

1972

Water Resources Data  
for  
Hawaii and other  
Pacific Areas

- Part 1. Surface Water Records  
Part 2. Water Quality Records



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Prepared in cooperation with the State of Hawaii, Trust Territory of the Pacific Islands, the Government of American Samoa, the Government of Guam, and with other State, county, and Federal agencies



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Hawaii Department of Land and Natural Resources,  
Division of Water and Land Development  
Hawaii Department of Transportation  
Government of Guam  
Government of American Samoa  
Trust Territory of the Pacific Islands  
City and County of Honolulu  
Corps of Engineers, U.S. Army

Copies of this report may be obtained from  
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U.S. Geological Survey  
5th Floor, 1833 Kalakaua Avenue  
Honolulu, Hawaii 96815

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

XI

(Letters after station name designate type of data:  
(c), chemical; (t), water temperature; (s), sediment)

HAWAII

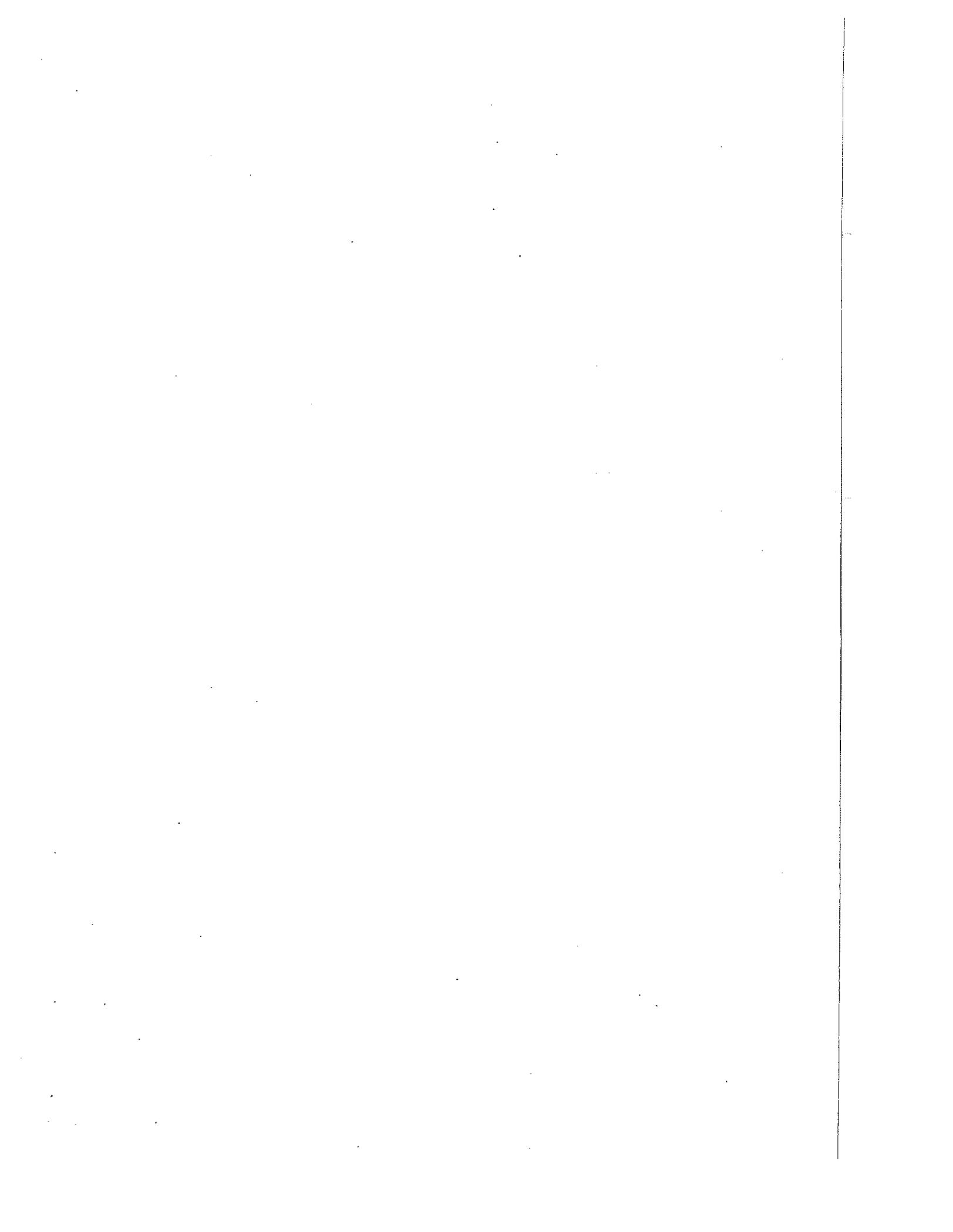
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WATER RESOURCES DATA FOR HAWAII  
AND OTHER PACIFIC AREAS, 1972

- Part 1. Surface Water Records
- Part 2. Water Quality Records

INTRODUCTION

Water resources data for the 1972 water year for Hawaii and other Pacific areas including records of streamflow or reservoir storage at gaging stations, partial-record stations, and miscellaneous sites, and records of water-quality data on the chemical and physical characteristics of surface water, are given in this report. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey under the direction of W. L. Burnham, district chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State, Territorial, and Federal agencies in Hawaii and other Pacific areas.

Through September 30, 1960 (June 30, 1960, for Hawaii and other Pacific areas), the records of discharge and stage of streams and contents and stage of lakes or reservoirs were published in an annual 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."

Beginning with the 1961 water year (fiscal year for Hawaii), streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis. The Hawaii reports have included records for other Pacific areas. Through June 1967, the Hawaii reports were on a fiscal-year basis (the 12-month period July 1 to June 30) and discharges (except for Guam and Okinawa) were published in million gallons a day.

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Beginning with the 1967 water year, the Hawaii reports have been published on a water-year basis and with discharges entirely in cubic feet per second.

Distribution of these basic-data reports is limited; they are designed primarily for rapid release of data shortly after the end of the water year to meet local needs. The streamflow records for 1961-65 also are published in a Geological Survey water-supply series entitled, "Surface Water Supply of the United States 1961-65," and those for 1966-70 will be published in a similar series.

The Geological Survey has published records of chemical quality, water temperatures, and suspended sediment since 1941 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States." Beginning with the 1964 water year, water-quality records also have been released on a State-boundary basis in conjunction with streamflow records or in a separate volume.

#### 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. Cooperative agreements with the Territory of Guam for the collection of streamflow records began in 1953, with the Territory of American Samoa in 1957, and with the Trust Territory of the Pacific Islands in 1968. 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 Transportation, Fujio Matsuda, director.
- Trust Territory of the Pacific Islands, E. E. Johnston, high commissioner.
- Government of American Samoa, J. M. Haydon, governor.
- Government of Guam, C. G. D. Camacho, governor.
- City and County of Honolulu, Board of Water Supply, G. A. L. Yuen, manager and chief engineer.
- City and County of Honolulu, Division of Engineering, A. C. Zane, director and chief engineer.

Assistance in the form of funds or services are given by the Corps of Engineers, U.S. Army, in collecting records for 10 gaging stations and 3 water-quality stations published in this report.

The following organizations aided in collecting records:

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

#### DEFINITION OF TERMS

Definition of terms related to streamflow, water-quality, and other hydrologic data, as used in this report, 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.

Bed material is the shifting portion of fragmented material of which the streambed is composed.

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, and represents a runoff of 0.0372 inch from 1 square mile.

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.

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.

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.

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Cubic foot per second (cfs) 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.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

Mean discharge is the arithmetic average of individual daily mean discharges during a specific 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 tables is "Discharge (cfs)."

Drainage area of a stream at a specified 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 stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the 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 gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Hardness of water is a physical-chemical characteristic attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ( $\text{CaCO}_3$ ).

Micrograms per liter (g/l, UG/L) is a more precise unit for expressing the concentration of chemical constituents

in solution as the weight (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (mg/l, MG/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the weight of solute per unit volume of water. Milligrams or micrograms per liter may be converted to milliequivalents (one thousandth of a gram-equivalent weight of a constituent) per liter by multiplying by the factors in table 1, page 6. Concentration of suspended sediment also is expressed in mg/l, and is based on the weight of sediment per liter of water-sediment mixture. Sediment concentrations are determined in the laboratory as parts per million (ppm) and are converted to mg/l by using the factors in table 2, page 6.

Partial-record station is a particular site where limited streamflow 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 sieve and 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) (Guy, 1969).

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 the particle sizes of sediment in transport in the natural stream. Most of the organic

WATER RESOURCES DATA FOR HAWAII  
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Table 1.--Factors for conversion of chemical constituents in milligrams or micrograms per liter to milliequivalents per liter

Ion	Multi- ply by	Ion	Multi- ply by
Aluminum (Al <sup>+3</sup> )*...	0.11119	Iodide (I <sup>-1</sup> ).....	0.00788
Ammonia as NH <sub>4</sub> <sup>+1</sup> ...	.05544	Iron (Fe <sup>+3</sup> )*.....	.05372
Barium (Ba <sup>+2</sup> ).....	.01456	Lead (Pb <sup>+2</sup> )*.....	.00965
Bicarbonate (HCO <sub>3</sub> <sup>-1</sup> )	.01639	Lithium (Li <sup>+1</sup> )*...	.14411
Bromide (Br <sup>-1</sup> ).....	.01251	Magnesium (Mg <sup>+2</sup> )..	.08226
Calcium (Ca <sup>+2</sup> ).....	.04990	Manganese (Mn <sup>+2</sup> )*.	.03640
Carbonate (CO <sub>3</sub> <sup>-2</sup> )..	.03333	Nickel (Ni <sup>+2</sup> )*....	.03406
Chloride (Cl <sup>-1</sup> ).....	.02821	Nitrate (NO <sub>3</sub> <sup>-1</sup> )...	.01613
Chromium (Cr <sup>+6</sup> )*...	.11539	Nitrite (NO <sub>2</sub> <sup>-1</sup> )...	.02174
Cobalt (Co <sup>+2</sup> )*.....	.03394	Phosphate (PO <sub>4</sub> <sup>-3</sup> )..	.03159
Copper (Cu <sup>+2</sup> )*.....	.03148	Potassium (K <sup>+1</sup> )...	.02557
Cyanide (CN <sup>-1</sup> ).....	.03844	Sodium (Na <sup>+1</sup> ).....	.04350
Fluoride (F <sup>-1</sup> ).....	.05264	Strontium (Sr <sup>+2</sup> )*.	.02283
Hydrogen (H <sup>+1</sup> ).....	.99209	Sulfate (SO <sub>4</sub> <sup>-2</sup> )...	.02082
Hydroxide (OH <sup>-1</sup> )...	.05880	Zinc (Zn <sup>+2</sup> )*.....	.03060

\*Constituent reported in micrograms per liter; multiply by factor and divide results by 1,000.

Table 2.--Factors for conversion of sediment concentration in milligrams per liter to parts per million\*  
(All values calculated to three significant figures)

Range of concentration in 1000 mg/l		Di- vide by	Range of concentration in 1000 mg/l		Di- vide by	Range of concentration in 1000 mg/l		Di- vide by
0 - 8	1.00	201-217	1.13	411-424	1.26	619-634	1.39	
8.05- 24	1.01	218-232	1.14	427-440	1.27	636-650	1.40	
24.2 - 40	1.02	234-248	1.15	443-457	1.28	652-666	1.41	
40.5 - 56	1.03	250-264	1.16	460-473	1.29	668-682	1.42	
56.5 - 72	1.04	266-280	1.17	476-489	1.30	684-698	1.43	
72.5 - 88	1.05	282-297	1.18	492-506	1.31	700-715	1.44	
88.5 -104	1.06	299-313	1.19	508-522	1.32	717-730	1.45	
105 -120	1.07	315-329	1.20	524-538	1.33	732-747	1.46	
121 -136	1.08	331-345	1.21	540-554	1.34	749-762	1.47	
137 -152	1.09	347-361	1.22	556-570	1.35	765-780	1.48	
153 -169	1.10	363-378	1.23	572-585	1.36	782-796	1.49	
170 -185	1.11	380-393	1.24	587-602	1.37	798-810	1.50	
186 -200	1.12	395-409	1.25	604-617	1.38			

\*Based on water density of 1,000 g/ml and a specific gravity of sediment of 2.65.

matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis of the silt and clay.

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 discharge 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 by volume, that is discharged in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Total sediment discharge or total sediment load 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 is discharged during a given time (Colby and Hembree, 1955).

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).

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

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

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This ratio should be known especially for water used for irrigating farmland.

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 and is expressed in micromhos per centimeter at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids content in the water. Commonly, the amount 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 or from well to well, and it may even vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

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

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

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

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

#### SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural 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 benchmark basin.

#### 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 mainstream stations are listed before the first mainstream 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 indentation, each indentation 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 16884600 which appears just to the left of the station name includes the 2-digit number "16" plus the 6-digit downstream order number "884600." In this report, the records are listed in downstream order by islands.

#### SURFACE WATER 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 direct reading on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at 5-, 15-, 30-, or 60-minute intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6. Surface areas of lakes or reservoirs are determined from instrument surveys using standard methods. The configuration of the reservoir bottom is determined by sounding at many points.

For a stream-gaging station, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, 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), velocity-area studies, and logarithmic plotting. The application of the gage height to the rating table gives the discharge. The daily mean discharge is computed from gage heights, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined 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. Discharge over spillways is computed from a stage-discharge relation curve defined by discharge measurements.

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 compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, or for

various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other stations records from the same or nearby basins.

The data in this report generally comprise a description of the station and tabulations of basic data. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents is given. Records are published for the water year, which begins on October 1 and ends on September 30. A calendar for the 1972 water year is shown on the reverse side of the front cover to facilitate finding the day of the week for any date.

The description of the gaging stations gives the location, drainage area, period of record, type and history of gages, average discharge, extremes of discharge or contents, notations of revisions of previously published records, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. 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." 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. 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 stations where changes in water development during the period of record cause the figure to have little significance. The maximum discharge (or contents), the maximum gage height, and the minimum discharge if there is little or no regulation (or minimum contents) are given under "EXTREMES." The maximum and minimum daily discharge are given if there is extensive regulation. In the first paragraph headed "Current year," the data given are for the complete current water year unless

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otherwise specified. In the second paragraph under "EXTREMES" headed "Period of record:" the data given are for the period of record given in PERIOD OF RECORD paragraph. Reliable information concerning major floods or abnormally low flows that occurred outside the period of record is given in the third or last paragraph under "EXTREMES." Unless otherwise qualified, the maximum discharge (or contents) corresponds to the crest stage obtained by use of a water-stage recorder (graphic or digital) or crest-stage gage. If the maximum gage height did not occur at the same time as the maximum discharge (or contents), it is given separately. Information pertaining to the accuracy of the discharge records, to conditions that affect the natural flow at the gaging station, and availability of Water Quality records, is given under "REMARKS".

Previously published 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 "REVISIONS (FISCAL YEARS)" or "REVISIONS (WATER YEARS)" 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 fiscal or water years for which figures are revised in that report. In listing the years only one number is given; for instance, 1933 stands for either the fiscal year July 1, 1932, to June 30, 1933, or the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge were revised, that fact is brought out by notations after the year dates as follows: "(M)" mean that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given.

The daily table for stream-gaging stations gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in the discharge during a day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharge for several parts of a day. For digital recorders, the daily mean discharge is always the average of the discharges at each punched reading.

The monthly summary is given below the daily table. For stream-gaging stations 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 is also expressed in acre-feet (line headed "AC-FT").

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges for the calendar and water years; likewise, the minimums in this summary are minimum daily discharges.

Peak discharges and their times of occurrence and corresponding gage heights for many stations are listed below the yearly summary. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year can 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.

In a general footnote, introduced by the word "NOTE," certain periods are indicated 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-discharge relation, or of any other unusual condition at the gage are indicated only if they are a month or more in length and the accuracy of the records is affected. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

#### Accuracy of data

The accuracy of discharge data depends primarily on (1) the stability of the stage-discharge relation, or if the control is unstable, the frequency of discharge measurements,

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and (2) the accuracy of observations of stage, measurements of discharge, and interpretation 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 is 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. The same rounding rules apply to discharge figures listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversions, consumptive use, regulation, evaporation or other factors.

#### 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 records 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, and in 1739 and 1851 for July 1950 to June 1960.

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.

#### Other Data Available

Data collected at partial-record stations and at miscellaneous sites are given in three tables at the end of the surface-water records in this report. The first is a table of discharge measurements at low-flow partial-record stations, the second is a table of annual maximum stage and discharge at crest-stage stations, and the third is a table of discharge measurements of miscellaneous sites. Data for crest-stage partial-record stations in the State of Hawaii are not included in this report. They are included in an annual progress report entitled "An Investigation of Floods in Hawaii," copies of which may be obtained from the district office.

Information of a more detailed nature than that published for most of the gaging stations, such as 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.

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WATER QUALITY RECORDS

Collection and examination of data

Water samples for analyses usually are collected at or near gaging stations. The discharge records at these stations are used in conjunction with the computations of the chemical constituents and sediment loads in this report.

Descriptive statements are given for water-quality stations located at or near streamflow stations. Given are location, drainage area, periods of record for the various water-quality data, extremes of pertinent data, and general remarks, in a format similar to that used for streamflow gaging stations.

Data on the quality of surface water were collected daily at some sites and less frequently at others. Water-quality information is presented for chemical quality, microbiological, water temperature, and fluvial sediment. Chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium adsorption ratio, specific conductance, and pH. Microbiological information includes quantitative identification of certain bacteriological indicator organisms. Water-temperature data represent once-daily observations. Fluvial-sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material.

Prior to the 1968 water year, data for chemical constituents and concentration of suspended sediment were reported in parts per million (ppm) and water temperatures were reported in degrees Fahrenheit ( $^{\circ}$ F). In October 1967 the U.S. Geological Survey began to use the metric system; data for chemical constituents and concentrations of suspended sediment are now reported in milligrams per liter (mg/l) and water temperatures are given in degrees Celsius (centigrade,  $^{\circ}$ C). In waters with a density of 1.000 g/ml (grams per milliliter), parts per million and milligrams per liter can be considered equal. In waters with a density greater than 1.000 g/ml, values in parts per million should be multiplied by the density to convert to milligrams per liter. To convert temperatures in degrees Fahrenheit to degrees Celsius, see table 3 on the following page.

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per liter instead of milligrams per liter. (See "Definition of Terms," p. 3.)

Solutes

The methods of collecting and analyzing water samples for determining the kinds and concentrations of solutes are described by Brown, Skougstad, and Fishman (1970). 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 at several verticals across the channel to determine accurately the solute load.

Table 3.--Degrees Celsius (°C) to degrees Fahrenheit (°F)  
(Temperature reported to nearest 0.5°C)

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0.0	32	10.0	50	20.0	68	30.0	86	40.0	104
.5	33	10.5	51	20.5	69	30.5	87	40.5	105
1.0	34	11.0	52	21.0	70	31.0	88	41.0	106
1.5	35	11.5	53	21.5	71	31.5	89	41.5	107
2.0	36	12.0	54	22.0	72	32.0	90	42.0	108
2.5	36	12.5	54	22.5	72	32.5	90	42.5	108
3.0	37	13.0	55	23.0	73	33.0	91	43.0	109
3.5	38	13.5	56	23.5	74	33.5	92	43.5	110
4.0	39	14.0	57	24.0	74	34.0	93	44.0	111
4.5	40	14.5	58	24.5	75	34.5	94	44.5	112
5.0	41	15.0	59	25.0	77	35.0	95	45.0	113
5.5	42	15.5	60	25.5	78	35.5	96	45.5	114
6.0	43	16.0	61	26.0	79	36.0	97	46.0	115
6.5	44	16.5	62	26.5	80	36.5	98	46.5	116
7.0	45	17.0	63	27.0	81	37.0	99	47.0	117
7.5	45	17.5	63	27.5	81	37.5	99	47.5	117
8.0	46	18.0	64	28.0	82	38.0	100	48.0	118
8.5	47	18.5	65	28.5	83	38.5	101	48.5	119
9.0	48	19.0	66	29.0	84	39.0	102	49.0	120
9.5	49	19.5	67	29.5	85	39.5	103	49.5	121

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

### Temperature

Water temperatures are measured at most of the water-quality stations. For daily stations, the water temperatures are taken about the same time each day when sample is collected. Large streams have a small diurnal temperature change while small, shallow streams may have a daily range of several sdegrees and may follow closely the changes in air temperature.

### Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, 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 sub-divided 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 times 0.0027, the reader can assume that the sediment discharge for that day was computed by the sub-divided day method. For periods when no samples are collected, daily loads of suspended sediment are 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 are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, 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 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	1969	A2150
1965	1966	1968	2016	1970	A2160
1966	1996				

A In preparation.

SELECTED REFERENCES

- American Public Health Association, and others 1971, Standard methods for the examination of water and wastewater, 13th ed.: Am. Public Health Assoc., New York, 874 p.
- Brown, Eugene, Skougstad, M. W., and Fishman, M. J., 1970, Methods for collection and analysis of water samples for dissolved minerals and gases: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap A1, 160 p.
- Carter, R. W., and Davidian, Jacob, 1968, General procedures for gaging streams: U.S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. A6, 13 p.
- Colby, B. R., 1963, Fluvial sediments--a summary of source, transportation, deposition, and measurement of sediment discharge: U.S. Geol. Survey Bull. 1181-A, 47 p.
- Colby, B. R. and Hembree, C. H., 1955, Computations of total sediment discharge, Niobrara River near Cody, Nebraska: U.S. Geol. Survey Water-Supply Paper 1357, 187 p.
- Colby, B. R. and Hubbell, D. W., 1961, Simplified methods for computing total sediment discharge with the modified Einstein procedure: U.S. Geol. Survey Water-Supply Paper 1593, 17 p.

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- Corbett, D. M., and others, 1953, reprinted 1957, Stream-gaging procedures describing methods and practices of the Geological Survey: U.S. Geol. Survey Water-Supply Paper 888, 245 p.
- Guy, H. P., 1969, Laboratory theory and methods for sediment analysis: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap. C1, 58 p.
- 1970, Fluvial sediment concepts: U.S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. C1, 55 p.
- Guy, H. P., and Norman, V. W., 1970, Field methods for measurement of fluvial sediment: U.S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. C2, 59 p.
- Hem, J. D., 1970, Study and interpretation of the chemical characteristics of natural water, 2d ed.: U.S. Geol. Survey Water-Supply Paper 1473, 363 p.
- Langbein, W. B., and Iseri, K. T., 1960, General information and hydrologic definitions: U.S. Geol. Survey Water-Supply Paper 1541-A, 29 p.
- Ritter, J. R., and Helley, E. J., 1969, Optical method for determining particle sizes of coarse sediment: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap. C3, 33 p.
- U.S. Inter-Agency Committee on Water Resources, Subcommittee on Sedimentation, A study of methods used in measurement and analysis of sediment loads in streams. Published by the St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minn.
- \_\_\_\_\_ 1941, Methods of analyzing sediment samples: Rept. 4.
- \_\_\_\_\_ 1953, Accuracy of sediment size analyses made by the bottom withdrawal-tube method: Rept. 10.
- \_\_\_\_\_ 1957, The development and calibration of visual-accumulation tube: Rept. 11.

U.S. Inter-Agency Committee on Water Resources, Subcommittee on Sedimentation, A study of methods used in measurement and analysis of sediment loads in streams. Published by the St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minn.

\_\_\_\_\_ 1957, Some fundamentals of particle size analysis:  
Rept. 12.

\_\_\_\_\_ 1959, Federal Inter-agency Sedimentation instruments and report: Rept. AA.

\_\_\_\_\_ 1961, The single stage sampler for suspended sediment:  
Rept. 13.

\_\_\_\_\_ 1963, Determinations of fluvial sediment discharge:  
Rept. 14.



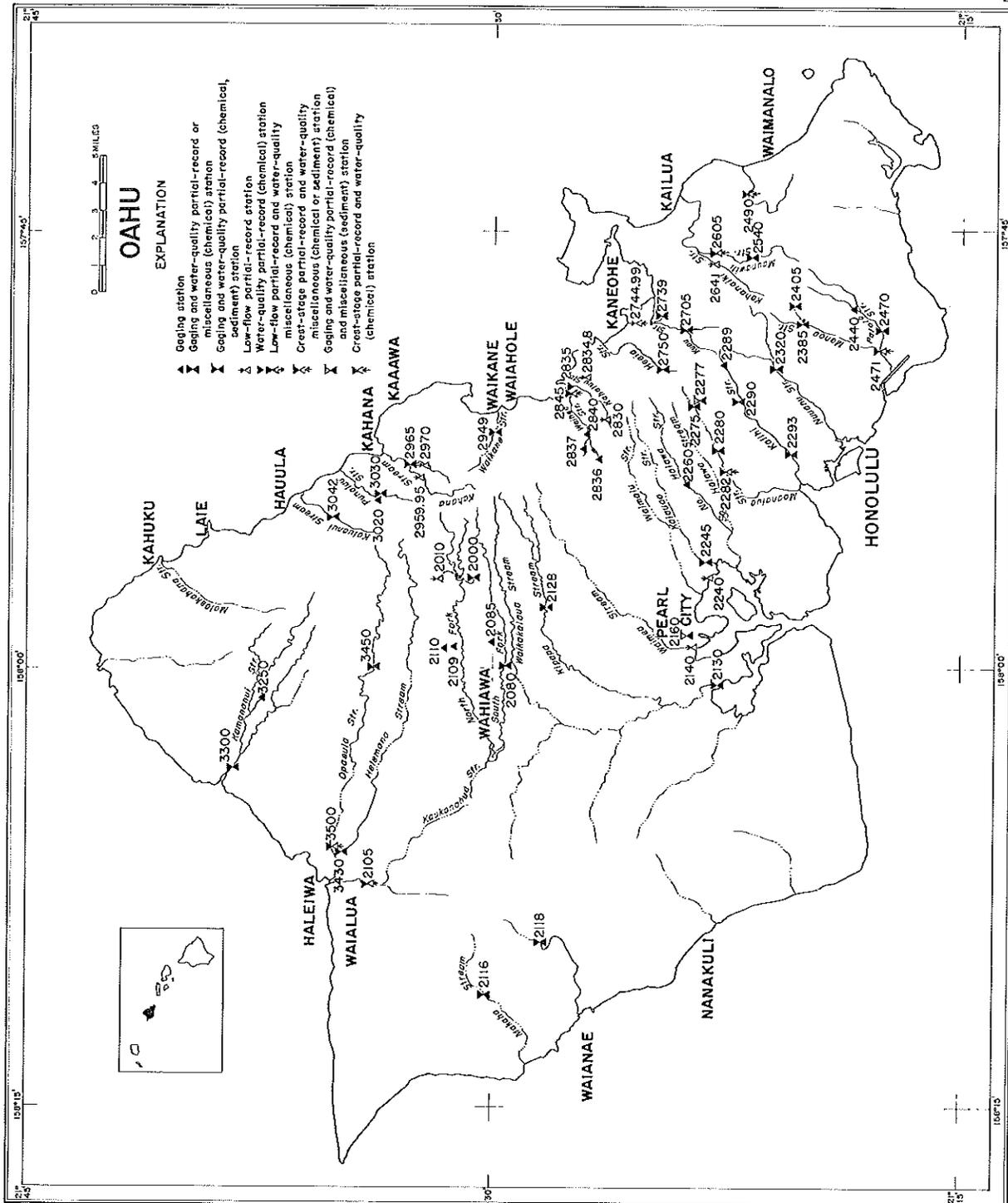


Figure 2.--Map of Oahu showing locations of gaging, water-quality, and partial-record stations.

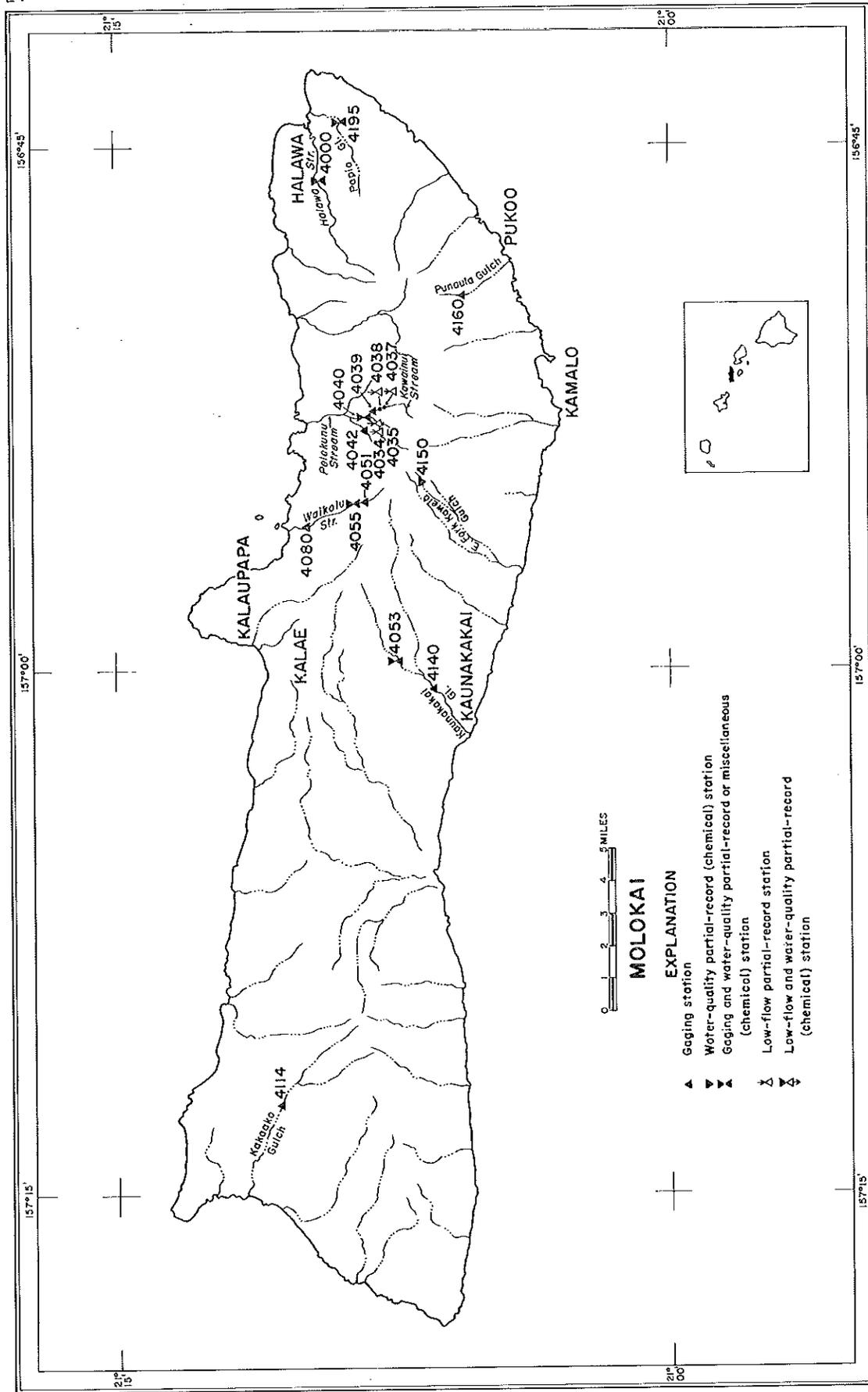


Figure 3.--Map of Molokai showing locations of gaging, water-quality, and partial-record stations.

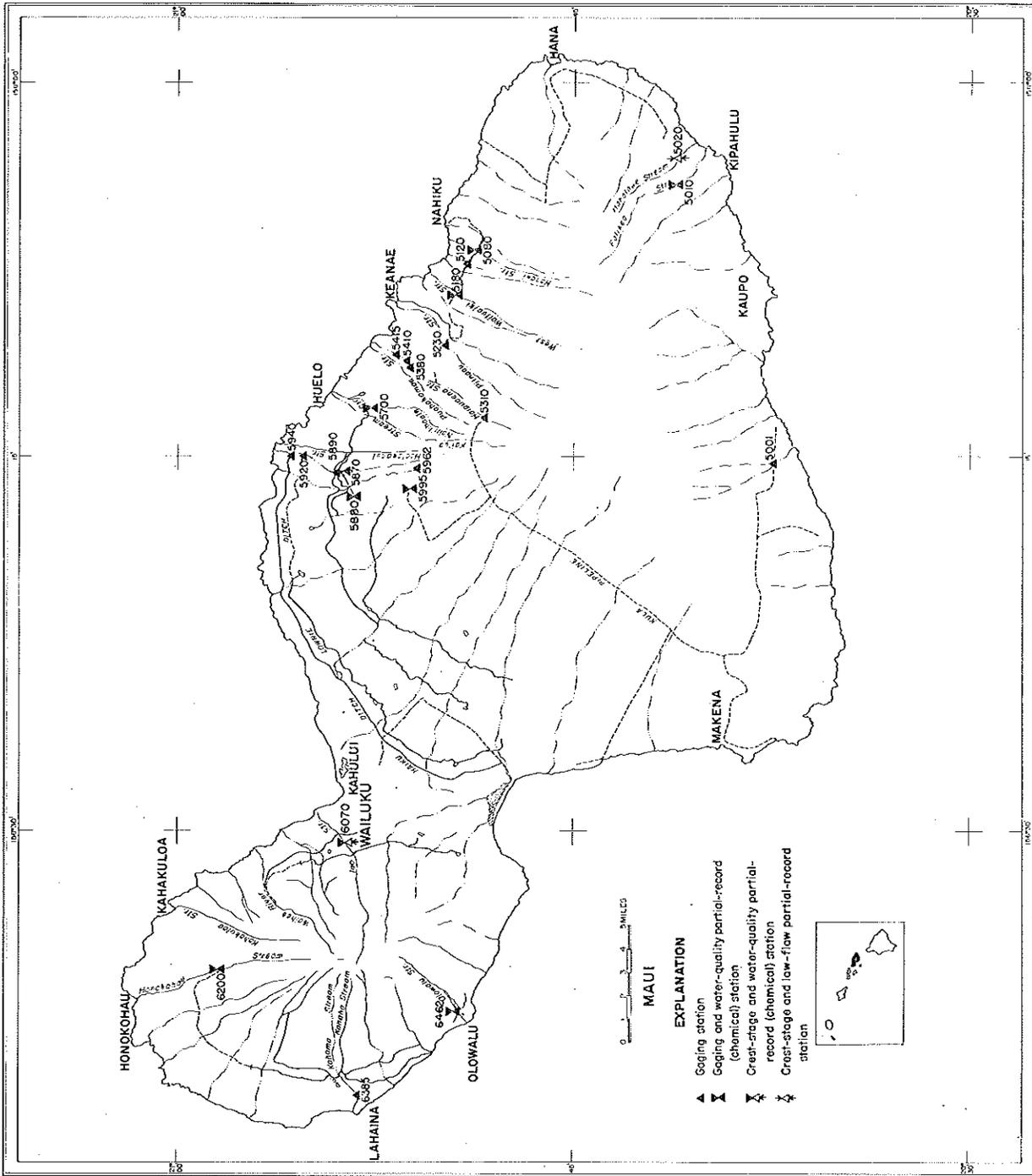


Figure 4.—Map of Maui showing locations of gaging, water-quality, and partial-record stations.

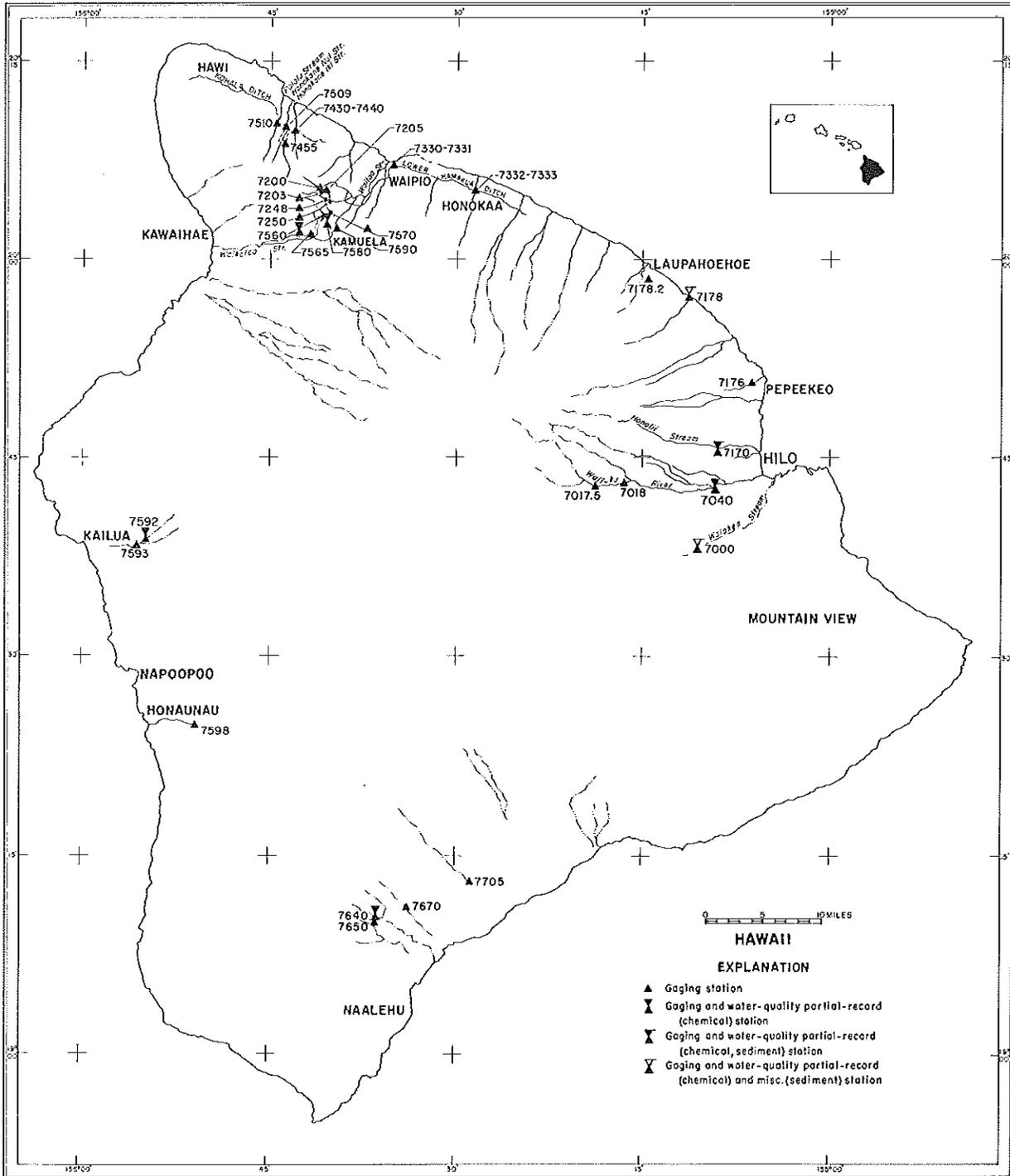


Figure 5.--Map of Hawaii showing locations of gaging and water-quality stations.

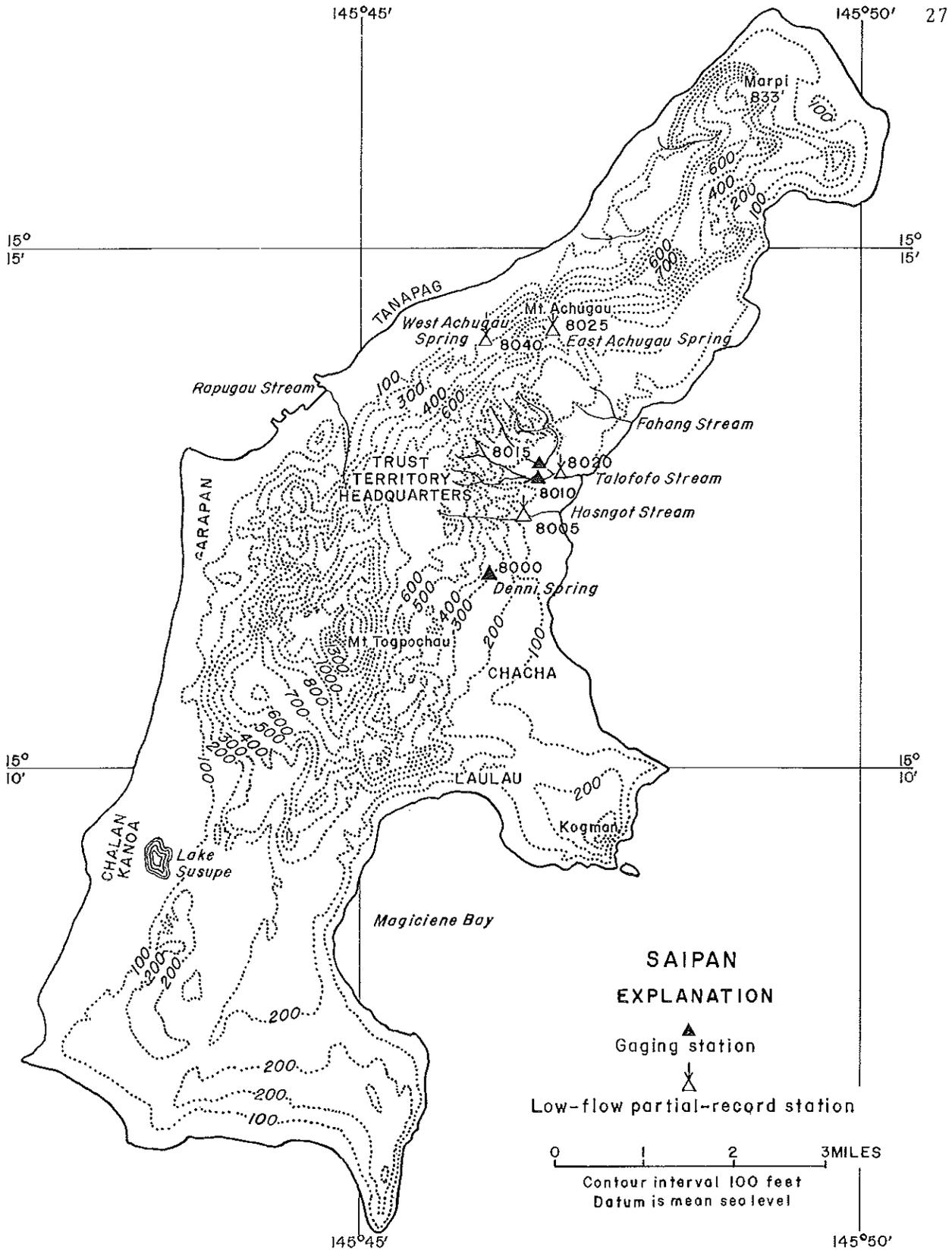


Figure 6.--Map of Saipan, Mariana Islands, showing locations of gaging and partial-record stations.



