 16	159 44 27	82-10-15	1030	4700	23.0	1400
				82-12-09	1025	700	22.0	120
				83-02-22	1030	1950	23.0	500
				83-04-18	1040	2200	23.5	1100
				83-06-15	1000	4000	23.0	--
				83-08-30	1000	3800	23.5	1300
220136159205501	2-0120-01	22 01 36	159 20 55	82-10-06	1430	540	26.5	120
				82-11-19	1400	480	26.0	120
				83-02-17	1500	650	26.5	140
220134159205401	2-0120-02	22 01 34	159 20 54	82-10-06	1440	810	26.5	140
				82-11-19	1415	820	24.5	140
				83-02-17	1445	820	25.0	140
				83-04-21	1300	750	25.0	140
				83-06-21	1045	850	25.0	130
				83-09-13	1230	810	25.0	140
220148159453501	2-0145-10	22 01 48	159 45 35	82-10-15	1130	780	21.5	140
				83-06-14	1100	710	21.0	92
220354159205602	2-0320-03	22 03 54	159 20 56	83-02-17	1430	420	24.0	42
220341159453901	2-0345-04	22 03 41	159 45 39	82-10-15	1200	1550	23.0	380
				82-12-09	1300	670	22.0	110
				83-02-22	1315	1200	22.0	280
				83-04-18	1315	--	22.0	340
				83-06-15	0900	1460	22.0	340
				83-08-30	1300	1300	23.5	360
220530159450401	2-0545-01	22 05 30	159 45 07	82-10-15	1220	950	24.0	170
				83-02-22	1300	960	24.0	160
				83-06-14	0930	960	24.0	160
220827159185401	2-0818-01	22 08 27	159 18 54	83-06-07	1055	210	25.0	20
				83-08-09	1330	235	24.0	18
220826159185401	2-0818-02	22 08 26	159 18 54	82-11-15	1505	240	23.5	20
				83-04-14	1145	220	25.5	20
221038159203801	2-1020-03	22 10 38	159 20 38	82-10-06	1115	200	22.5	20
				82-11-17	1215	220	22.0	19
				83-06-07	1200	200	23.0	19

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENTIFIER	LATITUDE	LONGITUDE	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
HAWAII, ISLAND OF KAUAI--Continued								
221141159252501	2-1125-01	22 11 41	159 25 25	82-10-05	1200	150	24.0	12
				82-11-15	1130	160	23.5	14
221141159252502	2-1125-02	22 11 41	159 25 25	82-10-05	1200	150	24.0	12
				83-04-13	0930	139	26.0	12
				83-06-02	1100	155	24.0	13
				83-08-10	1045	160	24.5	8.0
221150159264501	2-1126-01	22 11 50	159 26 45	82-11-15	1400	180	22.5	15
				83-02-17	1015	190	22.0	14
				83-04-13	1330	200	23.5	16
				83-06-02	0920	190	22.5	14
				83-08-10	0945	185	22.5	13
221201159293401	2-1229-03	22 12 01	159 29 34	82-10-08	1235	220	23.5	24
				83-02-17	1100	230	23.0	22
				83-04-11	1245	220	23.0	22
				83-08-08	1230	230	23.0	20
221247159324801	2-1232-01	22 12 47	159 32 48	82-10-08	1415	140	22.5	20
				82-11-16	1330	130	22.5	19
				83-04-11	1315	130	22.5	17
221318159335901	2-1333-01	22 13 18	159 33 59	82-10-08	1345	220	22.0	21
				83-04-11	1345	210	21.5	19
				83-08-08	1315	220	22.0	16
215454159274201	2-5427-01	21 54 54	159 27 42	82-12-10	1450	255	24.0	24
				83-03-03	1345	240	23.5	22
				83-09-09	1300	255	23.0	24
215536159263501	2-5526-01	21 55 36	159 26 35	83-06-16	1230	240	22.5	20
215528159303001	2-5530-02	21 55 28	159 30 30	82-12-10	0930	260	22.5	26
				83-03-03	1200	260	23.0	26
				83-04-22	1130	265	23.0	26
				83-06-16	0815	265	23.0	26
				83-09-08	0835	240	23.0	24
215535159302601	2-5530-03	21 55 35	159 30 26	82-10-18	1135	220	23.0	24
				82-12-10	0930	215	22.5	24
				83-04-22	1140	220	23.0	23
215635159355001	2-5635-01	21 56 35	159 35 50	82-10-18	0915	730	23.5	150
				82-12-10	1045	750	23.0	140
				83-03-03	0945	710	23.5	140
				83-06-15	1430	800	23.5	140
215803159401201	2-5840-01	21 58 03	159 40 12	82-10-15	1340	690	24.0	140
				82-12-09	1445	560	24.5	87
				83-02-22	1455	705	24.0	--
				83-06-15	1230	690	--	130
215854159424601	2-5842-02	21 58 54	159 42 46	82-10-15	0945	700	24.0	110
				82-12-09	0945	660	23.5	95
				83-02-22	0945	640	24.0	90
				83-04-18	0950	650	24.0	99
				83-06-15	1040	710	24.0	110
				83-08-30	0900	670	24.0	110
215843159422901	2-5842-03	21 58 43	159 42 29	82-10-15	0930	1100	24.0	240
				82-12-09	0900	940	23.5	160
				83-02-22	0915	710	24.0	110
				83-06-15	1130	1080	23.5	230
				83-08-30	0835	950	24.0	200
215901159235301	2-5923-01	21 59 01	159 23 50	83-06-21	0810	280	24.0	16
215906159395601	2-5939-01	21 59 06	159 39 56	82-10-15	1400	890	24.0	190
				82-12-09	1515	500	23.5	66
				83-03-03	0845	700	23.5	110
				83-04-19	1400	650	23.0	140
				83-06-15	1420	740	23.0	150