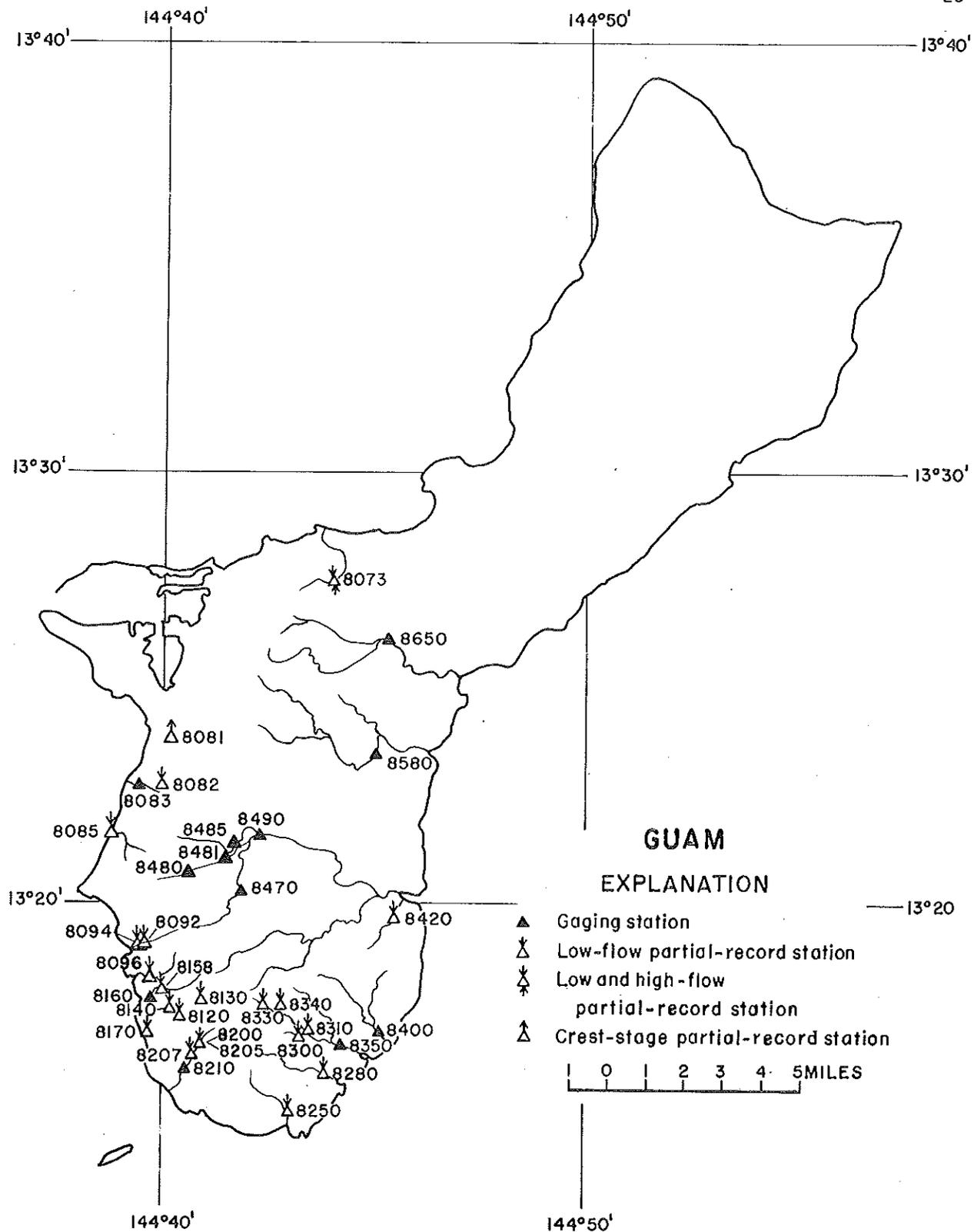
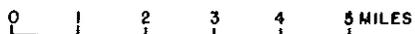


Figure 8.--Map of Guam, Mariana Islands, showing locations of gaging and partial-recard stations.

# BABELTHUAP PALAU ISLANDS

## EXPLANATION



Contour interval 100 and 500 feet  
Datum is mean sea level

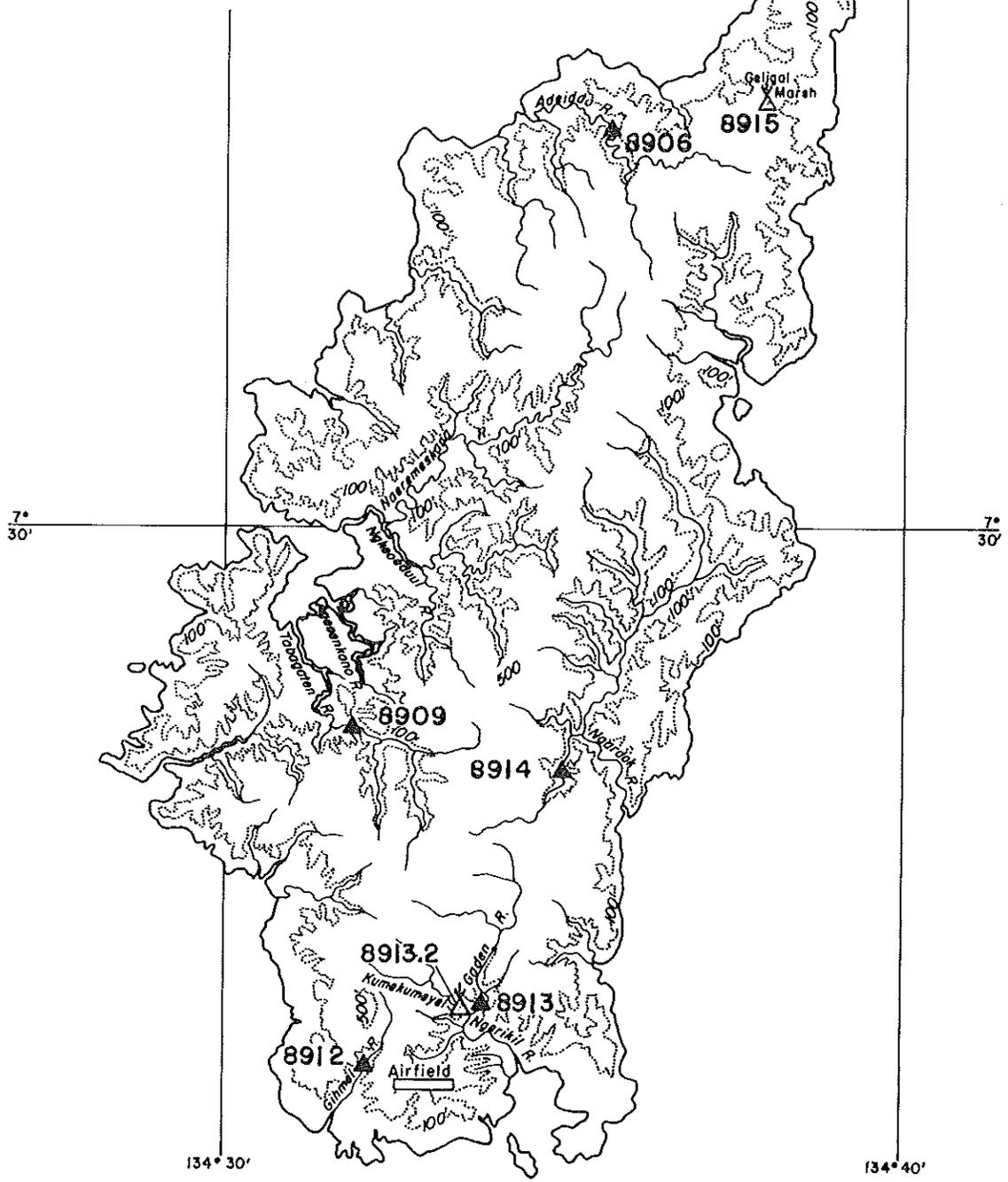


Figure 9.--Map of Babelthuap, Palau Islands, showing locations of gaging and partial-record stations.

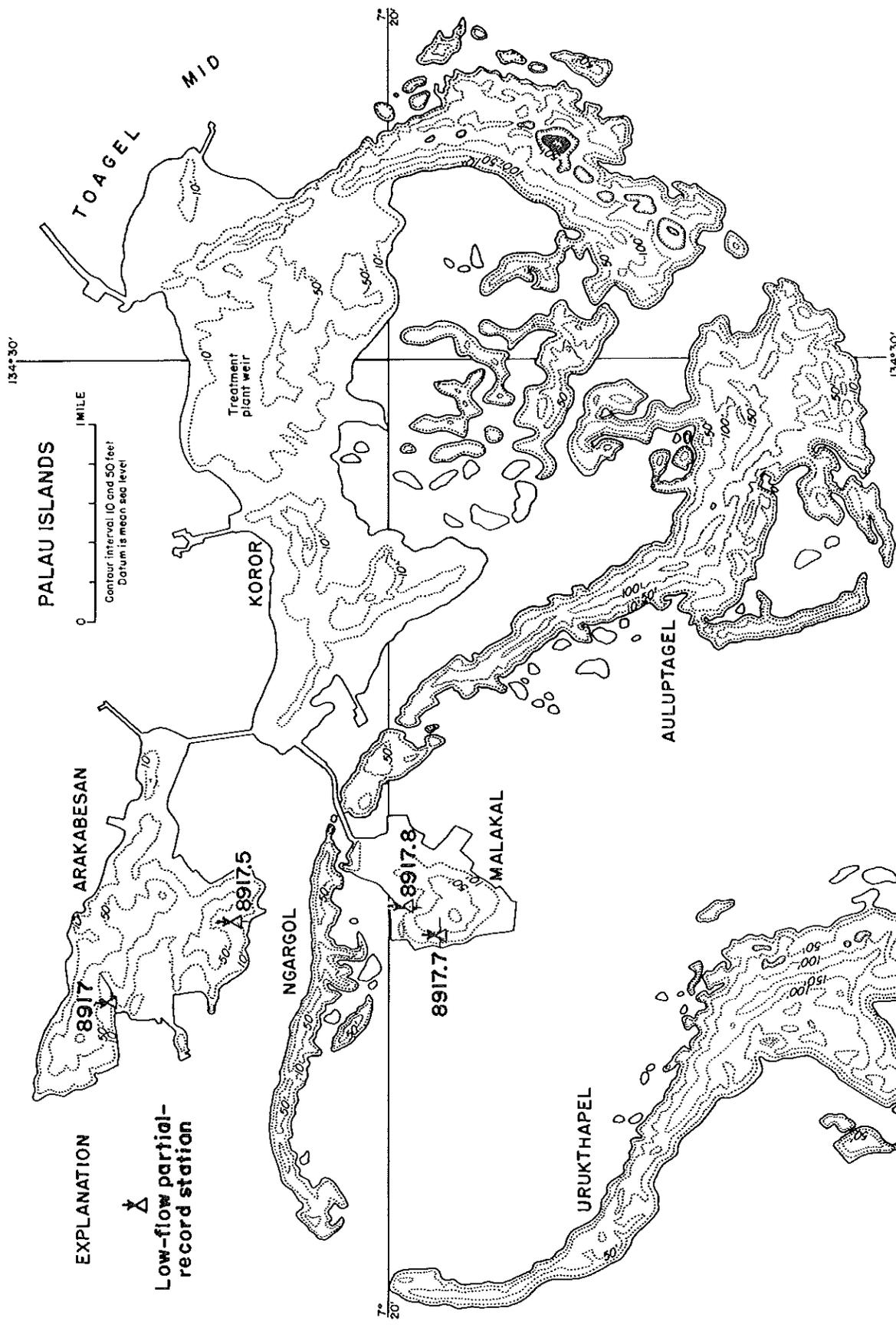


Figure 10.--Map of Arakabesan, Malakal, Palau Islands, showing locations of partial-record stations.

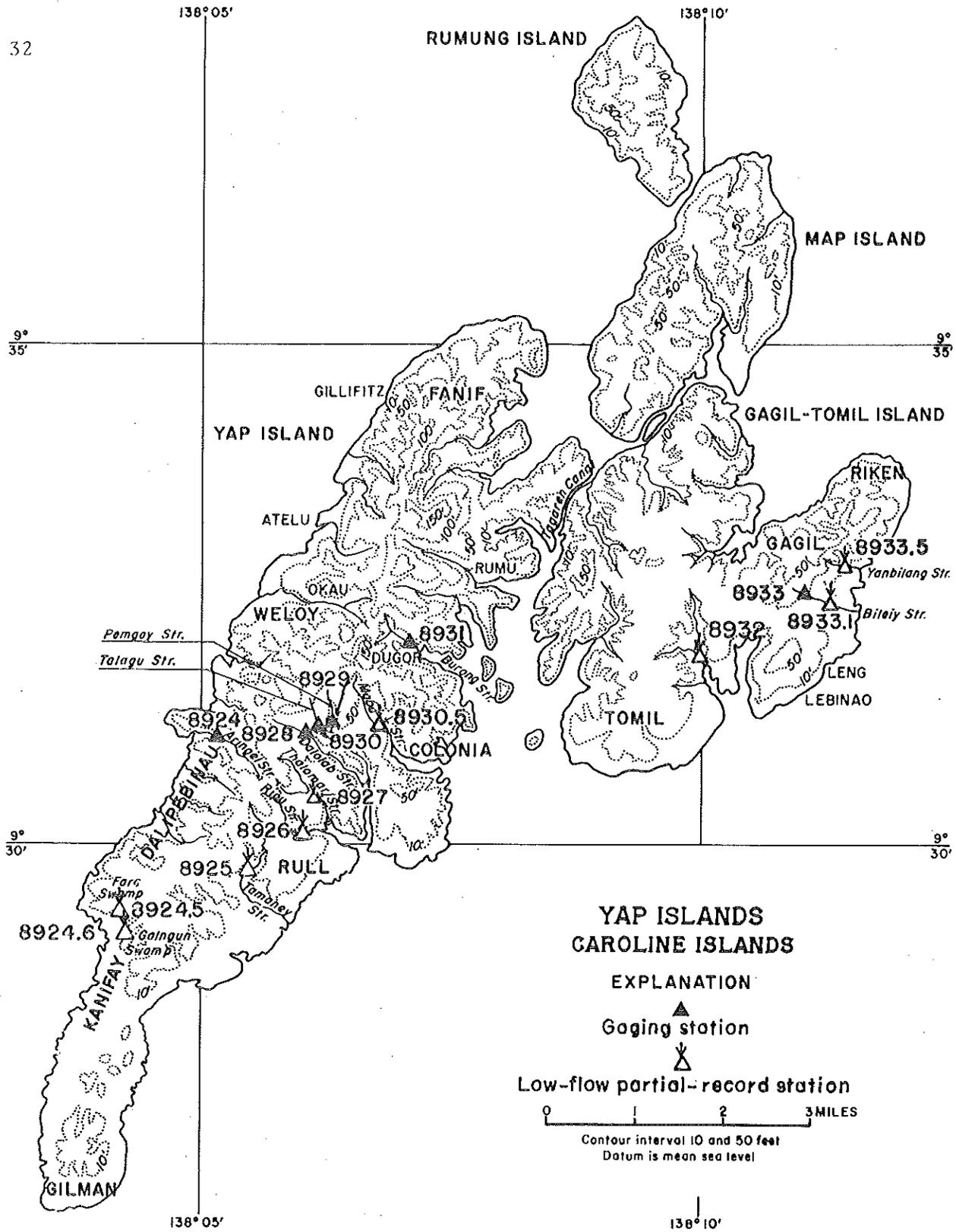


Figure 11.--Map of Yap Islands, showing locations of gaging and partial-record stations.



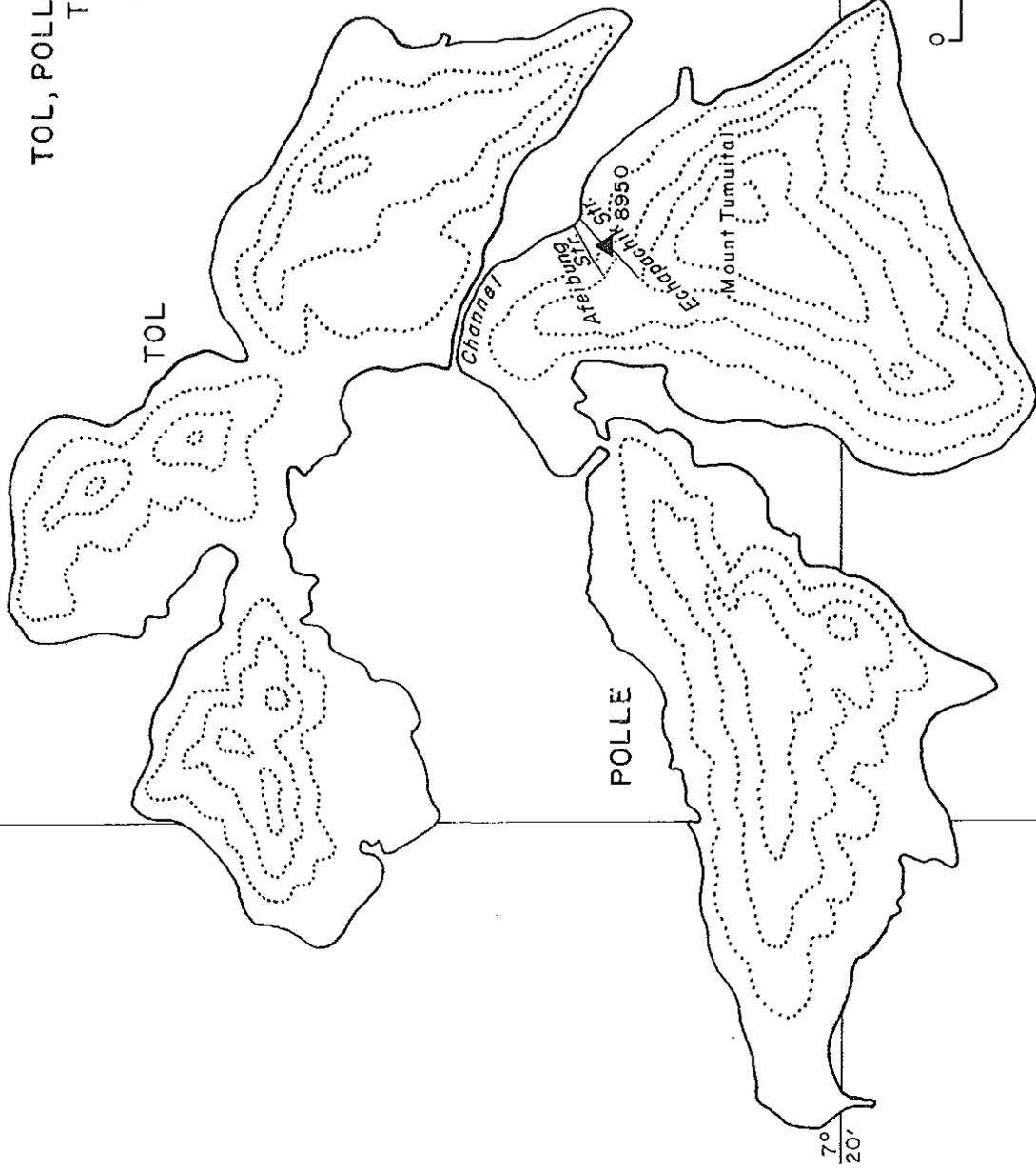
151°40'

# TOL, POLLE AND FALA-BEGUETS TRUK ISLANDS

## EXPLANATION

▲ Gaging station

151°35'



7°  
20'

7°  
20'



Contours are form lines and not elevation contours

151°35'

151°40'

Figure 13.--Map of Tol, Truk Islands, showing locations of gaging stations.

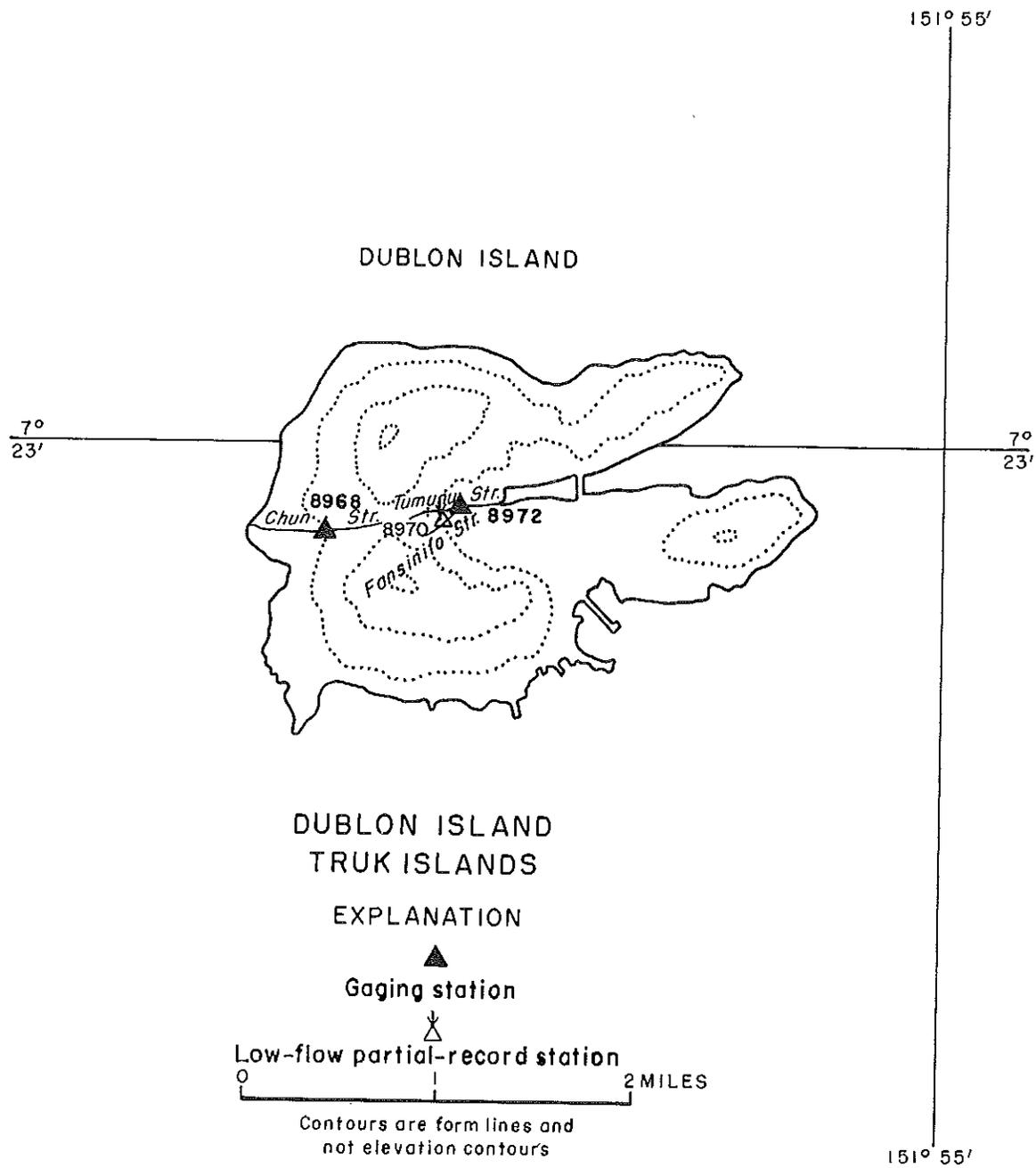


Figure 14.--Map of Dublon Island, Truk Islands, showing locations of gaging and partial-record stations.

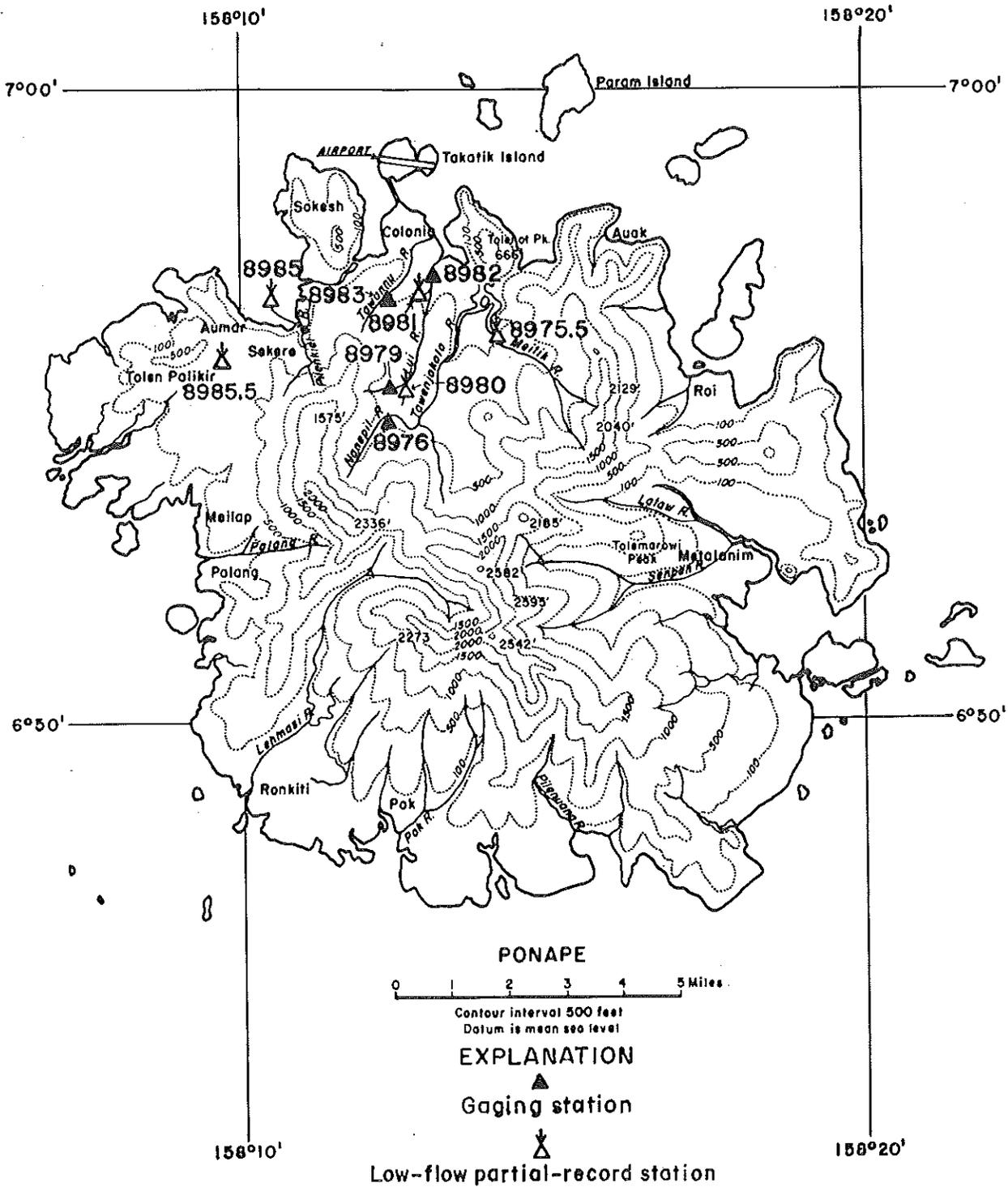


Figure 15.--Map of Ponape, showing locations of gaging and partial-record stations.



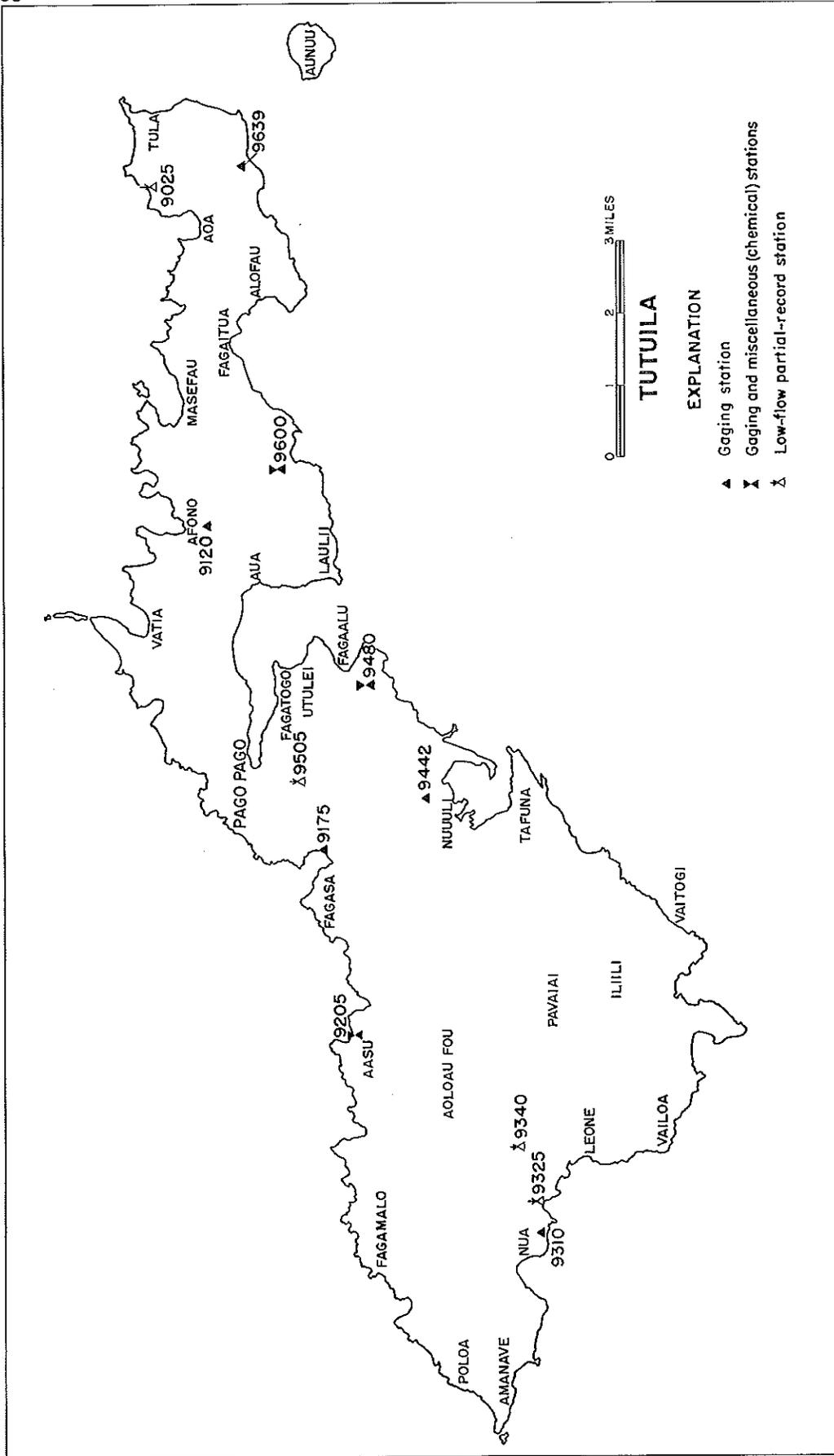
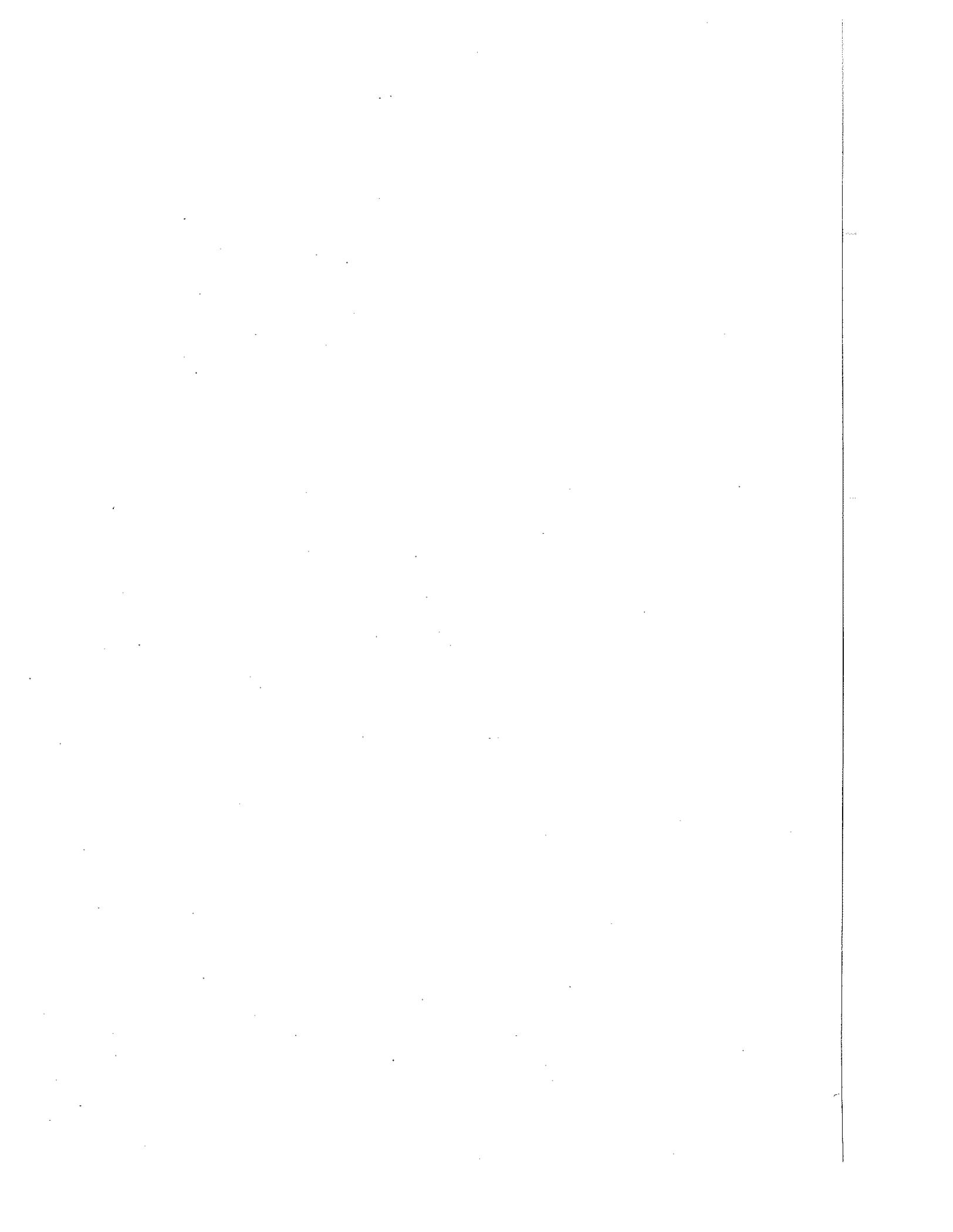


Figure 17 --Map of Tutuila, Samoa Islands, showing locations of gaging, water-quality, and partial-record stations.

PART 1. SURFACE WATER RECORDS



GAGING-STATION RECORDS

41

HAWAII, ISLAND OF KAUAI

16010000 Kawaikoi Stream near Waimea.

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

DRAINAGE AREA.--3.95 sq mi.

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.

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.

AVERAGE DISCHARGE.--55 years (1911-12, 1913-14, 1919-72), 34.9 cfs (25,290 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,110 cfs Mar. 2 (gage height, 8.09 ft), from rating curve extended as explained below; minimum, 3.0 cfs Sept. 24.  
Period of record: Maximum discharge, 11,300 cfs Jan. 13, 1967 (gage height, 15.33 ft), from rating curve extended above 470 cfs on basis of slope-area measurements at gage heights 12.12 and 13.43 ft; minimum, 1.14 cfs Sept. 21, 22, 1953.

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

REVISIONS (FISCAL YEARS)--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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	GCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	7.9	5.6	13	28	79	7.6	11	7.0	5.0	11	68
2	12	5.9	5.6	16	18	328	7.2	20	6.0	4.4	8.6	20
3	9.9	5.6	5.4	7.6	14	87	29	11	8.2	7.4	7.4	35
4	7.2	5.3	5.2	6.3	245	37	29	9.3	11	5.9	6.5	197
5	5.4	4.6	5.3	18	203	53	12	8.5	8.1	4.7	5.4	24
6	4.5	4.6	4.8	16	68	32	11	8.2	6.4	3.5	4.8	16
7	4.1	4.4	4.6	7.6	33	114	11	8.0	5.7	19	4.4	13
8	3.9	38	4.6	14	26	31	8.3	9.1	5.6	33	4.2	11
9	3.8	54	4.6	7.9	23	22	46	8.2	6.4	21	5.4	7.4
10	3.6	99	6.3	5.6	124	19	88	7.6	9.9	11	7.9	6.5
11	3.5	31	19	4.8	25	16	17	7.3	8.3	8.3	12	5.8
12	3.5	24	22	4.1	23	15	10	7.1	6.6	6.3	7.9	5.2
13	3.3	22	8.8	4.1	18	13	8.3	7.0	6.5	14	5.8	4.8
14	3.3	11	125	3.8	16	12	221	7.4	5.7	21	6.7	4.5
15	3.2	8.1	135	3.6	13	11	89	11	5.1	85	4.8	5.8
16	3.2	8.1	39	3.5	12	11	63	8.0	9.4	13	4.1	15
17	3.1	6.7	53	3.2	12	10	26	6.9	6.7	9.4	3.6	5.9
18	44	6.1	122	3.2	198	9.6	75	6.4	7.3	8.1	4.5	4.8
19	15	5.9	145	3.2	40	9.4	24	6.1	13	7.7	4.0	4.4
20	7.2	7.6	30	3.2	29	8.8	17	5.9	8.0	17	4.0	4.5
21	5.8	38	22	3.1	19	8.3	14	6.3	6.3	15	45	4.2
22	6.1	13	15	3.1	90	8.6	13	7.4	11	9.6	9.0	3.9
23	8.8	9.4	12	173	58	14	12	6.8	17	6.7	24	3.8
24	13	8.3	11	34	28	9.4	11	7.3	8.1	5.8	20	3.5
25	7.6	41	9.6	18	51	8.1	11	6.4	11	5.4	8.1	3.3
26	7.4	15	7.6	117	29	7.6	10	5.8	12	5.0	8.6	3.2
27	11	9.1	10	146	19	7.6	10	5.5	14	4.7	11	3.2
28	6.5	7.4	21	29	16	7.6	10	5.4	39	5.2	5.8	3.5
29	6.3	6.5	23	33	60	21	10	14	19	24	4.5	3.6
30	25	6.1	22	29	-----	18	12	11	7.4	18	31	4.5
31	13	-----	12	50	-----	9.4	-----	8.7	-----	9.6	19	-----
TOTAL	266.2	513.8	915.7	783.9	1,538	1,037.4	912.4	258.6	295.7	413.7	308.5	495.3
MEAN	8.59	17.1	29.5	25.3	53.0	33.5	30.4	9.34	9.86	13.3	9.95	16.5
MAX	44	99	145	173	245	328	221	20	39	85	45	197
MIN	3.1	4.4	4.6	3.1	12	7.6	7.2	5.4	5.1	3.5	3.6	3.2

CAL YR 1971 TOTAL 10,871.1 MEAN 29.8 MAX 414 MIN 3.1 AC-FT 21,560  
WTR YR 1972 TOTAL 7,739.2 MEAN 21.1 MAX 328 MIN 3.1 AC-FT 15,350

PEAK DISCHARGE (BASE, 2,100 CFS)--Mar. 2 (1600) 2,110 cfs (8.09 ft).

## HAWAII, ISLAND OF KAUAI

16014000 Kokee ditch near Waimea

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

PERIOD OF RECORD.--September 1926 to current year.

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.

AVERAGE DISCHARGE.--46 years, 24.2 cfs (17,530 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 105 cfs Dec. 2, 1929, Mar. 4, 1933; no flow at times.

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.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	12	5.8	6.4	42	49	22	24	13	12	13	30
2	13	7.9	5.1	16	29	16	21	32	12	10	11	38
3	9.4	6.5	5.1	8.6	24	13	28	23	15	12	8.9	27
4	7.9	5.6	4.9	8.8	55	18	49	22	19	11	7.9	66
5	6.0	4.9	4.5	15	87	22	28	20	14	9.4	6.7	31
6	5.1	5.1	4.2	25	68	33	25	19	12	7.9	6.0	27
7	4.5	4.7	4.2	14	54	57	26	18	11	14	5.6	16
8	4.2	27	4.2	26	45	44	22	19	10	40	5.1	19
9	4.2	54	4.5	16	44	34	36	18	11	29	5.6	12
10	3.8	54	5.2	11	70	42	72	17	15	19	9.2	9.6
11	3.8	47	15	9.4	46	52	33	17	15	15	12	8.2
12	3.6	26	20	8.4	39	48	24	16	13	13	9.2	7.4
13	3.6	29	11	7.9	33	45	20	16	12	14	7.2	6.7
14	3.6	14	24	7.2	30	42	45	16	10	30	7.4	6.2
15	3.4	10	29	6.7	26	40	91	20	9.6	50	6.0	6.5
16	3.2	9.4	27	6.9	24	36	81	17	13	22	5.1	24
17	3.2	7.9	26	6.9	23	35	33	15	11	14	4.5	10
18	15	6.7	16	8.6	69	33	24	14	10	12	5.1	7.9
19	31	6.2	12	6.5	59	31	14	13	16	11	6.7	6.5
20	10	6.7	13	5.6	42	30	20	13	13	16	13	6.2
21	7.4	29	15	5.3	33	28	18	13	10	19	53	6.0
22	6.7	17	12	5.1	70	28	15	15	12	12	18	5.3
23	7.1	11	15	32	74	40	13	14	23	9.2	29	4.9
24	14	9.9	16	35	48	29	23	14	13	8.2	29	4.7
25	8.6	36	17	29	65	26	28	13	14	7.4	11	4.5
26	7.9	23	14	63	59	24	27	12	16	6.9	7.6	4.3
27	14	12	12	80	40	24	26	11	17	6.5	15	4.2
28	8.2	8.6	21	43	34	23	26	11	36	6.5	7.9	4.3
29	7.4	7.4	20	42	64	43	25	17	31	21	6.0	4.5
30	29	6.7	17	41	-----	44	26	19	15	23	22	5.1
31	21	-----	5.0	55	-----	26	-----	15	-----	13	29	-----
TOTAL	278.7	505.2	408.3	645.3	1,396	1,055	981	523	441.6	494.0	382.7	413.0
MEAN	8.99	16.0	13.2	20.8	48.1	34.0	32.7	16.9	14.7	15.9	12.3	13.8
MAX	31	54	29	80	87	57	91	32	36	50	53	66
MIN	3.2	4.7	4.2	5.1	23	13	13	11	9.6	6.5	4.5	4.2
AC-FT	553	1,000	810	1,280	2,770	2,090	1,950	1,040	876	980	759	819

CAL YR 1971 TOTAL 8,089.98 MEAN 22.2 MAX 79 MIN 0 AC-FT 16,050  
 WTR YR 1972 TOTAL 7,523.8 MEAN 20.6 MAX 91 MIN 3.2 AC-FT 14,920

16019000 Waialae Stream at altitude 3,820 ft, near Waimea

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

DRAINAGE AREA.--1.79 sq mi.

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.

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

AVERAGE DISCHARGE.--31 years (1920-31, 1952-72), 22.4 cfs (16,230 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,880 cfs Dec. 19 (gage height, 5.39 ft); minimum, 1.4 cfs Aug. 17. Period of record: Maximum discharge, 4,530 cfs Jan. 16, 1921 (gage height, 8.44 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurement at gage height 4.60 ft; minimum, 0.99 cfs May 17, 18, May 30 to June 2, 1966.