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF KAUAI--Continued								
215937159434201	2-5943-01	21 59 37	159 43 42	82-10-15	1015	1010	24.0	210
				83-04-18	1020	1150	24.0	200
				83-06-14	1400	1130	23.5	220
				83-08-30	0945	1020	24.0	210
HAWAII, ISLAND OF OAHU								
211646157465201	3-1646-01	21 16 46	157 46 52	82-10-13	1000	750	22.5	170
				82-12-07	0955	640	23.5	130
				83-01-27	1250	650	23.0	130
				83-05-26	0950	750	22.0	180
				83-07-26	1300	800	22.5	180
				83-08-29	1300	800	22.0	180
211832157515501	3-1851-19A	21 18 32	157 51 55	82-10-13	1530	21000	23.5	8500
				83-02-03	1440	22000	23.5	8400
				83-05-26	1310	22000	23.5	8200
				83-07-26	1520	24000	23.5	8600
				83-09-12	1500	24000	24.0	8500
211832157515502	3-1851-19B	21 18 32	157 51 55	82-10-13	1525	2800	24.0	800
				83-02-03	1435	2800	23.5	850
				83-05-26	1315	3000	23.5	900
				83-07-26	1515	3120	23.5	950
				83-09-12	1510	3300	23.5	950
212038157422501	3-2042-13	21 20 02	157 42 06	82-10-08	1130	6200	25.5	2000
				82-12-16	1000	6600	25.0	1900
				83-05-31	1100	7500	25.5	2400
				83-07-20	1030	7400	25.0	2500
212106157533701	3-2153-02	21 21 06	157 53 37	82-10-13	1550	400	22.0	74
				83-02-03	1400	400	22.0	70
				83-05-20	1515	420	22.0	70
				83-07-25	1505	400	22.0	72
				83-09-09	1520	400	22.0	68
212259157554201	3-2255-35	21 22 59	157 55 42	82-10-08	1430	900	22.0	220
				82-12-08	1345	950	22.0	230
				83-05-25	1450	900	22.0	200
				83-07-25	1325	940	25.0	220
				83-09-09	1430	950	22.5	220
212238157561102	3-2256-12	21 22 39	157 56 09	82-10-06	1200	700	25.5	180
				82-12-01	1530	700	25.0	170
				83-01-31	0955	675	23.0	180
				83-05-18	1225	695	25.0	180
				83-07-21	1240	700	25.5	170
				83-08-31	1530	700	26.0	170
212300158004801	3-2300-06	21 23 00	158 00 48	82-10-14	1255	600	21.5	140
				82-12-08	1130	580	21.5	130
				83-02-03	1015	550	20.0	120
				83-05-25	1315	750	22.0	180
				83-07-25	1040	700	22.0	160
212343158001001	3-2300-11	21 23 43	158 00 10	82-10-14	1320	830	22.5	200
				82-12-08	1235	850	22.5	190
				83-02-03	1050	825	22.5	190
				83-05-25	1410	850	22.5	200
				83-07-25	1020	850	22.5	200
				83-09-09	1130	850	22.5	200

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued								
212358158010901	3-2301-09	21 23 58	158 01 09	82-10-14	1235	625	23.0	120
				82-12-08	1155	700	22.0	150
				83-02-03	1035	675	21.5	140
				83-05-25	1205	650	22.0	130
				83-07-13	1320	620	22.5	120
				83-09-09	1110	580	22.0	110
212332157582201	3-2358-02	21 23 32	157 58 22	82-10-14	1430	7500	20.5	2400
				82-12-07	1310	8500	20.5	2800
				83-02-03	1145	8500	20.5	2800
				83-05-20	1410	7800	20.5	2400
				83-07-25	1215	4500	20.5	1300
212342157584301	3-2358-22	21 23 42	157 58 43	82-10-14	1330	1300	20.5	360
				82-12-07	1205	1750	20.5	500
				83-02-03	1100	1750	20.5	510
				83-05-20	1320	1600	20.5	450
				83-07-25	1120	1300	20.5	340
				83-09-09	1310	1170	20.5	310
212343157584701	3-2358-29	21 23 43	157 58 47	82-10-14	1335	4100	20.5	1200
				82-12-07	1210	5000	20.5	1600
				83-02-03	1105	5100	20.5	1600
				83-05-20	1330	4500	20.5	1400
				83-07-25	1130	3250	20.5	950
				83-09-09	1315	2500	20.5	680
212336157591801	3-2359-05	21 23 36	157 59 18	82-10-14	1350	2900	22.0	820
				82-12-07	1225	3200	22.0	920
				83-02-03	1120	3350	22.0	1000
				83-05-20	1345	3150	22.0	900
				83-07-25	1140	2850	22.5	820
				83-09-09	1330	2600	22.5	720
212422157485601	3-2448-01	21 24 22	157 48 56	82-10-19	1340	190	21.0	20
				83-02-11	1500	190	20.0	19
				83-04-10	1600	190	20.0	19
				83-06-22	1410	180	20.0	15
				83-09-26	1440	180	21.0	18
212501158080701	3-2508-02	21 25 01	158 08 07	82-11-29	1530	1200	28.0	260
				83-01-13	1520	1130	28.0	270
				83-02-28	1130	1200	28.0	270
				83-04-19	1510	1160	28.0	270
				83-06-01	1110	1400	28.0	280
				83-07-29	1045	1300	28.5	270
				83-09-28	1530	1380	28.5	280
212556157500301	3-2550-01	21 25 56	157 50 03	82-10-19	1315	150	23.0	18
				82-12-16	1400	140	23.0	16
				83-02-11	1345	140	23.0	16
				83-06-03	0845	130	23.0	16
				83-07-22	1300	135	23.5	15
				83-09-26	1410	140	23.5	16
212656158071801	3-2607-01	21 26 56	158 07 18	82-11-29	1445	340	24.5	47
				83-02-28	1220	210	24.0	18
				83-04-19	1320	230	23.5	27
				83-06-15	1245	260	23.0	30
				83-07-29	1100	320	24.5	39
				83-09-28	1415	350	24.0	44