REMARKS.--Records fair. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1937: 1921, 1922-32(M), 1953(M), 1954. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	12	10	16	6.9	78	2.4	5.2	4.7	3.4	2.3	11
2	11	11	18	14	5.8	262	2.4	4.7	3.6	12	2.4	6.9
3	10	10	11	6.9	5.2	73	2.8	4.2	3.0	5.0	2.2	24
4	6.6	6.9	6.1	7.7	325	17	3.4	3.8	2.6	7.0	2.0	164
5	4.7	5.6	6.4	7.2	176	25	3.2	3.6	2.3	3.0	1.6	8.1
6	3.8	5.0	9.5	6.9	17	13	4.4	3.2	2.2	2.2	1.9	6.1
7	3.6	7.2	8.6	50	10	25	3.8	3.2	2.2	2.5	2.1	4.7
8	3.6	34	19	58	7.7	11	3.2	3.0	1.9	3.5	1.9	3.4
9	3.4	76	48	8.6	24	8.6	18	2.8	2.1	4.0	1.8	2.8
10	3.2	53	25	6.4	187	6.9	26	2.6	2.3	20	1.7	2.4
11	3.2	29	46	5.5	14	6.1	7.2	2.6	2.1	25	1.7	2.2
12	3.2	22	27	4.7	14	5.2	5.0	2.4	1.9	5.4	4.0	2.1
13	3.0	16	42	4.2	29	5.0	4.4	6.5	1.8	4.5	3.0	1.8
14	3.0	11	212	3.8	16	4.4	332	6.6	1.7	5.0	2.5	1.8
15	2.8	23	95	4.0	6.6	4.4	188	7.2	1.7	35	1.8	23
16	2.8	11	39	3.6	6.6	4.0	89	4.4	1.9	7.0	1.6	11
17	2.8	10	39	3.8	6.4	3.8	20	3.4	2.6	15	1.4	4.7
18	7.2	16	241	3.6	30	3.6	206	2.8	7.0	6.0	7.4	3.4
19	5.8	20	306	3.2	16	3.4	28	2.4	6.0	4.0	4.0	3.6
20	6.6	14	28	3.0	25	3.2	11	3.0	4.0	2.8	27	6.1
21	7.2	28	16	2.8	11	3.6	9.0	29	3.0	2.5	36	6.1
22	7.2	14	12	2.6	224	3.7	12	7.2	15	2.3	6.4	5.0
23	11	11	16	242	69	12	8.6	14	7.0	2.2	3.6	3.4
24	17	17	11	24	56	5.0	6.6	7.2	5.4	2.2	3.0	2.8
25	17	103	8.1	9.0	33	3.8	5.8	4.2	11	2.2	2.6	2.4
26	29	17	6.4	8.6	14	3.4	5.5	3.2	8.0	2.1	2.3	2.2
27	11	11	20	37	10	3.2	4.7	2.4	5.0	2.1	2.2	1.9
28	7.2	7.5	25	10	8.1	3.0	5.2	2.4	5.6	2.0	1.9	8.0
29	22	8.1	30	9.0	113	2.8	6.4	5.5	6.4	2.2	1.8	5.2
30	48	10	20	9.5	-----	2.6	7.7	8.1	3.0	2.4	2.4	5.5
31	24	-----	10	9.0	-----	2.6	-----	6.9	-----	2.2	3.6	-----
TOTAL	307.9	573.5	1,413.6	584.6	1,468.3	607.7	1,031.7	167.7	127.0	196.7	140.3	335.6
MEAN	9.93	19.1	45.6	18.9	50.6	19.6	34.4	5.41	4.23	6.35	4.53	11.2
MAX	48	103	306	242	325	262	332	29	15	35	36	164
MIN	2.8	5.0	6.4	2.6	5.2	2.4	2.4	2.4	1.7	2.0	1.4	1.8
AC-FT	611	1,140	2,800	1,160	2,910	1,210	2,050	333	252	390	278	666

CAL YR 1971 TOTAL 10,693.5 MEAN 29.3 MAX 490 MIN 2.4 AC-FT 21,210  
 WTR YR 1972 TOTAL 6,954.6 MEAN 19.0 MAX 332 MIN 1.4 AC-FT 13,790

PEAK DISCHARGE (BASE, 1,300 CFS).--Dec. 19 (0700) 1,880 cfs (5.39 ft); Mar. 2 (1600) 1,710 cfs (5.14 ft).

NOTE.--No gage-height record June 14 to Aug. 15.

## HAWAII, ISLAND OF KAUAI

16031000 Waimea River near Waimea

LOCATION.--Lat 21°59'02", long 159°39'46", on right bank 1.2 miles upstream from Makaweli River and 1.8 miles north of Waimea.

DRAINAGE AREA.--57.8 sq mi.

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).

GAGE.--Water-stage recorder. Altitude of gage is 25 ft (by hand levels from mouth of Makaweli River). Prior to Oct. 5, 1911, nonrecording gage at site 1 mile downstream at different datum, Oct. 5, 1911, to Oct. 31, 1919, nonrecording gage at present site at different datum.

AVERAGE DISCHARGE.--34 years (1910-17, 1944-68, 1969-72), 135 cfs (97,810 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 9,240 cfs Mar. 2 (gage height, 11.29 ft), from rating curve extended above 3,000 cfs on basis of slope-area measurement at gage height 18.7 ft; minimum, 1.0 cfs Nov. 18, Aug. 8.

Period of record: Maximum discharge, 37,100 cfs Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 5,200 cfs on basis of slope-area measurements at gage heights 10.28 and 18.7 ft; practically no flow occasionally owing to upstream diversions.

Flood of Nov. 29, 1968, which destroyed the station, reached a stage of 16.50 ft, from floodmarks (discharge, 25,800 cfs, from rating curve extended as explained above).

REMARKS.--Records good. Several upstream diversions for power and irrigation. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	19	3.1	34	99	526	13	39	13	5.9	3.6	23
2	7.7	4.9	3.0	78	82	2,920	13	30	11	5.9	3.1	75
3	5.9	4.1	15	34	72	1,560	15	26	9.2	5.7	3.4	4.1
4	4.6	3.6	3.3	16	1,440	558	15	25	7.3	5.9	3.1	564
5	4.4	3.3	2.5	16	1,360	606	14	26	7.3	5.7	2.8	38
6	5.2	5.9	2.6	18	346	412	14	16	7.0	5.9	2.8	5.2
7	4.9	2.8	2.8	15	177	847	16	15	7.0	5.7	2.8	4.1
8	4.9	15	3.9	168	120	420	13	15	7.0	6.6	2.5	4.1
9	5.2	57	47	47	201	305	15	14	7.3	8.5	3.0	3.1
10	5.4	135	55	9.6	915	254	120	13	8.1	9.2	3.0	3.4
11	5.2	156	72	6.2	252	223	43	13	9.6	39	3.1	2.8
12	4.9	23	54	6.2	195	197	16	13	6.6	14	3.4	2.6
13	5.9	28	13	7.7	199	182	12	14	7.7	4.4	3.4	2.6
14	5.7	7.0	725	7.0	179	179	2,390	17	7.3	4.1	3.9	2.6
15	5.7	10	604	7.0	62	175	1,610	19	7.3	106	3.6	11
16	5.7	8.5	323	8.1	47	159	1,320	14	7.3	25	4.1	76
17	5.7	3.1	272	8.5	41	149	407	8.9	7.7	2.8	3.9	7.7
18	5.4	2.5	1,130	21	341	143	843	8.1	8.1	2.3	3.6	3.6
19	75	14	1,860	5.7	142	139	375	8.1	12	2.2	5.2	3.1
20	7.3	7.0	420	4.9	127	37	116	8.1	10	2.0	3.9	3.1
21	4.1	29	181	4.6	101	52	88	19	7.3	2.3	85	3.4
22	3.6	16	67	5.2	825	24	81	39	8.5	2.6	16	3.9
23	3.4	3.6	61	1,540	1,150	66	78	8.9	8.5	2.5	2.5	3.6
24	5.9	2.5	76	456	465	35	58	21	7.3	2.3	2.2	3.3
25	8.1	171	60	132	525	22	49	10	7.3	2.2	3.3	3.3
26	2.3	63	47	99	317	20	46	10	9.2	2.0	3.3	3.1
27	34	11	14	385	185	19	55	9.2	9.2	3.0	3.4	3.0
28	5.7	2.8	94	106	131	16	40	9.2	8.9	3.0	2.6	3.0
29	8.1	2.3	94	69	518	14	40	9.6	21	3.0	2.5	4.6
30	110	2.6	81	76	-----	16	42	12	8.9	3.3	2.8	4.4
31	81	-----	61	102	-----	14	-----	15	-----	4.9	5.4	-----
TOTAL	522.8	313.5	6,442.2	3,492.7	10,614	10,289	7,957	505.1	263.9	297.9	197.2	874.7
MEAN	16.9	27.1	208	113	366	332	265	16.3	8.80	9.61	6.36	29.2
MAX	118	171	1,860	1,540	1,440	2,920	2,390	39	21	106	85	564
MIN	3.4	2.3	2.5	4.6	4.1	14	12	8.1	6.6	2.0	2.2	2.6
CAL YR 1971	TOTAL 49,526.4	MEAN 136	MAX 2,780	MIN 2.3	AC-FT 98,240							
WTR YR 1972	TOTAL 42,270.0	MEAN 115	MAX 2,920	MIN 2.3	AC-FT 83,840							

PEAK DISCHARGE (BASE, 8,700 CFS).--Mar. 2 (1700) 9,240 cfs (11.29 ft).

16036000 Makaweli River near Waimea

LOCATION.--Lat 21°58'31", long 159°38'55", on left bank 0.7 mile upstream from mouth and 1.9 miles northeast of Waimea.

DRAINAGE AREA.--26.0 sq mi.

PERIOD OF RECORD.--July 1943 to current year. Records for October 1911 to June 1917 at site 0.2 mile downstream not equivalent owing to intervening diversion.

GAGE.--Water-stage recorder. Datum of gage is 18.2 ft above mean sea level (by stadia survey). Prior to June 16, 1959, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--29 years, 89.6 cfs (64,920 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 9,120 cfs Dec. 19 (gage height, 9.56 ft), from rating curve extended as explained below; minimum, 10 cfs Oct. 15-17.  
 Period of record: Maximum discharge, 15,900 cfs Apr. 15, 1963 (gage height, 12.25 ft), from rating curve extended above 3,200 cfs on basis of slope-area measurement at gage height 10.65 ft; minimum, 3.15 cfs July 19, 1951.

REMARKS.--Records good except those for period of no gage-height record, which are poor. Olokele ditch diverts all low flow from Olokele River 9 miles above station for irrigation in vicinity of Makaweli.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	30	32	122	39	421	30	35	24	19	21	58
2	22	25	22	130	35	1,020	30	29	22	62	22	27
3	18	21	28	74	33	577	35	29	20	28	20	15
4	16	16	27	138	964	238	28	28	19	44	18	491
5	14	14	19	78	701	232	26	27	18	19	16	37
6	12	14	29	99	140	156	31	25	18	14	16	34
7	12	20	49	273	84	216	34	32	18	16	18	24
8	12	73	54	471	99	138	24	26	17	23	16	21
9	12	51	125	150	244	114	152	23	17	25	15	19
10	12	99	85	121	742	99	99	22	22	120	15	23
11	12	91	130	101	146	94	35	22	18	142	15	17
12	14	54	97	94	130	88	33	22	17	33	40	16
13	12	37	62	88	168	81	24	101	16	29	27	15
14	11	26	532	84	112	93	1,410	77	16	30	26	15
15	10	81	378	88	73	85	1,120	57	15	190	14	49
16	10	26	161	88	65	49	735	36	15	45	14	73
17	10	35	124	90	96	43	355	21	21	90	14	27
18	58	46	1,180	90	103	40	935	21	43	40	58	23
19	28	32	2,040	84	105	37	381	20	35	33	18	21
20	29	28	390	72	302	36	209	29	19	27	80	19
21	26	104	174	35	86	33	171	167	16	24	157	19
22	21	29	153	32	843	33	176	43	88	22	29	19
23	25	24	158	1,140	277	97	118	52	42	20	17	18
24	30	25	90	239	254	39	92	35	35	20	14	16
25	30	488	76	103	202	34	58	24	62	20	12	16
26	117	70	65	73	132	32	43	19	44	20	12	15
27	37	38	188	86	107	33	48	18	26	20	12	15
28	19	27	163	59	95	32	43	21	31	20	12	46
29	47	24	178	48	418	31	56	42	34	21	12	22
30	125	37	142	46	-----	30	50	31	18	22	14	24
31	67	-----	94	40	-----	30	-----	29	-----	20	14	-----
TOTAL	906	1,649	7,198	4,436	7,015	4,281	6,681	1,165	806	1,258	788	1,234
MEAN	29.2	50.3	229	143	242	136	223	37.5	26.9	40.6	25.4	41.1
MAX	126	488	2,040	1,140	984	1,020	1,510	167	88	190	157	491
MIN	10	14	19	32	33	30	24	18	15	14	12	15
AC-FT	1,500	3,350	14,100	8,800	13,910	8,490	13,250	2,310	1,600	2,500	1,560	2,450

CAL YR 1971 TOTAL 43,903 MEAN 120 MAX 2,040 MIN 10 AC-FT 87,000  
 WTR YR 1972 TOTAL 37,367 MEAN 102 MAX 2,040 MIN 10 AC-FT 74,120

PEAK DISCHARGE (BASE, 4,700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-19	1400	9.56	9,120	4-14	1000	7.61	5,500
3- 2	1700	7.43	5,210				

NOTE.--No gage-height record July 12 to Aug. 11.

## HAWAII, ISLAND OF KAUAI

16049000 Hanapepe River below Manuahi Stream, near Eleele

LOCATION.--Lat 21°57'29", long 159°33'13", on left bank 200 ft downstream from Manuahi Stream and 4 miles north-east of Eleele.

DRAINAGE AREA.--18.5 sq mi.

PERIOD OF RECORD.--July 1917 to January 1921, December 1926 to current year. Prior to July 1952, published as "at Koula, near Eleele." Records for August 1910 to December 1916 at site 0.5 mile upstream not equivalent owing to intervening inflow.

GAGE.--Water-stage recorder. Datum of gage is 222 ft above mean sea level (by stadia survey). July 1, 1917, to Jan. 22, 1921, nonrecording gage and Dec. 16, 1926, to June 30, 1951, water-stage recorder, at same site at datum 1.00 ft higher.

AVERAGE DISCHARGE.--48 years (1917-20, 1927-72), 87.4 cfs (63,320 acre-ft per year),

EXTREMES.--Current year: Maximum discharge, 9,960 cfs Dec. 18 (gage height, 9.12 ft); minimum, 16 cfs May 19, 20, 27, 28.

Period of record: Maximum discharge, 39,000 cfs Apr. 15, 1963 (gage height, 14.87 ft), from rating curve extended above 7,600 cfs on basis of slope-area measurement of peak flow; minimum, 5.1 cfs May 21, 1954.

REMARKS.--Records good. Hanapepe ditch diverts 3 miles above station for irrigation in vicinity of Makaweli. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 740: 1931. WSP 1719: 1929-31(M). WSP 1937: 1918, 1919(M), 1920, 1921(M), 1927-28(M), 1930, 1936-37(M), 1941(P), 1943-46(P), 1947(M), 1948-52(P), 1955(M), 1956-57(P), 1958(M), 1960(M). WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	35	36	167	25	120	23	24	20	21	28	29
2	29	32	99	132	23	484	23	23	19	62	28	28
3	24	26	34	102	23	224	28	31	17	25	27	35
4	23	23	27	179	533	83	26	23	17	34	26	605
5	23	21	23	113	294	80	23	20	17	20	25	49
6	22	20	37	95	55	57	48	20	17	20	25	35
7	22	28	30	178	36	74	38	20	20	23	27	34
8	22	84	71	356	34	49	22	20	17	32	25	60
9	22	35	82	138	142	41	192	19	17	27	25	44
10	22	96	67	113	484	36	98	19	18	113	24	27
11	21	84	83	97	78	35	28	19	18	171	27	24
12	23	38	45	89	57	32	25	71	18	32	66	23
13	21	32	40	84	58	31	24	102	18	29	40	24
14	21	48	378	78	37	47	1,130	136	17	31	28	26
15	21	67	379	87	30	55	690	58	17	227	25	86
16	20	29	227	81	27	32	518	23	19	49	24	52
17	21	40	121	177	26	29	164	19	20	109	24	33
18	118	38	1,190	100	27	27	377	18	32	45	49	32
19	32	38	1,250	81	58	27	233	17	27	34	27	27
20	24	28	351	48	549	27	113	17	18	33	74	31
21	30	114	200	24	58	27	93	104	17	30	187	29
22	23	32	148	23	674	27	98	23	235	27	35	35
23	25	26	155	992	498	56	45	42	74	27	27	34
24	40	45	155	185	161	27	35	23	35	27	27	29
25	33	514	122	126	122	25	29	19	44	27	25	29
26	144	134	102	100	61	24	28	17	55	27	24	26
27	47	58	219	87	46	25	27	17	30	27	24	26
28	29	34	202	54	41	25	29	19	26	28	24	49
29	47	28	231	30	53	24	36	39	28	29	24	27
30	104	60	197	27	-----	23	29	23	22	30	31	33
31	60	-----	152	26	-----	23	-----	21	-----	27	33	-----
TOTAL	1,158	1,887	6,453	4,169	4,310	1,896	4,272	1,046	949	1,443	1,105	1,621
MEAN	37.4	62.9	208	134	149	61.2	142	33.7	31.6	46.5	35.6	54.0
MAX	144	514	1,250	992	674	484	1,130	136	235	227	187	605
MIN	20	20	23	23	23	23	22	17	17	20	24	23
AC-FT	2,300	3,740	12,800	8,270	8,550	3,760	8,470	2,070	1,880	2,860	2,190	3,220

CAL YR 1971	TOTAL 37,320	MEAN 102	MAX 1,390	MIN 20	AC-FT 74,020
WTR YR 1972	TOTAL 30,309	MEAN 82.8	MAX 1,250	MIN 17	AC-FT 60,120

## PEAK DISCHARGE (BASE, 3,600 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	1500	9.12	9,960	3- 2	1700	6.37	3,900
2- 4	0800	7.11	5,170	4-14	1000	7.44	5,830
2-22	2230	7.00	4,950				

16052500 Lawai Stream near Koloa

LOCATION.--Lat 21°54'11", long 159°30'21", on right bank at private road bridge, 0.9 mile upstream from mouth, and 2.4 miles southwest of Koloa.

DRAINAGE AREA.--6.62 sq mi.

PERIOD OF RECORD.--Annual maximum, water years 1962-63, July 1963 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 37.0 ft above mean sea level (by stadia survey). Apr. 24, 1962, to June 30, 1963, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--9 years, 8.43 cfs (6,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,280 cfs Dec. 18 (gage height, 8.16 ft), from rating curve extended as explained below; minimum, 0.63 cfs Aug. 30.  
 Period of record: Maximum discharge, 3,540 cfs Mar. 14, 1963 (gage height, 9.56 ft), from rating curve extended above 190 cfs on basis of slope-area measurements at gage heights 7.70 and 9.56 ft; minimum, 0.06 cfs Aug. 18, 1966.

REMARKS.--Records good. Several diversions above station for irrigation of sugarcane in vicinity of Lawai. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.6	3.4	5.7	7.1	6.2	3.5	8.0	5.1	2.5	1.2	.90
2	1.0	1.4	2.0	3.6	6.5	7.0	3.9	7.8	4.6	4.4	2.1	.80
3	1.0	1.4	2.0	3.4	6.2	25	3.6	7.8	4.4	3.9	1.3	.95
4	.96	1.6	1.6	3.6	14	14	3.6	7.6	4.1	2.7	1.1	27
5	.91	1.4	1.5	3.4	18	13	3.6	7.1	4.1	2.3	1.0	4.1
6	.96	1.2	2.0	3.2	9.4	12	4.5	6.7	3.9	2.5	.95	3.5
7	1.1	1.3	2.1	3.3	6.9	12	4.3	6.7	4.8	2.7	.95	3.6
8	.91	2.1	8.6	4.2	6.3	9.8	3.4	6.9	4.1	2.4	1.1	3.0
9	.77	2.0	2.0	3.2	8.0	9.4	6.0	6.5	3.1	3.5	1.6	4.0
10	.72	2.1	1.9	3.0	34	8.9	7.5	6.2	2.9	4.8	1.4	2.4
11	.77	2.7	1.6	2.9	9.6	8.9	4.6	7.6	2.7	4.8	1.2	2.1
12	.82	1.8	1.5	2.9	4.9	8.0	4.3	8.6	2.7	3.6	2.9	2.0
13	2.0	1.5	2.4	2.7	4.1	7.1	4.4	12	2.7	2.4	2.0	2.0
14	.96	1.4	5.5	2.6	4.0	5.1	121	22	2.8	2.5	1.7	1.9
15	1.4	1.4	6.8	3.5	3.5	5.4	105	13	3.1	6.3	1.2	4.3
16	.82	1.9	7.8	2.7	3.5	4.9	157	8.2	3.3	2.2	1.0	3.4
17	.77	1.6	11	3.5	3.4	4.8	27	7.1	2.8	2.1	.90	2.2
18	6.3	1.8	367	2.9	4.1	4.4	22	6.5	3.3	2.2	1.5	2.0
19	3.7	1.3	128	2.4	3.4	4.4	19	6.2	3.7	2.5	1.7	2.0
20	1.6	1.3	20	2.3	17	4.2	15	6.2	3.1	2.1	1.8	2.0
21	1.4	2.5	5.5	2.3	12	4.4	13	6.5	2.9	1.8	6.7	2.1
22	1.0	3.8	4.4	2.5	100	4.4	14	6.7	2.9	1.4	1.6	3.0
23	1.0	3.2	4.1	310	47	6.3	11	7.1	3.0	1.3	1.1	2.3
24	1.0	2.2	3.7	34	16	4.5	10	6.2	3.1	1.2	.95	2.0
25	2.0	5.2	3.4	20	11	4.1	10	4.9	3.4	1.2	.90	2.0
26	4.4	2.9	3.1	15	6.0	4.1	9.6	4.9	3.7	1.2	.95	1.9
27	3.2	2.1	3.5	12	5.1	5.7	9.1	4.4	3.5	1.1	1.1	1.6
28	1.7	1.8	3.7	10	4.8	6.2	8.9	4.4	3.2	1.2	1.0	1.7
29	2.5	1.8	4.5	9.1	4.6	4.9	8.9	5.2	3.2	1.2	.90	1.8
30	3.0	3.3	4.5	8.2	-----	3.7	8.4	5.4	2.8	1.2	1.1	1.6
31	2.1	-----	3.7	7.4	-----	3.6	-----	4.9	-----	1.6	.95	-----
TOTAL	51.87	61.6	622.8	495.5	380.4	289.4	626.1	229.3	103.0	76.8	45.85	94.15
MEAN	1.67	2.05	20.1	16.0	13.1	9.34	20.9	7.40	3.43	2.48	1.48	3.14
MAX	6.3	5.2	367	310	100	70	157	22	5.1	6.3	6.7	27
MIN	.72	1.2	1.5	2.3	3.4	3.6	3.4	4.4	2.7	1.1	.90	.80
AC-FT	103	122	1,240	983	755	574	1,240	455	204	152	91	187

CAL YR 1971 TOTAL 3,905.64 MEAN 10.7 MAX 422 MIN .62 AC-FT 7,750  
 WTR YR 1972 TOTAL 3,076.77 MEAN 8.41 MAX 367 MIN .72 AC-FT 6,100

PEAK DISCHARGE (BASE, 1,200 CFS).--Dec. 18 (1900) 2,280 cfs (8.16 ft).

## HAWAII, ISLAND OF KAUAI

16060000 South Fork Wailua River near Lihue

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

DRAINAGE AREA.--22.4 sq mi.

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.

GAGE.--Water-stage recorder. Altitude of gage is 240 ft (from topographic map). Prior to Nov, 18, 1918, at site 0.3 mile 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.

AVERAGE DISCHARGE.--55 years (1912-18, 1919-20, 1921-24, 1925-56, 1958-72), 119 cfs (86,220 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 17,700 cfs Dec. 18 (gage height, 17.49 ft); minimum, 4.3 cfs Sept. 25-28, 30.

Period of record: Maximum discharge, 87,300 cfs Apr. 15, 1963 (gage height, 22.90 ft), from rating curve extended above 13,000 cfs on basis of slope-area measurement of peak flow; minimum, 1.69 cfs Sept. 21, 1953.

REMARKS.--Records good. Lihue and Hanamaulu ditches divert upstream for irrigation of sugarcane in vicinity of Lihue. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	92	50	153	59	411	6.4	33	8.2	7.0	9.3	5.2
2	11	64	83	130	19	766	9.0	16	8.2	30	14	5.2
3	9.8	31	54	92	20	467	29	21	7.6	27	7.0	7.3
4	10	10	65	152	1,010	215	95	16	7.0	83	7.0	350
5	6.8	9.0	54	105	472	193	39	13	7.0	17	6.6	28
6	5.5	16	56	58	181	102	66	12	7.3	9.2	6.4	8.4
7	6.2	19	73	25	124	48	102	12	14	5.9	6.6	10
8	6.6	50	101	215	134	62	29	12	9.8	6.8	7.3	65
9	5.9	27	103	40	178	58	198	11	8.7	7.9	7.0	78
10	5.7	49	88	63	538	48	153	12	9.8	88	6.4	46
11	5.7	103	75	57	167	51	20	25	9.0	55	5.9	9.2
12	5.5	38	57	56	163	52	7.3	12	14	8.4	34	5.5
13	5.9	48	54	19	151	27	7.6	49	7.9	6.2	15	4.8
14	5.5	53	198	56	105	14	1,470	274	7.0	6.2	16	4.5
15	5.2	264	328	92	54	14	1,830	137	6.6	648	6.4	11
16	4.8	117	369	85	51	12	1,560	40	7.0	119	5.5	27
17	6.2	103	128	113	33	11	732	13	6.6	293	5.2	25
18	70	68	2,550	54	75	10	636	9.2	10	139	9.0	13
19	13	60	1,690	16	162	11	423	8.4	17	66	7.9	5.5
20	6.8	71	400	21	737	14	230	8.2	6.6	53	6.9	4.5
21	30	144	200	38	117	11	216	64	6.8	44	121	4.5
22	36	66	170	39	1,810	9.5	221	15	11	33	10	4.5
23	15	103	179	2,000	1,050	9.8	138	9.5	19	33	6.6	4.8
24	14	65	164	403	444	8.4	98	9.8	10	25	6.8	4.6
25	8.2	553	145	219	337	7.6	74	9.2	7.6	16	6.6	4.5
26	141	245	126	156	225	7.6	63	8.4	7.3	8.2	5.9	4.3
27	37	167	215	147	169	7.9	60	7.9	7.3	7.6	5.9	4.3
28	48	109	188	135	127	7.6	64	7.9	6.6	9.5	5.7	5.7
29	124	99	241	121	195	7.6	59	8.7	8.4	8.2	4.8	5.7
30	158	95	227	110	-----	7.3	62	11	7.9	8.4	5.2	4.6
31	139	-----	206	99	-----	6.8	-----	9.0	-----	8.2	5.5	-----
TOTAL	960.3	2,978.0	8,637	5,069	8,927	2,677.1	8,697.3	894.2	271.2	1,876.7	373.4	760.6
MEAN	31.0	99.3	279	164	308	86.4	290	28.8	9.04	60.5	12.0	25.4
MAX	158	553	2,550	2,000	1,810	766	1,830	274	19	648	121	350
MIN	4.8	9.0	50	16	19	6.8	6.4	7.9	6.6	5.9	4.8	4.3
AC-FT	1,900	5,910	17,130	10,050	17,710	5,310	17,250	1,770	538	3,720	741	1,510

CAL YR 1971 TOTAL 47,852.9 MEAN 131 MAX 2,550 MIN 3.1 AC-FT 94,920  
 WTR YR 1972 TOTAL 42,121.8 MEAN 115 MAX 2,550 MIN 4.3 AC-FT 83,550

## PEAK DISCHARGE (BASE, 5,800 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	1630	17.49	17,700	2-22	2130	16.50	12,400
1-23	0500	14.55	5,920	4-13	1000	14.84	6,620
2-4	0900	15.18	7,610	4-16	0300	15.33	8,120

HAWAII, ISLAND OF KAUAI

49

16061000 North Wailua ditch near Lihue

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

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

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.).

AVERAGE DISCHARGE.--40 years, 18.9 cfs (13,690 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 59 cfs Dec. 21, 1933, Apr. 24, 1934; no flow at times.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for power and irrigation in vicinity of Lihue.

REVISIONS (FISCAL YEAR).--WSP 770: 1933.

DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	20	22	16	12	26	18	18	19	21	22	20
2	19	20	24	14	12	25	21	18	17	23	20	20
3	19	20	21	15	16	17	23	20	16	23	20	20
4	19	19	22	23	25	12	23	18	16	22	19	24
5	18	19	20	19	12	12	22	18	16	20	19	20
6	18	19	20	16	5.5	12	27	18	16	20	20	21
7	20	20	21	23	8.1	17	23	19	21	21	20	21
8	18	21	21	24	17	14	22	19	17	21	19	22
9	18	20	23	19	22	14	27	19	20	21	20	22
10	18	21	22	19	23	14	23	20	20	24	19	20
11	18	21	22	16	15	13	22	20	19	22	19	19
12	19	21	20	16	13	13	22	20	17	16	23	19
13	18	20	22	16	14	13	23	20	17	16	23	18
14	17	23	25	15	12	13	29	23	17	15	21	18
15	17	23	25	16	13	13	28	23	17	23	20	21
16	17	21	23	15	13	13	25	19	19	20	20	19
17	17	22	22	17	13	13	13	16	19	24	20	18
18	20	22	26	15	23	13	22	18	21	18	24	20
19	18	21	18	15	24	13	18	17	20	16	20	19
20	21	22	4.1	14	26	14	17	16	19	15	23	19
21	22	22	1.3	15	18	14	13	23	18	13	24	20
22	20	20	.43	16	27	16	13	18	21	13	20	21
23	20	20	0	28	21	17	9.2	20	22	13	20	21
24	20	21	0	13	18	16	11	19	23	12	20	21
25	20	27	0	13	14	15	13	18	22	13	20	20
26	24	25	0	15	12	15	14	17	22	12	20	19
27	21	21	3.7	18	11	16	16	17	20	12	20	19
28	22	22	9.4	13	11	17	20	18	22	16	19	21
29	22	20	18	13	24	18	20	20	21	20	18	19
30	22	23	20	13	-----	16	18	20	22	21	20	20
31	22	-----	19	12	-----	17	-----	18	-----	21	19	-----
TOTAL	604	636	494.93	512	474.6	473	595.2	591	576	567	631	601
MEAN	19.5	21.2	16.0	16.5	16.4	15.3	19.8	19.1	19.2	18.3	20.4	20.0
MAX	24	27	25	28	27	26	29	23	23	24	24	24
MIN	17	19	0	12	5.5	12	9.2	17	16	12	18	18
AC-FT	1,200	1,260	962	1,020	941	938	1,180	1,170	1,140	1,120	1,250	1,190

CAL YR 1971 TOTAL 7,110.93 MEAN 19.5 MAX 38 MIN 0 AC-FT 14,100  
 ATR YR 1972 TOTAL 6,755.73 MEAN 18.5 MAX 29 MIN 0 AC-FT 13,400

## HAWAII, ISLAND OF KAUAI

16061200 North Wailua ditch below Waikoko Stream, near Lihue

LOCATION.--Lat 22°03'34", long 159°28'00", on left bank 380 ft downstream from Waikoko Stream, 8.1 miles west of Wailua, and 8.4 miles 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).

AVERAGE DISCHARGE.--7 years, 26.3 cfs (19,050 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 58 cfs Oct. 11, 1966; no flow Jan. 1-18, 1965.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River and Waikoko Stream for power and irrigation in vicinity of Lihue.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	22	26	23	16	34	22	23	22	23	22	20
2	23	22	26	22	16	34	24	23	20	25	21	21
3	22	21	26	21	19	29	28	24	20	24	20	22
4	22	20	25	27	43	24	26	23	20	25	20	29
5	21	20	24	24	26	23	25	22	19	23	20	24
6	21	20	24	22	16	22	30	22	20	22	20	26
7	22	21	24	28	17	28	27	23	24	23	20	26
8	21	22	25	30	24	24	26	22	21	23	20	26
9	21	22	27	25	29	22	33	22	23	23	20	27
10	20	23	26	24	31	21	28	25	22	28	20	24
11	21	22	26	22	24	20	26	26	22	26	20	24
12	22	22	25	22	22	19	26	25	21	21	24	22
13	21	22	25	22	22	19	26	26	21	22	24	22
14	20	25	30	20	19	19	39	28	20	20	22	22
15	20	28	25	23	19	19	38	26	20	30	21	26
16	20	26	29	21	19	18	34	23	21	25	20	23
17	20	27	27	23	17	18	30	22	21	28	21	22
18	24	26	36	21	25	16	33	21	23	24	24	23
19	21	25	37	21	28	16	30	20	22	22	22	22
20	22	25	25	20	32	18	30	21	21	22	24	22
21	23	27	19	19	25	16	27	27	20	20	26	23
22	21	24	14	20	36	19	25	22	23	18	22	24
23	20	24	14	37	32	22	22	23	24	17	22	24
24	20	25	13	24	29	19	21	22	25	16	22	24
25	21	33	10	21	26	19	22	22	24	16	21	23
26	26	29	5.5	21	23	19	22	21	24	14	21	22
27	22	26	20	23	21	19	23	20	23	14	22	22
28	22	26	22	19	19	21	24	21	23	18	21	24
29	22	25	20	19	31	22	22	22	23	20	20	23
30	24	28	26	17	-----	21	24	22	23	21	21	23
31	23	-----	25	16	-----	21	-----	21	-----	20	20	-----
TOTAL	672	728	137.8	697	706	667	413	710	655	673	663	705
MEAN	21.7	24.3	23.8	22.5	24.3	21.5	27.1	22.9	21.8	21.7	21.4	23.5
MAX	26	33	37	37	43	34	39	28	25	30	26	29
MIN	20	20	8.8	16	16	16	21	20	19	14	20	20
AC-FT	1,330	1,440	1,450	1,380	1,400	1,320	1,610	1,410	1,300	1,330	1,320	1,400

CAL YR 1971 TOTAL 8,461.8 MEAN 21.2 MAX 34 MIN 8.3 AC-FT 16,820  
 WTR YR 1972 TOTAL 8,420.8 MEAN 23.9 MAX 43 MIN 8.8 AC-FT 16,710

16062000 Stable storm ditch near Lihue

LOCATION.--Lat 22°04'09", long 159°26'46", on left bank 100 ft downstream from intake, 7.8 miles northwest of Lihue, and 7.9 miles 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).

AVERAGE DISCHARGE.--35 years (1937-72), 11.0 cfs (7,970 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 71 cfs Apr. 3, 1948; no flow at times each year.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for irrigation of sugarcane in vicinity of Lihue.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	.04	.12	.12	.04	.12	.59	0	30	.45	34	26
2	.45	.04	.12	.12	.04	.20	.59	0	27	.33	30	25
3	.45	.04	.12	.12	.06	.12	.59	0	27	.33	28	28
4	.45	.04	.12	.12	.72	.04	.45	0	26	.33	26	44
5	.45	.04	.12	.12	.12	.04	.45	0	25	.33	25	13
6	27	.04	.12	.02	.12	.04	.45	0	26	.33	27	.59
7	38	.04	.12	.12	.12	.04	.45	0	34	.22	26	.45
8	35	.04	.12	.12	.12	.04	.45	11	26	.22	25	.45
9	35	.04	.12	.12	.12	.04	.33	25	21	.22	26	.45
10	35	.04	.12	.12	.12	.04	.33	26	27	.46	23	.45
11	34	.04	.12	.12	.12	.04	.33	27	34	.04	24	.45
12	39	.04	.12	.04	.12	.04	.33	29	32	.04	32	.45
13	33	.04	.12	.24	.12	.04	.33	18	29	.04	32	20
14	32	.12	.12	.22	.04	.04	1.3	.52	27	0	27	27
15	31	.12	.12	.22	.04	.04	.84	.22	26	.09	24	37
16	32	.12	.12	.22	.04	13	.37	.12	9.1	.04	22	30
17	30	.12	.12	.22	.04	24	.22	.12	.33	.04	24	27
18	17	.12	.90	.22	.04	24	.22	.12	.33	.04	37	10
19	.04	.12	.83	.12	.04	24	.22	.12	.33	.04	26	.45
20	.04	.12	.22	.12	.12	23	.22	.12	.33	.04	33	.45
21	.04	.12	.22	.12	.12	22	.22	.12	.45	.04	41	.45
22	.04	.12	.12	.12	.26	11	.22	16	22	.04	32	.45
23	.04	.12	.12	.36	.12	.59	.22	32	38	.04	31	.45
24	.04	.12	.12	.04	.12	.59	.04	30	6.5	.04	30	.45
25	.04	.12	.08	.04	.04	.59	0	27	.59	.04	20	13
26	.04	.12	0	.04	.04	.59	0	26	29	.04	25	20
27	.04	.12	0	.04	.04	17	0	25	34	25	25	22
28	.04	.12	.04	.04	.04	20	0	26	37	33	22	31
29	.04	.12	.12	.04	.04	19	0	33	34	30	22	22
30	.04	.12	.12	.04	-----	7.8	0	33	18	31	30	22
31	.04	-----	.12	.04	-----	.59	-----	30	-----	30	24	-----
TOTAL	420.77	2.56	5.05	3.76	3.12	208.67	9.76	417.46	646.96	152.87	853	422.99
MEAN	13.6	.085	.16	.12	.11	6.73	.33	13.5	21.6	4.93	27.5	14.1
MAX	39	.12	.90	.36	.72	24	1.3	33	38	33	41	44
MIN	.04	.04	0	.02	.04	.04	0	0	.33	0	20	.45
AC-FT	835	5.1	10	7.5	6.2	414	19	828	1,280	303	1,690	839

CAL YR 1971 TOTAL 4,806.46 MEAN 13.2 MAX 59 MIN 0 AC-FT 9,530  
 WTR YR 1972 TOTAL 3,146.97 MEAN 8.60 MAX 44 MIN 0 AC-FT 6,240

16063000 North Fork Wailua River at altitude 650 ft, near Lihue

LOCATION.--Lat 22°04'02", long 159°26'21", on right bank 0.5 mile downstream from intake of Stable storn ditch and 7.6 miles northwest of Lihue.

DRAINAGE AREA.--5.29 sq mi.

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.

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

AVERAGE DISCHARGE.--56 years (1915-18, 1919-72), 73.5 cfs (53,250 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 5,940 cfs Dec. 18 (gage height, 9.87 ft); minimum, 0.92 cfs Aug. 26, 27.

Period of record: Maximum discharge, 13,200 cfs Nov. 12, 1955 (gage height, 13.53 ft), from rating curve extended above 2,300 cfs on basis of slope-area measurement at gage height 10.65 ft; minimum, 0.23 cfs June 5, 1968.

REMARKS.--Records fair. Since 1925, Hanalei tunnel (see sta 16100000) has diverted from Hanalei River basin into North Fork Wailua River above station; North Wailua and Stable storn ditches (see stas 16061000 and 16062000) divert water above station for power development and irrigation in vicinity of Lihue.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	83	88	67	39	356	23	36	5.6	40	27	5.9
2	73	81	162	57	37	375	37	35	3.6	76	4.6	4.5
3	62	63	90	52	68	166	99	39	3.4	75	3.3	4.1
4	54	57	100	117	823	103	59	31	3.3	68	3.2	224
5	56	57	66	73	227	95	34	30	3.4	42	3.3	25
6	23	52	73	59	103	76	137	28	3.6	38	3.4	76
7	14	70	102	135	97	89	68	31	21	48	3.6	67
8	4.0	95	83	139	121	62	36	19	3.3	50	3.6	87
9	4.1	84	147	70	153	56	173	6.1	47	44	3.6	62
10	4.1	120	103	66	322	52	80	13	29	402	3.6	43
11	4.0	95	104	54	94	50	44	8.6	8.3	168	3.6	36
12	26	86	74	48	74	48	41	26	5.0	68	34	34
13	4.0	66	104	44	77	45	47	46	3.8	64	32	14
14	3.5	205	186	41	62	43	809	270	4.0	57	4.1	2.3
15	3.4	193	207	45	62	42	781	101	4.1	404	2.9	16
16	3.4	123	202	40	60	27	464	56	23	126	2.9	1.6
17	3.4	139	135	76	53	11	328	49	40	228	2.9	1.1
18	266	101	794	43	167	11	317	44	56	102	30	28
19	70	96	807	39	214	10	221	41	49	82	3.3	29
20	82	90	270	36	367	10	179	47	37	78	42	34
21	111	120	146	34	145	9.5	117	153	35	62	83	33
22	57	76	112	33	448	23	111	37	45	54	6.7	42
23	60	70	106	678	245	42	76	21	16	50	4.7	44
24	60	75	60	97	151	30	62	15	66	46	4.8	36
25	72	366	74	67	101	29	54	9.5	68	48	10	18
26	197	190	70	62	61	28	50	8.3	30	45	5.2	.92
27	73	103	163	47	72	14	44	7.4	5.8	21	5.0	.92
28	92	104	103	53	66	7.2	46	8.6	16	7.6	5.0	11
29	81	50	115	51	261	7.2	55	20	6.3	3.3	4.8	2.5
30	141	144	88	45	-----	12	39	11	26	5.4	13	2.6
31	156	-----	79	42	-----	23	-----	4.8	-----	3.8	4.6	-----
TOTAL	1,966.2	3,294	5,045	2,550	4,810	1,953.9	4,631	1,252.3	667.5	2,606.1	363.7	985.44
MEAN	63.4	110	163	82.3	166	63.0	154	40.4	22.3	84.1	11.7	32.8
MAX	266	366	607	678	823	375	809	270	68	404	83	224
MIN	3.4	52	66	33	37	7.2	23	4.8	3.3	3.3	2.9	.92
AC-FT	3,900	6,530	10,010	5,060	9,540	3,880	9,190	2,480	1,320	5,170	721	1,950

CAL YR 1971 TOTAL 30,307.07 MEAN 63.0 MAX 1,090 MIN .92 AC-FT 60,110  
 WTR YR 1972 TOTAL 30,125.14 MEAN 62.3 MAX 623 MIN .92 AC-FT 59,750

PEAK DISCHARGE (BASE, 2,800 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-18	1430	7.83	3,250	3- 2	1600	7.67	3,090
12-18	1500	9.87	5,940	4-14	0430	8.58	4,130
2- 4	0800	8.65	4,230	4-17	0230	7.53	2,950
2-22	2130	7.78	3,200	7-10	0900	7.62	3,040

16068000 East Branch of North Fork Wailua River near Lihue

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

DRAINAGE AREA.--6.27 sq mi.

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.

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.

AVERAGE DISCHARGE.--57 years (1912-14, 1915-17, 1919-72), 48.7 cfs (35,280 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,860 cfs Dec. 18 (gage height, 8.22 ft); minimum, 16 cfs Sept. 15-18.

Period of record: Maximum discharge, 18,400 cfs Nov. 12, 1955 (gage height, 14.7 ft, from floodmarks), from rating curve extended above 2,700 cfs; minimum, 6.8 cfs July 3, 13, 1926.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	53	42	59	23	247	22	29	28	29	45	27
2	27	45	61	46	20	248	44	29	26	42	35	31
3	24	38	39	38	24	130	46	37	25	37	32	28
4	23	35	51	61	522	90	36	26	24	38	30	163
5	21	31	35	50	96	78	27	23	24	28	27	38
6	20	25	32	38	60	67	35	21	24	25	27	52
7	19	26	142	37	55	58	34	24	31	29	26	58
8	19	37	54	50	65	51	27	23	24	42	26	39
9	20	36	46	39	58	47	80	20	73	35	26	33
10	20	64	44	33	147	44	46	21	78	83	25	30
11	19	51	42	29	51	41	31	24	44	59	26	27
12	24	40	37	27	42	39	28	20	33	36	33	25
13	19	34	34	25	37	37	27	28	25	34	33	24
14	17	112	69	24	32	36	364	222	21	35	28	24
15	17	136	100	26	32	35	631	66	20	329	24	33
16	16	74	115	25	30	33	376	45	21	81	23	28
17	16	65	67	42	25	31	147	39	23	96	23	24
18	106	46	524	25	65	31	142	35	33	68	38	33
19	36	44	347	27	116	31	94	32	30	58	27	24
20	34	40	158	20	139	29	73	31	22	56	50	24
21	39	59	101	18	104	26	62	52	20	47	78	26
22	24	44	74	19	294	28	63	35	25	42	33	26
23	24	39	65	496	191	26	51	45	42	40	30	24
24	24	36	57	78	110	26	44	36	47	38	33	22
25	24	86	66	48	79	26	41	31	49	37	27	21
26	49	51	46	47	61	25	38	29	36	34	27	20
27	35	42	76	74	51	25	35	27	31	32	28	20
28	54	48	62	35	45	25	33	28	34	35	24	24
29	45	40	70	31	150	36	34	40	39	33	23	23
30	125	60	56	28	-----	24	31	35	37	38	35	22
31	104	-----	64	25	-----	22	-----	30	-----	33	27	-----
TOTAL	1,001	1,550	2,856	1,615	2,724	1,702	2,742	1,185	989	1,649	969	993
MEAN	34.9	51.7	91.9	52.1	93.9	54.9	91.4	38.2	33.0	53.2	31.3	33.1
MAX	125	136	524	496	522	240	631	222	78	329	78	163
MIN	15	26	32	18	23	22	22	20	20	25	23	20
AC-FT	2,140	3,070	5,650	3,200	5,400	3,360	5,440	2,350	1,960	3,270	1,920	1,970

CAL YR 1971	TOTAL	21,193	MEAN	58.0	MAX	1,100	MIN	13	AC-FT	42,020
WTR YR 1972	TOTAL	20,049	MEAN	54.8	MAX	631	MIN	16	AC-FT	39,770

PEAK DISCHARGE (BASE, 1,900 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	1600	8.22	4,860	4-15	1230	6.30	2,500
2-4	0830	6.83	3,050				

## HAWAII, ISLAND OF KAUAI

16069000 Wailua ditch near Kapaa

LOCATION.--Lat 22°04'34", long 159°24'04", on right bank 2,000 ft downstream from Wailua Reservoir, 5.2 miles west of Kapaa, and 7 miles 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).