GROUND-WATER RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued								
212813158080201	3-2808-01	21 28 13	158 08 04	82-11-29	1410	1300	26.0	250
				83-01-13	1355	1000	24.5	220
				83-01-13	1420	1250	26.5	280
				83-02-28	1240	1000	25.0	190
				83-02-28	1310	1300	26.5	300
				83-04-19	1400	1350	26.0	300
				83-06-15	1330	1350	26.0	310
				83-07-29	1145	1450	26.5	290
				83-09-28	1400	1500	26.0	260
212828158092001	3-2809-06	21 28 27	158 09 20	82-11-17	1420	360	22.5	36
				83-01-06	1330	360	22.5	36
				83-02-23	1020	360	22.5	34
				83-04-19	1230	360	22.0	34
				83-06-15	1415	340	22.0	31
				83-07-29	1430	360	23.0	31
				83-09-28	1135	360	22.5	31
212859158124301	3-2812-01	21 28 59	158 12 43	82-11-17	1230	560	25.0	110
				83-01-06	1240	600	25.0	110
				83-02-28	1055	580	25.0	110
				83-04-18	1115	570	25.5	120
				83-06-15	1510	600	25.0	120
				83-07-29	1350	650	25.5	120
				83-09-28	1230	650	25.5	120
212945158014301	3-2901-09	21 29 45	158 01 43	82-12-03	1700	190	22.0	20
				83-01-07	1500	190	22.0	20
				83-02-25	1530	185	22.0	18
				83-04-22	1600	185	22.0	19
				83-06-29	1700	190	22.5	20
				83-07-22	1320	190	22.0	20
				83-09-29	1220	195	21.5	20
212939158112301	3-2911-02	21 29 39	158 11 23	82-11-17	1120	245	21.5	24
				83-01-06	1405	260	21.5	23
				83-02-23	1105	255	21.0	23
				83-04-18	1140	250	21.5	26
				83-06-01	1520	260	21.0	24
				83-07-26	1430	260	21.5	25
				83-09-15	1615	265	21.5	24
213224158135901	3-3213-06	21 32 24	158 13 59	82-11-17	1310	800	24.0	200
				83-01-06	1150	800	24.0	200
				83-02-28	1040	800	24.0	210
				83-04-18	1000	770	24.0	200
				83-06-15	1450	800	24.0	200
				83-07-29	1320	850	25.0	200
				83-09-28	1300	880	24.0	210
213243157510001	3-3251-01	21 32 43	157 51 00	82-10-19	1200	950	23.0	220
				82-12-15	1400	900	23.0	220
				83-02-08	1500	900	23.0	220
				83-04-11	1310	900	23.0	220
				83-06-22	1100	850	23.0	200
				83-07-22	1235	870	22.5	220
				83-09-26	1245	880	22.5	220
213427158055501	3-3405-02	21 34 27	158 05 55	82-12-03	1615	690	23.0	160
				83-01-18	1030	590	22.5	140
				83-02-25	0930	650	22.5	150
				83-04-14	1700	590	23.0	130
				83-06-07	1535	590	22.5	120
				83-07-27	1445	610	23.0	120
				83-09-29	1120	500	23.0	89

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
			HAWAII, ISLAND OF OAHU--Continued					
213411158074501	3-3407-25	21 34 11	158 07 45	83-01-18	1530	1500	23.0	460
				83-02-28	1530	1400	23.0	450
				83-06-29	1300	1400	23.0	480
				83-08-01	1420	1900	23.0	510
				83-09-30	1030	1900	22.5	510
213444158075501	3-3407-30	21 34 44	158 07 55	82-12-03	1305	9700	25.0	3100
				83-04-22	1130	7900	25.0	2400
				83-06-29	1320	7200	25.0	2100
				83-08-01	1200	9000	26.0	2600
213438158091101	3-3409-16	21 34 36	158 09 12	82-12-03	1340	850	22.5	200
				83-01-18	1345	850	21.5	200
				83-02-28	1430	830	26.5	200
				83-04-22	1220	740	23.0	200
				83-06-29	1410	800	25.0	190
				83-08-01	0950	890	22.5	210
				83-09-30	1315	825	23.0	190
213512158061601	3-3506-03	21 35 12	158 06 16	83-02-22	1630	550	22.5	120
				83-04-13	1700	530	22.0	120
				83-06-07	1220	590	22.0	120
				83-07-27	1325	600	22.5	120
213636158053701	3-3605-03	21 36 36	158 05 37	82-12-03	1130	1600	21.5	500
				83-01-17	0920	1550	21.5	480
				83-02-24	1500	1630	21.5	550
				83-04-14	0920	1850	21.5	620
				83-06-07	1500	2300	21.5	610
				83-07-18	1000	2250	21.5	590
				83-09-29	0900	2330	21.0	620
213636158053702	3-3605-21	21 36 35	158 05 40	82-12-03	1150	1370	21.5	400
				83-01-17	0940	1350	21.5	400
				83-02-24	1515	1290	21.5	400
				83-04-14	0940	1300	21.5	400
				83-06-07	1515	1700	21.5	430
				83-07-18	1015	1700	21.5	420
				83-09-29	0925	1650	21.0	430
213656157550401	3-3655-01	21 36 56	157 55 04	83-02-08	1430	300	22.0	58
				83-06-03	1420	300	26.0	54
				83-07-22	1200	300	26.0	56
				83-09-23	1340	240	21.0	31
213902157561601	3-3956-04	21 39 02	157 56 16	82-10-18	1500	560	21.5	130
				82-12-15	1140	580	21.5	130
				83-02-08	1400	550	21.5	130
				83-04-11	1230	560	21.5	140
				83-06-03	1350	550	22.0	140
				83-07-22	1140	600	22.0	140
				83-09-23	1300	650	22.0	150
214157158000101	3-4100-01	21 41 57	158 00 01	83-02-08	1230	360	21.0	60
				83-04-11	0800	360	21.0	63
				83-06-03	1045	350	21.0	53
				83-07-22	0835	340	21.5	59
214131158011601	3-4101-08	21 41 31	158 01 16	82-12-15	1045	240	21.0	32
				83-02-08	1200	260	21.5	33
				83-04-11	1020	230	21.5	31
				83-06-03	1150	220	21.0	28
				83-09-23	1130	225	20.5	32