AVERAGE DISCHARGE.--35 years (1937-72), 14.6 cfs (10,580 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 63 cfs June 4, 1937; no flow at times.

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.

## DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	8.5	13	1.4	4.6	1.4	8.7	12	14	19	25	17
2	16	15	12	1.3	4.8	1.6	8.7	12	14	19	25	17
3	16	14	12	1.3	5.2	1.9	8.3	12	14	20	25	17
4	16	14	12	1.0	4.0	1.8	5.0	12	14	20	25	17
5	16	11	12	1.9	2.9	1.8	3.2	12	14	20	25	17
6	16	10	12	1.1	2.6	1.9	3.1	12	14	20	25	16
7	16	10	12	1.3	2.4	1.9	2.6	12	14	17	25	14
8	16	16	12	1.3	2.1	2.1	2.6	16	14	12	25	11
9	16	19	12	1.3	1.8	2.1	2.2	18	12	12	25	11
10	15	19	9.0	1.3	1.6	2.2	8.8	18	4.1	12	25	11
11	16	19	4.8	1.3	1.8	2.4	12	18	3.2	12	25	11
12	16	19	4.6	1.4	1.8	2.4	12	18	2.9	12	25	11
13	16	19	9.6	1.9	1.8	8.6	13	18	2.7	16	25	11
14	16	19	12	6.8	1.8	9.1	5.5	19	8.6	20	25	11
15	22	10	12	9.6	1.8	9.1	1.0	19	11	10	25	12
16	24	5.2	12	9.8	6.1	9.1	.80	19	12	5.8	25	8.2
17	25	5.2	6.1	14	8.0	9.1	.60	19	12	5.7	25	8.3
18	25	5.2	3.6	16	6.0	9.1	.50	19	12	5.7	21	15
19	25	5.2	3.6	16	3.2	8.9	.40	19	12	5.7	17	18
20	25	5.0	3.2	16	3.2	12	.40	18	12	5.5	17	18
21	26	5.0	2.7	14	6.7	14	.40	18	13	5.3	17	18
22	26	5.0	2.5	11	6.6	14	.40	18	13	5.3	17	18
23	26	5.0	2.6	7.3	3.9	14	.40	18	13	5.3	17	18
24	27	4.8	2.7	1.6	3.2	15	.40	17	12	12	17	18
25	26	4.8	2.6	1.4	2.6	15	4.2	14	12	17	17	18
26	27	5.0	2.6	1.0	2.2	15	11	14	12	18	18	18
27	27	4.8	2.2	.80	2.1	15	11	14	17	22	18	17
28	27	4.6	2.1	2.4	2.1	15	12	14	19	25	17	17
29	14	4.6	1.8	4.6	1.9	15	12	14	19	25	17	8.4
30	3.6	8.4	1.6	4.6	-----	12	11	14	19	25	17	4.1
31	4.4	-----	1.4	4.6	-----	8.9	-----	14	-----	25	17	-----
TOTAL	603.0	300.3	214.1	158.40	98.8	249.6	162.20	491	365.5	454.3	669	426.0
MEAN	19.5	10.0	6.91	5.11	3.41	8.05	5.41	15.8	12.2	14.7	21.6	14.2
MAX	27	19	13	16	8.0	15	13	19	19	25	25	18
MIN	3.6	4.6	1.4	.80	1.6	1.4	.40	12	2.7	5.3	17	4.1
AC-FT	1,200	596	425	314	196	495	322	974	725	901	1,330	845

CAL YR 1971 TOTAL 5,501.34 MEAN 15.1 MAX 35 MIN .14 AC-FT 10,910  
 WTR YR 1972 TOTAL 4,192.20 MEAN 11.5 MAX 27 MIN .40 AC-FT 8,320

HAWAII, ISLAND OF KAUAI

16070000 Aahoaka ditch near Kapaa

LOCATION.--Lat 22°03'30", long 159°23'49", on left bank 10 ft upstream from tunnel entrance on canyon rim above Kaholalele Falls, 0.7 mile downstream from intake, 5.0 miles west of Kapaa, and 5.7 miles north of Lihue.

PERIOD OF RECORD.--December 1966 to September 1972 (discontinued).

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 400 ft (from topographic map).

AVERAGE DISCHARGE.--5 years (1967-72), 0.365 cfs (264 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 5.4 cfs Sept. 18, 1969; no flow many days each year.

REMARKS.--Records fair. Ditch diverts from North Fork Wailua River for irrigation of sugarcane in Aahoaka area between North and South Forks.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0		0	0	0	0	0			0		
2	0		0	0	0	0	0			0		
3	0		0	0	0	0	0			0		
4	0		0	0	.02	.31	0			0		
5	0		0	0	0	0	0			0		
6	0		0	0	0	0	0			0		
7	0		0	0	0	0	0			0		
8	0		0	0	0	0	0			0		
9	0		0	0	0	0	0			0		
10	0		0	0	0	0	0			0		
11	0		0	0	0	0	0			0		
12	0		0	0	0	0	0			0		
13	0		0	0	0	0	0			0		
14	0		0	0	0	0	.07			0		
15	0		0	0	0	0	.54			.06		
16	0		0	0	0	0	.37			0		
17	0		0	0	0	0	0			0		
18	.02		1.2	0	0	0	0			0		
19	0		1.2	0	0	0	0			0		
20	0		0	0	0	0	0			0		
21	0		0	0	0	0	0			0		
22	0		0	.03	0	0	0			0		
23	0		0	.80	.25	0	0			0		
24	0		0	0	.63	0	0			0		
25	0		0	0	0	0	0			0		
26	0		0	0	0	0	0			0		
27	0		.05	0	0	0	0			0		
28	0		.02	0	0	0	0			0		
29	0		0	0	0	0	0			0		
30	.02		.02	0	-----	0	0			0		
31	0	-----	0	0	-----	0	-----		-----	0		-----
TOTAL	.04	0	2.49	.83	.90	.31	.98	0	0	.06	0	0
MEAN	.001	0	.080	.027	.031	.016	.033	0	0	.002	0	0
MAX	.02	0	1.2	.80	.63	.31	.54	0	0	.06	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	.08	0	4.9	1.6	1.8	.6	1.9	0	0	.1	0	0

CAL YR 1971 TOTAL 9.85 MEAN .027 MAX 1.2 MIN 0 AC-FT 20  
 WTR YR 1972 TOTAL 5.61 MEAN .015 MAX 1.2 MIN 0 AC-FT 11

## HAWAII, ISLAND OF KAUAI

16071000 North Fork Wailua River near Kapaa

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

DRAINAGE AREA.--17.9 sq mi.

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

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

AVERAGE DISCHARGE.--20 years, 133 cfs (96,360 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 10,600 cfs Dec. 18 (gage height, 10.25 ft); minimum, 10 cfs Oct. 8.  
Period of record: Maximum discharge, 53,200 cfs Nov. 12, 1955 (gage height, 19.88 ft in gage well, 20.8 ft, from floodmarks), from rating curve extended above 3,700 cfs on basis of slope-area measurement of peak flow; minimum, 2.12 cfs Oct. 28, 1953.

REMARKS.--Records good. Wailua and Aahoaka ditches (see stas 16069000 and 16070000) divert above station for irrigation of sugarcane in vicinities of Kapaa and Wailua, respectively. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	173	160	158	70	745	72	64	29	55	39	13
2	77	141	210	146	66	723	111	63	32	94	27	16
3	70	103	139	114	64	430	136	75	38	74	18	18
4	49	92	150	175	1,420	289	110	66	37	107	16	316
5	30	86	193	143	425	250	78	63	17	58	13	55
6	26	76	104	139	229	209	171	68	18	52	13	113
7	14	94	239	150	150	206	133	68	39	59	12	113
8	13	121	153	260	219	173	84	52	24	80	13	116
9	22	93	170	146	211	148	245	24	85	70	14	90
10	20	145	163	130	484	134	161	23	191	345	14	68
11	12	150	150	100	166	130	71	51	95	231	15	58
12	16	110	125	77	130	136	62	27	44	103	41	40
13	13	87	125	70	125	130	57	62	14	84	33	33
14	12	105	235	64	101	136	1,150	444	14	75	23	16
15	12	427	298	68	96	150	1,560	183	16	725	12	24
16	12	258	356	77	100	130	1,210	94	20	227	11	32
17	12	234	220	101	81	57	604	74	42	321	12	19
18	177	178	1,410	86	227	54	528	64	67	186	39	33
19	107	158	1,590	62	279	50	414	67	64	156	17	41
20	92	146	663	58	545	52	308	77	49	143	18	41
21	116	206	371	55	251	36	266	182	54	121	152	43
22	82	141	268	56	944	38	244	67	67	103	26	46
23	55	134	235	1,370	783	76	173	43	57	96	17	56
24	61	121	200	390	451	61	132	41	103	60	20	39
25	69	440	176	206	288	64	125	35	116	28	19	43
26	213	252	150	150	220	67	114	36	67	42	17	17
27	103	181	256	217	195	55	103	39	33	43	17	14
28	118	166	222	132	168	30	103	41	31	23	15	23
29	127	156	217	118	426	39	122	45	47	20	13	22
30	245	201	186	110	-----	43	98	37	44	24	19	36
31	356	-----	183	88	-----	70	-----	34	-----	18	23	-----
TOTAL	2,416	4,977	9,229	5,216	8,914	4,935	8,745	2,311	1,554	3,823	738	1,594
MEAN	77.9	166	298	168	307	159	292	74.5	51.8	123	23.8	53.1
MAX	356	440	1,590	1,370	1,420	745	1,560	444	191	725	152	316
MIN	12	70	103	55	64	30	57	23	14	18	11	13
AC-FT	4,790	9,870	18,310	10,350	17,680	9,790	17,350	4,580	3,080	7,580	1,460	3,160

CAL YR 1971 TOTAL 53,343.5 MEAN 146 MAX 2,450 MIN 7.8 AC-FT 105,800  
WTR YR 1972 TOTAL 54,452 MEAN 149 MAX 1,590 MIN 11 AC-FT 108,000

## PEAK DISCHARGE (BASE, 4,100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	1900	10.25	10,600	2-22	2200	7.17	4,260
2-4	0830	8.21	6,040	4-14	0500	7.68	5,040

## 16071500 Left Branch Opaekaa Stream near Kapaa

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

DRAINAGE AREA.--0.65 sq mi.

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

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

AVERAGE DISCHARGE.--12 years, 2.87 cfs (2,080 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 134 cfs Dec. 18 (gage height, 6.04 ft); minimum, 0.21 cfs Oct. 15-18.

Period of record: Maximum discharge, 365 cfs Apr. 15, 1963 (gage height, 5.21 ft), from rating curve extended above 13 cfs; minimum, 0.09 cfs Sept. 27-30, 1968.

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

REVISIONS.--WSP 2137: Drainage area.

## DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.34	.83	.70	1.6	1.6	7.0	.87	1.4	.70	1.2	2.1	1.8
2	.28	.74	.78	1.4	1.6	7.0	1.5	1.4	.70	1.4	2.1	1.9
3	.26	.66	.74	1.4	1.6	5.4	1.3	1.4	.70	1.3	2.1	1.8
4	.26	.61	1.0	1.4	9.1	4.3	1.2	1.3	.70	1.4	2.0	3.0
5	.26	.61	.83	1.4	3.5	3.9	.87	1.2	.66	1.2	2.0	2.1
6	.26	.57	.74	1.4	2.5	3.5	.87	1.1	.66	1.2	2.0	2.1
7	.26	.53	.94	1.2	2.2	3.2	.78	1.1	.74	1.1	2.0	3.8
8	.26	.61	.87	1.1	2.0	2.9	.78	1.1	.66	1.4	1.9	1.7
9	.26	.53	.78	1.1	1.8	2.6	.83	1.0	.94	1.3	1.9	1.5
10	.26	.61	.74	1.1	2.3	2.6	.83	1.1	1.3	2.0	1.9	1.4
11	.26	.61	.74	1.1	1.8	2.4	.70	1.2	1.2	1.7	1.9	1.3
12	.28	.57	.74	1.0	1.7	2.3	.66	1.0	.87	1.4	2.1	1.2
13	.26	.53	.74	.94	1.6	2.1	.70	.94	.78	1.3	2.0	1.2
14	.26	.57	.87	.94	1.5	2.0	6.8	1.8	.83	1.2	1.9	1.2
15	.23	2.9	1.1	.94	1.4	1.9	11	1.3	.78	8.0	1.9	1.2
16	.21	1.8	1.8	.87	1.4	1.8	12	1.1	.78	3.0	1.9	1.2
17	.21	.87	1.4	1.7	1.4	1.7	5.4	.94	.78	3.1	1.9	1.2
18	.81	.78	2.0	1.2	1.5	1.6	4.2	.87	.78	2.9	2.0	1.2
19	.53	.74	11	.94	1.6	1.5	3.5	.83	.83	2.7	1.9	1.1
20	.36	.74	5.4	.87	1.7	1.4	3.0	.83	.83	2.6	1.9	1.1
21	.36	.87	3.8	.83	1.9	1.4	2.8	1.1	.83	2.6	2.5	1.1
22	.31	.74	3.0	2.0	9.4	1.4	2.7	.87	.83	2.5	2.0	1.1
23	.28	.70	2.6	16	8.5	1.4	2.4	.83	1.3	2.5	1.9	1.1
24	.28	.70	2.3	4.9	5.5	1.3	2.1	.83	1.3	2.4	1.9	1.0
25	.26	.78	2.0	3.3	4.2	1.2	1.9	.78	1.3	2.3	1.8	1.0
26	.28	.78	1.8	2.7	3.6	1.1	1.8	.74	1.1	2.3	1.8	1.0
27	.28	.70	2.2	2.4	3.2	1.1	1.7	.70	1.1	2.3	1.8	1.0
28	.51	.70	1.9	2.1	2.9	1.1	1.6	.74	1.1	2.2	1.8	1.0
29	.57	.70	1.8	2.0	3.1	1.2	1.6	.83	1.2	2.2	1.7	1.0
30	2.3	.70	1.7	1.9	-----	1.0	1.5	.74	1.1	2.3	1.9	1.0
31	1.5	-----	1.6	1.7	-----	.94	-----	.74	-----	2.1	1.8	-----
TOTAL	13.04	22.98	76.61	63.43	86.1	74.44	77.89	31.81	27.38	67.1	60.3	43.3
MEAN	.42	.77	2.47	2.05	2.97	2.40	2.60	1.03	.91	2.16	1.95	1.44
MAX	2.3	2.9	20	16	9.4	7.0	12	1.8	1.3	8.0	2.5	3.8
MIN	.21	.53	.70	.83	1.4	.94	.66	.70	.66	1.1	1.7	1.0
AC-FT	26	46	152	126	171	148	154	63	54	133	120	86

CAL YR 1971 TOTAL 680.74 MEAN 1.87 MAX 20 MIN .21 AC-FT 1,350  
 WTR YR 1972 TOTAL 644.38 MEAN 1.76 MAX 20 MIN .21 AC-FT 1,280

PEAK DISCHARGE (BASE, 140 CFS).--No peak above base.

## HAWAII, ISLAND OF KAUAI

16077000 Makaleha ditch near Kealia

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

AVERAGE DISCHARGE.--35 years (1937-72), 6.72 cfs (4,870 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 31 cfs Aug. 1, 1961; no flow at times.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	5.6	.14	.09	.24	1.5	.21	7.3	6.4	2.7	6.6	13
2	9.7	9.8	.09	.09	.21	3.2	.63	7.9	7.8	2.6	5.3	15
3	8.7	8.0	.09	.06	.17	2.9	.93	.42	8.9	2.6	5.3	12
4	9.4	7.8	.14	.06	6.0	1.6	.99	.38	10	2.5	7.3	19
5	8.2	6.9	.11	.06	2.2	.99	.63	.38	11	6.3	8.7	14
6	7.9	6.6	4.3	.11	1.1	.69	.52	.33	12	9.4	9.4	15
7	8.4	6.8	8.7	.11	.63	.52	.42	.33	16	10	9.7	20
8	7.5	11	.33	.09	.47	.38	.33	3.0	9.7	12	10	11
9	7.8	11	.28	.09	.21	.33	.33	7.9	15	11	10	.58
10	7.0	12	.24	.06	.25	4.6	7.5	8.0	.91	11	9.4	.52
11	7.6	12	.24	.06	.52	7.3	12	8.4	.87	12	10	4.8
12	11	9.2	.24	.06	.42	7.1	7.0	8.0	6.6	10	11	8.0
13	8.7	7.4	.24	.06	.38	7.3	.47	8.3	11	8.8	12	7.9
14	7.9	10	.24	.04	.28	7.3	6.9	10	9.7	11	10	7.6
15	7.4	6.3	.28	.04	.24	7.5	12	11	6.7	13	9.0	9.7
16	7.4	.42	.33	.04	.21	7.3	12	12	.42	1.3	7.6	9.0
17	7.3	.28	.33	.09	.21	7.1	3.6	10	.42	.99	7.6	7.9
18	9.8	.21	8.8	.06	.28	7.0	2.2	9.1	.42	.87	16	9.9
19	10	.17	6.7	.06	.42	7.4	1.3	8.4	6.9	.69	9.0	8.3
20	13	.14	2.0	.06	.47	7.3	.87	8.0	9.4	.58	15	9.2
21	16	.17	.93	.06	.56	6.9	.58	11	8.9	.52	12	11
22	11	.13	.47	.15	4.5	7.0	.47	9.7	8.4	.47	11	9.5
23	11	.09	.28	10	5.9	7.3	.33	11	11	.42	10	8.7
24	10	.09	.21	3.6	3.5	7.0	.28	11	15	3.4	14	9.1
25	10	.09	.14	1.4	1.9	7.0	.24	9.0	15	8.4	9.1	8.6
26	16	.09	.11	.69	1.2	7.0	.24	8.0	12	7.9	13	7.8
27	12	.09	.09	.47	.74	7.1	.21	7.6	11	7.6	11	7.8
28	11	.09	.09	.38	.52	7.4	.21	8.6	12	8.3	8.7	11
29	7.6	.09	.09	.33	.66	10	.21	10	13	8.2	7.9	11
30	.24	.09	.09	.28	-----	3.9	.21	6.5	10	8.8	15	10
31	.21	-----	.09	.24	-----	.21	-----	6.4	-----	8.3	13	-----
TOTAL	281.75	132.64	36.41	18.99	34.39	160.12	73.81	227.94	266.44	191.64	313.6	296.90
MEAN	9.09	4.42	1.17	.61	1.19	5.17	2.46	7.35	8.88	6.18	10.1	9.90
MAX	16	12	8.8	10	6.0	10	12	12	16	13	16	20
MIN	.21	.09	.09	.04	.17	.21	.21	.33	.42	.42	5.3	.52
AC-FT	559	263	72	38	68	318	146	452	528	380	622	589

CAL YR 1971 TOTAL 2,028.69 MEAN 5.56 MAX 20 MIN 0 AC-FT 4,020  
 WTR YR 1972 TOTAL 2,034.63 MEAN 5.56 MAX 20 MIN .04 AC-FT 4,040

16079000 Kapahi ditch near Kealia

LOCATION.--Lat 22°06'09", long 159°22'28", on right bank 500 ft downstream from intake and 4.0 miles 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 1913 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.

AVERAGE DISCHARGE.--54 years (1917-20, 1921-72), 6.48 cfs (4,690 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 138 cfs Feb. 6, 1913; no flow at times.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.31	.14	.38	.03	.03	.45	1.6	1.3	.99	14	7.6	9.1
2	.25	.14	.38	.01	.01	.56	1.1	1.3	.99	11	8.4	10
3	.25	.14	.31	.01	.25	.25	.58	5.5	.99	11	9.4	6.2
4	.45	.19	.38	.10	1.4	.19	.45	2.5	.99	10	6.4	18
5	1.5	.10	.38	.10	.14	.19	.45	8.7	.90	7.3	4.9	9.0
6	2.0	.10	4.3	.10	.14	.19	.45	13	.90	2.4	4.9	11
7	.45	.14	15	.06	.14	.19	.45	13	4.5	.58	4.4	15
8	1.3	.19	20	.06	.10	.25	.38	11	1.2	.51	4.6	9.6
9	.45	.14	19	.03	.10	.25	.45	5.6	1.2	.45	4.7	12
10	.45	.19	6.6	.01	.38	.19	.38	6.3	.79	.38	4.4	11
11	.38	6.2	.25	.01	.10	.19	.38	12	.58	2.6	4.7	7.4
12	1.6	7.8	.19	.01	.10	.14	2.8	6.6	.51	.31	6.8	4.9
13	3.2	6.6	7.5	0	.10	.03	.45	8.2	.51	.31	7.2	4.7
14	2.9	11	20	0	.10	5.4	1.7	9.8	2.4	.45	5.0	4.4
15	2.8	8.1	24	0	10	5.7	3.1	11	.82	1.4	4.4	5.8
16	2.8	.25	23	0	13	5.9	2.0	10	.74	.14	4.1	5.0
17	2.8	.19	6.3	11	12	6.1	.39	7.4	.74	.14	4.1	4.6
18	6.3	.19	3.3	14	3.2	5.7	.33	6.6	.66	.14	9.7	5.6
19	5.0	.14	.90	13	.64	5.7	.25	6.1	.66	.14	4.9	4.6
20	6.7	.10	.31	12	.19	5.6	.14	6.1	2.6	.10	9.4	4.5
21	8.3	.14	.25	7.8	12	5.4	.06	9.9	.58	.10	7.0	4.2
22	.38	.14	.19	.51	9.3	5.4	.03	6.6	.51	.10	6.4	3.9
23	.31	.14	.14	3.0	.51	5.6	.01	9.5	.51	.06	5.6	3.8
24	.25	.14	.06	.38	.31	5.2	.01	10	.51	6.5	8.5	3.5
25	.25	.19	.03	.25	.25	5.0	.01	6.4	.51	6.4	5.6	3.9
26	.25	.19	.03	.19	.19	5.0	4.0	6.2	5.9	5.9	6.6	3.5
27	.25	.19	.10	.19	.19	5.0	1.9	5.9	7.2	5.6	5.7	3.2
28	.25	.25	.03	.14	.31	5.4	1.6	6.1	8.8	6.2	4.9	3.6
29	.31	3.0	.03	.10	.38	9.2	1.5	9.3	13	6.6	4.4	2.6
30	.43	3.2	.01	.10	-----	6.9	1.4	8.6	14	6.6	14	.25
31	.25	-----	.01	.10	-----	1.8	-----	4.4	-----	8.7	6.6	-----
TOTAL	53.12	49.62	153.36	63.29	65.56	103.07	28.35	235.3	75.19	116.11	195.3	194.85
MEAN	1.71	1.65	4.95	2.04	2.26	3.32	.95	7.59	2.51	3.75	6.30	6.50
MAX	8.3	11	24	14	13	9.2	4.0	13	14	14	14	18
MIN	.25	.10	.01	0	.01	.03	.01	1.3	.51	.06	4.1	.25
AC-FT	105	98	304	126	130	204	56	467	149	230	387	386

CAL YR 1971 TOTAL 1,359.42 MEAN 3.72 MAX 26 MIN .01 AC-FT 2,700  
 #TH YR 1972 TOTAL 1,333.12 MEAN 3.64 MAX 24 MIN 0 AC-FT 2,640

HAWAII, ISLAND OF KAUAI

16080000 Kapaa Stream at Kapahi ditch intake, near Kapaa

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

DRAINAGE AREA.--3.86 sq mi.

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

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.

AVERAGE DISCHARGE.--36 years, 21.6 cfs (15,650 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,160 cfs Dec. 18 (gage height, 4.15 ft); no flow for many days. Period of record: Maximum discharge, 7,670 cfs Jan. 25, 1956 (gage height, 5.41 ft, present datum), from rating curve extended above 2,800 cfs; no flow at times.

REMARKS.--Records good. Entire low flow is diverted above station at times for irrigation of sugarcane. Records do not include flow of Kapahi ditch (see sta 16079000).

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	12	18	25	17	135	11	9.5	9.1	.69	0	4.1
2	2.6	6.9	26	19	16	155	55	9.2	6.2	5.7	0	.07
3	2.6	5.6	16	16	20	57	93	19	4.0	9.2	0	0
4	2.2	5.1	30	31	399	36	46	13	4.5	8.3	0	86
5	1.5	4.5	17	38	55	32	23	4.9	4.5	2.1	0	0
6	.83	4.5	4.8	24	40	25	29	0	5.1	1.7	0	3.6
7	2.2	4.5	21	19	39	24	23	.04	7.7	8.8	0	23
8	1.1	7.6	.58	30	37	21	19	0	4.5	14	0	.05
9	2.2	8.3	.12	24	42	20	45	0	4.2	8.3	0	0
10	4.0	20	15	18	91	14	16	1.4	74	22	0	0
11	3.0	4.9	20	17	30	9.9	6.9	3.6	40	9.2	0	0
12	2.6	0	17	14	24	9.9	6.1	.02	16	5.1	.03	0
13	0	0	5.1	14	21	8.3	18	.45	6.2	7.6	1.0	0
14	0	30	6.0	13	19	2.1	269	108	3.5	33	0	0
15	0	102	31	21	8.4	.51	419	16	6.6	269	0	0
16	0	47	29	18	4.0	.42	235	.09	15	38	0	0
17	0	31	18	13	3.2	0	75	0	16	52	0	0
18	2.6	21	590	.32	61	0	61	0	15	34	.38	0
19	0	18	239	0	97	0	37	0	5.0	24	0	0
20	0	18	66	0	57	0	30	0	4.0	24	12	0
21	4.8	31	37	2.9	57	0	24	7.2	6.0	19	17	0
22	3.5	21	27	49	198	0	30	0	6.0	17	0	0
23	3.0	20	28	458	133	0	23	3.6	8.0	14	0	0
24	3.0	19	23	48	77	0	20	.65	10	4.8	.99	0
25	2.6	49	20	27	52	0	18	0	10	0	0	0
26	8.3	25	17	34	36	0	13	0	4.1	0	0	0
27	6.2	17	39	51	28	0	14	0	0	0	0	0
28	9.3	27	34	23	25	11	16	0	1.0	.98	0	0
29	13	13	37	20	87	7.1	19	11	.27	.59	0	.92
30	65	26	24	19	-----	3.6	17	4.8	3.0	4.5	6.4	3.5
31	37	-----	24	18	-----	9.9	-----	7.5	-----	1.1	0	-----
TOTAL	187.63	598.9	1,479.60	1,104.22	1,773.6	581.73	1,711.0	219.95	337.27	638.66	37.80	121.24
MEAN	6.05	20.0	47.7	35.6	61.2	18.8	57.0	7.10	11.2	20.6	1.22	4.04
MAX	65	102	590	458	399	155	419	108	74	269	17	86
MIN	0	0	.12	0	3.2	0	6.1	0	0	0	0	0
AC-FT	372	1,190	2,930	2,190	3,520	1,150	3,390	436	669	1,270	75	240

CAL YR 1971 TOTAL 7,781.68 MEAN 21.3 MAX 590 MIN 0 AC-FT 15,430  
 WTR YR 1972 TOTAL 8,791.60 MEAN 24.0 MAX 590 MIN 0 AC-FT 17,440

PEAK DISCHARGE (BASE, 1,900 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	1630	4.15	4,160	2-4	0900	3.35	2,520
1-23	0400	3.43	2,660	4-15	1330	3.01	1,960

## 16087000 Anahola ditch wasteway near Kealia

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

AVERAGE DISCHARGE.--36 years, 5.00 cfs (3,620 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 84 cfs Nov. 12, 1955; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Water that passes station flows into Kaupaku Stream and thence into Anahola Stream 2 miles below gaging station 16089000 on Anahola Stream.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.37	2.6	4.9	4.5	14	.56	5.2	.56	.56	.70	.18
2	.18	.07	.70	4.5	4.0	16	.99	6.1	.30	.54	.70	.18
3	.18	.02	.18	3.8	5.4	7.3	.99	5.2	0	0	.70	.18
4	.37	.02	3.6	5.7	34	5.0	.84	4.8	0	0	.56	.18
5	.18	.02	4.0	7.9	12	5.2	.56	4.3	0	0	.56	0
6	.18	.07	6.5	5.8	8.7	4.0	3.0	4.0	0	0	.56	0
7	.18	.07	12	6.4	7.8	3.8	5.8	4.5	0	.07	.56	.02
8	.37	.07	5.2	6.7	11	3.6	5.2	3.6	0	.56	.56	.07
9	.56	.18	5.2	5.2	8.9	3.1	8.1	1.4	0	.70	.56	.02
10	.37	.70	5.0	2.9	15	1.9	6.7	1.4	0	.56	.56	0
11	.37	.56	4.8	3.3	7.3	.18	5.2	1.2	0	.56	.70	.02
12	.37	.37	4.5	3.1	6.1	.07	4.8	1.2	0	.37	.70	.07
13	.37	.18	4.5	2.8	5.8	.07	4.8	1.2	0	.37	.56	.07
14	.56	.94	7.6	2.8	5.2	.07	24	1.2	0	.56	.37	.07
15	.56	.78	15	4.8	5.0	.07	35	.70	0	13	.37	.18
16	.56	.37	19	4.5	4.8	.18	25	.70	0	14	.37	.18
17	.56	.37	6.1	3.3	4.8	.18	14	.56	0	16	.37	.37
18	.84	.07	34	3.1	17	.18	12	.56	0	12	.37	.37
19	.07	.02	27	3.1	13	.07	7.0	.56	0	9.2	.37	.18
20	.37	.02	11	2.8	13	.07	4.8	.56	0	12	.56	.18
21	.37	.18	7.6	7.8	10	.07	6.4	.70	.64	8.2	.56	.37
22	.18	.02	6.4	30	19	.07	7.6	.31	.99	6.4	.18	.18
23	.56	.02	5.8	33	16	.02	6.1	.03	1.4	5.8	.02	.37
24	.37	2.4	4.5	9.8	9.8	.02	5.5	.44	1.2	5.2	.37	.37
25	.37	8.2	4.0	6.7	9.6	.02	5.2	.30	.70	5.2	.18	.37
26	.70	4.5	3.8	9.2	7.6	.02	5.2	.54	.56	4.8	.18	.37
27	.02	3.6	4.3	10	6.7	.02	5.0	.09	.37	2.4	.18	.56
28	.37	5.7	5.2	5.8	6.1	.08	5.0	.47	.56	.99	.18	.56
29	.07	4.5	5.8	5.2	16	.99	4.8	1.2	.40	.84	.18	.70
30	.94	9.2	5.2	5.0	-----	.70	4.8	.42	.02	.70	.37	.84
31	.56	-----	4.3	4.8	-----	.56	-----	.18	-----	.70	.37	-----
TOTAL	11.89	43.59	226.38	209.7	294.1	67.61	224.94	53.62	7.70	122.28	13.53	7.21
MEAN	.38	1.45	7.30	6.76	10.1	2.18	7.50	1.73	.26	3.94	.44	.24
MAX	.94	9.2	34	33	34	16	35	6.1	1.4	16	.70	.84
MIN	.02	.02	.18	2.8	4.0	.02	.56	.03	0	0	.02	0
AC-FT	24	86	449	416	583	134	446	106	15	243	27	14

CAL YR 1971 TOTAL 1,293.74 MEAN 3.54 MAX 35 MIN .02 AC-FT 2,570  
 WTR YR 1972 TOTAL 1,282.55 MEAN 3.50 MAX 35 MIN 0 AC-FT 2,540

NOTE.--No gage-height record May 22 to June 21.

## HAWAII, ISLAND OF KAUAI

16088000 Anahola ditch above Kaneha Reservoir, near Kealia

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

AVERAGE DISCHARGE.--48 years (1922-25, 1927-72), 4.11 cfs (2,980 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 62 cfs Nov. 12, 1947; no flow at times.

REMARKS.--Records good. Ditch diverts water from Anahola Stream to Kaneha Reservoir, where it is stored for irrigation. Flow sometimes diverted above station by Anahola ditch wasteway (see sta 16087000).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	5.0	2.3	0	0	.02	1.8	0	2.2	3.3	3.3	6.6
2	2.9	3.7	7.0	0	0	.09	6.4	0	1.1	10	3.0	4.6
3	4.0	3.4	4.4	0	.04	0	12	0	.13	5.9	5.2	3.8
4	4.2	3.0	2.2	0	1.3	0	6.9	0	.09	6.8	3.0	17
5	2.4	2.8	.13	.03	.03	0	4.4	0	.09	3.9	2.8	7.5
6	2.0	2.5	.09	0	0	0	2.9	0	.13	3.1	4.1	10
7	1.5	2.4	.06	0	0	0	.02	0	.13	7.1	3.7	15
8	1.7	3.3	0	0	.01	0	0	.99	.13	8.8	2.6	7.7
9	2.6	4.2	0	0	0	0	0	2.0	1.5	12	3.1	4.8
10	2.0	11	0	.06	.01	1.2	0	2.1	2.4	12	2.8	4.2
11	1.8	5.9	0	0	0	3.1	0	2.4	.54	7.4	5.5	3.4
12	1.4	6.4	0	0	0	2.9	0	1.9	.44	4.4	12	3.0
13	1.5	4.2	0	0	0	2.8	0	2.5	.29	4.4	4.7	2.8
14	1.4	11	0	0	0	2.8	.20	7.2	.23	7.1	3.1	2.5
15	1.3	20	.04	.01	0	2.8	.36	4.7	.23	15	2.8	2.8
16	1.4	8.2	.02	0	0	2.6	.13	3.6	.23	.82	2.5	2.4
17	1.3	6.0	0	0	0	2.5	0	2.9	.09	.82	2.4	2.1
18	5.5	4.4	3.2	0	.05	2.4	0	2.8	.12	.62	7.5	2.1
19	5.0	4.0	.23	0	.02	2.2	0	2.2	.17	.44	3.4	2.0
20	6.2	4.0	.09	0	.01	2.1	0	2.4	.21	.54	8.5	2.5
21	6.6	6.0	.04	0	.02	2.1	0	4.6	.15	.36	15	2.1
22	3.1	3.9	.02	.06	.12	2.0	0	3.0	.09	.29	4.2	2.6
23	3.6	4.4	0	1.5	.03	2.1	0	2.8	.65	.17	4.7	1.9
24	3.4	1.5	0	.03	0	1.9	0	2.7	9.0	.13	10	2.0
25	3.9	.13	0	0	0	1.8	0	1.7	8.8	.09	3.1	1.7
26	7.4	.06	0	.02	0	1.8	0	1.8	2.2	.09	7.5	1.4
27	3.4	.04	0	.02	0	1.6	0	.81	.82	1.6	5.6	1.3
28	5.6	.04	0	0	0	2.6	0	1.4	3.3	4.8	3.0	2.4
29	5.0	.04	.01	0	.13	7.1	0	5.7	3.4	4.0	2.5	2.5
30	12	.06	0	0	-----	2.9	0	2.5	1.5	7.8	11	2.9
31	8.6	-----	0	0	-----	2.0	-----	2.0	-----	6.3	6.0	-----
TOTAL	117.4	131.57	19.89	1.73	1.77	55.61	37.11	66.70	40.36	140.07	158.6	127.8
MEAN	3.79	4.39	.64	.056	.061	1.79	1.24	2.15	1.35	4.52	5.12	4.26
MAX	12	20	7.0	1.5	1.3	7.1	12	7.2	9.0	15	15	17
MIN	1.3	.04	0	0	0	0	0	0	.09	.09	2.4	1.3
AC-FT	233	261	39	3.4	3.5	110	74	132	80	278	315	253

CAL YR 1971 TOTAL 870.38 MEAN 2.46 MAX 20 MIN 0 AC-FT 1,740  
 WTR YR 1972 TOTAL 896.61 MEAN 2.46 MAX 20 MIN 0 AC-FT 1,780

## 16089000 Anahola Stream near Kealia

LOCATION.--Lat 22°09'05", long 159°21'17", on right bank at intake of Lower Anahola ditch and 4.7 miles north-west of Kealia.

DRAINAGE AREA.--4.27 sq mi.

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.

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 mile upstream at different datum.

AVERAGE DISCHARGE.--57 years (1913-17, 1919-72), 23.0 cfs (16,660 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,740 cfs Dec. 18 (gage height, 8.03 ft), from rating curve extended above 240 cfs on basis of slope-area measurement at gage height 10.6 ft; minimum, 3.7 cfs Nov. 7, 8. Period of record: Maximum discharge, 19,600 cfs Jan. 25, 1956 (gage height, 14.6 ft, from floodmarks), from rating curve extended above 590 cfs; minimum, 1.98 cfs Oct. 27, 1953.

REMARKS.--Records poor. Records include flow in Lower Anahola ditch (see sta 16091000). Anahola ditch (see sta 16088000) diverts 3 miles above station for irrigation in vicinity of Kealia.

REVISIONS (FISCAL YEARS).--WSP 1719: 1915, 1916-18(M). (WATER YEAR).--WSP 2137: 1965(P), drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.0	11	14	10	29	7.8	15	8.0	15	8.0	7.1
2	5.1	3.9	16	12	10	88	26	18	8.0	22	7.8	6.6
3	6.8	4.5	9.4	11	9.8	27	35	16	8.4	16	8.4	6.4
4	6.5	4.2	9.6	14	329	16	19	15	8.7	16	7.8	87
5	6.2	4.0	7.2	17	32	16	12	14	9.4	15	7.8	7.6
6	5.6	4.0	13	16	22	13	11	14	9.4	14	8.0	31
7	6.1	3.8	27	14	18	12	9.8	15	18	15	8.4	17
8	6.0	3.9	11	16	25	12	9.2	16	9.4	16	7.7	19
9	6.4	4.6	8.4	14	18	11	11	14	52	16	7.6	9.4
10	7.1	8.4	7.6	13	46	10	10	13	91	18	7.2	7.7
11	6.5	5.2	8.0	10	16	10	8.6	14	38	15	7.6	7.1
12	6.6	4.4	7.0	9.4	13	9.8	8.2	13	30	14	14	7.0
13	6.6	4.0	5.5	9.4	13	9.6	10	13	23	14	8.4	6.6
14	6.2	54	10	9.0	12	9.4	218	35	20	31	8.0	6.5
15	6.2	145	37	10	12	9.8	508	12	19	254	7.6	6.4
16	6.5	22	26	10	11	9.4	230	9.2	19	13	7.4	6.4
17	6.5	13	12	9.2	10	9.0	56	8.2	18	16	7.2	6.1
18	14	9.8	534	8.8	40	8.8	39	8.0	21	12	8.2	6.1
19	8.6	8.0	274	6.6	20	8.8	28	7.8	20	10	7.8	6.0
20	6.2	8.2	60	8.4	28	8.6	24	8.0	18	12	8.3	6.0
21	7.3	12	25	8.4	13	8.4	20	12	19	10	15	6.0
22	4.9	7.8	19	98	123	8.4	25	8.6	18	9.4	6.6	6.0
23	4.5	8.2	16	394	78	8.4	19	8.0	19	9.0	6.5	5.7
24	5.0	7.1	14	30	26	8.2	18	8.6	17	8.8	7.8	5.7
25	4.7	13	12	17	22	8.0	17	8.2	16	8.6	6.4	5.7
26	12	8.4	11	18	17	8.0	16	7.8	16	8.2	7.1	5.6
27	5.8	6.6	10	24	14	8.0	16	7.8	17	8.2	7.0	5.6
28	13	7.0	13	13	13	8.0	16	8.6	16	8.2	6.4	5.7
29	9.8	6.7	15	12	34	16	16	17	18	8.2	6.1	5.7
30	20	23	14	12	-----	8.6	16	10	21	8.8	11	9.7
31	12	-----	13	12	-----	8.0	-----	8.8	-----	8.2	7.4	-----
TOTAL	233.7	421.7	1,255.7	872.2	1,034.8	425.2	1,459.6	383.6	625.3	649.6	250.5	320.4
MEAN	7.54	14.1	40.5	28.1	35.7	13.7	48.7	12.4	20.8	21.0	8.08	10.7
MAX	20	145	534	394	329	88	508	35	91	254	15	87
MIN	4.5	3.8	5.5	8.4	9.8	8.0	7.8	7.8	8.0	8.2	6.1	5.6
AC-FT	464	836	2,490	1,730	2,050	843	2,900	761	1,240	1,290	497	636

CAL YR 1971 TOTAL 7,285.2 MEAN 20.0 MAX 585 MIN 2.6 AC-FT 14,450  
 WTR YR 1972 TOTAL 7,932.3 MEAN 21.7 MAX 534 MIN 3.8 AC-FT 15,730

PEAK DISCHARGE (BASE, 2,200 CFS).--Dec. 18 (1500) 4,740 cfs (8.03 ft).

## HAWAII, ISLAND OF KAUAI

16091000 Lower Anahola ditch near Kealia

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

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

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

AVERAGE DISCHARGE.--35 years (1937-72), 3.07 cfs (2,220 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 18.6 cfs June 1, 1938; no flow at times each year.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	4.4	8.6	.02	.01	.02	6.6	.02	.06	.06	4.9	4.1
2	3.6	3.9	5.3	.02	.02	.04	10	.02	2.0	.09	3.2	3.9
3	3.7	3.3	3.3	.02	0	0	7.0	.02	5.9	.06	3.0	3.8
4	4.3	3.2	1.4	.02	.01	0	.04	.04	5.9	.06	5.4	6.7
5	4.5	3.0	.06	.02	0	0	.04	.04	6.3	.06	4.7	5.3
6	3.6	2.9	.04	.02	0	0	.04	.02	5.9	2.7	4.3	7.0
7	4.1	2.8	.04	.02	0	0	.04	.02	7.0	4.8	4.7	10
8	3.8	2.7	.02	.02	0	0	.04	.02	6.7	5.3	4.6	8.9
9	3.9	2.6	0	.02	0	.06	.04	0	9.0	4.9	4.8	7.4
10	4.2	3.2	0	.02	0	.13	.04	0	12	6.0	3.8	6.3
11	4.0	4.3	0	.02	0	.09	.04	0	11	5.7	3.8	6.1
12	3.9	3.6	0	.02	0	.09	.04	0	3.4	5.3	4.3	6.4
13	4.1	3.3	0	.02	0	.09	.04	.02	.13	2.9	4.2	5.3
14	4.0	3.2	0	.02	0	.09	.13	.02	.09	.13	4.2	5.1
15	3.8	7.9	0	.02	0	.09	.69	2.5	.09	.09	4.0	5.3
16	3.9	.06	0	.02	0	.09	.12	7.6	.52	.04	3.8	5.3
17	3.9	.04	.02	.02	.02	.09	0	7.0	.13	.02	3.6	5.0
18	4.2	.02	.36	.02	.01	.09	0	6.7	.09	.02	3.5	5.2
19	6.6	.02	0	0	0	3.5	0	6.6	.09	.02	3.4	5.9
20	5.6	.02	0	0	0	6.5	0	6.6	.06	.04	3.2	4.8
21	5.8	0	0	0	.02	6.3	0	7.5	.06	.04	4.5	4.8
22	5.1	0	.02	.04	.09	6.1	0	7.3	.06	.06	4.0	5.0
23	6.4	0	.02	.11	.04	6.4	0	6.7	.06	.04	3.7	4.7
24	4.9	0	.02	.02	.04	6.4	.01	6.6	.06	.04	5.9	4.6
25	5.9	0	.02	.02	.02	5.7	.02	4.0	.06	.04	4.0	5.4
26	6.8	0	.02	.02	.02	5.7	.02	.13	.06	.04	4.5	5.4
27	5.3	0	.02	.02	.02	5.6	.02	.09	.06	.04	4.7	5.0
28	4.7	0	.02	.02	.02	5.9	.02	.09	.06	2.5	4.2	5.0
29	6.4	4.2	.02	.01	.02	6.7	.02	.09	.06	5.3	3.8	5.4
30	7.1	8.1	.02	.02	-----	6.4	.02	.09	.06	5.8	5.0	4.5
31	8.0	-----	.02	.01	-----	6.7	-----	.06	-----	5.6	4.9	-----
TOTAL	146.2	67.26	19.54	.65	.36	79.07	25.07	69.89	76.96	57.79	129.8	167.6
MEAN	4.72	2.24	.63	.021	.012	2.55	.84	2.25	2.57	1.86	4.19	5.59
MAX	7.1	8.1	8.8	.11	.09	6.7	10	7.6	12	6.0	5.9	10
MIN	3.6	0	0	0	0	0	0	0	.06	.02	3.0	3.8
AC-FT	290	133	39	1.3	.7	157	50	139	153	115	257	332

CAL YR 1971 TOTAL 1,998.69 MEAN 3.61 MAX 11 MIN 0 AC-FT 2,180

WTR YR 1972 TOTAL 840.19 MEAN 2.30 MAX 12 MIN 0 AC-FT 1,670

16093200 Anahola Stream at Anahola

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

DRAINAGE AREA.--9.24 sq mi.

PERIOD OF RECORD.--Annual maximum, water years 1962-65, November 1964 to current year.

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.

AVERAGE DISCHARGE.--7 years (1965-72), 41.6 cfs (30,140 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 9,120 cfs Dec. 18 (gage height, 14.35 ft); minimum, 4.7 cfs Apr. 1, 2.  
 Period of record: Maximum discharge, 13,000 cfs May 15, 1965 (gage height, 16.0 ft), from rating curve extended above 5,800 cfs on basis of contracted-opening measurement of peak flow; minimum, 3.8 cfs Aug. 21, Sept. 7, 1968.

REMARKS.--Records good. Anahola and Lower Anahola ditches (see stas 16088000 and 16091000) divert above station for irrigation of sugarcane in vicinities of Kealia and Anahola, respectively. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	7.8	13	27	14	47	4.8	25	14	15	8.2	11
2	9.5	6.6	13	25	12	115	27	27	12	25	9.3	11
3	11	6.2	8.4	20	12	51	37	23	10	18	11	9.3
4	11	6.2	9.2	23	45.4	26	25	22	11	17	8.0	10.4
5	11	6.0	11	32	53	24	13	19	13	16	8.0	14
6	9.8	5.8	16	32	33	19	16	18	12	13	8.0	57
7	9.8	6.4	37	27	27	17	18	18	30	12	9.3	49
8	9.5	6.8	16	31	34	16	17	22	13	14	8.0	48
9	9.8	7.3	12	30	24	15	23	16	68	14	8.0	20
10	10	16	12	25	58	14	22	15	122	17	8.0	15
11	10	12	12	18	22	12	12	16	44	13	8.4	13
12	9.8	7.8	12	18	16	11	11	14	35	12	24	13
13	9.5	7.3	10	17	14	10	15	13	27	13	9.3	12
14	9.0	8.4	13	16	12	10	453	54	22	17	8.9	12
15	8.7	245	42	16	12	11	1,080	24	20	283	8.0	12
16	8.7	28	42	23	11	10	520	13	19	46	8.0	11
17	8.4	18	18	16	11	9.2	152	11	19	53	8.0	11
18	13	12	1,020	15	47	8.7	104	10	24	38	10	10
19	14	9.8	423	15	23	7.0	69	10	22	44	9.3	10
20	9.0	9.2	100	17	41	6.4	54	11	18	48	9.8	9.8
21	9.2	26	53	17	18	6.4	47	19	20	35	57	9.8
22	8.1	15	37	147	157	6.2	62	13	19	27	9.3	10
23	7.3	12	33	620	153	6.2	50	10	21	27	8.9	9.8
24	7.6	11	29	76	59	6.0	41	11	18	23	13	9.8
25	7.6	19	25	30	35	6.0	34	12	17	16	9.3	10
26	12	15	22	28	24	5.8	32	14	17	10	12	10
27	9.2	11	23	38	20	6.0	31	14	18	9.0	12	9.8
28	12	10	29	20	18	5.8	31	16	16	8.2	10	9.8
29	18	12	30	18	42	15	25	34	20	8.2	9.3	10
30	30	20	27	16	-----	6.2	25	21	24	8.4	24	9.8
31	16	-----	25	15	-----	5.0	-----	17	-----	8.2	13	-----
TOTAL	338.3	583.6	2,172.6	1,468	1,456	513.9	3,050.8	562	745	908.0	367.3	550.9
MEAN	10.9	19.5	70.1	47.4	50.2	16.6	102	16.1	24.8	29.3	11.8	18.4
MAX	30	245	1,020	620	454	115	1,080	54	122	283	57	104
MIN	7.3	5.8	8.4	15	11	5.0	4.8	10	10	8.2	8.0	9.3
AC-FT	671	1,160	4,310	2,910	2,890	1,020	6,050	1,110	1,480	1,800	729	1,090

CAL YR 1971 TOTAL 11,865.9 MEAN 32.5 MAX 1,020 MIN 5.3 AC-FT 23,540  
 WTR YR 1972 TOTAL 12,716.4 MEAN 34.7 MAX 1,080 MIN 4.8 AC-FT 25,220

PEAK DISCHARGE (BASE, 2,200 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	1530	14.35	9,120	4-15	1400	10.53	3,230
1-23	0400	10.34	2,990				

## HAWAII, ISLAND OF KAUAI

16097000 Pohakuhonu Stream near Kilauea

LOCATION.--Lat 22°10'52", long 159°25'40", on left bank 0.7 mile upstream from confluence with Halaulani Stream and 2.6 miles southwest of Kilauea.

DRAINAGE AREA.--1.73 sq mi.

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

GAGE.--Water-stage recorder. Datum of gage is 401.7 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--14 years (1958-72), 7.88 cfs (5,710 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,720 cfs July 15 (gage height, 5.73 ft); minimum, 0.70 cfs Oct. 17, 18, Mar. 22-26, Apr. 1.

Period of record: Maximum discharge, 2,710 cfs Aug. 6, 1959 (gage height, 7.23 ft, from floodmark in well), from rating curve extended above 640 cfs on basis of slope-area measurement at gage height 11.0 ft; minimum, 0.70 cfs Oct. 17, 18, 1971, Mar. 22-26, Apr. 1, 1972.

Flood of Jan. 24, 1956, reached a stage of 11.0 ft, from floodmarks (discharge, 5,600 cfs, by slope-area measurement).

REMARKS.--Records good. Kalihiwai ditch diverts 0.5 mile above station for domestic supply and irrigation of sugarcane. Recording rain gage located at station.

REVISIONS.--WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.3	2.4	5.8	1.9	2.6	.70	1.6	1.4	1.9	1.6	1.4
2	1.4	1.9	2.0	3.7	1.8	15	2.3	1.8	1.4	12	1.4	1.6
3	1.3	1.8	2.3	2.6	1.8	6.1	3.9	2.1	1.4	5.0	1.4	1.4
4	1.1	1.4	2.3	2.8	23	3.2	2.1	1.9	1.4	3.7	1.4	16
5	1.1	1.4	1.9	3.2	3.7	3.0	1.4	1.8	1.4	3.0	1.4	2.3
6	1.0	1.4	2.8	2.8	3.0	2.4	1.8	1.6	1.3	2.6	1.4	6.5
7	1.0	1.3	15	2.4	3.7	2.3	1.4	1.9	3.9	2.8	1.4	3.5
8	1.1	1.4	4.2	3.0	7.3	2.1	1.8	1.8	1.8	3.5	1.3	2.8
9	1.3	1.4	3.5	2.6	12	1.9	2.0	1.4	5.6	5.0	1.3	2.4
10	1.3	2.3	3.0	2.3	27	1.8	4.5	1.6	4.2	13	1.3	2.1
11	1.1	2.1	2.8	2.1	5.0	1.6	2.3	1.6	2.4	6.7	1.0	2.1
12	1.0	2.1	2.6	1.9	3.5	1.4	1.9	1.4	4.3	3.7	5.1	1.9
13	1.0	1.9	2.4	1.9	3.0	1.3	1.8	1.4	2.4	3.5	2.8	1.8
14	1.0	2.7	3.0	1.9	2.4	1.1	45	3.9	2.1	40	1.9	1.8
15	.90	18	10	2.1	2.3	1.1	122	2.3	1.9	208	1.4	1.8
16	.80	8.8	5.8	1.9	2.1	1.0	35	1.6	1.9	22	1.3	1.8
17	.70	4.5	3.7	1.8	1.9	.90	18	1.6	1.9	10	1.3	1.8
18	.90	3.0	9.4	1.8	11	.80	9.0	1.6	2.1	6.1	1.8	1.8
19	1.0	2.8	10.4	1.6	4.5	.80	5.5	1.6	2.3	4.5	1.4	1.6
20	.90	2.8	14	1.6	14	.80	3.5	1.8	1.9	3.7	2.3	1.8
21	1.0	4.5	6.7	1.4	4.2	.80	2.6	2.3	1.9	3.2	5.2	1.6
22	.90	2.6	4.5	5.8	19	.70	2.8	1.8	1.8	2.8	2.1	1.6
23	.90	2.4	3.7	46	10	.70	2.4	2.1	1.9	2.6	1.8	1.6
24	1.0	2.3	3.0	5.0	5.5	.70	2.1	1.8	2.3	2.4	2.8	1.4
25	1.0	7.4	2.6	3.0	3.7	.70	1.9	1.6	2.3	2.3	1.6	1.4
26	1.8	3.2	2.4	3.0	3.0	.70	1.8	1.6	2.1	2.1	1.6	1.4
27	1.0	2.4	2.4	2.8	2.6	.80	1.8	1.4	1.9	1.9	1.9	1.4
28	1.8	2.3	2.6	2.3	2.3	.80	1.6	1.6	2.1	1.9	1.4	1.8
29	1.8	2.1	3.0	2.1	3.5	1.1	1.9	3.2	2.8	1.8	1.4	1.8
30	4.5	2.6	3.0	2.1	-----	.90	1.8	1.8	2.3	1.8	1.9	1.8
31	5.3	-----	2.6	1.9	-----	.80	-----	1.6	-----	1.8	1.6	-----
TOTAL	42.50	97.1	318.8	125.2	188.7	59.90	304.60	57.1	68.4	385.3	57.5	74.0
MEAN	1.37	3.24	10.3	4.04	6.51	1.93	10.2	1.84	2.28	12.4	1.85	2.47
MAX	5.3	18	10.4	46	27	15	122	3.9	5.6	208	5.2	16
MIN	.70	1.3	1.9	1.4	1.8	.70	.70	1.4	1.3	1.8	1.0	1.4
AC-FT	84	193	632	248	374	119	604	113	136	764	114	147

CAL YR 1971 TOTAL 2,271.70 MEAN 6.22 MAX 260 MIN .70 AC-FT 4,510  
 AYR YR 1972 TOTAL 1,779.10 MEAN 4.86 MAX 208 MIN .70 AC-FT 3,530

PEAK DISCHARGE (BASE, 780 CFS).--Dec. 18 (1600) 900 cfs (4.10 ft); July 15 (0100) 1,720 cfs (5.73 ft).

16097500 Halaulani Stream at altitude 400 ft, near Kilauea

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

DRAINAGE AREA.--1.19 sq mi.

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

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

AVERAGE DISCHARGE.--14 years (1958-72), 11.7 cfs (8,480 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,270 cfs July 15 (gage height, 6.56 ft), from rating curve extended as explained below; minimum, 3.4 cfs Oct. 17, 18.

Period of record: Maximum discharge, 2,070 cfs Aug. 6, 1959 (gage height, 8.30 ft), from rating curve extended above 190 cfs on basis of slope-area measurement of peak flow; minimum, 1.8 cfs Sept. 6-8, 1968.

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

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	6.2	9.0	24	6.6	14	5.1	6.7	5.5	7.3	6.2	5.5
2	4.2	5.4	11	14	6.1	29	13	6.8	5.2	24	5.9	5.7
3	4.3	4.9	7.7	9.6	6.0	19	14	8.0	5.2	13	6.2	5.3
4	4.1	4.5	7.6	11	55	11	12	7.0	5.1	11	5.7	22
5	3.9	4.2	6.4	12	15	11	7.1	6.4	5.0	8.7	5.9	8.4
6	3.9	4.0	9.8	10	12	8.8	9.0	6.2	5.1	7.4	6.2	17
7	3.8	4.0	30	8.5	15	8.1	7.3	7.8	15	8.6	5.9	11
8	3.8	4.3	11	10	27	7.4	7.3	6.8	6.3	12	5.1	8.4
9	3.8	4.2	9.3	8.8	23	7.1	26	5.8	16	15	5.3	6.6
10	4.2	8.0	8.2	7.6	41	6.8	15	5.6	19	23	4.9	6.0
11	3.8	6.2	7.8	7.2	16	6.5	9.1	5.4	12	15	4.8	5.5
12	3.8	6.2	6.9	6.6	12	6.3	7.8	5.3	15	9.9	14	5.2
13	3.7	5.6	6.3	6.3	10	6.1	7.2	5.7	9.1	9.3	8.9	5.0
14	3.6	6.6	8.5	6.1	8.7	5.9	63	15	7.4	45	6.2	4.8
15	3.6	40	21	6.3	7.9	6.3	127	9.3	6.9	144	5.3	4.8
16	3.6	21	16	6.1	7.3	6.3	63	6.5	6.9	37	4.9	4.7
17	3.5	13	9.4	5.9	7.0	5.7	29	5.8	6.5	28	5.1	4.5
18	4.4	8.6	107	5.7	26	5.5	23	5.4	7.7	18	7.1	4.4
19	4.3	7.4	96	5.4	17	5.4	16	5.3	8.1	14	5.5	4.3
20	4.2	7.5	34	5.3	34	5.3	13	5.6	6.4	13	8.4	4.5
21	5.2	12	18	5.3	15	5.3	11	7.9	6.7	11	16	4.3
22	4.0	7.6	14	37	37	5.3	13	6.0	6.0	9.2	6.8	4.2
23	3.9	6.9	11	73	29	5.4	11	7.1	6.4	8.2	6.6	4.0
24	4.2	6.4	9.4	19	17	5.2	9.0	6.4	8.6	7.3	8.8	4.0
25	4.1	15	8.1	11	14	5.1	8.2	5.7	8.0	7.1	5.9	4.0
26	7.8	8.7	7.3	14	11	5.1	7.7	5.4	6.8	6.8	5.9	3.9
27	4.4	7.0	8.3	13	9.5	5.2	7.3	5.2	6.3	6.6	6.8	3.9
28	6.5	6.7	9.0	8.7	8.6	5.1	7.3	5.7	7.9	6.8	5.5	4.3
29	5.8	6.5	12	7.7	18	7.9	8.4	12	12	6.6	5.1	4.4
30	14	13	12	7.3	-----	5.6	7.1	6.9	9.3	6.8	8.5	4.4
31	14	-----	9.6	7.1	-----	5.2	-----	5.8	-----	6.4	6.4	-----
TOTAL	152.8	261.6	541.6	379.5	511.7	241.9	563.9	210.5	251.4	546.0	209.8	185.0
MEAN	4.93	8.72	17.5	12.2	17.6	7.80	18.8	6.79	8.38	17.6	6.77	6.17
MAX	14	40	107	73	55	29	127	15	19	144	16	22
MIN	3.5	4.0	6.3	5.3	6.0	5.1	5.1	5.2	5.0	6.4	4.8	3.9
AC-FT	303	519	1,070	753	1,010	480	1,120	418	499	1,080	416	367

CAL YR 1971 TOTAL 3,974.2 MEAN 10.9 MAX 196 MIN 3.5 AC-FT 7,880  
 WTR YR 1972 TOTAL 4,055.7 MEAN 11.1 MAX 144 MIN 3.5 AC-FT 8,040

PEAK DISCHARGE (BASE, 580 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	1700	6.32	1,180	7-15	0100	6.56	1,270
4-15	1945	4.83	659				

## HAWAII, ISLAND OF KAUAI

16100000 Hanalei tunnel outlet near Lihue

LOCATION.--Lat 22°05'02", long 159°27'50", on right bank at outlet of Hanalei tunnel, 2.2 miles downstream from intake on Kaapoko Stream, and 9.4 miles northwest of Lihue.

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

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,210 ft (from tunnel-profile).

AVERAGE DISCHARGE.--40 years, 27.7 cfs (20,070 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 99 cfs Apr. 11, 25, 26, 1942; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. 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.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	45	50	22	20	47	15	15	19	17	20	19
2	34	45	58	21	19	48	18	14	18	22	17	16
3	33	38	42	20	25	29	25	15	18	22	17	16
4	31	34	47	35	60	22	21	14	18	20	17	17
5	29	35	35	27	45	20	19	14	18	17	17	19
6	29	33	38	20	35	18	31	13	18	17	18	20
7	34	42	46	38	25	18	21	14	22	19	17	19
8	28	51	41	38	30	17	19	14	18	22	17	18
9	29	48	59	25	35	16	37	14	23	19	17	17
10	29	54	50	24	45	15	25	14	24	39	17	17
11	28	51	50	22	35	15	21	14	17	36	17	16
12	33	48	35	21	31	15	20	14	16	23	21	16
13	27	39	52	20	30	15	21	17	15	22	21	16
14	26	53	62	19	30	15	47	25	15	22	16	16
15	26	67	64	17	28	15	47	21	15	31	16	16
16	27	60	62	19	26	15	38	17	16	25	16	15
17	26	60	52	26	25	15	33	16	16	30	17	15
18	43	55	76	20	30	14	39	15	20	24	20	17
19	40	51	72	19	34	14	29	15	19	22	16	16
20	48	50	50	18	45	15	27	16	16	22	21	16
21	55	55	44	18	30	14	20	30	16	20	24	16
22	38	47	38	18	50	14	20	20	17	19	16	18
23	42	48	37	56	31	15	17	23	20	18	16	19
24	42	48	29	30	27	14	16	20	20	18	16	14
25	48	66	27	19	24	14	15	19	21	18	15	12
26	62	59	26	18	21	14	15	18	20	17	16	10
27	42	52	41	25	20	14	15	18	19	17	15	9.9
28	42	56	27	23	20	14	16	18	22	19	15	13
29	45	48	28	22	49	15	16	22	19	19	15	11
30	54	56	24	21	-----	15	15	21	19	20	20	11
31	60	-----	23	20	-----	15	-----	19	-----	19	16	-----
TOTAL	1,171	1,494	1,385	741	925	556	718	539	554	675	539	470.9
MEAN	37.8	49.8	44.7	23.9	31.9	17.9	23.9	17.4	18.5	21.8	17.4	15.7
MAX	62	67	76	56	60	48	47	30	24	39	24	20
MIN	26	33	23	17	19	14	15	13	15	17	15	9.9
AC-FT	2,320	2,960	2,750	1,470	1,830	1,100	1,420	1,070	1,100	1,340	1,070	934

CAL YR 1971 TOTAL 11,516.0 MEAN 31.6 MAX 76 MIN 0 AC-FT 22,840  
 WTR YR 1972 TOTAL 9,767.9 MEAN 26.7 MAX 76 MIN 9.9 AC-FT 19,370

NOTE.--No gage-height record Nov. 23 to Feb. 24.

## 16103000 Hanalei River near Hanalei

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

DRAINAGE AREA.--19.1 sq mi.

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

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 mile upstream at different datum. Jan. 26 to Dec. 26, 1962, crest-stage gage at present site and datum.

AVERAGE DISCHARGE (since diversion to Hanalei tunnel).--9 years (1963-72), 233 cfs (168,800 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 15,400 cfs Dec. 19 (gage height, 12.11 ft); minimum, 47 cfs Oct. 17, 18.

Period of record: Maximum discharge, 24,600 cfs Nov. 13, 1965, Jan. 31, 1969 (gage height, 14.23 ft), from rating curve extended above 9,600 cfs; minimum, 39 cfs Mar. 4, 1963.

REMARKS.--Records fair. Since 1925, Hanalei tunnel (see sta I6100000) has diverted from Hanalei River and its tributary Kaapoko Stream above station to North Branch of North Fork Wailua River for irrigation. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1937: Drainage area. WSP 2137: 1962(M), 1963-65(P).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	107	100	189	97	515	67	107	82	77	97	95
2	70	90	158	162	88	732	127	119	82	156	77	76
3	68	78	96	132	116	372	231	138	77	124	68	66
4	63	70	113	237	1,750	205	186	103	90	123	65	682
5	58	66	84	227	477	195	102	93	93	96	61	127
6	55	62	87	170	284	146	178	90	80	78	60	191
7	55	69	394	350	219	136	128	111	123	119	60	143
8	53	91	124	400	274	119	103	96	82	247	59	103
9	52	84	207	250	475	110	635	90	250	208	65	91
10	51	200	157	170	1,050	103	372	86	220	854	61	78
11	50	140	138	150	240	99	152	83	100	492	61	72
12	55	104	115	130	198	93	178	80	94	170	110	68
13	50	88	102	120	170	88	110	120	84	144	103	65
14	49	311	357	110	144	86	1,520	617	70	142	75	62
15	48	323	590	120	124	84	2,280	179	63	1,330	61	67
16	47	153	365	110	123	80	1,020	112	65	362	57	73
17	47	151	192	200	107	78	696	96	68	384	55	60
18	461	103	1,470	150	770	77	954	88	111	218	123	70
19	102	100	2,740	110	393	76	482	84	105	177	65	61
20	81	96	640	100	846	76	312	86	71	160	142	63
21	84	142	333	90	268	75	240	234	65	130	297	63
22	69	96	240	84	603	73	235	110	78	112	84	66
23	67	95	222	1,500	466	77	177	138	92	96	77	76
24	70	92	170	215	255	71	152	102	109	90	99	63
25	73	956	150	142	220	68	138	86	119	84	66	63
26	166	176	134	138	177	67	128	80	93	79	86	59
27	77	114	292	387	144	67	119	78	82	82	71	57
28	121	107	217	144	132	129	124	76	111	92	61	78
29	89	99	275	123	470	229	140	143	169	91	59	66
30	188	135	241	114	-----	81	117	99	107	105	190	63
31	429	-----	195	106	-----	70	-----	88	-----	78	105	-----
TOTAL	3,038	4,038	10,698	6,630	10,680	4,479	11,353	3,812	3,035	6,702	2,720	2,967
MEAN	98.0	137	345	214	368	144	378	123	101	216	87.7	98.9
MAX	461	556	2,740	1,500	1,750	732	2,280	617	250	1,330	297	682
MIN	47	62	84	84	88	67	67	76	63	77	55	57
AC-FT	6,030	8,130	21,220	13,150	21,180	8,980	22,520	7,560	6,020	13,290	5,400	5,890

CAL YR 1971 TOTAL 73,589 MEAN 202 MAX 2,740 MIN 47 AC-FT 146,000  
WTR YR 1972 TOTAL 70,212 MEAN 192 MAX 2,740 MIN 47 AC-FT 139,300

PEAK DISCHARGE (BASE, 9,200 CFS).--Dec. 19 (1330) 15,400 cfs (12.11 ft).

## HAWAII, ISLAND OF KAUAI

16108000 Wainiha River near Hanalei

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

DRAINAGE AREA.--10.2 sq mi.

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

GAGE.--Water-stage recorder. Altitude of gage is 960 ft (from topographic map).

AVERAGE DISCHARGE.--17 years (1952-55, 1958-72), 143 cfs (103,600 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 6,300 cfs Dec. 19 (gage height, 6.05 ft), from rating curve extended as explained below; minimum, 40 cfs Feb. 29.

Period of record: Maximum discharge recorded, 20,100 cfs Aug. 6, 1959 (gage height, 8.19 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurement at gage height 7.72 ft; minimum, 34.8 cfs Feb. 12, 1954.

Flood of Feb. 17, 1956, which destroyed the station, reached a stage of 14.1 ft, from floodmarks (discharge, about 40,000 cfs, from unit-discharge study).

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	83	78	101	57	192	45	68	72	62	58	131
2	73	95	160	75	48	539	47	72	59	127	55	73
3	78	65	77	61	69	159	93	82	55	98	56	162
4	61	57	81	173	840	71	72	62	56	98	50	524
5	55	53	57	101	349	77	58	56	55	60	49	107
6	56	49	75	72	99	53	107	54	52	55	58	87
7	60	99	144	264	65	63	69	62	79	101	61	73
8	52	234	125	266	88	64	57	59	54	125	49	63
9	54	144	277	91	216	59	349	62	57	96	68	57
10	56	254	154	77	668	56	175	60	59	280	55	54
11	54	175	184	64	95	54	77	55	53	252	65	49
12	65	141	196	56	82	52	76	63	49	82	121	47
13	49	92	135	53	99	51	66	137	49	92	104	45
14	49	171	410	50	64	50	833	170	49	82	60	44
15	47	109	440	50	50	50	749	98	49	269	52	68
16	51	83	207	49	58	49	335	67	63	117	52	60
17	47	112	144	50	49	49	352	57	73	185	66	47
18	194	126	614	49	293	49	818	54	122	91	157	88
19	63	103	1,200	49	182	49	270	52	107	82	63	58
20	124	98	256	47	312	48	160	68	61	77	203	72
21	137	160	127	45	93	48	113	262	58	64	195	72
22	72	96	89	45	332	49	137	73	78	57	67	82
23	103	93	194	465	152	73	82	131	90	55	64	76
24	105	115	73	92	87	49	73	79	104	59	70	61
25	201	627	64	64	77	48	68	60	121	58	54	60
26	222	141	59	98	59	48	70	55	121	54	59	47
27	77	86	194	265	49	48	69	52	88	50	57	49
28	83	83	151	87	45	47	90	58	145	77	50	121
29	112	69	189	91	286	52	108	125	92	88	47	66
30	180	127	127	76	-----	49	75	99	78	98	107	77
31	207	-----	86	72	-----	47	-----	76	-----	67	73	-----
TOTAL	2,895	3,940	6,185	3,198	4,963	2,392	5,693	2,528	2,248	3,158	2,345	2,620
MEAN	93.4	131	200	103	171	77.2	190	81.5	74.9	102	75.6	87.3
MAX	222	627	1,200	465	840	539	833	262	145	280	203	524
MIN	47	49	57	45	45	47	45	52	49	50	47	44

CAL YR 1971 TOTAL 58,382 MEAN 160 MAX 2,000 MIN 45 AC-FT 115,800  
 WTR YR 1972 TOTAL 42,165 MEAN 115 MAX 1,200 MIN 44 AC-FT 83,630

PEAK DISCHARGE (BASE, 3,600 CFS).--Dec. 19 (1300) 6,300 cfs (6.05 ft).

16200000 North Fork Kaukonahua Stream above Right Branch, near Wahiawa

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

DRAINAGE AREA.--1.38 sq mi.

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.

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

AVERAGE DISCHARGE.--49 years (1913-24, 1926-52, 1960-72), 16.9 cfs (12,240 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,720 cfs Jan. 22 (gage height, 10.36 ft), from rating curve extended above 82 cfs on basis of slope-area measurement at gage height 12.46 ft; minimum, 0.41 cfs Oct. 17, 18.

Period of record: Maximum discharge, 5,490 cfs Jan. 1, 1933 (gage height, 11.7 ft, from floodmarks), from rating curve extended above 68 cfs by test of model of station site; maximum gage height, 12.46 ft Apr. 15, 1963; minimum discharge, 0.12 cfs Mar. 2, 13, 1941.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	2.7	16	8.2	4.5	4.5	1.0	12	3.6	12	8.1	2.4
2	1.6	7.1	9.0	6.4	4.2	6.0	2.0	7.0	2.8	62	5.4	3.5
3	1.4	8.8	6.0	9.8	3.9	32	6.7	11	2.6	16	4.2	11
4	2.4	29	11	17	45	6.0	13	5.8	2.3	4.8	2.9	52
5	1.5	24	5.0	6.4	11	5.0	2.5	4.5	2.1	3.7	2.6	3.9
6	1.3	3.9	29	6.0	6.8	4.2	20	4.2	1.9	3.2	3.3	3.3
7	1.0	4.6	32	21	10	3.9	6.4	4.0	3.4	2.9	2.7	2.6
8	.87	7.5	8.4	55	17	3.4	93	4.3	2.1	7.3	2.2	2.3
9	1.0	5.6	25	9.3	106	3.2	129	13	14	28	2.3	2.2
10	1.6	8.4	12	10	93	3.0	26	4.0	2.9	18	5.2	2.0
11	1.0	11	15	6.6	14	2.8	7.3	3.6	2.1	11	3.4	1.9
12	.92	6.4	9.0	5.6	10	2.7	6.4	24	1.7	4.3	11	1.8
13	.77	4.0	13	5.0	8.7	2.6	6.7	22	1.6	4.8	18	1.6
14	.63	28	40	8.7	6.2	2.4	30	19	1.6	4.2	3.3	1.6
15	.51	6.9	31	5.2	6.4	2.3	38	15	1.6	135	2.6	1.4
16	.47	31	17	4.3	5.4	2.2	9.2	6.0	2.0	50	2.2	1.3
17	.44	12	82	3.9	4.5	2.1	189	6.3	4.7	13	8.3	1.3
18	.47	11	17	3.6	72	4.0	134	4.0	23	6.6	12	4.8
19	.51	7.1	298	4.8	59	2.5	17	3.6	10	5.2	3.0	1.6
20	.87	4.7	20	3.6	39	2.0	21	4.7	4.2	4.7	76	3.6
21	.63	5.0	12	3.0	14	1.8	9.9	17	2.8	4.7	39	2.1
22	1.7	3.9	9.6	715	42	1.7	12	10	2.3	4.3	5.8	22
23	2.6	3.2	8.2	124	23	8.2	6.8	14	7.1	3.9	5.6	3.0
24	12	64	10	27	11	2.6	6.6	9.9	7.0	3.2	4.2	12
25	13	130	13	12	8.4	1.6	8.7	4.3	6.9	7.3	5.6	6.1
26	24	18	7.4	9.0	6.6	1.5	11	3.7	24	13	8.9	2.1
27	2.6	7.9	14	13	6.0	1.4	5.4	3.3	5.4	4.0	3.4	4.5
28	1.5	15	7.7	7.2	5.4	1.3	14	3.4	3.0	4.2	2.9	5.5
29	1.3	7.2	13	6.4	4.8	1.8	20	3.2	2.8	3.0	2.8	6.2
30	33	48	35	5.6	-----	1.9	14	3.3	5.6	3.3	5.6	2.5
31	6.7	-----	26	5.0	-----	1.2	-----	4.7	-----	13	3.0	-----
TOTAL	120.69	525.9	851.3	1,127.6	647.8	121.8	866.6	254.8	157.1	460.6	265.5	172.1
MEAN	3.89	17.5	27.5	36.4	22.3	3.93	28.9	8.22	5.24	14.9	8.56	5.74
MAX	33	130	298	715	106	32	189	24	24	135	76	52
MIN	.44	2.7	5.0	3.0	3.9	1.2	1.0	3.2	1.6	2.9	2.2	1.3
AC-FT	239	1,040	1,690	2,240	1,280	242	1,720	505	312	914	527	341

CAL YR 1971 TOTAL 5,389.66 MEAN 14.8 MAX 323 MIN .44 AC-FT 10,690  
 WTR YR 1972 TOTAL 5,571.79 MEAN 15.2 MAX 715 MIN .44 AC-FT 11,050

PEAK DISCHARGE (BASE, 1,300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-22	0500	10.36	3,720	7-15	0900	7.15	1,790
4-17	1800	9.45	3,170				

16208000 South Fork Kaukonahua Stream at East Pump Reservoir, near Wahiawa

LOCATION.--Lat 21°29'32", long 157°59'55", on right bank on upstream side of dam at East Pump Reservoir, 2.3 miles east of Wahiawa Post Office, and 7.1 miles north of Waipahu.

DRAINAGE AREA.--4.04 sq mi.

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.

AVERAGE DISCHARGE (since termination of diversions to Schofield Barracks).--10 years (1960-62, 1964-72), 23.4 cfs (16,950 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,120 cfs Jan. 22 (gage height, 8.21 ft); minimum, 1.2 cfs on several days.

Period of record: Maximum discharge, 5,460 cfs Apr. 15, 1963 (gage height, 11.33 ft), from rating curve extended above 1,100 cfs on basis of computation of peak flow over dam; no flow Dec. 24, 25, 27, 28, 1960, Feb. 23, 24, 1963.

REMARKS.--Records good. Prior to 1960, diversions from reservoirs above station for use at Schofield Barracks. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	3.4	16	20	9.4	8.3	3.5	53	3.2	2.6	4.9	2.7
2	3.3	3.3	8.0	14	8.5	9.2	3.6	19	3.2	44	19	2.3
3	2.9	3.3	6.3	8.9	7.8	62	4.6	12	2.9	17	5.7	5.8
4	3.7	46	7.8	11	68	15	20	8.8	2.4	5.2	3.6	74
5	4.9	75	5.7	8.3	32	10	6.2	7.4	2.1	3.4	2.4	7.0
6	3.4	6.1	14	7.5	14	8.4	17	6.7	2.0	2.7	2.0	5.6
7	2.4	3.9	39	9.2	15	7.9	23	6.2	1.9	2.6	1.8	3.7
8	1.6	7.1	8.7	37	35	7.0	41	5.8	1.9	3.4	1.6	2.6
9	1.7	5.0	8.9	11	78	6.4	167	6.4	4.5	27	1.6	2.1
10	2.0	43	8.2	8.2	108	6.0	89	5.5	4.7	23	4.5	1.9
11	2.1	42	16	9.2	18	5.6	15	5.1	2.9	6.6	9.8	1.7
12	1.8	15	17	6.5	15	5.3	9.2	6.0	2.0	4.0	14	1.6
13	1.5	9.7	12	5.7	13	5.0	31	13	1.8	5.4	12	1.5
14	1.5	20	62	6.5	10	4.8	44	16	1.7	9.7	5.3	1.4
15	1.4	9.8	84	9.9	8.9	4.6	154	8.8	1.6	137	2.5	1.3
16	1.3	49	76	5.4	8.4	4.4	21	6.0	1.8	28	1.7	1.3
17	1.3	13	152	4.7	7.6	4.2	122	5.0	2.7	12	1.5	1.3
18	1.6	8.4	54	4.3	85	4.0	97	4.5	24	6.5	11	5.0
19	1.4	6.7	137	4.3	43	3.9	26	3.8	14	5.1	4.9	3.0
20	1.7	7.1	46	4.6	35	3.8	16	3.8	6.5	4.3	34	1.9
21	1.5	10	23	4.0	13	3.6	14	6.2	4.9	4.1	58	2.5
22	2.0	7.5	17	663	110	3.6	12	6.8	3.6	3.7	7.3	9.5
23	3.9	5.3	14	326	50	7.4	10	15	3.8	3.4	4.1	5.0
24	5.1	11	12	94	24	10	8.7	19	4.8	3.2	5.1	4.4
25	3.9	118	19	33	19	5.3	8.0	5.9	3.8	4.2	5.6	4.2
26	17	22	12	22	13	4.4	29	4.5	26	5.1	8.1	1.8
27	5.1	9.6	12	26	11	4.0	13	3.5	14	3.5	4.8	1.3
28	2.3	13	10	18	9.9	3.9	12	3.2	4.5	5.0	2.8	4.2
29	1.9	8.6	12	14	9.2	4.1	19	3.2	3.1	4.0	2.3	11
30	17	42	42	12	-----	4.9	27	3.0	3.4	4.7	4.5	4.5
31	15	-----	26	10	-----	4.1	-----	3.0	-----	6.9	5.5	-----
TOTAL	129.7	623.8	977.6	1,418.2	878.7	241.1	1,062.8	276.1	159.7	397.3	251.9	176.1
MEAN	3.89	20.8	31.5	45.7	30.3	7.78	35.4	8.91	5.32	12.8	8.13	5.87
MAX	17	118	152	663	110	62	167	53	26	137	58	74
MIN	1.3	3.3	5.7	4.0	7.6	3.6	3.5	3.0	1.6	2.6	1.5	1.3
AC-FT	239	1,240	1,940	2,810	1,740	478	2,110	548	317	788	500	349

CAL YR 1971 TOTAL 7,901.1 MEAN 21.6 MAX 361 MIN 1.3 AC-FT 15,670  
 WTR YR 1972 TOTAL 6,584.0 MEAN 18.0 MAX 663 MIN 1.3 AC-FT 13,060

PEAK DISCHARGE (BASE, 1,100 CFS).--Jan. 22 (0715) 3,120 cfs (8.21 ft).

16208500 Right Branch of South Fork Kaukonahua Stream near Wahiawa

LOCATION.--Lat 21°29'58", long 157°59'07", on left bank 500 ft downstream from Ku Tree Reservoir spillway, 1 mile upstream from mouth, and 3.1 miles east of Wahiawa Post Office.

DRAINAGE AREA.--0.86 sq mi.

PERIOD OF RECORD.--August 1957 to September 1972 (discontinued).

GAGE.--Water-stage recorder and masonry control. Altitude of gage is 980 ft (from topographic map).

AVERAGE DISCHARGE (since termination of upstream diversions).--12 years (1960-72), 2.28 cfs (1,650 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 456 cfs Feb. 22 (gage height, 4.74 ft), from rating curve extended above 170 cfs; no flow for many days.

Period of record: Maximum discharge, 3,160 cfs Jan. 5, 1968 (gage height, 7.68 ft), from rating curve extended above 170 cfs; no flow at times.

REMARKS.--Records good. Prior to 1960, diversions from reservoirs above station for use at Schofield Barracks.

REVISIONS (FISCAL YEAR).--WSP 1937: 1960(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	.03	0	7.6	2.0	1.7	.61	.98	.36	.06	.02	.06
2	.46	.05	0	4.0	1.8	3.5	.79	.84	.21	.72	.03	.04
3	.11	.03	0	1.8	1.7	13	.85	.70	.20	.62	.02	.06
4	0	0	0	1.8	27	3.2	.73	.59	.19	.20	.02	12
5	0	0	0	1.4	6.4	2.5	.38	.63	.16	.02	.01	.61
6	0	0	0	1.2	2.4	1.9	.59	.47	.13	0	0	.17
7	0	0	0	2.3	1.8	2.0	.94	.48	.06	.03	0	.04
8	.02	0	0	4.4	1.7	1.5	4.9	.60	.05	.03	0	.02
9	.03	0	0	1.5	9.8	1.4	8.7	.71	.03	1.4	0	.02
10	.03	0	.03	1.4	12	1.3	7.4	.40	.02	4.5	0	.02
11	.04	0	.04	.79	2.9	1.3	1.2	.34	.03	.71	0	.02
12	.08	0	.03	.83	2.8	1.2	1.1	.51	.06	.27	0	.02
13	.02	.01	.09	.78	2.4	1.2	2.5	.94	.02	1.4	0	.02
14	.03	.01	.26	3.2	1.6	1.1	11	.93	.02	1.1	0	.03
15	.03	.01	8.0	1.7	1.5	1.1	30	.35	.04	11	0	.03
16	.03	.01	11	.91	1.4	1.1	3.0	.49	.12	1.6	0	.04
17	.03	0	24	.78	1.4	1.0	5.5	.38	.56	.40	0	.03
18	.05	0	9.1	.81	2.6	.96	4.1	.36	1.6	.06	0	.03
19	.04	0	21	.72	2.2	.98	1.8	.18	2.6	.06	0	.02
20	.04	.01	4.4	.59	2.4	.85	1.2	.46	.77	.06	4.7	.03
21	0	.04	2.4	.60	1.5	.72	1.0	.79	.22	.05	6.0	.03
22	.01	.02	1.8	52	43	.86	1.1	1.2	.08	.04	.60	.03
23	.07	0	1.3	74	15	2.3	1.1	5.0	.07	.01	.17	.02
24	.03	.04	1.3	15	4.9	1.1	.88	2.2	.09	.01	.03	.04
25	.03	.10	1.5	4.5	3.0	.80	.77	.88	.44	.03	.12	.05
26	.03	.02	1.2	3.6	2.3	.71	8.3	.39	3.1	.05	.04	.09
27	.01	0	2.2	4.8	2.0	.71	3.0	.33	1.2	.05	.01	.03
28	0	0	2.0	2.9	1.9	.69	4.2	.30	.23	.02	.02	.05
29	.02	0	3.2	2.5	2.1	1.1	2.8	.35	.12	0	.02	.05
30	.04	0	5.8	2.3	-----	.81	1.5	.35	.12	0	.03	.04
31	.02	-----	3.7	2.2	-----	.56	-----	.53	-----	0	.04	-----
TOTAL	2.40	.38	104.35	202.91	163.5	53.15	111.94	23.66	12.90	24.50	11.89	13.74
MEAN	.077	.013	3.37	6.55	5.64	1.71	3.73	.76	.43	.79	.38	.46
MAX	1.1	.10	24	74	43	13	30	5.0	3.1	11	6.0	12
MIN	0	0	0	.59	1.4	.56	.38	.18	.02	0	0	.02
AC-FT	4.8	.8	207	402	324	105	222	47	26	49	24	27

CAL YR 1971 TOTAL 1,379.42 MEAN 3.78 MAX 74 MIN 0 AC-FT 2,740  
 WTR YR 1972 TOTAL 725.32 MEAN 1.98 MAX 74 MIN 0 AC-FT 1,440

## HAWAII, ISLAND OF OAHU

16210900 Poamoho tunnel near Wahiawa

LOCATION,--Lat 21°31'12", long 157°58'51", on left bank 5 ft downstream from tunnel outlet and 3.6 miles north-east of Wahiawa Post Office.

PERIOD OF RECORD,--July 1958 to current year.

GAGE,--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (from topographic map).

AVERAGE DISCHARGE,--14 years, 5.32 cfs (3,850 acre-ft per year).

EXTREMES,--Period of record: Maximum daily discharge, 265 cfs Mar. 16, 1968; no flow at times.