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENTIFIER	LATITUDE	LONGITUDE	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued								
214233157583501	3-4258-04	21 42 33	157 58 35	82-10-18	1030	2000	23.0	570
				82-12-15	0830	1900	23.0	560
				83-04-11	0900	1800	23.0	550
				83-06-03	1015	1950	26.0	560
				83-07-22	0810	1900	26.5	550
				83-09-23	1000	1900	26.0	540
HAWAII, ISLAND OF MOLOKAI								
210402156495801	4-0449-01	21 04 02	156 49 58	83-01-24	1445	320	21.0	56
				83-07-25	1635	320	21.0	57
210419156570501	4-0457-01	21 04 19	156 57 05	82-10-20	1415	240	23.0	44
				83-01-24	1540	240	23.0	42
				83-03-07	1445	260	23.5	50
				83-04-18	1340	280	23.5	56
				83-06-07	1300	280	23.0	55
				83-07-26	0800	260	23.0	48
				83-09-06	1430	250	23.0	49
210856157011201	4-0801-01	21 08 56	157 01 12	82-10-20	j0745	332	--	67
				83-01-26	j0808	347	--	64
210857156010701	4-0801-02	21 08 57	157 01 07	83-04-19	j0810	332	--	66
				83-07-28	j0830	330	--	59
210903157013001	4-0901-01	21 09 03	157 01 30	82-12-09	1010	350	--	74
				83-01-27	0945	410	--	92
210825157014501	SMPL P-A	21 08 25	157 01 45	82-10-21	0900	110	18.5	12
				82-12-09	0945	100	18.0	12
				83-01-27	0915	93	18.0	9.0
				83-03-10	0840	114	18.0	10
				83-04-21	0820	63	17.0	10
				83-06-08	0730	108	19.0	11
				83-07-26	0900	78	19.5	9.0
				83-09-08	1510	74	20.5	8.0
210855157021001	SMPL P-B2	21 08 55	157 02 10	82-12-09	1025	330	21.0	68
				83-01-27	1005	340	21.0	62
				83-04-21	0915	370	21.5	87
				83-06-08	0825	390	21.5	84
				83-09-08	1420	380	22.5	84
210928157024801	SMPL P-C	21 09 28	157 02 48	82-10-21	0925	110	19.0	12
				82-12-09	1040	112	18.5	14
				83-01-27	1020	95	18.0	9.0
				83-03-10	0930	114	18.5	10
				83-04-21	0935	116	18.0	21
				83-06-08	0845	240	20.5	44
				83-07-26	0945	77	19.5	9.0
				83-09-08	1430	144	21.0	24
210923157031501	SMPL P-D	21 09 23	157 03 15	82-10-21	0945	94	22.5	14
				82-12-09	1055	94	21.5	13
				83-01-27	1050	87	21.0	7.0
				83-03-10	0945	95	23.0	11
				83-04-21	0955	94	22.0	12
				83-06-08	0905	92	24.0	12
				83-07-26	1000	90	24.0	12
				83-09-08	1445	94	25.5	13

j Collected by non-USGS agency.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
			HAWAII, ISLAND OF MAUI					
203835156065001	6-3806-01	20 38 35	156 06 50	83-07-01	0915	610	--	140
203947156261201	6-3926-03	20 39 47	156 26 13	82-10-13	1020	2700	19.0	720
				83-04-13	1045	2700	18.5	720
				83-05-26	1050	2600	19.0	660
				83-07-12	1105	2700	18.5	710
				83-08-23	1025	2600	18.5	700
204126156262101	6-4126-02	20 41 26	156 26 21	82-10-13	1045	2150	--	560
				82-12-01	1230	2100	23.0	560
				83-01-17	1345	2250	23.0	620
				83-03-01	1130	1900	20.0	480
204601156001501	6-4600-01	20 46 01	156 00 15	82-11-18	0730	410	21.5	62
				83-01-06	1525	400	21.5	60
				83-02-16	1615	400	21.0	60
				83-03-31	1550	400	21.0	60
				83-05-11	1610	410	21.0	70
				83-06-29	1545	440	21.5	71
				83-08-18	1500	500	21.0	86
204636156002601	6-4600-02	20 46 36	156 00 26	83-02-17	1415	350	19.0	74
				83-03-31	1525	530	21.0	130
204633156003201	6-4600-03	20 46 36	156 00 30	82-10-08	0705	126	19.5	16
				82-11-18	0710	134	20.0	18
				83-01-06	1540	190	20.5	35
				83-02-17	1410	210	20.0	42
				83-03-31	1500	440	19.0	100
				83-05-12	0745	640	19.5	160
				83-06-29	1520	600	19.0	170
				83-08-18	1530	810	19.0	220
204635156270101	6-4627-14	20 46 35	156 27 01	82-10-13	1345	1800	23.0	360
				82-12-01	1445	1800	23.0	360
				83-01-17	1450	1800	22.5	360
				83-03-01	1315	1750	23.0	360
				83-04-13	1310	1800	23.0	360
				83-05-26	1415	1800	23.5	350
				83-07-12	1300	1600	23.0	340
				83-08-23	1400	1750	23.5	360
204845156255001	6-4825-01	20 48 45	156 25 50	83-08-26	j1030	1580	--	320
204931156371201	6-4937-01	20 49 31	156 37 12	82-12-21	j --	724	--	120
				83-02-28	j0900	718	--	100
				83-03-21	j1300	1050	--	220
				83-05-26	1020	1320	24.0	300
205102156282501	6-5128-02	20 51 02	156 28 25	83-08-26	j0945	2040	--	420
205243156243201	6-5224-02	20 52 43	156 24 32	83-08-26	j0915	1550	--	350
205329156305502	6-5330-09	20 53 29	156 30 55	83-07-11	1410	730	22.5	160
				83-08-29	1205	770	22.5	180
205330156305401	6-5330-11	20 53 30	156 30 54	82-10-13	1405	600	22.5	120
				82-11-30	1345	590	22.5	110
				83-02-28	1430	580	22.5	120
				83-04-12	1355	590	22.5	120
				83-05-23	1450	590	22.5	120
				83-08-29	1215	580	22.5	110
205322156394501	6-5339-01	20 53 22	156 39 45	82-10-12	1455	860	21.5	160
				83-01-10	1445	840	22.0	160
				83-04-11	1420	890	21.5	180