REMARKS,--Records fair. Tunnel diverts from Poamoho Stream to North Fork Kaukonahua Stream to augment storage in Wahiawa Reservoir.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	.10	.12	.08	.11	.05	.10	5.3	.83	2.9	.41	.03
2	.63	.11	.12	.08	.10	.05	.08	3.8	.78	7.3	.44	.03
3	.78	.12	.12	.09	.09	6.3	.07	3.2	.66	4.3	.30	.04
4	.70	.11	.12	.10	44	.06	.08	2.4	.62	1.3	.18	13
5	.74	.11	.12	.10	1.5	.05	.06	1.9	.54	.66	.12	.04
6	.50	.12	7.3	.10	.17	.05	.06	1.8	.47	.44	.51	.03
7	.32	.13	6.5	.33	.11	.05	.07	1.6	.73	.38	.58	.03
8	.26	.13	.12	.67	1.0	.05	2.6	1.5	.98	.41	.13	.04
9	.19	.11	1.8	.08	9.7	.05	9.0	14	5.4	2.4	.07	.05
10	.17	.11	.12	.08	15	.05	.51	3.0	2.0	15	.06	.05
11	.19	.12	.12	.08	.15	.05	.07	1.9	.88	5.1	.09	.05
12	.21	.12	.12	.08	.09	.05	.07	2.8	.58	1.3	.30	.05
13	.18	.13	.12	.08	.07	.05	.94	4.0	.50	.78	1.6	.05
14	.16	2.0	.95	.09	.06	.05	10	4.7	.44	1.0	.11	.06
15	.12	.13	.42	.08	.06	.05	22	3.2	.41	39	.04	.08
16	.09	2.1	.35	.07	.06	.05	2.5	2.1	.41	16	.04	.07
17	.08	.70	18	.07	.06	.05	56	2.4	.54	4.3	.04	.05
18	.11	.14	.71	.07	14	.05	40	1.6	1.1	1.7	.10	.05
19	.08	.12	42	.07	1.6	.06	11	1.3	4.0	1.0	.04	.05
20	.12	.12	.11	.07	1.7	.06	13	1.7	2.1	.83	4.0	.05
21	.09	.12	.11	.07	.40	.06	6.4	3.3	1.0	.74	8.2	.05
22	.13	.12	.11	113	13	.06	4.8	2.0	.50	.62	.10	.69
23	.17	.12	.10	104	3.0	.15	3.9	4.3	.41	.54	.04	.05
24	.35	.71	.10	15	.06	.06	4.0	3.6	3.2	.47	.04	5.0
25	.32	25	.10	2.1	.06	.05	3.3	1.4	.93	.41	.05	.05
26	8.7	7.7	.10	.93	.06	.05	3.6	1.1	2.0	.38	.16	.05
27	.11	.12	.12	4.9	.05	.06	2.9	.98	2.1	.54	.05	.07
28	.10	.13	.10	.62	.05	.09	4.7	.93	.74	.24	.04	.08
29	.10	.13	.10	.30	.05	.10	12	.88	.47	.22	.04	.06
30	.15	2.9	.12	.19	-----	.10	6.1	.83	.41	.18	.05	.05
31	.11	-----	.15	.15	-----	.10	-----	.83	-----	.24	.04	-----
TOTAL	16.07	43.88	80.55	243.73	106.36	10.16	219.91	84.35	35.73	110.68	17.97	20.05
MEAN	.52	1.46	2.60	7.86	3.67	.33	7.33	2.72	1.19	3.57	.58	.67
MAX	8.7	25	42	113	44	6.3	56	14	5.4	39	8.2	13
MIN	.08	.10	.10	.07	.05	.05	.06	.83	.41	.18	.04	.03
AC-FT	32	87	160	463	211	20	436	167	71	220	36	40

CAL YR 1971 TOTAL 1,047.19 MEAN 2.87 MAX 61 MIN .02 AC-FT 2,080  
 WTR YR 1972 TOTAL 989.44 MEAN 2.70 MAX 113 MIN .03 AC-FT 1,960

16211000 Poamoho Stream near Wahiawa

LOCATION.--Lat 21°31'24", long 157°58'55", on left bank 180 ft downstream from Poamoho tunnel intake and 3.7 miles northeast of Wahiawa Post Office.

DRAINAGE AREA.--1.79 sq mi.

PERIOD OF RECORD.--January 1947 to current year.

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

AVERAGE DISCHARGE.--25 years, 4.29 cfs (3,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,550 cfs Apr. 17 (gage height, 5.69 ft), from rating curve extended as explained below; no flow Oct. 3-22.  
 Period of record: Maximum discharge, 3,630 cfs Mar. 16, 1968 (gage height, 10.32 ft), from rating curve extended above 75 cfs on basis of slope-area measurement at gage height 7.26 ft; no flow at times.

REMARKS.--Records fair. Poamoho tunnel (see sta 16210900) diverts 180 ft above station to North Fork Kaukonahua Stream to augment storage in Wahiawa Reservoir.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1959(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.8	8.0	7.5	4.0	3.3	.95	.08	.24	.26	.26	.25
2	.36	9.0	6.0	4.2	3.5	5.1	.92	.08	.25	.32	.28	.40
3	0	12	4.2	5.0	3.3	21	1.4	.07	.27	.22	.25	1.0
4	0	18	4.5	8.7	36	6.0	7.8	.07	.13	.13	.20	5.0
5	0	4.0	3.1	3.3	13	5.0	2.2	.07	.07	.10	.13	.60
6	0	2.0	30	3.2	7.1	3.5	1.4	.07	.08	.10	.31	.30
7	0	1.0	35	24	5.4	3.3	3.4	.07	.11	.10	.49	.20
8	0	2.0	6.9	28	7.2	2.9	5.5	.07	.16	.12	.24	.15
9	0	.80	27	5.5	20	2.6	32	2.0	.25	.26	.28	.11
10	0	1.2	6.4	4.0	21	2.4	13	.08	.15	1.3	.38	.09
11	0	6.0	5.1	3.4	7.4	2.2	3.2	.07	.09	.29	.43	.07
12	0	1.0	4.7	2.9	5.8	2.1	2.1	.08	.05	.15	.64	.06
13	0	1.2	4.0	2.6	5.6	1.9	7.9	.10	.04	.12	2.9	.05
14	0	4.0	21	6.3	4.3	1.8	11	.08	.03	.13	1.3	.05
15	0	1.5	12	3.9	3.8	1.7	22	.07	.04	56	.50	.04
16	0	6.0	12	2.3	3.7	1.7	8.5	.07	.07	1.5	.30	.04
17	0	1.2	41	2.2	3.3	1.6	98	.09	.09	.13	.26	.04
18	0	.60	16	1.9	34	1.9	4.9	.07	.23	.11	1.1	.30
19	0	.30	70	2.9	19	1.8	.17	.07	.36	.09	.84	.10
20	0	.15	14	3.0	18	1.5	.43	.08	.24	.08	3.9	.20
21	0	.06	8.5	1.7	14	1.4	.11	.12	.16	.16	9.0	.14
22	0	.02	6.4	258	30	1.4	.10	.10	.10	.16	1.5	4.4
23	.01	.01	5.2	30	18	4.1	.08	.13	.06	.12	.75	1.8
24	2.3	1.0	4.4	14	8.7	2.8	.09	.13	.39	.09	.71	9.8
25	4.0	30	4.5	8.5	6.0	1.5	.08	.12	.19	.20	.92	3.6
26	27	10	4.1	6.9	5.0	1.2	.08	.12	.27	.21	1.8	.93
27	1.9	3.0	11	9.6	4.3	1.1	.08	.12	.24	.25	.60	.49
28	.70	5.0	4.8	6.5	3.9	1.1	.09	.13	.10	.14	.40	.41
29	.48	3.0	5.6	5.4	3.8	1.2	.26	.15	.09	.17	.30	.44
30	7.9	15	14	4.9	-----	1.6	.09	.20	.08	.24	.50	.45
31	5.4	-----	19	4.4	-----	1.1	-----	.21	-----	.30	.35	-----
TOTAL	51.15	140.84	418.4	474.7	319.1	91.8	227.83	4.97	4.63	63.55	31.82	31.51
MEAN	1.65	4.69	13.5	15.3	11.0	2.96	7.59	.16	.15	2.05	1.03	1.05
MAX	27	30	70	258	36	21	98	2.0	.39	56	9.0	9.8
MIN	0	.01	3.1	1.7	3.3	1.1	.08	.07	.03	.08	.13	.04
AC-FT	101	279	830	942	633	182	452	9.9	9.2	126	63	63

CAL YR 1971 TOTAL 2,796.25 MEAN 7.66 MAX 337 MIN 0 AC-FT 5,550  
 WTR YR 1972 TOTAL 1,860.30 MEAN 5.08 MAX 258 MIN 0 AC-FT 3,690

## 16211600 Makaha Stream near Makaha

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

DRAINAGE AREA.--2.31 sq mi.

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

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

AVERAGE DISCHARGE.--13 years, 2.12 cfs (1,540 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 362 cfs Feb. 4 (gage height, 4.04 ft), from rating curve extended as explained below; minimum, 0.04 cfs Aug. 16, 19, 21.

Period of record: Maximum discharge, 1,170 cfs Mar. 13, 1962 (gage height, 6.50 ft, from floodmarks), from rating curve extended above 51 cfs on basis of slope-area measurement of peak flow; no flow at times.

Maximum stage known since at least 1953, about 7.8 ft Nov. 24, 1954, from information by local resident (discharge, about 1,700 cfs).

REMARKS.--Records good. Wells and water-development tunnels in the vicinity and above the station may affect low-flow records. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.24	.21	.78	1.7	2.2	.92	.99	.34	.21	.08	2.9
2	.10	.24	.21	.55	1.4	4.1	.92	.92	.34	.18	.09	1.1
3	.10	.21	.18	.40	1.1	27	.99	.85	.51	.18	.09	.62
4	.10	.21	.15	.31	38	9.0	1.8	.66	.40	.15	.09	1.3
5	.10	.18	.15	.45	22	7.8	1.2	.59	.36	.15	.10	.62
6	.08	.18	2.6	.78	11	5.7	1.1	.61	.33	.13	.08	.58
7	.08	.15	1.1	.45	6.2	12	1.2	.58	.32	.13	.07	.41
8	.08	.13	.55	.35	4.2	6.2	.99	.55	.31	.13	.07	.30
9	.08	.13	.35	.31	3.3	4.8	1.1	.52	.33	.13	.08	.25
10	.08	.13	.27	.27	3.2	3.8	1.1	.48	.32	.13	.07	.23
11	.08	.13	.27	.24	2.4	3.0	.85	.47	.31	.13	.06	.21
12	.08	.15	.27	.24	1.9	2.6	.78	.45	.31	.12	.07	.19
13	.10	.15	.24	.21	1.6	2.2	.72	.44	.30	.12	.07	.17
14	.06	.15	.21	.18	1.4	2.0	2.7	.42	.28	.12	.06	.16
15	.06	.15	.18	.21	1.2	1.8	13	.40	.26	.12	.06	.35
16	.06	.15	.18	.18	1.1	1.6	6.6	.40	.24	.12	.05	.33
17	.06	.13	17	.18	1.1	1.5	7.2	.39	.24	.11	.06	.21
18	1.1	.10	3.0	.18	13	1.4	4.4	.38	.24	.10	.05	.19
19	.21	.10	6.6	.21	4.8	1.3	3.2	.38	.23	.10	.05	.17
20	.13	.08	2.1	.21	2.9	1.2	2.5	.37	.24	.11	.07	.15
21	.15	.08	1.5	.18	2.4	1.1	2.1	.37	.24	.11	.06	.14
22	.13	.08	1.1	.18	11	1.1	1.8	.37	.24	.11	.05	.14
23	.13	.06	.85	18	7.6	5.7	1.7	.37	.25	.10	.06	.14
24	.15	.06	.66	17	6.0	2.2	1.5	.36	.24	.09	.05	.13
25	.15	.87	.55	5.0	7.0	1.5	1.4	.35	.23	.09	.05	.12
26	.15	.50	.40	2.7	4.4	1.2	1.3	.37	.22	.08	.08	.10
27	.15	.31	.35	5.9	3.5	1.1	1.1	.38	.21	.08	.06	.09
28	.15	.27	.31	3.5	2.9	1.1	1.1	.37	.20	.07	.06	.09
29	.18	.24	.31	3.0	2.5	1.2	1.1	.35	.21	.07	.12	.08
30	.40	.24	.45	2.1	-----	1.2	.99	.34	.21	.07	1.9	.07
31	.31	-----	.40	2.2	-----	.99	-----	.33	-----	.09	.67	-----
TOTAL	4.89	5.80	42.70	66.45	170.8	119.59	67.36	14.81	8.46	3.63	4.58	11.54
MEAN	.16	.19	1.38	2.14	5.89	3.86	2.25	.48	.28	.12	.15	.38
MAX	1.1	.87	17	18	38	27	13	.99	.51	.21	1.9	2.9
MIN	.06	.06	.15	.18	1.1	.99	.72	.33	.20	.07	.05	.07
AC-FT	9.7	12	85	132	339	237	134	29	17	7.2	9.1	23

CAL YR 1971 TOTAL 749.29 MEAN 2.05 MAX 95 MIN .06 AC-FT 1,490  
 WTR YR 1972 TOTAL 520.61 MEAN 1.42 MAX 38 MIN .05 AC-FT 1,030

PEAK DISCHARGE (BASE, 200 CFS).--Dec. 17 (1230) 220 cfs (3.48 ft); Feb. 4 (1730) 362 cfs (4.04 ft).

16211800 Kaupuni Stream at altitude 374 ft, near Waianae

LOCATION.--Lat 21°28'20", long 158°09'26", on right bank at diversion dam, 2.6 miles northeast of Waianae Cemetery, and 2.8 miles northeast of junction of Waianae Valley Road and Farrington Highway.

DRAINAGE AREA.--3.58 sq mi.

PERIOD OF RECORD.--May 1960 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder and concrete-masonry control. Datum of gage is 374 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--12 years, 1.16 cfs (840 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 180 cfs Feb. 4 (gage height, 3.05 ft); minimum, no flow parts of many days.

Period of record: Maximum discharge, 1,340 cfs Dec. 23, 1964 (gage height, 4.75 ft), from rating curve extended above 160 cfs on basis of slope-area measurement at gage height 4.06 ft; no flow at times.

REMARKS.--Records good. Several water development tunnels above station may affect flow. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.19	.16	.23	.19	.49	.40	.32	.15	.13	.08	.04
2	.16	.19	.16	.19	.19	.61	.43	.29	.18	.13	.06	.04
3	.16	.19	.19	.19	.19	26	.43	.27	.18	.13	.07	.03
4	.16	.19	.19	.19	18	6.2	.43	.26	.18	.12	.09	.03
5	.13	.19	.16	.19	11	4.8	.39	.24	.17	.11	.07	.04
6	.13	.19	.16	.19	3.4	3.2	.37	.24	.16	.11	.06	.03
7	.13	.19	.16	.19	1.2	7.7	.36	.23	.15	.12	.06	.04
8	.13	.19	.16	.16	.67	4.1	.34	.21	.15	.13	.06	.03
9	.16	.19	.16	.16	.49	2.7	.32	.21	.15	.12	.06	.02
10	.13	.19	.16	.16	.39	2.1	.36	.21	.16	.13	.06	.02
11	.13	.19	.16	.16	.35	1.7	.37	.21	.16	.10	.04	.01
12	.16	.19	.16	.16	.35	1.4	.32	.21	.15	.11	.05	.01
13	.16	.19	.16	.16	.31	1.1	.31	.21	.16	.10	.04	.02
14	.16	.19	.16	.13	.31	.94	.32	.21	.17	.10	.04	.01
15	.16	.23	.16	.13	.31	.80	3.8	.21	.14	.10	.05	.03
16	.13	.27	.16	.13	.27	.69	3.1	.20	.14	.10	.04	.02
17	.16	.23	2.6	.13	.31	.58	2.2	.19	.14	.10	.04	.02
18	.16	.16	.23	.13	.49	.48	1.6	.18	.14	.10	.04	.02
19	.16	.16	.39	.13	.35	.40	1.2	.18	.15	.09	.04	.02
20	.16	.16	.23	.13	.31	.36	1.0	.18	.16	.09	.06	.02
21	.16	.16	.23	.13	.31	.34	.96	.18	.15	.09	.04	.02
22	.16	.16	.19	.11	2.4	.33	.88	.17	.14	.08	.04	.02
23	.16	.16	.19	4.5	1.7	1.6	.81	.17	.14	.08	.04	.02
24	.16	.16	.23	6.2	1.4	.93	.74	.17	.14	.07	.04	.03
25	.16	.19	.23	.55	2.8	.57	.67	.17	.13	.07	.04	.04
26	.16	.16	.23	.31	1.1	.51	.61	.17	.13	.07	.04	.03
27	.16	.16	.23	.27	.81	.50	.55	.16	.13	.07	.03	.04
28	.16	.16	.19	.27	.67	.50	.37	.16	.12	.09	.03	.03
29	.16	.16	.19	.27	.55	.48	.35	.15	.12	.08	.03	.03
30	.19	.16	.19	.23	-----	.47	.33	.15	.12	.07	.04	.03
31	.19	-----	.19	.19	-----	.42	-----	.15	-----	.08	.04	-----
TOTAL	4.81	5.50	8.36	16.27	50.82	73.00	24.32	6.26	4.46	3.07	1.52	.79
MEAN	.16	.18	.27	.52	1.75	2.35	.81	.20	.15	.099	.049	.026
MAX	.19	.27	2.6	6.2	18	26	3.8	.32	.18	.13	.09	.04
MIN	.13	.16	.16	.11	.19	.33	.31	.15	.12	.07	.03	.01
AC-FT	9.5	11	17	32	101	145	48	12	8.9	6.1	3.0	1.6

CAL YR 1971 TOTAL 560.80 MEAN 1.54 MAX 92 MIN .09 AC-FT 1,110  
 WTR YR 1972 TOTAL 199.18 MEAN .54 MAX 26 MIN .01 AC-FT 395

PEAK DISCHARGE (BASE, 90 CFS)--Feb. 4 (1745) 180 cfs (3.05 ft).

## HAWAII, ISLAND OF OAHU

16212800 Kipapa Stream near Wahiawa

LOCATION.--Lat 21°28'15", long 157°57'50", on left bank 1,700 ft downstream from forest-reserve boundary, 4.9 miles southeast of Wahiawa Post Office, and 6.3 miles northeast of Waipahu.

DRAINAGE AREA.--4.29 sq mi.

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

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

AVERAGE DISCHARGE.--15 years, 11.2 cfs (8,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,550 cfs Jan. 22 (gage height, 8.17 ft), from rating curve extended as explained below; no flow Oct. 8-24.

Period of record: Maximum discharge, 5,680 cfs May 14, 1963 (gage height, 12.29 ft), from rating curve extended above 300 cfs on basis of slope-area measurements at gage heights 7.96 and 12.29 ft; no flow at times.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.80	1.3	8.5	8.7	2.8	2.8	.49	4.9	.59	.30	1.2	.98
2	1.1	1.0	4.7	5.8	2.4	3.8	14	3.1	.80	.30	11	2.9
3	.45	1.2	3.2	3.9	2.2	52	15	2.0	.74	1.8	1.6	2.4
4	.19	11	5.6	5.1	15	11	20	1.6	.59	1.1	.59	32
5	.11	25	2.2	4.0	18	6.3	3.4	1.3	.41	.49	.30	3.2
6	.07	4.1	11	7.8	6.3	4.1	51	1.2	.30	.27	.19	1.7
7	.02	2.6	37	3.6	3.4	3.4	19	1.1	.27	.19	.13	1.0
8	0	6.2	5.1	8.9	10	2.8	7.4	.98	.30	.17	.07	.64
9	0	2.6	6.1	3.7	19	2.3	54	2.4	13	.19	.11	.45
10	0	5.3	4.3	2.3	76	2.0	22	1.6	4.4	.64	4.8	.37
11	0	5.6	6.3	2.0	8.7	1.8	7.1	1.1	1.3	.98	3.2	.30
12	0	2.6	8.8	1.6	5.6	1.6	15	1.1	.69	.59	3.8	.25
13	0	2.0	3.4	1.4	4.9	1.5	19	7.7	.49	.41	8.9	.22
14	0	19	26	1.4	3.1	1.4	52	12	.33	.37	2.5	.22
15	0	9.3	18	1.3	2.6	1.3	175	3.8	.25	35	.80	.19
16	0	38	31	1.2	2.3	1.2	18	2.2	.37	20	.33	.17
17	0	12	105	1.0	2.0	1.1	122	1.4	.59	4.5	.17	.19
18	0	7.5	36	.98	102	1.0	34	1.0	.49	1.3	3.5	.45
19	0	4.3	116	.92	53	1.0	13	.80	5.0	.69	1.4	.41
20	0	2.8	21	1.3	17	.92	9.1	.92	1.6	.41	12	.19
21	0	2.7	12	.98	9.1	.86	6.8	1.5	.92	.69	32	.25
22	0	2.2	7.6	233	54	.80	6.3	2.0	1.0	1.2	3.8	9.5
23	0	1.4	5.3	194	41	3.2	4.5	1.6	.92	.54	1.4	2.2
24	0	1.8	4.1	64	19	4.0	4.1	7.9	1.1	.30	.86	3.4
25	.12	105	9.0	16	14	1.2	3.4	2.0	.69	.27	2.5	1.6
26	14	23	5.2	10	7.3	.80	3.6	1.2	7.6	.25	1.2	.54
27	2.6	6.8	6.2	18	5.1	.74	2.8	.74	5.6	.22	1.6	.30
28	.74	10	3.9	8.4	4.1	.80	3.0	.64	1.5	.17	.64	.74
29	3.0	5.3	9.9	5.1	3.4	.64	3.2	.74	.69	.25	.37	1.1
30	17	29	24	4.1	-----	.64	5.2	.69	.45	.33	7.2	.80
31	5.0	-----	19	3.2	-----	.54	-----	.64	-----	.41	3.6	-----
TOTAL	45.20	350.6	561.4	623.68	513.3	117.54	713.39	71.85	52.98	74.33	111.76	68.66
MEAN	1.46	11.7	18.1	20.1	17.7	3.79	23.8	2.32	1.77	2.40	3.61	2.29
MAX	17	105	116	233	102	52	175	12	13	35	32	32
MIN	0	1.0	2.2	.92	2.0	.54	.49	.64	.25	.17	.07	.17
AC-FI	90	695	1,110	1,240	1,020	233	1,420	143	105	147	222	136

CAL YR 1971 TOTAL 3,808.18 MEAN 10.4 MAX 285 MIN 0 AC-FI 7,550

WTR YR 1972 TOTAL 3,304.69 MEAN 9.03 MAX 233 MIN 0 AC-FI 6,550

PEAK DISCHARGE (BASE, 930 CFS).--Jan. 22 (0630) 1,550 cfs (8.17 ft); Apr. 15 (0100) 1,340 cfs (7.79 ft).

## 16213000 Waikele Stream at Waipahu

LOCATION (revised).--Lat 21°23'11", long 158°00'49", on left bank 300 ft upstream from bridge on Highway 90 and 0.3 mile southwest of sugar refinery at Waipahu.

DRAINAGE AREA.--45.7 sq mi.

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

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.

AVERAGE DISCHARGE.--19 years (1952-59, 1960-72), 39.7 cfs (28,760 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 5,730 cfs Jan. 23 (gage height, 8.63 ft); minimum, 8.0 cfs Sept. 17. Period of record: Maximum discharge, 13,600 cfs Nov. 28, 1954 (gage height, 14.82 ft, site and datum then in use), from rating curve extended above 730 cfs on basis of slope-area measurement of peak flow; minimum, 3.7 cfs Sept. 28, 29, 1962.

REMARKS.--Records good. Diversions above station for irrigation of sugarcane in vicinity of Waipahu. Records of chemical analyses and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEAR).--WSP 1639: 1955(M). (WATER YEAR): WSP 1937: Drainage area. WSP 2137: 1965.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	14	40	53	35	31	32	33	17	20	19	36
2	18	16	24	58	34	32	36	33	18	23	18	21
3	28	23	24	46	30	125	41	27	25	26	20	24
4	15	24	30	37	83	62	46	24	25	23	16	49
5	13	71	30	34	99	48	34	19	21	16	19	24
6	13	36	18	35	49	39	32	21	19	16	20	16
7	14	29	46	34	42	40	104	32	19	21	16	15
8	13	25	74	36	34	39	34	25	19	22	12	16
9	27	24	22	43	57	33	71	23	20	23	9.9	17
10	30	18	20	34	134	33	96	25	27	19	10	15
11	16	37	30	32	45	32	42	23	27	18	10	14
12	12	22	31	31	39	31	29	23	23	17	12	13
13	17	28	24	30	36	26	52	28	22	16	16	14
14	17	29	34	30	35	23	60	44	21	18	22	13
15	24	30	33	33	29	25	746	29	18	51	16	11
16	36	55	79	33	26	22	89	23	26	37	10	12
17	31	34	218	30	24	25	206	19	22	27	11	13
18	37	23	157	28	136	25	138	18	23	21	10	12
19	26	19	271	26	101	25	64	20	19	17	11	12
20	26	28	79	26	59	20	46	25	18	16	14	12
21	27	22	47	28	41	21	39	28	18	15	39	10
22	26	14	37	533	214	23	39	27	18	19	22	10
23	35	15	34	1,320	122	28	41	22	20	20	13	12
24	32	17	36	307	75	27	39	22	20	17	14	11
25	25	166	38	86	67	29	36	23	23	13	12	9.6
26	18	74	37	61	50	28	33	22	22	12	12	10
27	14	43	36	55	44	25	29	25	19	13	12	9.6
28	13	30	37	57	40	26	25	28	19	16	12	8.9
29	24	29	35	43	35	25	25	27	16	17	11	9.2
30	34	56	76	40	-----	25	30	23	17	20	11	11
31	23	-----	69	38	-----	33	-----	19	-----	16	11	-----
TOTAL	699	1,051	1,766	3,277	1,815	1,027	2,334	780	621	625	460.9	460.3
MEAN	22.5	35.0	57.0	106	62.6	33.1	77.8	25.2	20.7	20.2	14.9	15.3
MAX	37	166	271	1,320	214	125	746	44	27	51	39	49
MIN	12	14	18	26	24	20	25	18	16	12	9.9	8.9
AC-FT	1,390	2,080	3,500	6,500	3,600	2,040	4,630	1,550	1,230	1,240	914	913

CAL YR 1971 TOTAL 17,889 MEAN 49.0 MAX 1,090 MIN 12 AC-FT 35,480  
 WTR YR 1972 TOTAL 14,916.2 MEAN 40.8 MAX 1,320 MIN 8.9 AC-FT 29,590

## PEAK DISCHARGE (BASE, 1,300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-22	0800	5.97	2,470	4-15	0330	6.98	3,580
1-23	1900	8.63	5,730				

## HAWAII, ISLAND OF OAHU

16216000 Waiawa Stream near Pearl City

LOCATION.--Lat 21°23'55", long 157°58'50", on left bank 100 ft upstream from lower bridge on Highway 90, 0.6 mile northwest of Pearl City, and 2.0 miles northeast of Waipahu.

DRAINAGE AREA.--26.4 sq mi.

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

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

AVERAGE DISCHARGE.--20 years, 32.9 cfs (23,840 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 12,400 cfs Apr. 15 (gage height, 16.62 ft), from rating curve extended as explained below; minimum, 2.4 cfs Oct. 15, June 1.  
Period of record: Maximum discharge, 23,400 cfs Jan. 5, 1968 (gage height, 20.56 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurements at gage heights 17.1 and 20.56 ft; minimum, 1.8 cfs Sept. 1, 1971.

REMARKS.--Records good except those above 300 cfs, which are poor. Low flow affected by effluent from sewage treatment plant and occasional small irrigation diversions and return flows above station. Records of chemical analyses and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1569: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	4.3	13	8.0	6.1	6.7	4.3	6.2	3.5	3.6	4.1	36
2	3.2	3.5	7.5	6.6	5.5	6.7	24	7.9	3.5	3.2	4.9	5.5
3	3.1	3.4	6.6	5.4	5.0	131	14	6.2	4.3	3.3	4.9	3.3
4	3.1	3.5	5.0	4.8	8.2	43	60	6.5	3.5	3.5	4.7	14
5	2.9	4.2	5.0	4.6	23	23	16	6.7	3.3	3.5	4.0	7.2
6	2.9	5.7	5.6	4.6	11	14	25	6.2	2.9	3.6	4.1	4.0
7	2.9	4.0	33	5.5	8.5	10	44	5.1	2.9	4.3	4.1	3.2
8	2.9	3.7	13	4.9	6.2	7.7	12	4.9	2.9	5.3	3.6	3.3
9	3.0	3.7	6.9	7.0	17	6.5	54	4.9	3.0	6.0	3.5	4.4
10	3.0	4.1	5.7	5.4	49	5.8	47	4.9	3.0	6.2	3.3	3.2
11	2.9	4.7	5.0	4.8	18	5.1	20	5.1	3.3	5.3	3.2	3.0
12	2.9	5.6	6.0	4.5	11	4.9	11	5.5	3.0	6.0	3.2	3.3
13	4.4	4.6	7.2	4.4	7.9	5.3	30	6.5	3.0	6.0	3.2	3.5
14	3.0	12	32	4.8	6.2	5.5	187	23	3.0	5.3	3.0	3.5
15	2.8	55	28	4.7	5.1	5.8	2,030	6.9	3.0	27	3.2	3.5
16	2.8	86	57	4.5	5.3	6.0	80	5.1	3.0	17	4.3	4.0
17	12	24	203	4.3	5.3	5.1	208	5.5	3.3	15	4.3	5.1
18	4.0	14	131	4.3	198	4.7	76	4.5	3.8	6.5	4.1	4.1
19	3.1	9.6	187	4.5	46	5.8	28	4.5	3.6	5.5	5.1	3.6
20	3.0	6.8	60	4.4	26	5.3	18	4.1	3.8	4.5	6.0	3.6
21	3.3	5.4	28	4.3	15	5.3	16	4.0	4.5	4.3	5.1	4.1
22	2.9	4.9	17	323	87	5.8	11	4.5	4.1	4.0	4.5	5.3
23	3.1	5.1	11	790	154	6.5	10	4.7	4.7	4.1	4.5	5.3
24	3.2	4.5	8.6	273	82	5.8	7.9	4.0	4.3	4.1	4.9	5.8
25	3.4	198	9.2	48	55	4.9	6.7	4.0	4.0	4.0	3.8	5.5
26	3.9	55	7.3	24	26	4.7	6.7	3.8	4.0	4.0	4.1	5.8
27	5.0	29	6.0	19	17	4.7	6.0	3.8	3.8	3.6	4.3	5.8
28	3.5	17	6.7	17	12	4.7	5.8	3.6	3.6	4.0	4.7	5.3
29	4.9	13	6.1	11	8.5	4.3	5.8	3.6	3.5	4.0	5.3	4.3
30	17	21	13	8.5	-----	4.3	6.0	3.6	3.5	4.0	4.3	4.1
31	8.2	-----	12	7.0	-----	4.3	-----	3.5	-----	3.8	3.8	-----
TOTAL	129.4	606.3	942.4	1,626.8	924.8	363.2	3,070.2	173.3	105.6	184.5	130.1	172.6
MEAN	4.17	20.2	30.4	52.5	31.9	11.7	102	5.59	3.52	5.95	4.20	5.75
MAX	17	198	203	790	198	131	2,030	23	4.7	27	6.0	36
MIN	2.8	3.4	5.0	4.3	5.0	4.3	4.3	3.5	2.9	3.2	3.0	3.0
AC-FT	257	1,200	1,870	3,230	1,830	720	6,090	344	209	366	258	342

CAL YR 1971 TOTAL 14,418.1 MEAN 39.5 MAX 1,440 MIN 2.4 AC-FT 28,600  
WTR YR 1972 TOTAL 8,429.2 MEAN 23.0 MAX 2,030 MIN 2.8 AC-FT 16,720

## PEAK DISCHARGE (BASE, 2,300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-22	0730	10.53	2,370	4-15	0245	16.62	12,400
1-23	1915	10.70	4,400	4-17	2000	8.37	2,300

16224500 Kalauao Stream at Moanalua Road, at Aiea

LOCATION.--Lat 21°23'07", long 157°56'22", on left bank at downstream side of Moanalua Road bridge, 0.4 mile northwest of Aiea Post Office, and 2.3 miles southeast of Pearl City Post Office.

DRAINAGE AREA.--2.59 sq mi.

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 11.71 ft above mean sea level. Nov. 15, 1965, to June 16, 1966, at datum 0.04 ft higher. Prior to Nov. 15, 1965 and June 17, 1966 to Sept. 30, 1970, at datum 1.04 ft higher.

AVERAGE DISCHARGE.--15 years, 3.05 cfs (2,210 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,120 cfs Apr. 15 (gage height, 5.19 ft); no flow for many days. Period of record: Maximum discharge, 2,580 cfs May 14, 1963 (gage height, 6.63 ft, datum then in use), from rating curve extended above 77 cfs on basis of slope-area measurements at gage heights 6.29 and 6.63 ft; no flow for many days in 1970, 1971, and 1972.

REMARKS.--Records fair. Some return of irrigation water above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.08	.09	.38	.20	.25	.07	.05	0	.03	.02	0
2	.08	.06	.08	.12	.15	.82	.07	.04	0	.05	.03	0
3	.08	.06	.08	.13	.13	26	.05	.04	.14	.06	.03	0
4	.09	.06	.08	.15	.66	9.3	1.1	.03	.02	.04	.02	.01
5	.08	.07	.08	.13	2.7	2.9	.50	.03	0	.01	.02	0
6	.23	.07	.08	.15	.78	1.3	16	.01	0	.01	.01	0
7	.09	.07	.08	.15	.50	.78	2.9	0	0	0	0	0
8	.15	.07	.07	.33	.50	.58	.41	0	0	0	0	0
9	.08	.07	.06	.33	5.2	.38	2.5	0	0	.01	.01	0
10	.08	.07	.06	.20	5.8	.23	2.1	0	0	.09	0	0
11	.12	.06	.06	.18	1.8	.23	1.7	.03	.01	.02	0	0
12	.25	.06	.06	.18	2.0	.13	.61	0	0	.04	.01	0
13	.06	.06	.06	.16	3.8	.10	4.0	0	0	.04	.01	0
14	.06	.08	.10	.12	2.4	.10	96	.47	0	.02	.01	.02
15	.06	.12	.06	.28	.38	.09	288	.07	0	3.4	.01	0
16	.08	3.0	.82	.16	.18	.08	11	.03	0	1.8	0	0
17	1.1	.44	13	.18	.28	.08	28	.03	0	.69	0	0
18	.13	.10	7.9	.16	38	.08	9.6	.02	0	.04	0	0
19	.07	.08	14	.35	6.8	.08	1.8	0	0	.02	0	0
20	.07	.09	2.7	.54	2.3	.08	.82	.01	.01	.02	.03	0
21	.07	.08	.74	.58	1.1	.08	.47	.02	.01	.02	0	0
22	.06	.08	.28	41	6.1	.08	.33	.02	.02	.01	0	0
23	.06	.08	.15	114	16	.15	.25	.02	.03	.01	0	0
24	.06	.09	.12	40	10	.10	.18	.01	.02	.01	0	0
25	.06	6.6	.11	5.6	9.3	.25	.15	.01	.02	.01	0	0
26	.06	1.2	.10	2.1	2.6	.30	.15	.01	.03	.03	0	0
27	.06	.20	.41	.97	1.2	.08	.16	.01	.03	.03	0	0
28	.15	.09	.87	.70	.50	.09	.12	.01	.02	.03	0	0
29	.87	.09	.13	.50	.30	.08	.12	.01	.03	.02	0	0
30	.70	.08	.38	.35	-----	.08	.09	.71	.02	.02	0	0
31	.08	-----	.58	.25	-----	.08	-----	.09	-----	.02	0	-----
TOTAL	5.27	13.36	43.39	210.43	121.66	44.96	469.25	1.78	.41	6.60	.21	.03
MEAN	.17	.45	1.40	6.79	4.20	1.45	15.6	.057	.014	.21	.007	.001
MAX	1.1	6.6	14	114	38	26	288	.71	.14	3.4	.03	.02
MIN	.06	.06	.06	.12	.13	.08	.05	0	0	0	0	0
AC-FT	10	27	86	417	241	89	931	3.5	.8	13	.4	.06

CAL YR 1971 TOTAL 1,011.27 MEAN 2.77 MAX 117 MIN .05 AC-FT 2,010  
 WTR YR 1972 TOTAL 917.35 MEAN 2.51 MAX 288 MIN 0 AC-FT 1,820

PEAK DISCHARGE (BASE, 300 CFS).--Apr. 15 (0030) 1,120 cfs (5.19 ft).

## HAWAII, ISLAND OF OAHU

16226000 North Halawa Stream near Aiea

LOCATION.--Lat 21°23'45", long 157°53'37", on left bank 2.7 miles upstream from confluence with South Halawa Stream and 2.7 miles northeast of Aiea Post Office.

DRAINAGE AREA.--3.45 sq mi.

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

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

AVERAGE DISCHARGE.--22 years (1929-32, 1953-72), 5.35 cfs (3,880 acre-ft per year),

EXTREMES.--Current year: Maximum discharge, 538 cfs Apr. 15 (gage height, 8.76 ft), from rating curve extended above 44 cfs on basis of slope-area measurements at gage heights 10.3, 13.04 and 13.46 ft; no flow for many days.

Period of record: Maximum discharge, 6,650 cfs Feb. 28, 1932 (gage height, 13.36 ft), from rating curve extended above 420 cfs; maximum gage height, 13.46 ft May 14, 1963; no flow at times each year.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. Recording rain gage located at station.

REVISIONS (FISCAL YEARS).--WSP 1319: Drainage area. WSP 1719: 1954-55(P), 1956, 1957(P), 1958-59.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.43	.08	.29	.66	0	.35		0	1.3	
2		0	.24	.05	.25	.60	0	.35		0	.46	
3		0	.11	.04	.22	23	.73	.29		0	.05	
4		0	.06	.03	.20	14	14	.20		0	.03	
5		0	.03	.02	3.5	8.0	1.7	.13		0	.01	
6		0	.02	.01	2.0	3.5	17	.10		0	0	
7		0	2.4	.01	1.0	1.8	7.0	.07		0	0	
8		0	.48	.03	.50	1.2	1.8	.05		0	0	
9		0	.22	.06	2.4	.80	11	.12		0	0	
10		0	.10	.03	7.1	.68	9.2	.32		0	0	
11		0	.06	.02	2.4	.48	3.1	2.1		0	0	
12		0	.03	.01	1.2	.29	3.9	3.3		0	0	
13		0	.03	.01	.68	.18	3.4	5.4		0	0	
14		0	.29	.01	.48	.12	16	3.6		0	0	
15		.94	5.6	0	.29	.09	83	1.1		.03	0	
16		11	5.3	0	.14	.07	15	.68		3.0	0	
17		1.8	14	0	.08	.06	37	.48		.48	0	
18		.63	13	0	61	.04	10	.22		.12	0	
19		.39	27	0	12	.02	4.4	.13		.07	0	
20		.24	7.2	0	4.8	.01	2.8	.10		.03	0	
21		.10	3.0	0	2.5	.01	1.8	.08		.02	0	
22		.06	1.0	2.5	6.0	.01	1.4	.06		.01	0	
23		.03	.60	60	32	0	1.1	.04		.01	0	
24		.02	.40	5.6	8.0	0	.87	.04		.01	0	
25		19	.25	2.7	3.9	0	.68	.03		.01	0	
26		6.4	.10	1.2	2.5	0	.68	.01		.01	0	
27		1.9	.20	.80	1.5	0	.63	.01		0	0	
28		1.3	.35	.62	1.4	0	.63	0		0	0	
29		.68	.60	.50	1.2	0	.53	0		0	0	
30		.48	.25	.41	-----	0	.43	0		0	0	
31		-----	.14	.35	-----	0	-----	0	-----	0	0	-----
TOTAL	0	44.97	83.49	75.09	159.53	55.62	249.78	19.36	0	3.80	1.85	0
MEAN	0	1.50	2.69	2.42	5.50	1.79	8.33	.62	0	.12	.060	0
MAX	0	19	27	60	61	23	83	5.4	0	3.0	1.3	0
MIN	0	0	.02	0	.08	0	0	0	0	0	0	0
AC-FT	0	89	166	149	316	110	495	38	0	7.5	3.7	0

CAL YR 1971 TOTAL 1,377.31 MEAN 3.77 MAX 135 MIN 0 AC-FT 2,730  
 WTR YR 1972 TOTAL 693.49 MEAN 1.89 MAX 83 MIN 0 AC-FT 1,380

PEAK DISCHARGE (BASE, 570 CFS).--No peak above base.

NOTE.--No gage-height record Dec. 21 to Feb. 9.

16227500 Moanalua Stream near Kaneohe

LOCATION.--Lat 21°23'29", long 157°51'05", on left bank 3.3 miles northeast of Tripler Hospital and 3.6 miles southwest of Kaneohe Post Office.

DRAINAGE AREA.--0.94 sq mi.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 660 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 486 cfs Jan. 22 (gage height, 5.36 ft), from rating curve extended as explained below; no flow for many days.

Period of record: Maximum discharge, 1,530 cfs Nov. 26, 1970 (gage height, 8.07 ft), from rating curve extended above 18 cfs on basis of slope-area measurement at gage height 5.94 ft; no flow for many days each year.

REMARKS.--Records fair. No diversion above station. Recording rain gage and evaporation pan located at station. Records of suspended sediment loads for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.15	0	.30	.46	0	.14			6.0	0
2		0	0	0	.23	1.5	0	.10			1.2	0
3		0	0	0	.16	30	.80	.05			0	0
4		0	0	0	.76	4.0	7.9	0			0	.54
5		0	0	0	1.6	1.8	1.2	0			0	0
6		0	0	0	1.0	1.1	9.7	0			0	0
7		0	1.4	0	.53	.84	3.1	0			0	0
8		0	.36	0	.39	.66	.89	0			0	0
9		0	.02	0	.74	.57	2.4	.02			0	0
10		0	0	0	.91	.48	1.2	0			0	0
11		0	0	0	.53	.41	.64	0			0	0
12		0	0	0	.37	.36	.50	0			0	0
13		0	0	0	.26	.31	.71	.68			0	0
14		0	0	0	.18	.28	8.6	.40			0	0
15		.35	.33	0	.10	.24	12	.12			0	0
16		.76	.99	0	.01	.19	5.6	.01			0	0
17		0	1.9	0	0	.14	10	0			0	0
18		0	1.9	0	18	.10	3.5	0			0	0
19		0	6.9	0	3.3	.04	1.4	0			0	0
20		0	1.7	0	1.4	0	.93	0			0	0
21		0	.70	0	.91	0	.67	0			0	0
22		0	.41	77	1.2	0	.55	0			0	0
23		0	.22	50	9.2	0	.46	0			0	0
24		0	.07	22	2.4	0	.39	0			0	0
25		2.1	0	3.5	2.9	0	.36	0			0	0
26		2.0	0	1.5	1.3	0	.31	0			0	0
27		.44	0	1.1	.82	0	.28	0			0	0
28		.17	0	.85	.65	0	.24	0			0	0
29		0	0	.61	.54	0	.21	0			0	0
30		.48	0	.50	-----	0	.18	0	-----		0	0
31		-----	0	.38	-----	0	-----	0	-----		0	-----
TOTAL	0	6.30	17.05	157.44	50.69	43.48	74.72	1.52	0	0	7.2	.54
MEAN	0	.21	.55	5.08	1.75	1.40	2.49	.049	0	0	.23	.018
MAX	0	2.1	6.9	77	18	30	12	.68	0	0	6.0	.54
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	12	34	312	101	86	148	3.0	0	0	14	1.1

CAL YR 1971 TOTAL 417.15 MEAN 1.14 MAX 88 MIN 0 AC-FT 927  
 WTR YR 1972 TOTAL 358.94 MEAN .98 MAX 77 MIN 0 AC-FT 712

PEAK DISCHARGE (BASE, 250 CFS).--Jan. 22 (0605) 486 cfs (5.36 ft); Mar. 3 (0230) 295 cfs (4.75 ft),

## HAWAII, ISLAND OF OAHU

16227700 Moanalua Stream tributary near Kaneohe

LOCATION.--Lat 21°23'27", long 157°50'59", on left bank 3.4 miles northeast of Tripler Hospital and 3.6 miles southwest of Kaneohe Post Office.

DRAINAGE AREA.--0.62 sq mi.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 700 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 592 cfs Jan. 22 (gage height, 4.98 ft), from rating curve extended as explained below; no flow for many days.