j Collected by non-USGS agency.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF MAUI--Continued								
205320156394501	6-5339-02	20 53 20	156 39 45	82-10-12	1450	680	21.5	120
				83-04-11	1410	780	21.0	150
205343156401101	6-5340-02	20 53 43	156 40 11	82-12-21	j --	649	--	120
				83-01-26	j --	1100	--	260
				83-02-28	j0800	1270	--	310
				83-03-21	j0830	1430	--	350
				83-05-26	0730	1180	21.0	320
				83-05-26	0745	1360	22.0	340
205416156244301	6-5424-01	20 54 16	156 24 43	83-08-26	j0715	2520	--	640
205651156401001	6-5640-01	20 56 51	156 40 10	82-10-26	j1000	517	--	110
				82-11-19	j --	390	--	100
				82-12-21	j --	622	--	130
				83-02-28	j0700	775	--	160
				83-03-21	j0900	682	--	160
				83-05-26	0815	810	21.0	190
205837156384601	6-5838-01	20 58 37	156 38 46	82-10-12	1340	670	21.0	160
				82-11-30	1330	610	21.0	150
				83-07-08	1250	670	21.0	160
				83-08-22	1145	670	21.0	160
205838156383101	6-5838-02	20 58 38	156 38 31	82-11-30	1350	280	20.0	62
				83-01-10	1140	290	20.0	59
				83-02-28	1340	280	20.0	57
				83-04-11	1320	310	19.5	63
				83-05-23	1320	310	20.0	64
				83-08-22	1200	285	20.0	50
HAWAII, ISLAND OF HAWAII								
190347155354301	8-0335-01	19 03 47	155 35 43	83-05-09	1415	160	19.0	12
190832155310801	8-0831-01	19 08 32	155 31 08	83-05-09	1145	580	18.5	130
				83-07-15	1005	560	18.5	120
190832155310901	8-0831-02	19 08 32	155 31 09	83-01-31	1105	580	18.5	140
				83-03-24	1200	600	18.0	140
				83-08-31	0925	625	19.0	140
191108155281701	8-1128-02	19 11 08	155 28 17	83-01-31	1020	120	19.0	10
				83-03-24	1115	120	19.0	12
				83-05-09	1055	120	19.0	10
				83-07-11	1455	120	19.0	12
191114155294801	8-1129-01	19 11 14	155 29 48	83-01-31	1050	92	18.0	2.0
				83-03-24	1145	92	18.0	4.0
191219155291601	8-1229-01	19 12 25	155 29 22	83-03-24	1040	90	17.0	4.0
				83-05-09	1025	90	17.0	4.0
				83-07-11	1520	93	17.0	4.0
192108155021201	8-2102-01	19 21 08	155 02 12	82-12-06	1535	1130	24.5	290
				83-02-14	1335	1200	24.5	300
				83-04-06	1240	1250	24.5	320
				83-06-22	1020	1200	24.0	300
				83-08-17	1050	1160	25.0	280
192646155532001	8-2653-01	19 26 46	155 53 20	82-12-16	0835	240	18.5	34
				83-01-25	1100	240	18.5	37
				83-03-17	1000	250	18.5	39
				83-07-12	1515	260	19.0	36
				83-08-29	1610	240	19.5	30

j Collected by non-USGS agency.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENTIFIER	LATITUDE	LONGITUDE	DATE OF SAMPLE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
HAWAII, ISLAND OF HAWAII--Continued								
192738155534201	8-2753-01	19 27 38	155 53 42	83-01-25	1025	520	19.0	110
				83-05-09	1600	530	19.0	110
				83-08-29	1525	500	20.0	100
192731155534101	8-2753-02	19 27 22	155 53 38	83-03-17	0935	620	18.5	150
192728154530101	8-2783-01	19 27 28	154 53 01	82-12-06	1325	12000	53.0	4200
				83-02-14	1110	12500	53.0	4800
				83-04-06	0940	12000	52.0	4900
				83-06-17	1430	14500	54.0	5200
				83-08-17	1335	14900	52.0	5600
192924154564701	8-2986-01	19 29 24	154 56 47	83-02-14	1015	120	22.0	5.5
				83-04-06	1345	120	22.0	6.0
				83-06-22	0910	120	22.0	5.5
				83-08-19	0915	120	23.0	5.5
192923154564701	8-2986-02	19 29 23	154 56 47	82-12-06	1015	120	22.0	5.0
193113154555801	8-3185-01	19 31 13	154 55 58	83-02-14	1445	120	21.0	--
				83-04-06	1410	120	21.0	14
193105154580301	8-3188-01	19 31 05	154 58 03	83-06-22	1225	110	19.0	5.0
193354156572601	8-3357-01	19 33 54	155 57 26	83-01-24	1420	7800	20.5	2500
193442156575101	8-3457-01	19 34 42	155 57 51	83-01-25	0920	4100	20.0	1200
193510155570801	8-3557-01	19 35 10	155 57 08	82-12-16	0940	140	19.5	6.5
				83-01-24	1545	125	19.5	7.5
				83-05-10	1410	130	20.0	9.0
193505155570701	8-3557-04	19 35 05	155 57 07	82-10-13	1415	240	20.0	31
				82-12-16	0920	250	19.5	36
				83-01-24	1600	250	19.5	33
				83-03-17	0840	260	19.5	35
				83-05-10	1450	270	20.0	36
				83-07-12	1355	270	20.0	34
193502155572301	8-3557-05	19 35 02	155 57 23	82-12-16	1120	510	19.5	110
				83-01-25	0845	520	19.5	110
193805155020201	8-3802-03	19 38 05	155 02 02	82-11-05	0850	87	18.0	6.0
				83-02-11	1115	85	18.5	4.0
				83-04-20	1000	80	18.5	4.5
				83-06-22	1335	85	18.0	4.0
				83-08-19	1145	80	19.0	3.0
194037155035301	8-4003-01	19 40 37	155 03 53	82-11-05	1030	90	20.0	4.5
				83-02-11	1015	85	20.0	4.0
				83-04-20	1100	82	20.0	4.5
				83-07-08	0950	80	20.0	4.0
				83-09-21	0845	78	20.5	2.0
194040155035201	8-4003-02	19 40 40	155 03 52	82-11-05	1020	88	20.0	4.0
				83-04-20	1055	85	20.0	4.5
				83-07-08	0940	80	20.0	4.0
194222155035001	8-4203-05	19 42 22	155 03 50	82-11-05	1345	115	20.5	10
				83-02-11	0945	120	20.5	15
194222155034801	8-4203-06	19 42 22	155 03 48	83-04-20	0930	130	26.0	18
				83-07-08	1015	180	24.0	30
				83-09-21	0920	130	25.5	31

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF HAWAII--Continued								
194337155041801	8-4304-01	19 43 37	155 04 18	82-11-05	1415	18500	21.5	7100
				83-02-11	1435	22000	21.0	8800
				83-04-20	0850	17000	20.5	6200
				83-07-08	1040	21800	20.0	6100
194818155582301	8-4858-02	19 48 18	155 58 23	82-10-12	1305	2150	20.5	430
				82-12-15	1540	2000	20.5	420
				83-03-17	1250	2000	20.0	410
				83-05-11	0925	2100	20.0	440
				83-07-13	0920	2200	21.0	430
				83-08-29	1310	2150	21.0	430
194820155582401	8-4858-03	19 48 20	155 58 24	82-10-12	1300	4200	20.5	1100
				83-01-25	1255	4000	20.5	1000
				83-03-17	1250	3700	20.5	980
195035155054501	8-5005-01	19 50 35	155 05 45	83-09-21	1055	200	20.5	11
195043155053801	8-5005-02	19 50 43	155 05 38	82-12-02	0925	230	21.5	19
				83-02-17	1010	280	21.0	28
				83-04-08	0850	300	20.5	33
				83-07-06	1105	280	21.0	27
				83-09-21	1045	280	22.0	22
195049155051601	8-5005-04	19 50 49	155 05 16	82-12-02	1010	17000	17.5	5900
				83-02-17	1000	13700	17.5	5000
				83-07-06	1055	15000	18.0	5800
				83-09-21	1030	12500	19.0	4900
195315155072301	8-5307-02	19 53 15	155 07 23	83-02-15	0920	190	21.5	14
195546155480301	8-5548-01	19 55 46	155 48 03	83-02-18	1050	2200	28.0	570
				83-07-27	1040	2200	28.0	570
195724155455301	8-5745-01	19 57 24	155 45 53	83-04-14	1140	340	26.0	26
				83-06-07	1110	310	26.0	24
195722155455201	8-5745-02	19 57 22	155 45 52	82-12-07	1155	300	26.0	26
				83-02-18	1130	320	26.0	26
				83-04-14	1150	310	26.0	26
				83-06-07	1135	320	26.0	25
				83-08-01	1045	320	26.5	24
				83-09-27	1110	310	26.5	24
195857155142301	8-5814-01	19 58 57	155 14 23	83-04-08	0955	470	18.5	98
195912155464201	8-5946-02	19 59 12	155 46 43	83-02-18	1250	350	25.5	46
				83-05-11	1020	370	26.0	48
				83-06-07	1225	370	25.5	47
				83-07-27	1150	390	25.5	49

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF KAUAI

220621159232101 - 2-0623-04 STATE, MAKALEHUA KAUAI

DATE	TIME	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	ALKA-LINITY LAB (MG/L AS CACO3)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
JUN 17...	0700	10	6.1	10	1.1	2.5	12	<.10	31	42	1.2

DATE	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)
JUN 17...	100	<1	<100	<10	<1	<10	1	16	110	100	10

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	AGENCY COL-LECTING SAMPLE (CODE NUMBER)
JUN 17...	4	<10	10	<10	.1	<1	1	<1	<1	20	j

215804159402001 - 2-5840-02 WAIMEA KAUAI

DATE	TIME	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	ALKA-LINITY LAB (MG/L AS CACO3)
SEP 29...	0800	7.2	11	62	2.8	9.6	43	.10	70	120