Period of record: Maximum discharge, 892 cfs Feb. 1, 1969 (gage height, 5.57 ft), from rating curve extended above 28 cfs on basis of slope-area measurement at gage height 5.19 ft; no flow for many days each year.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.06	.03	.22	.32	.16	.22	.13	.07	.99	0
2		0	.05	.03	.18	.66	.16	.27	.11	.06	.04	0
3		0	.03	.03	.18	13	.28	.27	.11	.02	0	0
4		0	.01	.02	.58	1.4	1.7	.27	.11	0	0	.49
5		0	0	.04	.51	.76	.30	.18	.12	0	0	.07
6		0	.01	.02	.24	.54	3.5	.17	.10	0	0	.02
7		0	.28	.01	.19	.44	.85	.17	.13	.02	0	0
8		0	.04	0	.23	.42	.51	.20	.11	.01	0	0
9		0	.01	0	.22	.39	1.2	.23	.07	.01	0	0
10		0	0	0	.27	.40	.65	.18	.06	.02	.12	0
11		0	0	0	.22	.36	.61	.23	.06	0	0	0
12		0	0	0	.22	.32	.56	.23	.06	0	0	0
13		0	0	0	.23	.27	.46	.73	.06	0	0	0
14		0	.18	0	.27	.32	3.0	.24	.07	0	0	0
15		.40	.29	0	.24	.27	3.5	.22	.08	1.1	0	0
16		.51	.36	.33	.22	.27	1.5	.18	.10	1.2	0	0
17		.13	.59	.01	.15	.27	1.9	.18	.10	.17	0	0
18		.03	.48	0	9.3	.32	.62	.18	.13	.08	0	0
19		0	2.8	0	1.4	.32	.49	.18	.11	.03	0	0
20		0	.64	0	.67	.18	.44	.18	.06	.03	0	0
21		0	.33	0	.43	.22	.44	.20	.06	.02	.08	0
22		0	.22	44	.54	.22	.38	.22	.06	.01	.02	0
23		0	.15	17	4.5	.21	.32	.24	.07	0	0	0
24		0	.10	7.0	.95	.22	.27	.22	.06	0	0	0
25		3.8	.10	1.6	.87	.20	.22	.23	.04	0	0	0
26		.71	.09	.85	.54	.18	.18	.21	.01	0	0	0
27		.21	.09	.68	.43	.19	.24	.21	.03	0	0	0
28		.17	.07	.45	.35	.18	.22	.18	.04	0	0	0
29		.09	.04	.36	.32	.18	.22	.19	.04	0	0	0
30		.10	.05	.31	-----	.16	.18	.21	.04	0	0	0
31		-----	.04	.26	-----	.14	-----	.16	-----	0	0	-----
TOTAL	0	6.15	7.11	73.03	24.67	23.33	25.06	6.98	2.33	2.85	1.25	.58
MEAN	0	.21	.23	2.36	.85	.75	.84	.23	.078	.092	.040	.019
MAX	0	3.8	2.8	44	9.3	13	3.5	.73	.13	1.2	.99	.49
MIN	0	0	0	0	.15	.14	.16	.16	.01	0	0	0
AC-FT	0	12	14	145	49	46	50	14	4.6	5.7	2.5	1.2

CAL YR 1971 TOTAL 299.26 MEAN .82 MAX 47 MIN 0 AC-FT 594  
 WTR YR 1972 TOTAL 173.34 MEAN .47 MAX 44 MIN 0 AC-FT 344

PEAK DISCHARGE (BASE, 150 CFS).--Jan. 22 (0555) 592 cfs (4.98 ft); Mar. 3 (0220) 192 cfs (3.79 ft).

16228000 Moanalua Stream near Honolulu

LOCATION.--Lat 21°22'53", long 157°52'22", on left bank 1.8 miles northeast of Tripler Hospital and 5.0 miles north of Honolulu Post Office.

DRAINAGE AREA.--2.73 sq mi.

PERIOD OF RECORD.--June 1926 to current year.

GAGE.--Water-stage recorder and concrete weir. Datum of gage is 338.12 ft above mean sea level (city and county of Honolulu bench mark). Prior to July 1, 1960, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--46 years, 3.26 cfs (2,360 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 750 cfs Jan. 22 (gage height, 5.92 ft), from rating curve extended above 120 cfs on basis of slope-area measurement at gage height 11.82 ft; no flow most of time.  
 Period of record: Maximum discharge, 4,580 cfs Nov. 18, 1930 (gage height, 12.58 ft, present datum), from rating curve extended above 110 cfs by test of model of station site; no flow at times each year.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of suspended sediment loads for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 935: 1931(M). WSP 1319: 1927-30(M), 1932-41(M). WSP 1569: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	0	0	.03	.42	0			0	.99	
2		0	0	0	0	.83	0			0	.63	
3		0	0	0	0	54	0			0	0	
4		0	0	0	0	11	1.8			0	0	
5		0	0	0	.22	5.1	.54			0	0	
6		0	0	0	2.2	2.9	7.6			0	0	
7		0	0	0	.54	1.8	5.1			0	0	
8		0	0	0	.20	1.0	.88			0	0	
9		0	0	0	.15	.63	3.2			0	0	
10		0	0	0	.30	.34	2.2			0	0	
11		0	0	0	.50	.19	.78			0	0	
12		0	0	0	.22	.15	.13			0	0	
13		0	0	0	.17	.13	0			0	0	
14		0	0	0	.17	.13	4.6			0	0	
15		0	0	0	.17	.11	43			.19	0	
16		0	0	0	.15	.09	11			2.1	0	
17		0	.68	0	.13	.08	14			.09	0	
18		0	3.9	0	26	.05	5.6			0	0	
19		0	14	0	7.8	0	2.0			0	0	
20		0	4.9	0	2.0	0	1.1			0	0	
21		0	1.8	0	1.5	0	.58			0	0	
22		0	.68	137	1.8	0	.28			0	0	
23		0	.25	95	19	0	.17			0	0	
24		0	.15	50	7.0	0	.13			0	0	
25		4.6	.13	9.8	7.0	0	.13			0	0	
26		2.2	.11	4.4	3.8	0	.11			0	0	
27		.25	.09	2.6	2.0	0	.09			0	0	
28		.08	.05	1.7	1.2	0	.08			0	0	
29		0	0	.88	.73	0	.04			0	0	
30		0	0	.42	-----	0	0			0	0	
31		-----	0	.11	-----	0	-----			0	0	-----
TOTAL	0	7.13	26.74	301.91	84.98	78.95	105.14	0	0	2.38	1.62	0
MEAN	0	.24	.86	9.74	2.93	2.55	3.50	0	0	.077	.052	0
MAX	0	4.6	14	137	26	54	43	0	0	2.1	.99	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	14	53	599	169	157	209	0	0	4.7	3.2	0

CAL YR 1971 TOTAL 1,171.57 MEAN 3.21 MAX 226 MIN 0 AC-FT 2,320  
 WTR YR 1972 TOTAL 608.85 MEAN 1.66 MAX 137 MIN 0 AC-FT 1,210

PEAK DISCHARGE (BASE, 400 CFS).--Jan. 22 (0630) 750 cfs (5.92 ft).

## HAWAII, ISLAND OF OAHU

16229000 Kalihi Stream near Honolulu

LOCATION.--Lat 21°21'59", long 157°50'49", on right bank 1.9 miles upstream from Kamaikai Stream and 4.1 miles north of Honolulu Post Office.

DRAINAGE AREA.--2.61 sq mi.

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

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.

AVERAGE DISCHARGE.--58 years (1914-72), 6.96 cfs (5,040 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,470 cfs Jan. 22 (gage height, 8.89 ft), from rating curve extended as explained below; minimum, 0.13 cfs Oct. 16, 17.

Period of record: Maximum discharge, about 12,400 cfs Nov. 18, 1930 (gage height, 13.81 ft), from rating curve extended above 280 cfs on basis of indirect measurements at gage heights 8.9, 10.96 and 11.27 ft; minimum, 0.09 cfs Oct. 22, 1933, July 29, 1966.

REMARKS.--Records fair. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS)--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.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.36	.40	2.0	1.0	3.8	4.4	1.5	3.0	1.3	.65	.82	.58
2	.43	.70	1.6	.91	3.4	7.9	3.0	2.8	1.1	1.0	1.4	1.1
3	.30	.41	1.3	.82	3.0	72	3.4	3.0	1.4	.65	.65	2.0
4	.30	.50	1.2	.91	7.8	18	10	2.6	1.2	.50	.57	2.2
5	.30	.57	1.0	1.0	4.9	11	4.9	2.4	1.0	.50	.65	1.2
6	.30	.50	1.1	1.1	4.4	7.7	23	2.3	.91	.43	.57	.91
7	.30	.50	3.5	1.0	4.2	6.8	11	2.3	.91	.50	.57	.73
8	.24	.65	1.6	1.0	5.0	5.9	6.5	2.2	1.0	.43	.43	.65
9	.30	.57	1.3	.82	8.0	5.4	10	4.2	2.0	.84	.73	.57
10	.43	1.1	1.2	.73	6.8	4.0	7.1	2.6	1.3	1.3	1.4	.57
11	.24	.91	1.1	.65	4.6	4.4	5.1	2.8	1.8	.60	.65	.50
12	.30	.65	1.1	.65	3.8	4.0	4.9	2.6	1.5	.51	1.5	.50
13	.30	.50	.91	.57	3.4	3.0	4.4	2.8	1.4	.47	1.0	.43
14	.24	2.1	2.4	.57	2.8	3.4	15	2.4	1.0	.45	.90	.36
15	.24	4.3	3.1	.65	2.4	3.2	32	2.0	1.0	5.0	.71	.33
16	.19	4.6	3.6	1.1	2.3	3.0	16	1.9	1.0	2.5	.64	.31
17	.19	1.9	4.4	1.0	2.3	2.8	14	2.0	.91	1.2	.76	.31
18	.30	1.4	4.2	.65	40	2.0	9.0	1.6	1.1	.90	.73	.43
19	.30	1.0	11	.65	12	2.5	7.1	1.5	1.0	.71	.58	.38
20	.24	1.0	5.1	.57	7.1	2.4	5.9	1.5	.82	.54	1.9	.52
21	.24	.82	3.0	.57	5.9	2.3	5.0	1.5	.82	.75	.91	.50
22	.24	.73	2.2	170	6.8	2.2	6.0	1.4	.82	.67	.70	.48
23	.50	.57	1.8	105	42	2.3	4.4	2.8	1.0	.56	.63	.47
24	.65	.91	1.5	55	13	2.1	3.3	2.0	.91	.46	.59	.47
25	.57	13	1.4	14	9.5	2.0	3.0	1.6	.91	1.1	.75	.39
26	1.2	5.9	1.2	8.0	7.1	2.0	3.8	1.3	.82	.73	.63	.30
27	.65	2.4	1.4	8.0	5.9	2.5	3.0	1.2	.73	.58	.45	.36
28	.36	2.8	1.1	6.5	5.4	2.0	2.8	1.3	.65	.50	.50	.30
29	.38	1.9	1.1	5.5	4.6	1.9	3.0	1.4	.65	.57	.73	.36
30	1.1	4.1	1.3	4.8	-----	1.6	3.0	1.3	.57	.73	1.8	.30
31	.43	-----	1.0	4.2	-----	1.5	-----	1.1	-----	.57	.82	-----
TOTAL	12.12	57.39	69.71	397.92	232.2	198.0	231.1	65.4	31.53	26.90	25.67	18.53
MEAN	.39	1.91	2.25	12.8	8.01	6.39	7.70	2.11	1.05	.87	.83	.62
MAX	1.2	13	11	170	42	72	32	4.2	2.0	5.0	1.9	2.2
MIN	.19	.40	.91	.57	2.3	1.5	1.5	1.1	.57	.43	.43	.30
AC-FT	24	114	138	789	461	393	458	130	63	53	51	37

CAL YR 1971 TOTAL 1,826.41 MEAN 5.00 MAX 146 MIN .19 AC-FT 3,620  
 WTR YR 1972 TOTAL 1,366.47 MEAN 3.73 MAX 170 MIN .19 AC-FT 2,710

PEAK DISCHARGE (BASE, 700 CFS)--Jan. 22 (0700) 1,470 cfs (8.89 ft).

16229300 Kalihi Stream at Kalihi

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

DRAINAGE AREA.--5.18 sq mi.

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.

AVERAGE DISCHARGE.--10 years, 12.9 cfs (9,350 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,240 cfs Jan. 22 (gage height, 5.48 ft), from rating curve extended above 780 cfs on basis of slope-area measurements at gage heights 8.0 and 8.24 ft; minimum, 0.67 cfs Oct. 19-21.

Period of record: Maximum discharge, about 7,000 cfs Nov. 14, 1965; minimum, 0.16 cfs June 24, 1966. Flood of May 14, 1960, reached a stage of 8.0 ft, from floodmarks, present site and datum (discharge, 6,350 cfs, from slope-area measurement of peak flow).

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		.93	2.8	1.6	4.2	6.8	1.6	3.4	2.3	1.7	1.9	3.4
2	1.5	1.3	2.2	1.5	3.6	15	3.3	3.0	2.2	2.6	2.4	2.8
3	.84	.93	1.5	1.2	3.3	143	3.2	3.3	4.7	2.0	1.9	5.3
4	.75	1.0	1.2	1.3	9.5	31	12	2.8	2.3	1.7	1.3	6.1
5	.75	.93	1.2	1.1	7.8	14	5.6	2.6	2.0	1.6	1.3	2.6
6	.84	2.4	1.4	1.5	5.2	12	21	2.6	2.0	1.5	1.2	2.1
7	.84	.93	3.4	1.6	5.2	9.6	14	2.4	2.0	1.7	1.0	1.9
8	.84	.93	2.0	1.6	5.7	7.7	8.2	2.6	1.8	1.3	1.3	1.5
9	.93	.94	1.6	1.0	13	6.4	13	6.3	2.4	2.5	3.1	1.3
10	1.2	3.1	1.6	.93	9.6	5.6	11	3.0	1.8	5.5	3.9	1.0
11	1.0	1.6	1.7	.93	6.4	5.2	6.8	3.0	3.0	1.5	1.9	1.0
12	.93	.93	1.6	.93	4.9	4.9	5.2	3.3	3.0	1.2	4.8	1.3
13	1.0	1.3	2.7	1.0	4.2	4.6	5.2	3.6	2.0	1.3	3.9	.90
14	.93	4.0	8.4	1.1	3.6	4.2	27	3.6	2.0	1.3	2.8	.80
15	.84	6.2	7.4	1.2	3.8	3.8	44	2.6	2.2	36	1.7	.80
16	.75	7.2	7.2	1.1	3.8	3.4	21	2.6	2.3	10	1.5	.80
17	.84	3.0	16	1.7	3.8	3.3	19	2.8	2.4	3.6	1.7	.90
18	2.1	2.0	9.6	.93	42	3.6	14	2.3	2.6	2.4	1.7	1.2
19	.93	1.3	33	.84	18	3.3	9.6	2.2	2.4	1.9	1.3	.90
20	.75	1.6	10	.93	13	2.6	8.2	2.0	2.4	1.5	8.2	1.3
21	.67	1.5	3.8	.84	9.6	2.6	7.2	2.0	3.3	2.1	3.1	1.3
22	1.1	1.1	2.0	235	15	2.4	8.2	2.0	3.0	1.9	1.5	1.3
23	1.4	.84	1.8	191	105	2.8	5.6	4.2	5.1	1.3	1.5	1.3
24	1.6	1.5	1.7	82	24	2.4	5.2	3.6	2.6	1.2	1.3	1.2
25	1.3	16	1.6	19	19	2.2	5.2	2.8	3.0	2.1	1.9	.90
26	3.6	9.6	1.4	12	13	2.2	6.4	2.3	2.4	1.3	1.9	.70
27	1.3	3.6	1.5	11	10	3.2	4.2	2.3	2.1	1.2	1.2	.80
28	.84	3.6	1.3	8.6	9.1	2.2	4.9	2.3	1.8	1.0	1.3	1.3
29	3.0	2.2	1.5	6.4	7.7	2.2	4.9	2.6	2.0	1.2	1.5	.90
30	4.3	4.3	1.9	5.2	-----	1.7	4.2	2.0	1.7	1.9	4.2	.90
31	1.0	-----	1.6	4.6	-----	1.6	-----	2.0	-----	1.4	2.1	-----
TOTAL	40.17	86.76	136.6	599.63	383.0	315.5	308.9	88.1	74.8	99.4	70.3	48.50
MEAN	1.30	2.89	4.41	19.3	13.2	10.2	10.3	2.84	2.49	3.21	2.27	1.62
MAX	4.3	16	33	235	105	143	44	6.3	5.1	36	8.2	6.1
MIN	.67	.84	1.2	.84	3.3	1.6	1.6	2.0	1.7	1.0	1.0	.70
AC-FT	80	172	271	1,190	760	626	613	175	148	197	139	96

CAL YR 1971 TOTAL 3,078.13 MEAN 8.43 MAX 226 MIN .51 AC-FT 6,110  
 WTR YR 1972 TOTAL 2,251.66 MEAN 6.15 MAX 235 MIN .67 AC-FT 4,470

PEAK DISCHARGE (BASE, 1,600 CFS).--Jan. 22 (0730) 2,240 cfs (5.48 ft).

## 16232000 Nuuanu Stream below reservoir 2 wasteway, near Honolulu

LOCATION.--Lat 21°20'55", long 157°49'40", on right bank beside Old Pali Road in upper Nuuanu Valley, 0.2 mile downstream from reservoir 2 wasteway, and 3.5 miles northeast of Honolulu Post Office.

DRAINAGE AREA.--3.35 sq mi.

PERIOD OF RECORD.--October 1913 to January 1921, September 1921 to current year.

GAGE.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level. Prior to Sept. 7, 1915, nonrecording gage at same site at datum 0.03 ft lower and Sept. 7, 1915, to Mar. 31, 1918, at same datum.

AVERAGE DISCHARGE.--56 years (1914-16, 1917-20, 1921-72), 7.42 cfs (5,380 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 232 cfs Jan. 22 (gage height, 3.53 ft), from rating curve extended above 420 cfs on basis of slope-area measurement at gage height 6.69 ft; minimum, 0.58 cfs Sept. 30.  
Period of record: Maximum discharge, 6,990 cfs Jan. 16, 1921 (gage height, 8.74 ft, from floodmarks), from rating curve extended above 420 cfs by test of model of station site; minimum, 0.09 cfs Sept. 10, 11, 1925.

REMARKS.--Records fair. Low-flow regulation by reservoirs 2, 3, and 4 (capacities, 21, 34, and 1,630 acre-ft, respectively). Honolulu Board of Water Supply diverts ground water from tunnels in drainage area. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 985: 1921-35(M). WSP 1319: 1931. WSP 1569: Drainage area. WSP 1639: 1931, 1935.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	.81	2.4	2.2	5.0	8.2	3.8	3.7	2.2	2.9	1.6	1.2
2	1.2	1.2	2.0	2.0	4.8	9.9	4.2	3.7	2.2	2.2	1.6	1.1
3	1.2	1.3	1.9	2.2	4.7	36	4.3	3.7	2.4	1.9	1.3	1.5
4	1.2	1.0	1.8	2.0	9.0	12	16	3.5	2.2	1.7	1.2	1.6
5	1.1	1.0	1.7	2.0	7.8	9.8	12	3.4	2.2	1.7	1.4	1.1
6	1.0	1.3	2.2	2.0	6.4	8.8	11	3.3	2.2	1.7	1.3	1.0
7	1.0	1.4	4.7	2.1	6.4	8.3	16	3.3	2.2	1.7	1.4	1.1
8	1.0	1.1	2.4	2.3	6.2	8.2	12	3.4	2.2	1.8	1.6	.96
9	1.0	.86	2.2	2.0	7.6	7.9	8.2	5.1	2.4	2.0	1.3	.91
10	1.1	1.1	2.0	1.7	6.4	7.8	5.9	3.7	2.3	2.3	1.4	.86
11	.96	1.3	1.8	1.7	5.4	7.6	5.6	3.7	2.4	1.8	1.2	.86
12	.91	1.1	2.0	1.7	5.2	7.1	5.9	3.8	2.4	1.6	1.5	.99
13	.91	1.1	2.1	1.6	4.8	7.0	11	4.5	2.2	1.6	1.5	.86
14	.86	2.7	4.2	1.7	4.7	6.9	22	4.5	2.1	1.6	1.2	.86
15	.81	8.1	4.0	1.7	4.7	6.9	30	3.7	2.1	5.7	1.1	.81
16	.71	5.4	4.5	1.7	4.3	6.6	26	3.9	2.2	3.9	1.1	.81
17	.76	2.6	4.7	1.7	4.0	6.3	6.4	3.7	2.2	2.2	1.3	.86
18	1.0	2.0	4.1	1.6	22	6.2	5.3	3.2	2.5	1.9	1.4	.96
19	.96	1.4	15	1.6	9.1	5.9	4.8	3.1	2.4	1.7	1.2	.76
20	.81	1.2	5.2	1.6	7.0	5.7	5.1	3.1	2.3	1.7	2.1	.76
21	.81	1.3	3.4	1.5	6.4	5.6	5.1	3.2	2.4	1.8	1.6	.81
22	.86	1.4	3.0	49	7.2	5.4	5.4	3.0	2.5	1.6	1.2	.96
23	.96	1.2	2.8	68	27	5.8	4.7	3.1	2.8	1.6	1.0	.62
24	1.7	1.7	2.6	23	11	14	4.3	3.0	2.6	1.5	1.0	.66
25	1.3	12	2.6	6.6	9.6	29	4.1	3.0	2.6	1.9	1.1	.62
26	1.9	6.1	2.4	5.7	8.3	26	4.4	2.8	2.5	1.6	1.2	.62
27	1.2	3.0	2.4	6.2	8.2	24	4.0	2.8	2.3	1.5	1.0	.66
28	1.1	3.4	2.2	5.6	8.0	11	3.9	2.8	2.7	1.5	.96	.66
29	1.1	2.4	2.4	5.3	8.2	4.1	3.9	2.7	3.0	1.5	1.2	.66
30	1.3	4.2	2.6	5.2	-----	4.1	4.0	2.7	2.8	1.6	2.1	.62
31	.91	-----	2.3	5.1	-----	3.9	-----	2.4	-----	1.5	1.2	-----
TOTAL	32.93	74.67	99.6	218.3	229.4	316.0	259.3	105.5	71.5	61.2	41.26	26.75
MEAN	1.06	2.49	3.21	7.04	7.91	10.2	8.64	3.40	2.38	1.97	1.33	.89
MAX	1.9	12	15	68	27	36	30	5.1	3.0	5.7	2.1	1.6
MIN	.71	.81	1.7	1.5	4.0	3.9	3.8	2.4	2.1	1.5	.96	.62
AC-FT	65	148	198	433	455	627	514	209	142	121	82	53

CAL YR 1971 TOTAL 2,256.20 MEAN 6.18 MAX 163 MIN .71 AC-FT 4,400  
WTR YR 1972 TOTAL 1,536.41 MEAN 4.20 MAX 68 MIN .62 AC-FT 3,050

PEAK DISCHARGE (BASE, 240 CFS).--No peak above base.

## 16238500 Waihi Stream at Honolulu

LOCATION.--Lat 21°19'55" (revised), long 157°48'13", on left bank 100 ft upstream from bridge on Waaloa Way, 700 ft upstream from confluence with Waiakeakua Stream, and 4.2 miles northeast of Honolulu Post Office.

DRAINAGE AREA.--1.14 sq mi.

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

GAGE.--Water-stage recorder and combination Parshall flume and V-notch weir. Datum of gage is 290.84 ft above mean sea level (Honolulu Board of Water Supply bench mark). Prior to June 17, 1914, nonrecording gage at same site at different datum. June 17, 1914, to Jan. 16, 1921, water-stage recorder at site 150 ft upstream at different datum and Aug. 4, 1925, to Mar. 15, 1928, at present site at datum 3.35 ft lower.

AVERAGE DISCHARGE.--54 years (1913-20, 1925-72), 3.69 cfs (2,670 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 322 cfs Apr. 14 (gage height, 3.19 ft), from rating curve extended above 120 cfs by test of model of station site; minimum, 0.12 cfs Oct. 16, 17.  
Period of record: Maximum discharge, 3,250 cfs Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 60 cfs; minimum, 0.08 cfs Dec. 16, 18, 1913, Jan. 16-18, Feb. 4, 6, 1915, Mar. 16, 22, 1926.

REMARKS.--Records fair. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: 1930-32(M), 1939(M). WSP 1569: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.84	.26	1.6	.99	1.0	1.7	.35	1.6	.62	.49	.37	.83
2	.55	.30	1.7	.84	.92	5.4	1.2	1.2	.54	1.0	.53	.84
3	.42	.34	1.3	1.1	.84	17	1.5	1.1	1.1	.81	.28	3.3
4	.48	.71	1.2	.93	4.7	5.2	2.9	.95	.55	.34	.26	1.9
5	.36	.86	.95	.87	2.8	3.9	.73	.81	.45	.27	.33	.89
6	.30	.45	1.5	.91	1.6	2.8	13	.74	.40	.26	.29	.63
7	.30	.42	2.2	1.0	2.8	2.6	3.4	.73	.38	.28	.27	.59
8	.26	.62	.99	2.0	2.0	2.1	3.0	.67	.72	.46	.25	.45
9	.26	.92	1.3	.88	4.3	1.8	4.7	3.2	2.4	1.1	.47	.36
10	.42	2.5	1.0	.89	2.8	1.6	3.4	1.3	.74	.94	1.1	.31
11	.26	1.5	.92	.67	1.9	1.5	2.0	1.5	.63	.56	.39	.26
12	.22	.96	1.2	.59	1.5	1.3	2.2	2.0	.45	.40	.74	.29
13	.26	.67	.84	.55	1.3	1.1	1.6	4.8	.49	.61	.94	.24
14	.22	5.0	4.7	.51	1.1	.92	15	3.0	.41	.37	.39	.24
15	.18	6.4	6.6	.50	.96	1.0	15	2.0	.35	7.3	.27	.19
16	.18	3.4	3.5	.48	.88	.97	6.2	1.5	.38	2.5	.23	.22
17	.18	2.1	4.4	.56	.81	.88	3.8	1.4	.47	1.2	.73	.25
18	.30	1.8	2.3	.37	14	.86	2.7	1.1	.82	.75	1.2	.51
19	.36	1.2	18	.48	6.5	.81	2.2	.91	.81	.56	.41	.50
20	.30	1.4	4.7	.41	4.0	.71	1.9	.85	.43	.48	3.4	.40
21	.22	1.1	3.0	.34	2.8	.67	1.7	1.2	.84	.69	1.4	.25
22	.26	.90	2.2	6.6	3.9	.64	3.3	.82	2.5	.42	.68	.44
23	.55	.76	1.8	44	17	.69	1.9	1.1	.80	.39	.49	.28
24	.69	3.7	1.6	19	6.3	.64	1.6	1.2	.84	.35	.35	.34
25	.48	12	1.6	4.5	4.1	.54	1.4	.98	.73	1.1	.76	.28
26	2.1	5.0	1.3	2.3	2.9	.49	1.6	.73	.54	.79	1.9	.26
27	.60	2.6	1.2	2.6	2.3	.51	1.3	.69	.51	.39	.51	.23
28	.36	3.3	1.0	1.7	2.0	.62	1.2	.69	.35	.43	.39	.37
29	.31	1.9	1.1	1.5	1.8	.46	1.3	.69	.37	.39	.50	.23
30	.67	5.1	1.8	1.3	-----	.41	1.9	.62	.38	.57	1.1	.19
31	.39	-----	1.5	1.2	-----	.38	-----	.55	-----	.39	.38	-----
TOTAL	13.28	68.17	79.00	100.57	99.81	60.20	103.98	40.63	21.00	26.59	21.31	16.07
MEAN	.43	2.27	2.55	3.24	3.44	1.94	3.47	1.31	.70	.86	.69	.54
MAX	2.1	12	18	44	17	17	15	4.8	2.5	7.3	3.4	3.3
MIN	.18	.26	.84	.34	.81	.38	.35	.55	.35	.26	.23	.19
AC-FT	26	135	157	199	198	119	206	81	42	53	42	32

CAL YR 1971 TOTAL 1,062.95 MEAN 2.91 MAX 75 MIN .18 AC-FT 2,110  
WTR YR 1972 TOTAL 650.61 MEAN 1.78 MAX 44 MIN .18 AC-FT 1,290

PEAK DISCHARGE (BASE, 310 CFS).--Apr. 14 (2230) 322 cfs (3.19 ft).

## HAWAII, ISLAND OF OAHU

## 16240500 Waiakeakua Stream at Honolulu

LOCATION.--Lat 21°19'52", long 157°48'08", on right bank 5 ft downstream from bridge on Waaloa Way, 500 ft upstream from confluence with Waihi Stream, and 4.2 miles northeast of Honolulu Post Office.

DRAINAGE AREA.--1.06 sq mi.

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.

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.

AVERAGE DISCHARGE.--54 years (1913-20, 1925-72), 5.20 cfs (3,770 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 450 cfs Apr. 14 (gage height, 3.65 ft), from rating curve extended above 110 cfs on basis of slope-area measurement at gage height 5.28 ft; minimum, 1.3 cfs Sept. 30.  
Period of record: Maximum discharge, 3,090 cfs Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 58 cfs; minimum, 0.6 cfs June 7, 8, 1926.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. 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. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: 1919(M), 1930-33(M), WSP 1569; Drainage area. WSP 1937; 1949(M), 1960(M).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	2.0	2.7	2.2	2.1	3.1	2.1	3.7	2.4	2.2	1.9	2.2
2	2.5	1.9	2.7	2.0	2.1	12	3.1	3.2	2.2	2.6	2.1	2.1
3	2.2	1.9	2.4	2.2	2.0	15	4.7	3.0	2.8	2.6	1.8	4.2
4	2.5	2.7	2.4	2.0	5.8	5.4	8.6	2.8	2.2	2.1	1.8	3.2
5	2.2	2.2	2.1	2.0	4.2	4.7	3.0	2.7	2.1	1.9	2.0	2.0
6	2.1	2.1	2.6	2.0	2.8	3.8	22	2.7	2.1	1.9	1.9	1.9
7	2.2	2.1	2.5	2.2	4.4	3.8	6.2	2.6	2.2	1.9	1.7	2.0
8	2.1	2.2	2.1	3.4	5.0	3.2	5.5	2.6	2.6	2.2	1.7	1.7
9	2.1	3.2	2.5	2.3	6.1	3.1	6.6	7.0	4.4	3.0	2.1	1.6
10	2.5	5.1	2.2	2.0	3.7	3.0	5.4	3.4	2.5	2.8	3.2	1.6
11	2.1	3.2	2.2	1.9	2.8	2.8	3.7	3.6	2.4	2.1	2.0	1.5
12	2.0	2.6	2.1	1.9	2.6	2.7	4.1	4.7	2.2	2.0	2.5	1.5
13	2.1	2.2	2.1	1.9	2.2	2.7	3.3	8.0	2.6	2.0	2.6	1.5
14	2.0	9.4	4.7	1.9	2.1	2.6	18	5.2	2.4	1.9	1.8	1.5
15	1.9	7.0	8.2	1.9	2.0	2.6	16	4.0	2.2	7.1	1.7	1.5
16	1.9	4.2	4.4	2.0	2.0	2.5	6.2	3.3	2.2	4.1	1.6	1.5
17	1.8	2.8	4.7	2.0	2.0	2.4	5.1	3.2	2.4	2.8	2.1	1.5
18	2.0	2.7	3.7	1.9	32	2.5	4.5	3.0	2.6	2.2	2.7	1.6
19	2.1	2.2	18	2.0	7.7	2.5	3.7	3.0	3.0	2.1	2.0	1.5
20	2.0	2.4	6.0	1.9	5.0	2.2	3.3	2.8	2.5	2.1	3.6	1.4
21	2.0	2.2	4.3	1.9	4.2	2.2	3.1	3.1	2.8	2.8	2.7	1.5
22	2.0	2.1	3.5	5.1	5.6	2.4	4.2	2.8	5.6	1.9	2.0	2.0
23	2.4	2.0	3.0	50	18	2.5	3.2	3.2	3.0	1.9	1.9	1.5
24	2.1	5.1	2.7	14	6.3	2.2	3.0	3.1	2.8	1.9	1.8	1.6
25	2.2	14	2.5	4.4	4.8	2.2	2.8	3.1	2.6	2.7	2.4	1.5
26	3.9	5.4	2.4	3.3	4.0	2.1	3.0	2.8	2.5	2.5	4.4	1.4
27	2.1	3.2	2.3	4.3	3.3	2.2	3.0	2.7	2.4	1.9	2.1	1.5
28	2.1	3.9	2.2	3.0	3.2	2.2	3.0	2.7	2.2	1.9	1.7	1.8
29	2.1	3.0	2.2	2.6	3.1	2.1	3.2	2.6	2.2	1.8	2.1	1.5
30	2.6	4.6	3.3	2.5	-----	2.0	4.0	2.4	2.1	2.0	2.9	1.4
31	2.0	-----	2.7	2.2	-----	2.0	-----	2.4	-----	1.9	1.8	-----
TOTAL	68.5	109.6	111.4	134.9	151.1	106.7	167.6	105.4	78.2	74.8	68.6	53.2
MEAN	2.21	3.65	3.59	4.35	5.21	3.44	5.59	3.40	2.61	2.41	2.21	1.77
MAX	3.9	14	18	50	32	15	22	8.0	5.6	7.1	4.4	4.2
MIN	1.8	1.9	2.1	1.9	2.0	2.0	2.1	2.4	2.1	1.8	1.6	1.4
AC-FT	136	217	221	268	300	212	332	209	155	148	136	106

CAL YR 1971 TOTAL 1,675.7 MEAN 4.59 MAX 53 MIN 1.8 AC-FT 3,320  
WTR YR 1972 TOTAL 1,230.0 MEAN 3.36 MAX 50 MIN 1.4 AC-FT 2,440

PEAK DISCHARGE (BASE, 310 CFS).--Apr. 14 (2200) 450 cfs (3.65 ft).

NOTE.--No gage-height record Dec. 16 to Jan. 23.

16244000 Pukele Stream near Honolulu

LOCATION.--Lat 21°18'35", long 157°47'30", on right bank 200 ft upstream from bridge on Palolo Avenue, 0.6 mile upstream from confluence with Waiomao Stream, and 4.8 miles east of Honolulu Post Office.

DRAINAGE AREA.--1.18 sq mi.

PERIOD OF RECORD.--June 1926 to current year.

GAGE.--Water-stage recorder and V-notch weir. Datum of gage is 344.78 ft above mean sea level (Honolulu Board of Water Supply bench mark).

AVERAGE DISCHARGE.--46 years, 2.02 cfs (1,460 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 174 cfs Jan. 23 (gage height, 3.53 ft); minimum, 0.20 cfs Sept. 27, 28, 30.

Period of record: Maximum discharge, 2,600 cfs Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 71 cfs by test of model of station site; minimum, 0.08 cfs Oct. 31, 1929.

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

REVISIONS (FISCAL YEARS).--WSP 835: 1930(M). WSP 1569: Drainage area. WSP 1639: 1927-29(M), 1931(M), 1932, 1933-34(M). WSP 1719: 1935(M), 1937-40(M), 1942(M), 1948-59(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	.24	.51	.44	1.1	1.9	.62	1.1	.51	.36	.41	.27
2	.30	.24	.54	.43	1.1	4.3	.69	.97	.46	.46	.36	.27
3	.30	.27	.56	.43	.97	12	.97	.97	.46	.46	.31	.31
4	.30	.27	.52	.42	1.6	5.9	2.8	.90	.46	.46	.31	.31
5	.30	.24	.44	.40	.90	3.4	.83	.90	.46	.36	.31	.31
6	.30	.27	.46	.40	.83	2.4	6.6	.90	.41	.36	.31	.31
7	.30	.24	.48	.42	.83	2.3	3.6	.90	.41	.41	.31	.31
8	.30	.23	.47	.43	1.3	2.1	1.7	.83	.41	.36	.31	.31
9	.30	.22	.45	.40	2.3	2.0	2.8	.97	.46	.31	.31	.31
10	.27	.25	.45	.40	1.6	1.9	1.9	.90	.51	.41	.31	.36
11	.27	.25	.43	.36	1.1	1.8	1.5	.97	.51	.36	.31	.31
12	.27	.24	.43	.36	1.1	1.7	1.5	1.1	.46	.36	.31	.31
13	.30	.24	.42	.36	1.1	1.6	1.4	1.1	.36	.36	.31	.31
14	.30	.97	.43	.35	1.1	1.5	4.9	.97	.36	.36	.31	.31
15	.27	.30	.64	.33	1.1	1.3	9.6	.83	.36	.31	.31	.31
16	.27	.28	.77	.33	1.1	1.2	3.6	.76	.36	.31	.31	.46
17	.27	.27	1.5	.33	.97	1.1	3.4	.76	.36	.31	.27	.27
18	.27	.27	.60	.33	17	1.1	2.0	.83	.41	.31	.27	.27
19	.27	.24	7.0	.31	5.3	1.1	1.8	.76	.41	.36	.31	.27
20	.30	.28	1.5	.30	2.4	.97	1.8	.76	.41	.36	.36	.27
21	.27	.24	.68	.30	1.7	.90	1.7	.76	.41	.36	.36	.27
22	.27	.24	.67	.31	2.5	.90	1.7	.69	.41	.36	.36	.27
23	.24	.22	.67	23	15	.90	1.6	.76	.46	.41	.31	.27
24	.23	.22	.68	12	5.5	.83	1.5	.76	.41	.41	.27	.27
25	.24	2.0	.65	2.1	3.6	.83	1.4	.62	.36	.41	.27	.27
26	.24	.79	.61	1.1	2.4	.76	1.3	.62	.31	.41	.23	.27
27	.24	.44	.57	1.7	2.3	.90	1.3	.56	.31	.41	.23	.27
28	.27	.47	.53	1.1	2.1	.69	1.2	.51	.31	.41	.23	.23
29	.27	.49	.49	1.2	2.0	.69	1.1	.51	.31	.41	.23	.23
30	.24	.48	.60	1.1	-----	.69	1.1	.51	.31	.41	.27	.23
31	.24	-----	.50	1.1	-----	.62	-----	.51	-----	.46	.27	-----
TOTAL	8.51	11.40	25.25	52.54	81.90	60.28	67.91	24.99	12.15	11.81	9.35	8.74
MEAN	.27	.38	.81	1.69	2.82	1.94	2.26	.81	.41	.38	.30	.29
MAX	.30	2.0	7.0	23	17	12	9.6	1.1	.51	.46	.41	.46
MIN	.23	.22	.42	.30	.83	.62	.62	.51	.31	.31	.23	.23
AC-FT	17	23	50	104	162	120	135	50	24	23	19	17

CAL YR 1971 TOTAL 430.17 MEAN 1.18 MAX 16 MIN .16 AC-FT 853  
 WTR YR 1972 TOTAL 374.83 MEAN 1.02 MAX 23 MIN .22 AC-FT 743

PEAK DISCHARGE (BASE, 140 CFS).--Jan. 23 (2015) 174 cfs (3.53 ft).

## HAWAII, ISLAND OF OAHU

16247000 Palolo Stream near Honolulu

LOCATION.--Lat 21°17'35", long 157°48'25", on left bank 250 ft downstream from bridge on Palolo Avenue and 3.9 miles east of Honolulu Post Office.

DRAINAGE AREA.--3.63 sq mi.

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

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 95 ft (from topographic map).

AVERAGE DISCHARGE.--20 years, 5.95 cfs (4,310 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,320 cfs Feb. 23 (gage height, 3.78 ft), from rating curve extended as explained below; minimum, 0.19 cfs Sept. 26.

Period of record: Maximum discharge, 4,270 cfs Dec. 18, 1967 (gage height, 5.98 ft), from rating curve extended above 140 cfs on basis of slope-conveyance study and slope-area measurements at gage heights 3.92 and 4.13 ft; minimum, 0.02 cfs June 25, 1958.

REMARKS.--Records poor. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1953, 1955-60.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.43	.48	1.2	1.1	1.4	2.1	1.9	1.7	.85	.58	.93	1.2
2	.41	.47	1.2	.96	1.3	2.2	5.6	1.3	.74	.77	1.0	.63
3	.45	.47	1.1	1.5	1.3	7.8	4.3	1.9	1.1	.58	.93	3.3
4	.49	.65	.98	1.3	6.2	2.2	14	1.2	.74	.58	.85	1.4
5	.57	.56	.91	1.2	2.8	1.2	3.9	1.2	.70	.58	.93	.77
6	.45	.55	.94	1.2	2.1	5.5	2.8	1.2	.67	.58	.85	.63
7	.68	.54	1.0	3.7	2.1	5.4	1.1	1.2	.69	.63	.85	.58
8	.43	.52	.94	3.3	2.2	3.3	6.9	1.1	.72	.70	.77	.53
9	.40	2.9	.90	1.7	5.9	2.7	10	3.3	1.4	.85	.93	.53
10	.50	2.6	.90	1.5	3.1	2.5	7.0	1.4	.92	.85	1.3	.53
11	2.7	1.1	.84	1.2	1.8	2.0	4.1	1.3	1.2	.58	.93	.48
12	.56	.69	1.1	1.2	1.9	2.0	5.2	2.0	1.0	.53	.93	.48
13	.51	.59	1.3	1.2	2.3	2.0	4.0	2.7	.85	.63	1.0	.48
14	.51	6.9	1.6	1.2	2.4	1.7	2.6	2.0	1.0	.62	.85	.48
15	.49	2.7	5.0	1.2	2.4	1.6	1.2	1.3	.85	1.3	.77	.48
16	.52	4.0	3.8	1.6	2.1	1.6	2.0	1.0	.85	1.4	.70	.53
17	.51	1.2	10	1.1	1.3	1.6	5.3	1.0	.77	1.0	.77	.53
18	1.2	.90	2.7	.82	.90	1.6	2.0	.93	.85	.75	.93	.40
19	.52	.80	3.5	.73	9.9	1.6	1.9	.93	.77	.65	.93	.37
20	.60	1.1	4.4	.53	3.5	1.6	1.7	.85	.85	.71	1.0	.37
21	.42	.78	1.9	.54	2.8	1.6	1.4	.93	.85	1.0	1.2	.37
22	.50	.73	1.2	2.9	1.1	1.6	1.9	1.0	.58	.73	1.0	.37
23	.48	.69	1.1	1.9	1.53	1.7	1.9	1.3	1.0	1.2	.93	.37
24	.46	1.8	1.2	7.2	2.8	1.7	1.6	1.3	.77	1.6	.93	.37
25	.45	1.3	1.1	6.8	1.2	1.6	1.4	.85	.63	2.6	.85	.37
26	.70	4.2	.98	2.7	5.6	1.6	1.4	.77	.63	1.1	1.7	.34
27	.45	1.5	.91	5.0	3.5	1.6	1.4	.77	.58	.85	.77	.40
28	.45	1.7	.87	2.0	2.9	1.7	1.4	.77	.58	.93	.58	.41
29	.50	1.3	.85	2.3	2.5	1.7	1.3	.77	.58	.70	1.9	.60
30	.54	2.0	5.1	1.9	-----	1.7	1.9	.77	.58	.85	3.3	.89
31	.50	-----	1.3	1.7	-----	1.7	-----	.70	-----	.77	1.0	-----
TOTAL	18.38	57.42	92.32	325.08	367.3	191.0	172.4	39.44	24.30	27.20	32.31	19.19
MEAN	.59	1.91	2.98	10.5	12.7	6.16	5.75	1.27	.81	.88	1.04	.64
MAX	2.7	13	35	199	153	78	28	3.3	1.4	2.6	3.3	3.3
MIN	.40	.47	.84	.53	1.3	1.6	1.3	.70	.58	.53	.58	.34
AC-FT	36	114	183	645	729	379	342	78	48	54	64	38

CAL YR 1971 TOTAL 1,510.90 MEAN 4.14 MAX 89 MIN .40 AC-FT 3,000

WTR YR 1972 TOTAL 1,366.34 MEAN 3.73 MAX 199 MIN .34 AC-FT 2,710

PEAK DISCHARGE (BASE, 500 CFS).--Jan. 23 (2000) 1,200 cfs (3.66 ft); Feb. 23 (0300) 1,320 cfs (3.78 ft).