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)
SEP 29...	5.0	<1	<100	<1	<10	3	30	20	9

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	AGENCY COL-LECTING SAMPLE (CODE NUMBER)
SEP 29...	3	10	9	1	<.1	1	<1	10	j

< Actual value is known to be less than the value shown.
j Collected by non-USGS agency.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU

211753157470401 - 3-1747-03 STATE, WAIALAE NUI OAHU

DATE	TIME	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)
MAR 30...	1800	65	0	10	9.7	31	50	1.7	1.3	73

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	AGENCY COLLECTING SAMPLE (CODE NUMBER)
MAR 30...	7.9	41	<.10	43	.63	30	<10	188	j

211826157434001 - 3-1843-01 STATE, KULIOUOU OAHU

DATE	TIME	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
FEB 11...	0930	110	40	18	17	51	48	2.1	3.6

DATE	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB 11...	75	13	100	<.10	55	.43	11	2	303

< Actual value is known to be less than the value shown.
j Collected by non-USGS agency.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

211828157515801 - 3-1851-22 W101 STATE, ALA MOANA OAHU

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	DENSITY (GM/ML AT 20 C)	NITROGEN DISSOLVED (MG/L AS N)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM
DEC 16...	0945	9660	7.7	22.7	1.000	.65	1700	1620	170	300	1400	64

DATE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
DEC 16...	15	62	45	360	3200	.20	22	.28	.020	.30	.25	<.060

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUSPENDED TOTAL (UG/L AS AS)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, DISSOLVED (UG/L AS BA)
DEC 16...	<.060	.60	.20	.40	.90	.030	.020	1	0	1	<100	<100

DATE	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM SUSPENDED RECOVERABLF (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
DEC 16...	1	0	1	10	0	10	1	0	1	<1	<1	350

DATE	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)
DEC 16...	260	90	1	0	2	470	10	460	.1	.0	.1	<1

DATE	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)	ZINC, DISSOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)
DEC 16...	<1	<1	<1	50	20	30	.5	<.01	<.10	<.01	<.01	<.01

DATE	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
DEC 16...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DEC 16...	<.01	<1	<.01	<.01	<.01	<.01	<.10	<.10	5540	<.01	<.01

< Actual value is known to be less than the value shown.

201959157481801 - 3-1948-01 STATE, MANOA OAHU

DATE	TIME	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)
APR 14...	1300	41	0	7.2	5.6	11	36	.8	.8	47

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	AGENCY COLLECTING SAMPLE (CODE NUMBER)
APR 14...	2.3	12	<.10	27	.21	10	<10	94	j

212133158035501 - 3-2103-03 S14 NAVY, BARBERS PT OAHU

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT 14...	1005	1100	23.5	220
25...	0847	--	23.5	230
DEC 08...	0900	1100	23.0	220
JAN 28...	0900	1080	23.0	220
JUL 26...	0900	1100	23.0	230

DATE	TIME	PH (STANDARD UNITS)	BROMIDE DISSOLVED (MG/L AS BR)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)
OCT 25...	0847	6.8	.90	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
OCT 25...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 25...	<.01	<1	<.01	<.01	<.01	<.01	<.10	<.10	<.01	<.01

j Collected by non-USGS agency.
< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212252158025001 - 3-2202-21 S3 OSCO EP 15 TO 16 EWA OAHU

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	BROMIDE DIS-SOLVED (MG/L AS BR)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)
OCT 25...	0955	880	6.6	23.0	180	.69	<.01	<.10	<.01	<.01	<.01

DATE	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)
OCT 25...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL TRI-THION, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	MIREX, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 25...	<.01	<.01	<1	<.01	<.01	<.01	<.01	<.10	<.10	<.01	<.01

212408158002603 - 3-2400-03 CNTY, WAIPAHU OAHU

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (STAND-ARD UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)
SEP 27...	1000	348	7.2	22.1	8.2	43	0	6.0	6.9	53

DATE	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY LAB (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	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 SIO2)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
SEP 27...	72	3.6	2.0	67	17	48	.20	.23	64	2.6

DATE	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)
SEP 27...	<1	<100	1	<10	4	30	30	5	3

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)
SEP 27...	10	7	3	<.1	2	<1	20	238

< Actual value is known to be less than the value shown.

212506157582301 - 3-2558-10 S16 NAVY, WAIAWA OAHU

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
OCT				
14...	1410	900	21.5	240
25...	1045	956	22.0	240
DEC				
07...	1145	1000	21.5	260
JAN				
28...	1100	1000	22.0	270
MAY				
20...	1255	910	21.5	230
JUL				
25...	1105	900	21.5	220
SEP				
09...	1250	825	21.5	200

DATE	TIME	PH (STANDARD UNITS)	BROMIDE DISSOLVED (MG/L AS BR)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)
OCT										
25...	1045	6.8	.70	<.01	<.10	<.01	<.01	<.01	<.01	<.01

DATE	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
OCT										
25...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT										
25...	<.01	<1	<.01	<.01	<.01	<.01	<.10	<.10	<.01	<.01

< Actual value is known to be less than the value shown.

212701158004101 - 3-2600-03 CNTY, MILILANI III WELL 1 OAHU

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	HARDNESS (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO
OCT								
19...	1530	210	47	8.2	6.5	24	51	1.6
19...	1610	200	--	--	--	--	--	--

DATE	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	IRON, DISSOLVED (UG/L AS FE)
OCT								
19...	1.7	--	--	--	--	--	--	95
19...	--	49	11	23	.20	73	1.8	--

212617158033801 - 3-2603-01 W330-8 HAW CC, KUNIA OAHU

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	BROMIDE DISSOLVED (MG/L AS BR)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
OCT												
14...	0940	360	--	22.5	50	--	<.02	<.20	<.02	<.02	<.02	<.01
25...	1200	351	7.0	23.0	48	.20	--	--	--	--	--	--
FEB												
03...	0950	360	--	22.0	47	--	--	--	--	--	--	--

DATE	DIELDRIN TOTAL (UG/L)	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
OCT											
14...	<.02	<.02	<.02	<.01	<.02	<.02	<.02	<.01	<.02	<.01	<.01
25...	--	--	--	--	--	--	--	--	--	--	--
FEB											
03...	--	--	--	--	--	--	--	--	--	--	--

DATE	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	MIREX, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT										
14...	<.01	<2	<.01	<.01	<.01	<.02	<.20	<.20	<.01	<.01
25...	--	--	--	--	--	--	--	--	--	--
FEB										
03...	--	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF OAHU--Continued

212803158000701 - 3-2800-01 W250-4A CNTY, MILILANI OAHU

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
DEC 06...	1410	150	22.0	16
JAN 07...	1020	150	22.5	15
FEB 25...	1500	150	22.0	14
SEP 27...	1000	158	21.8	--
27...	1030	158	21.8	16

DATE	TIME	PH (STANDARD UNITS)	OXYGEN, DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARBONATE (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)
SEP 27...	1030	7.1	8.1	44	0	7.4	6.1	13	38	.9	1.3

DATE	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	FLUORIDE, DISSOLVED (MG/L AS F)	BROMIDE DISSOLVED (MG/L AS BR)	SILICA, DISSOLVED (MG/L AS SIO2)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
SEP 27...	46	5.2	<.10	.10	65	.74	<1	<.00	<1.0	<10	4.0

DATE	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
SEP 27...	10	10	3.0	0	<10	<1	<.0	<1	<1.0	20	142

212829157593301 - 3-2859-01 CNTY, MILILANI OAHU

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)	BROMIDE DISSOLVED (MG/L AS BR)
OCT 25...	0840	160	23.0	16	.20
25...	0933	161	23.0	17	.09
25...	1633	162	22.0	17	.07

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF MOLOKAI

211040156580401 - 4-1058-01 NATIONAL PARK, KALAUPAPA MOLOKAI

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CHLORIDE, DISSOLVED (MG/L AS CL)
MAY				
20...	1500	--	--	21
20...	1515	--	--	18
JUL				
12...	0955	175	20.5	20
12...	1300	145	20.5	19
12...	1530	145	20.5	19
JUL				
12...	1620	150	20.5	19
13...	2000	180	20.5	22
14...	0400	160	20.5	22
14...	0800	180	20.5	22

DATE	TIME	SAMPLING DEPTH (FEET)	PH (STANDARD UNITS)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	ALKALINITY LAB (MG/L AS CACO3)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)
MAY												
20...	1500	90.0	--	7.6	5.2	15	2.2	3.0	<.10	16	44	--
20...	1515	250	--	8.7	5.5	13	1.6	3.0	<.10	18	51	--
JUL												
14...	0800	--	8.2	8.7	5.2	17	1.8	3.9	<.10	30	52	.20

DATE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)
MAY												
20...	.16	--	--	--	--	--	--	--	--	--	--	--
20...	.14	--	--	--	--	--	--	--	--	--	--	--
JUL												
14...	.60	.40	.030	60	<1	.00	<10.0	<1.0	<10	6.0	2.0	70

DATE	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
MAY												
20...	--	13	--	--	--	61	--	--	--	--	--	--
20...	--	20	--	--	--	94	--	--	--	--	--	--
JUL												
14...	20	53	<0	<10	<10	2	<.0	<1	<1.0	<1	<1.0	30

< Actual value is known to be less than the value shown.

193659155571701 - 8-3657-01 STATE, HOLUALOA HAWAII

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)
MAY 10...	1545	200	20.0	--	--	--	--	--	21	--
SEP 30...	1830	--	--	9.0	6.6	20	3.8	8.3	23	.20

DATE	SILICA, DISSOLVED (MG/L AS SIO2)	ALKALINITY LAB (MG/L AS CACO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
MAY 10...	--	--	--	--	--	--	--	--	--	--
SEP 30...	44	58	.83	<1	<100	<1	<10	17	30	20

DATE	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	AGENCY COLLECTING SAMPLE (CODE NUMBER)
MAY 10...	--	--	--	--	--	--	--	--	--	k
SEP 30...	13	4	10	9	1	.1	1	<1	10	j

194039155035601 - 8-4003-03 STATE, PANAEWA WELL 3, HAWAII

DATE	TIME	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
APR 06...	1630	6.9	2.7	5.8	1.6	1.6	3.4

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	ALKALINITY LAB (MG/L AS CACO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	AGENCY COLLECTING SAMPLE (CODE NUMBER)
APR 06...	<.10	36	39	.23	40	<10	j

j Collected by non-USGS agency.
k Collected by USGS.
< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

HAWAII, ISLAND OF HAWAII--Continued

195225155394401 - 8-5239-01 JERRY KREMKOW, WAIKII WELL 1 HAWAII

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	ALKALINITY LAB (MG/L AS CACO3)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
MAY 19...	1345	460	8.3	9.9	71	8.2	54	18	.40	64	152	.66

DATE	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)	IRON, DISSOLVED (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)
MAY 19...	300	2	<100	<10	<1	<10	<1	11	480	460	23	5

DATE	LITHIUM TOTAL RECOVERABLE (UG/L AS LI)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY TOTAL RECOVERABLE (UG/L AS HG)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)	SELENIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOVERABLE (UG/L AS AG)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)	AGENCY COLLECTING SAMPLE (CODE NUMBER)
MAY 19...	10	30	9	21	<.1	18	10	1	<1	190	j

j Collected by non-USGS agency.
< Actual value is known to be less than the value shown.

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October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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