## 16254000 Makawao Stream near Kailua

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

DRAINAGE AREA.--2.04 sq mi.

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

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.

AVERAGE DISCHARGE.--16 years (1913-15, 1958-72), 5.67 cfs (4,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 362 cfs Jan. 23 (gage height, 4.81 ft); minimum, 1.0 cfs Sept. 26, 29, 30.

Period of record: Maximum discharge, 6,000 cfs Feb. 4, 1965 (gage height, 12.41 ft), from rating curve extended above 470 cfs on basis of slope-area measurement of peak flow; minimum, 0.43 cfs Sept. 8-12, 14, 16-20, 22, 23, 1964.

REMARKS.--Records good. Maunawili ditch diverts 1.5 miles above station for irrigation in vicinity of Waimanalo. Records of chemical analyses and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	1.3	1.5	2.0	6.0	5.4	3.6	5.1	2.6	2.0	1.8	1.4
2	1.5	1.3	1.5	2.0	5.8	24	5.4	5.2	2.5	2.0	1.7	1.3
3	1.5	1.3	1.5	2.1	5.6	33	5.4	4.8	2.7	1.9	1.6	1.5
4	1.5	1.4	1.5	2.2	17	14	11	4.4	2.5	1.9	1.8	1.3
5	1.4	1.4	1.4	2.3	13	11	7.9	3.9	2.4	1.9	1.6	1.3
6	1.5	1.3	1.6	2.3	9.8	9.5	7.2	3.8	2.4	1.8	1.5	1.3
7	1.5	1.3	1.4	2.2	8.3	8.7	7.5	3.7	2.4	1.8	1.5	1.3
8	1.4	1.4	1.4	2.2	8.1	9.2	7.3	3.6	2.4	1.8	1.5	1.2
9	1.4	1.5	1.4	2.1	8.3	9.7	6.6	3.6	2.5	1.9	1.5	1.2
10	1.6	1.5	1.4	2.0	7.3	9.0	6.0	3.5	2.6	1.8	1.6	1.2
11	1.5	1.4	1.4	2.0	6.7	8.6	6.0	3.6	2.8	1.8	1.5	1.2
12	1.5	1.4	1.4	2.2	5.8	7.6	5.2	3.4	2.4	1.8	1.4	1.3
13	1.5	1.4	1.4	2.1	5.6	6.7	3.8	3.9	2.4	1.7	1.5	1.2
14	1.4	1.5	1.6	2.4	5.6	6.3	18	3.4	2.3	1.7	1.4	1.2
15	1.4	4.0	1.9	2.2	5.2	5.7	32	3.3	2.3	1.7	1.4	1.2
16	1.5	2.2	1.7	2.2	4.2	4.6	9.8	3.2	2.2	1.9	1.4	1.1
17	1.5	1.7	5.3	2.1	4.2	4.4	15	3.1	2.2	1.8	1.5	1.1
18	2.0	1.6	3.1	2.0	8.8	4.3	9.0	3.0	2.2	1.7	1.5	1.1
19	1.5	1.5	12	2.0	5.6	4.1	8.0	3.0	2.2	1.7	1.4	1.1
20	1.5	1.6	3.5	2.0	4.7	3.9	9.4	2.9	2.1	1.7	1.5	1.1
21	1.4	1.6	2.6	2.0	4.3	3.9	9.8	3.0	2.2	1.9	1.4	1.1
22	1.4	1.4	2.4	3.3	5.6	3.8	9.1	2.9	2.2	1.6	1.3	1.1
23	1.4	1.5	2.9	94	28	3.8	8.2	2.9	2.1	1.6	1.3	1.1
24	1.4	1.5	2.9	48	9.8	3.6	6.6	2.8	2.1	1.6	1.3	1.1
25	1.4	2.2	3.0	15	8.3	3.6	6.5	2.8	2.1	1.7	1.3	1.1
26	1.5	1.6	2.9	11	7.1	3.5	6.3	2.7	2.0	1.6	1.6	1.1
27	1.4	1.5	2.8	9.8	6.5	3.7	5.9	2.7	2.0	1.6	1.3	1.1
28	1.4	1.5	2.4	8.6	6.2	3.5	6.1	2.7	2.0	1.5	1.3	1.1
29	1.5	1.5	2.2	7.8	5.6	3.4	7.3	2.7	2.0	1.5	1.4	1.1
30	1.7	1.6	2.0	7.1	-----	3.4	6.8	2.6	1.9	1.6	1.5	1.1
31	1.4	-----	2.7	6.5	-----	3.2	-----	2.5	-----	1.6	1.3	-----
TOTAL	46.0	47.9	76.7	255.7	227.0	229.1	256.7	104.7	68.7	54.1	45.6	35.6
MEAN	1.48	1.60	2.47	8.25	7.83	7.39	8.56	3.38	2.29	1.75	1.47	1.19
MAX	2.0	4.0	12	94	28	33	32	5.2	2.8	2.0	1.8	1.5
MIN	1.4	1.3	1.4	2.0	4.2	3.2	3.6	2.5	1.9	1.5	1.3	1.1
AC-FT	91	95	152	507	450	454	509	208	136	107	90	71

CAL YR 1971 TOTAL 1,541.8 MEAN 4.22 MAX 51 MIN 1.3 AC-FT 3,060  
 WTR YR 1972 TOTAL 1,447.8 MEAN 3.96 MAX 94 MIN 1.1 AC-FT 2,870

PEAK DISCHARGE (BASE, 390 CFS)--No peak above base.

## HAWAII, ISLAND OF OAHU

16270500 Kamooalii Stream below Kuou Stream, near Kaneohe

LOCATION.--Lat 21°23'42", long 157°48'26", on right bank 100 ft downstream from Kuou Stream, 1.1 miles southwest of Castle High School, and 1.9 miles south of Kaneohe Post Office.

DRAINAGE AREA.--3.21 sq mi.

PERIOD OF RECORD.--April 1967 to September 1970. Occasional low-flow measurements and annual maximum, water year 1971. January to September 1972.

GAGE.--Water-stage recorder and combination pipe culverts and paved road control. Altitude of gage is 118 ft (from topographic map). Control rebuilt and datum lowered 2.80 ft Apr. 22, 1969.

EXTREMES.--Maximum discharge during period, January to September 1972, 1,020 cfs Jan. 22 (gage height, 8.35 ft), from rating curve extended above 130 cfs; minimum, 4.7 cfs Sept. 20, 26, 27.  
 Period of record: Maximum discharge, 10,800 cfs Feb. 1, 1969 (gage height, 12.42 ft, control and datum then in use), from rating curve extended above 1,800 cfs; minimum, 4.7 cfs Sept. 28, 29, 1970, Sept. 20, 26, 27, 1972.

REMARKS.--Records poor. No diversion above station. Records of suspended sediment loads for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, JANUARY TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				6.2	10	10	11	13	9.2	7.1	6.0	5.9
2				5.9	9.8	24	12	12	8.5	6.8	6.0	5.9
3				5.5	9.8	89	13	12	9.8	6.8	5.7	6.5
4				5.3	21	21	14	12	9.0	6.8	6.3	6.2
5				5.7	15	17	11	12	9.0	6.5	6.8	5.9
6				5.5	12	16	26	11	8.5	6.5	6.2	5.7
7				5.7	11	15	13	11	8.5	7.1	6.2	5.7
8				5.7	11	14	11	11	8.5	6.8	5.9	5.7
9				5.7	10	14	13	11	9.8	7.1	5.9	5.5
10				5.5	9.8	13	12	11	9.8	6.8	7.6	5.5
11				5.3	9.8	13	11	11	11	6.5	6.2	5.5
12				5.3	9.2	12	11	11	8.5	6.5	6.8	5.5
13				5.3	9.2	12	11	12	8.5	6.5	6.5	5.5
14				5.9	9.0	12	52	11	8.5	6.8	6.2	5.3
15				5.7	9.0	12	44	11	7.6	7.6	5.9	5.1
16				5.9	8.5	11	22	11	7.6	13	5.9	5.1
17				5.7	8.5	11	66	10	7.6	7.1	6.2	5.1
18				5.7	12	11	22	10	7.6	6.8	6.5	5.3
19				5.7	9.2	12	18	9.2	8.5	6.8	5.9	5.1
20				5.5	8.5	11	16	9.2	7.6	7.1	6.3	4.7
21				5.3	8.5	11	15	10	7.6	7.1	6.2	4.9
22				145	11	11	15	9.2	7.6	6.8	5.7	5.3
23				130	32	12	15	11	7.6	6.5	5.5	4.9
24				58	15	11	14	10	7.1	6.5	5.5	5.1
25				20	13	11	14	10	7.6	6.2	5.5	4.9
26				15	12	11	14	9.2	7.1	6.2	6.0	4.7
27				15	11	11	14	9.2	7.1	5.9	5.7	4.7
28				13	11	11	13	9.2	7.1	6.2	5.5	4.9
29				12	11	10	13	10	7.1	6.5	6.3	4.9
30				11	-----	10	13	9.2	6.8	6.2	6.5	4.9
31		-----		11	-----	9.2	-----	9.2	-----	6.2	5.9	-----
TOTAL				548.0	336.8	460.2	549	327.6	246.3	213.3	189.3	159.9
MEAN				17.7	11.6	15.1	18.3	10.6	8.21	6.88	6.11	5.33
MAX				145	32	89	66	13	11	13	7.6	6.5
MIN				5.3	8.5	9.2	11	9.2	6.8	5.9	5.5	4.7
AC-FI				1,090	668	929	1,090	650	489	423	375	317

PEAK DISCHARGE (BASE, 900 CFS).--Jan. 22 (0830) 1,020 cfs (8.35 ft).

## 16273900 Kamooolii Stream at Kaneohe

LOCATION.--Lat 21°24'51", long 157°48'12", on right bank 500 ft upstream from Highway 83 and 0.2 mile south of Parker School in Kaneohe.

DRAINAGE AREA.--4.38 sq mi.

PERIOD OF RECORD.--January 1959 to October 1963, November 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 38.75 ft above mean sea level (levels by city and county of Honolulu). Prior to Oct. 5, 1963, at site 50 ft downstream at datum 0.93 ft lower.

AVERAGE DISCHARGE.--10 years (1959-63, 1966-72), 16.5 cfs (11,950 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,250 cfs Jan. 22 (gage height, 4.14 ft); minimum, 6.7 cfs Sept. 20, 26, 27.

Period of record: Maximum discharge, 12,000 cfs Feb. 1, 1969 (gage height, 10.16 ft), from rating curve extended above 380 cfs on basis of slope-area measurements at gage heights 5.26, 7.14, 7.47 and 10.16 ft; minimum, 3.4 cfs Aug. 28, 1962.

Flood of Oct. 23, 1958, reached a stage of 8.3 ft, from floodmarks, former site and datum (discharge, 6,610 cfs, from rating curve extended above 120 cfs on basis of slope-area measurement at gage height 5.69 ft). Discharge for peaks of Feb. 4 and May 2, 1965, 6,190 and 5,400 cfs, respectively; results of slope-area measurements of peak flow.

REMARKS.--Records good. Many diversions for irrigation above station. Recording rain gage located at station. Records of chemical analyses and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

## DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	7.6	9.7	8.9	14	13	15	16	13	10	8.2	8.5
2	7.9	7.6	9.3	8.5	14	33	17	16	12	9.7	8.2	8.5
3	7.9	7.6	8.9	7.9	14	120	18	16	14	9.7	7.9	9.3
4	8.7	8.2	8.9	7.6	30	26	20	16	12	9.7	9.1	8.9
5	7.9	8.2	8.5	8.2	21	22	16	16	12	9.3	9.7	8.5
6	8.2	7.6	11	7.9	16	21	36	16	12	9.3	8.9	8.2
7	8.5	8.2	11	8.2	15	19	18	15	12	10	8.2	8.2
8	8.5	7.9	8.9	8.2	15	18	16	14	12	9.7	7.9	8.2
9	8.9	8.2	8.5	8.2	15	18	18	14	14	10	8.5	7.9
10	8.9	8.5	8.2	7.9	14	16	16	14	14	9.7	11	7.9
11	8.2	7.9	8.2	7.6	14	16	14	14	16	9.3	9.0	7.9
12	8.2	7.6	8.9	7.6	13	16	14	14	12	9.3	9.7	7.9
13	8.2	7.6	8.6	7.6	13	16	14	16	12	9.3	9.3	7.9
14	7.9	8.9	9.7	8.5	12	16	71	14	12	9.7	8.2	7.6
15	7.9	14	9.5	8.2	12	16	60	14	11	11	7.9	7.3
16	7.6	15	8.9	8.4	12	15	31	14	11	18	7.3	7.3
17	7.0	8.9	16	8.2	12	15	90	14	11	10	8.9	7.3
18	9.8	8.2	11	8.2	17	14	28	12	11	9.7	9.3	7.6
19	7.9	7.9	18	8.2	13	15	23	12	12	9.7	8.5	7.3
20	7.6	7.9	11	7.9	12	14	21	12	11	10	9.0	6.7
21	7.6	7.6	9.7	7.3	12	14	20	14	11	10	8.9	7.0
22	7.6	7.6	9.3	204	15	14	20	12	11	9.7	8.2	7.6
23	8.2	7.6	8.9	169	45	16	19	15	11	9.3	7.9	7.0
24	8.9	8.2	8.5	78	19	14	18	12	10	9.3	7.9	7.3
25	8.9	14	8.9	28	18	14	19	12	11	8.9	7.9	7.0
26	9.5	9.3	8.5	21	14	14	18	12	10	8.2	8.6	6.7
27	8.5	8.2	8.9	21	14	14	18	12	10	8.5	8.2	6.7
28	8.2	8.5	8.5	18	14	14	18	12	10	8.9	7.9	7.0
29	10	7.9	8.9	16	14	13	18	13	10	9.3	9.1	7.0
30	8.9	20	8.9	15	-----	13	16	12	9.7	8.9	9.3	7.0
31	7.9	-----	16	15	-----	12	-----	12	-----	8.9	8.5	-----
TOTAL	258.7	272.4	307.7	754.2	463	611	740	427	349.7	303.0	267.1	229.2
MEAN	8.35	9.08	9.93	24.3	16.0	19.7	24.7	13.8	11.7	9.77	8.62	7.64
MAX	10	20	18	204	45	120	90	16	16	18	11	9.3
MIN	7.6	7.6	8.2	7.3	12	12	14	12	9.7	8.2	7.3	6.7
AC-FT	513	540	610	1,500	918	1,210	1,470	847	694	601	530	455

CAL YR 1971 TOTAL 5,243.3 MEAN 14.4 MAX 279 MIN 7.6 AC-FT 10,400

WTR YR 1972 TOTAL 4,983.0 MEAN 13.6 MAX 204 MIN 6.7 AC-FT 9,880

PEAK DISCHARGE (BASE, 950 CFS)--Jan. 22 (0900) 1,250 cfs (4.14 ft).

HAWAII, ISLAND OF OAHU

16275000 Haiku Stream near Heeia

LOCATION.--Lat 21°24'45", long 157°49'35", on left bank 1.7 miles west of Kaneohe Post Office and 1.8 miles southwest of Heeia.

DRAINAGE AREA.--0.97 sq mi.

PERIOD OF RECORD.--January 1914 to October 1919, July 1939 to current year.

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.

AVERAGE DISCHARGE (since diversion from tunnel began).--29 years (1943-72), 2.24 cfs (1,620 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 328 cfs Jan. 22 (gage height, 3.03 ft), from rating curve extended as explained below; minimum, 0.79 cfs Aug. 25.  
 Period of record: Maximum discharge, 5,740 cfs May 2, 1965 (gage height, 7.94 ft), from rating curve extended above 57 cfs on basis of slope-area measurements at gage heights 3.87, 3.88 and 7.94 ft; minimum, 0.20 cfs July 20, 1957, Sept. 17, 1961.

REMARKS.--Records fair. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1943. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (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).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

CAY	CCY	NCV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.5	1.5	1.4	1.7	1.5	1.4	1.6	1.2	1.2	3.8	1.1
2	1.3	1.5	1.5	1.4	1.6	2.1	1.5	1.6	1.2	1.2	1.9	1.1
3	1.3	1.4	1.4	1.3	1.6	1.6	1.7	1.6	1.2	1.1	1.4	1.1
4	1.5	1.3	1.4	1.3	2.2	4.9	4.8	1.5	1.2	1.1	1.2	1.4
5	1.3	1.3	1.5	1.4	2.1	2.7	2.2	1.5	1.2	1.1	1.1	1.1
6	1.3	1.3	1.6	1.5	2.2	2.1	3.9	1.4	1.2	1.1	1.1	1.1
7	1.3	1.3	1.8	1.5	1.9	2.0	3.0	1.4	1.2	1.1	1.1	1.0
8	1.3	1.3	1.9	1.5	1.7	1.8	1.8	1.4	1.2	1.2	1.1	1.0
9	1.3	1.3	1.7	1.4	1.7	1.8	1.7	1.4	1.2	1.2	1.1	1.0
10	1.4	1.3	1.6	1.4	1.6	1.7	1.6	1.4	1.2	1.2	1.2	1.0
11	1.3	1.3	1.6	1.4	1.6	1.6	1.5	1.4	1.2	1.2	1.1	1.0
12	1.3	1.3	1.6	1.4	1.6	1.6	1.5	1.4	1.2	1.1	1.2	1.0
13	1.3	1.3	1.6	1.3	1.6	1.6	1.5	1.5	1.1	1.1	1.2	1.0
14	1.3	1.3	1.6	1.3	1.6	1.6	5.4	1.4	1.1	1.1	1.1	1.0
15	1.3	1.6	1.9	1.3	1.5	1.6	9.6	1.3	1.1	1.1	1.1	1.0
16	1.3	2.4	1.0	1.3	1.5	1.6	4.9	1.3	1.1	2.8	1.1	1.0
17	1.3	1.7	2.3	1.3	1.5	1.6	12	1.3	1.2	1.2	1.1	1.0
18	1.3	1.4	2.3	1.3	2.7	1.6	6.1	1.3	1.1	1.1	1.1	1.0
19	1.4	1.3	2.0	1.3	2.1	1.6	3.3	1.3	1.1	1.1	1.1	1.0
20	1.4	1.3	2.3	1.3	1.7	1.6	2.3	1.3	1.1	1.1	1.1	1.0
21	1.5	1.3	2.0	1.3	1.5	1.6	2.0	1.3	1.1	1.2	1.1	1.0
22	1.4	1.3	1.7	39	1.7	1.5	1.9	1.3	1.1	1.1	1.0	1.1
23	1.5	1.3	1.5	25	3.3	1.4	1.8	1.4	1.1	1.1	1.0	.99
24	1.6	1.3	1.4	16	2.3	1.3	1.6	1.3	1.1	1.1	1.1	.95
25	1.5	2.6	1.4	4.9	2.3	1.3	1.6	1.2	1.1	1.1	1.0	.95
26	1.4	2.3	1.4	2.7	1.9	1.3	1.6	1.2	1.1	1.1	1.2	.95
27	1.3	1.7	1.4	2.3	1.7	1.3	1.6	1.1	1.1	1.1	1.1	.95
28	1.4	1.6	1.4	2.1	1.6	1.3	1.5	1.2	1.1	1.1	1.1	.95
29	1.4	1.6	1.4	2.0	1.6	1.3	1.6	1.2	1.1	1.1	1.1	.98
30	1.6	1.8	1.3	1.8	-----	1.3	1.5	1.1	1.1	1.1	1.1	1.0
31	1.6	-----	1.6	1.8	-----	1.3	-----	1.1	-----	1.1	1.0	-----
TOTAL	42.8	44.9	52.2	126.2	53.6	67.5	88.4	41.7	34.3	36.6	38.0	30.72
MEAN	1.38	1.50	1.68	4.07	1.85	2.18	2.95	1.35	1.14	1.18	1.23	1.02
MAX	1.6	2.6	2.9	39	3.3	16	12	1.6	1.2	2.8	3.8	1.4
MIN	1.3	1.3	1.3	1.3	1.5	1.3	1.4	1.1	1.1	1.1	1.0	.95

CAL YR 1971 TOTAL 302.80 MEAN 2.20 MAX 60 MIN 1.3 AC-FT 1,590  
 WTR YR 1972 TOTAL 656.92 MEAN 1.79 MAX 39 MIN .95 AC-FT 1,300

PEAK DISCHARGE (BASE, 340 CFS).--No peak above base.

16283600 South Fork Waihee Stream near Heeia

LOCATION.--Lat 21°26'42", long 157°52'10", on left bank 0.6 mile upstream from confluence with North Fork, 3.0 miles southwest of Waiahole School, and 4.0 miles northwest of Heeia.

DRAINAGE AREA.--0.03 sq mi.

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).

AVERAGE DISCHARGE.--10 years, 2.10 cfs (1,520 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 65 cfs Apr. 14 (gage height, 2.39 ft), from rating curve extended above 3.9 cfs; minimum, 1.3 cfs many days.

Period of record: Maximum discharge, 279 cfs May 2, 1965 (gage height, 3.96 ft), from rating curve extended above 3.9 cfs; minimum, 1.3 cfs many days in 1972.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	1.7	1.7	1.5	1.5	1.4	1.4	1.6	1.5	1.4	1.4	1.4
2	1.9	1.7	1.7	1.5	1.5	1.5	1.6	1.6	1.5	1.4	1.3	1.4
3	1.9	1.7	1.7	1.5	1.5	2.2	1.7	1.6	1.5	1.4	1.3	1.4
4	1.9	1.7	1.7	1.5	1.7	1.5	1.9	1.6	1.5	1.4	1.3	1.4
5	1.9	1.7	1.7	1.6	1.6	1.4	1.5	1.6	1.5	1.4	1.3	1.4
6	1.8	1.7	1.7	1.5	1.5	1.4	2.3	1.6	1.5	1.4	1.3	1.4
7	1.8	1.7	1.8	1.5	1.5	1.4	1.6	1.6	1.5	1.4	1.3	1.4
8	1.8	1.7	1.7	1.5	1.5	1.4	1.5	1.6	1.5	1.4	1.3	1.4
9	1.9	1.7	1.6	1.5	1.6	1.4	1.6	1.6	1.6	1.4	1.3	1.4
10	1.9	1.7	1.6	1.5	1.5	1.4	1.5	1.5	1.4	1.4	1.3	1.4
11	1.9	1.7	1.6	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.4
12	1.9	1.7	1.6	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.4
13	1.8	1.7	1.6	1.5	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.4
14	1.8	1.8	1.6	1.5	1.4	1.4	2.4	1.5	1.4	1.4	1.3	1.4
15	1.8	1.9	1.6	1.4	1.4	1.4	3.2	1.5	1.4	1.4	1.3	1.4
16	1.8	1.9	1.6	1.5	1.4	1.4	1.9	1.5	1.4	1.5	1.3	1.4
17	1.8	1.7	1.8	1.4	1.4	1.4	4.3	1.5	1.4	1.4	1.3	1.4
18	1.8	1.7	1.7	1.4	2.3	1.4	1.8	1.5	1.4	1.4	1.3	1.4
19	1.8	1.7	2.9	1.4	1.5	1.4	1.7	1.5	1.4	1.4	1.3	1.4
20	1.8	1.7	1.7	1.4	1.4	1.4	1.6	1.5	1.4	1.4	1.4	1.4
21	1.8	1.7	1.7	1.4	1.4	1.4	1.6	1.5	1.4	1.4	1.4	1.3
22	1.8	1.7	1.7	4.2	1.5	1.4	1.6	1.5	1.4	1.4	1.4	1.4
23	1.8	1.7	1.7	3.9	1.6	1.4	1.6	1.6	1.4	1.4	1.4	1.4
24	1.8	1.7	1.7	2.0	1.7	1.4	1.6	1.6	1.4	1.4	1.4	1.4
25	1.8	2.4	1.6	1.7	1.4	1.4	1.6	1.6	1.4	1.4	1.4	1.3
26	1.9	1.8	1.6	1.6	1.4	1.4	1.6	1.6	1.4	1.4	1.4	1.3
27	1.8	1.7	1.6	1.6	1.4	1.4	1.6	1.5	1.4	1.4	1.4	1.3
28	1.8	1.7	1.5	1.6	1.4	1.4	1.6	1.5	1.4	1.4	1.4	1.3
29	1.8	1.7	1.5	1.6	1.4	1.4	1.6	1.5	1.4	1.4	1.4	1.3
30	1.8	1.8	1.5	1.5	-----	1.4	1.6	1.5	1.4	1.4	1.4	1.3
31	1.7	-----	1.5	1.5	-----	1.4	-----	1.5	-----	1.4	1.4	-----
TOTAL	56.7	52.4	51.3	52.2	43.6	44.4	53.7	47.8	43.0	43.5	41.6	41.3
MEAN	1.83	1.75	1.65	1.68	1.50	1.43	1.79	1.54	1.43	1.40	1.34	1.38
MAX	1.9	2.4	2.9	4.2	2.3	2.2	4.3	1.6	1.6	1.5	1.4	1.4
MIN	1.7	1.7	1.5	1.4	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.3
AC-FT	112	104	102	104	86	88	107	95	85	86	83	82

CAL YR 1971 TOTAL 794.2 MEAN 2.18 MAX 7.1 MIN 1.5 AC-FT 1,580  
 WTR YR 1972 TOTAL 571.5 MEAN 1.56 MAX 4.3 MIN 1.3 AC-FT 1,130

PEAK DISCHARGE (BASE, 47 CFS).--Apr. 14 (2400) 65 cfs (2.39 ft).

## HAWAII, ISLAND OF OAHU

16283700 North Fork Waihee Stream near Heeia

LOCATION.--Lat 21°26'46", long 157°52'18", on left bank 0.6 mile upstream from confluence with South Fork, 2.8 miles southwest of Waiahole School, and 4.3 miles northwest of Heeia.

DRAINAGE AREA.--0.03 sq mi.

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).

AVERAGE DISCHARGE.--10 years, 2.02 cfs (1,460 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 64 cfs Apr. 14 (gage height, 1.94 ft), from rating curve extended above 19 cfs; minimum, 1.5 cfs many days.

Period of record: Maximum discharge, 376 cfs Feb. 4, 1965 (gage height, 3.38 ft), from rating curve extended above 19 cfs; minimum, 1.3 cfs many days in 1963.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	1.6	1.7	1.6	1.5	1.6	1.5	1.6	1.5	1.5	1.7	1.7
2	1.8	1.6	1.7	1.6	1.5	1.6	1.6	1.6	1.5	1.5	1.7	1.7
3	1.8	1.6	1.7	1.6	1.5	2.2	1.8	1.6	1.5	1.5	1.7	1.6
4	1.8	1.6	1.7	1.6	1.6	1.6	1.9	1.6	1.5	1.5	1.6	1.7
5	1.8	1.6	1.7	1.6	1.5	1.6	1.6	1.6	1.5	1.5	1.6	1.7
6	1.8	1.6	1.7	1.6	1.5	1.6	2.0	1.6	1.5	1.5	1.6	1.6
7	1.8	1.6	1.8	1.6	1.5	1.6	1.6	1.6	1.5	1.5	1.6	1.6
8	1.8	1.6	1.7	1.6	1.5	1.6	1.6	1.6	1.5	1.5	1.6	1.6
9	1.8	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.6	1.6
10	1.8	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.6	1.6
11	1.8	1.6	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.6	1.6
12	1.8	1.6	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.6	1.6
13	1.8	1.6	1.7	1.5	1.6	1.6	1.6	1.5	1.5	1.5	1.6	1.6
14	1.8	1.7	1.7	1.5	1.6	1.6	2.0	1.5	1.5	1.5	1.6	1.6
15	1.8	1.9	1.7	1.5	1.6	1.6	3.1	1.5	1.5	1.5	1.6	1.6
16	1.8	1.7	1.7	1.5	1.5	1.6	1.7	1.5	1.5	1.6	1.6	1.6
17	1.8	1.6	1.9	1.5	1.5	1.6	2.9	1.5	1.5	1.5	1.6	1.6
18	1.8	1.6	1.8	1.5	2.2	1.5	1.8	1.5	1.5	1.5	1.6	1.6
19	1.8	1.6	2.1	1.5	1.6	1.5	1.7	1.5	1.5	1.5	1.6	1.6
20	1.8	1.6	1.7	1.5	1.6	1.5	1.6	1.5	1.6	1.5	1.6	1.6
21	1.8	1.7	1.7	1.5	1.6	1.5	1.6	1.5	1.6	1.5	1.6	1.7
22	1.8	1.7	1.6	2.9	1.6	1.5	1.6	1.5	1.6	1.5	1.6	1.7
23	1.8	1.7	1.6	2.9	1.7	1.6	1.6	1.5	1.6	1.5	1.6	1.6
24	1.8	1.7	1.6	1.8	1.8	1.6	1.6	1.5	1.5	1.5	1.6	1.7
25	1.8	2.2	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.7	1.7
26	1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.7	1.7
27	1.8	1.8	1.6	1.5	1.6	1.6	1.6	1.5	1.5	1.5	1.7	1.6
28	1.7	1.8	1.6	1.5	1.6	1.6	1.6	1.5	1.5	1.5	1.8	1.6
29	1.7	1.7	1.6	1.5	1.6	1.5	1.6	1.5	1.5	1.5	1.8	1.6
30	1.7	1.8	1.6	1.5	-----	1.5	1.6	1.5	1.5	1.5	1.8	1.5
31	1.7	-----	1.6	1.5	-----	1.5	-----	1.5	-----	1.6	1.8	-----
TOTAL	55.4	50.4	52.5	51.1	46.4	49.4	52.4	47.5	45.4	46.7	51.0	48.8
MEAN	1.79	1.68	1.69	1.65	1.60	1.59	1.75	1.53	1.51	1.51	1.65	1.63
MAX	1.8	2.2	2.1	2.9	2.2	2.2	3.1	1.6	1.6	1.6	1.8	1.7
MIN	1.7	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.5
AC-FT	110	100	104	101	92	98	104	94	90	93	101	97

CAL YR 1971 TOTAL 680.4 MEAN 1.80 MAX 5.9 MIN 1.4 AC-FT 1,350

WTR YR 1972 TOTAL 597.0 MEAN 1.63 MAX 3.1 MIN 1.5 AC-FT 1,180

PEAK DISCHARGE (BASE, 45 CFS).--Apr. 14 (2400) 64 cfs (1.94 ft).

HAWAII, ISLAND OF OAHU

99

16284000 Waihee Stream near Heeia

LOCATION.--Lat 21°27'00", long 157°51'40", on left bank 70 ft upstream from intake of Kihe ditch, 120 ft downstream from forest-reserve boundary, 3.5 miles northwest of Heeia, and 4.0 miles northwest of Kaneohe Post Office.

DRAINAGE AREA.--0.93 sq mi.

PERIOD OF RECORD.--December 1935 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 193.44 ft above mean sea level (levels by Honolulu Board of Water Supply).

AVERAGE DISCHARGE.--36 years (1936-72), 8.91 cfs (6,460 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 438 cfs Apr. 14 (gage height, 4.88 ft); minimum, 3.4 cfs several days in September.

Period of record: Maximum discharge, 5,110 cfs Feb. 4, 1965 (gage height, 8.72 ft, from floodmarks), from rating curve extended above 77 cfs on basis of slope-area measurements at gage heights 6.06 and 8.72 ft; minimum, 3.4 cfs Oct. 15, 16, 1962, and on several days in September 1972.

REVISIONS.--The maximum discharge for the water year 1971 has been revised to 980 cfs Nov. 25 (gage height, 5.55 ft), superseding figure published in WRD Hawaii 1971.

REMARKS.--Records fair. Honolulu Board of Water Supply diverts water from tunnel in drainage area.

REVISIONS (FISCAL YEARS)--WSP 1569: Drainage area. WSP 1719: 1956-57. WSP 1937: 1940-43(M), 1947(M), 1948(P), 1949-50(M), 1953(M), 1955(M), 1958(M), 1959(P).

REVISED PEAK DISCHARGE.--1971: Jan. 19 (1930) 714 cfs (5.23 ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	4.9	4.4	3.8	4.0	4.3	4.7	5.1	4.6	4.4	4.2	3.5
2	5.4	4.9	4.4	3.8	4.0	4.0	5.6	5.1	4.6	4.3	4.1	3.5
3	5.2	5.1	4.3	3.8	4.0	9.4	5.8	5.1	4.9	4.3	3.8	3.5
4	5.2	5.1	4.3	3.8	4.6	6.5	9.0	5.1	4.8	4.3	3.8	3.6
5	5.2	5.1	4.3	4.1	4.4	5.2	6.6	4.9	4.8	4.3	3.6	3.4
6	5.1	4.9	4.3	4.0	4.1	4.9	8.7	4.9	4.8	4.3	3.6	3.4
7	5.1	4.8	4.9	3.8	4.0	4.6	6.6	4.8	4.8	4.3	3.6	3.5
8	5.1	4.6	4.3	3.8	4.0	4.3	5.8	4.7	4.8	4.3	3.6	3.5
9	5.2	4.6	4.3	3.8	4.1	4.1	5.6	4.6	4.9	4.4	3.6	3.5
10	5.4	4.6	4.3	3.8	4.1	4.1	5.2	4.6	4.8	4.3	3.6	3.5
11	5.2	4.6	4.1	3.8	4.1	4.1	4.6	4.4	4.8	4.3	3.6	3.5
12	5.2	4.6	4.1	3.6	4.0	4.1	4.4	4.6	4.8	4.1	3.6	3.5
13	5.2	4.6	4.1	3.8	4.0	4.1	4.4	5.1	4.8	4.1	3.8	3.5
14	5.2	4.8	4.3	3.8	4.0	4.1	7.0	4.8	4.8	4.1	3.6	3.5
15	5.2	5.6	4.3	3.6	4.0	4.3	3.0	4.8	4.8	4.1	3.5	3.5
16	5.1	6.0	4.3	3.8	4.0	4.1	8.4	4.6	4.8	4.8	3.5	3.5
17	4.9	4.8	5.4	3.8	4.1	4.1	4.4	4.4	4.6	4.3	3.5	3.5
18	5.2	4.6	5.6	3.6	9.2	4.1	15	4.6	4.4	4.1	3.6	3.4
19	5.1	4.4	7.4	3.8	6.1	4.1	8.4	4.4	4.3	4.1	3.6	3.4
20	5.1	4.3	5.8	3.6	4.9	4.1	7.0	4.6	4.3	4.1	3.6	3.4
21	5.1	4.3	4.9	3.6	4.3	4.3	6.3	4.6	4.3	4.1	3.6	3.4
22	5.1	4.3	4.4	2.0	4.8	4.3	5.8	4.3	4.4	4.1	3.6	3.8
23	5.1	4.3	4.3	3.0	5.1	4.4	5.6	4.4	4.6	4.0	3.5	3.5
24	5.2	4.4	4.3	1.6	6.2	4.3	5.4	4.8	4.4	4.0	3.5	3.5
25	5.2	6.6	4.1	7.2	5.6	4.3	5.4	4.8	4.6	4.1	3.5	3.4
26	5.4	4.9	4.1	5.6	4.9	4.3	5.2	4.8	4.6	4.1	3.6	3.4
27	5.2	4.4	4.1	4.9	4.8	4.3	5.1	4.4	4.6	4.0	3.5	3.4
28	5.2	4.4	4.1	4.6	4.4	4.3	5.1	4.6	4.4	4.0	3.5	3.4
29	5.4	4.3	4.1	4.3	4.3	4.3	5.1	4.4	4.4	3.8	3.5	3.4
30	5.4	5.2	4.1	4.1	-----	4.3	5.1	4.4	4.4	4.1	3.5	3.4
31	5.1	-----	4.0	4.1	-----	4.3	-----	4.6	-----	4.1	3.5	-----
TOTAL	161.1	144.0	139.7	180.1	134.1	140.8	250.9	145.3	138.9	129.7	112.2	104.2
MEAN	5.20	4.80	4.51	5.81	4.62	4.54	8.36	4.69	4.63	4.18	3.62	3.47
MAX	5.4	6.6	7.4	3.0	9.2	9.4	4.4	5.1	4.9	4.8	4.2	3.8
MIN	4.9	4.3	4.0	3.6	4.0	4.1	4.4	4.3	4.3	3.8	3.5	3.4
AC-FT	320	286	277	357	266	279	498	280	276	257	223	207

CAL YR 1971 TOTAL 2,306.2 MEAN 6.32 MAX 50 MIN 4.0 AC-FT 4,570  
 WTR YR 1972 TOTAL 1,781.0 MEAN 4.87 MAX 44 MIN 3.4 AC-FT 3,530

PEAK DISCHARGE (BASE, 140 CFS)--Apr. 14 (2400) 438 cfs (4.88 ft); Apr. 17 (1530) 237 cfs (4.26 ft).

## HAWAII, ISLAND OF OAHU

16294900 Waikane Stream at altitude 75 ft, at Waikane

LOCATION.--Lat 21°30'00", long 157°51'54", on right bank 0.3 mile downstream from Waikeekē Stream, 0.7 mile west of Waikane, and 1.2 miles northwest of Waiahole School.

DRAINAGE AREA.--2.22 sq mi.

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

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

AVERAGE DISCHARGE.--12 years (1960-72), 9.67 cfs (7,010 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 806 cfs Apr. 17 (gage height, 5.09 ft), from rating curve extended as explained below; minimum, 1.7 cfs Sept. 29.

Period of record: Maximum discharge, 8,800 cfs Feb. 4, 1965 (gage height, 10.76 ft), from rating curve extended above 120 cfs on basis of slope-area measurements at gage heights 4.88, 9.46, and 10.76 ft; minimum, 1.2 cfs Oct. 10, 11, 1962.

REMARKS.--Records good. Waiahole tunnel diverts from two tributaries above station for irrigation in vicinity of Waipahu. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	2.2	2.6	4.2	5.5	6.1	4.2	5.8	3.2	2.6	8.8	3.0
2	2.0	2.1	2.6	3.4	5.2	7.0	33	5.5	3.1	3.3	4.9	3.2
3	1.8	2.1	2.4	3.2	4.9	21	19	5.2	3.4	3.2	2.6	3.0
4	2.0	2.4	2.4	3.0	9.8	9.5	23	4.9	3.2	2.5	2.3	6.0
5	2.0	3.0	2.4	3.6	9.9	7.6	13	4.7	3.1	2.5	2.2	3.0
6	1.8	2.1	2.6	3.8	8.7	6.7	54	4.4	3.0	2.4	2.3	2.6
7	2.0	2.0	2.6	3.2	7.0	6.1	22	4.4	3.6	2.4	2.2	2.4
8	2.0	2.1	2.6	3.8	7.0	5.8	13	4.2	3.0	2.5	2.2	2.4
9	2.1	2.1	2.4	3.4	7.6	5.2	14	4.0	4.4	2.8	2.3	2.3
10	2.1	2.1	2.4	3.0	7.6	5.2	11	3.8	3.0	2.6	3.6	2.3
11	2.0	2.1	2.4	3.0	6.1	4.9	8.8	3.8	3.5	2.4	2.5	2.3
12	2.0	2.0	2.4	3.0	5.5	4.7	8.1	3.8	3.0	2.4	2.5	2.4
13	2.0	1.8	2.4	3.0	5.2	4.4	7.5	5.8	2.9	2.4	3.1	2.1
14	2.0	2.2	2.6	3.6	4.7	4.4	22	4.7	2.9	2.4	2.4	2.1
15	2.0	2.3	2.8	3.4	4.7	4.2	93	4.2	2.8	4.8	2.3	2.0
16	2.0	2.8	3.8	3.0	4.4	4.2	20	3.9	2.8	5.7	2.2	2.1
17	2.0	2.4	17	3.0	4.7	4.0	115	3.8	2.8	3.2	2.4	2.0
18	2.0	2.2	9.4	2.8	69	3.8	41	3.7	3.1	2.4	3.0	2.0
19	2.1	2.1	32	2.8	22	3.8	23	3.7	2.8	2.3	2.4	2.0
20	2.1	2.1	8.3	2.8	12	3.6	17	3.7	2.8	2.4	2.7	2.0
21	2.0	2.2	5.2	2.8	9.1	3.8	13	3.9	2.6	2.4	4.4	2.0
22	2.0	2.2	4.2	65	15	3.6	11	3.6	2.5	2.4	2.4	2.6
23	2.0	2.2	3.8	114	15	4.2	9.5	3.6	3.1	2.3	2.3	2.0
24	2.0	2.2	4.3	42	12	3.8	8.7	3.7	2.6	2.2	2.3	2.0
25	2.1	13	4.0	14	10	3.4	8.0	3.5	2.5	2.3	2.8	2.0
26	2.2	4.7	3.4	10	8.7	3.4	7.3	3.4	3.3	2.2	3.4	2.1
27	2.1	3.2	3.4	11	7.3	3.8	7.0	3.2	2.8	2.2	2.5	2.0
28	2.2	2.8	3.2	8.7	7.0	3.4	6.7	3.3	2.4	2.2	2.5	2.0
29	2.6	2.6	3.0	7.3	6.4	3.6	6.4	3.2	2.4	2.2	3.0	2.0
30	4.2	3.0	4.2	6.4	-----	3.2	6.7	3.2	2.4	2.3	4.5	2.0
31	2.8	-----	5.2	5.8	-----	3.0	-----	3.2	-----	2.2	3.1	-----
TOTAL	66.2	82.3	152.0	352.0	302.0	161.4	645.9	125.8	89.0	82.1	92.1	71.9
MEAN	2.14	2.74	4.90	11.4	10.4	5.21	21.5	4.06	2.97	2.65	2.97	2.40
MAX	4.2	13	32	114	69	21	115	5.8	4.4	5.7	8.8	6.0
MIN	1.8	1.8	2.4	2.8	4.4	3.0	4.2	3.2	2.4	2.2	2.2	2.0

CAL YR 1971 TOTAL 2,665.4 MEAN 7.30 MAX 299 MIN 1.8 AC-FT 5,290  
 WTR YR 1972 TOTAL 2,222.7 MEAN 6.07 MAX 115 MIN 1.8 AC-FT 4,410

PEAK DISCHARGE (BASE, 700 CFS).--Apr. 17 (1545) 806 cfs (5.09 ft).

## 16296500 Kahana Stream at altitude 30 ft, near Kahana

LOCATION.--Lat 21°32'38", long 157°53'07", on right bank 600 ft upstream from Kawa Stream, 1.1 miles southwest of Kahana, and 2.2 miles southwest of Swanzy Beach Park in Kaaawa.

DRAINAGE AREA.--3.74 sq mi.

PERIOD OF RECORD.--December 1958 to current year.

GAGE.--Water-stage recorder and concrete-masonry control. Altitude of gage is 30 ft (from topographic map).

AVERAGE DISCHARGE.--13 years (1959-72), 38.1 cfs (27,600 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,730 cfs Apr. 17 (gage height, 6.87 ft), from rating curve extended as explained below; minimum, 12 cfs on Oct. 22, 23.

Period of record: Maximum discharge, 5,430 cfs Apr. 15, 1963 (gage height, 8.10 ft), from rating curve extended above 530 cfs on basis of computation of peak flow over submerged weir; minimum, 10 cfs Sept. 17, 18, 20, 1961.

REMARKS.--Records good except those above 50 cfs, which are fair. Approximately 9 cfs is diverted by Waiahole Water Co. at 800-ft elevation, 2.3 miles above station. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1937: 1959-60.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	15	24	32	22	23	18	24	18	25	22	15
2	14	15	25	26	21	27	128	22	17	26	23	16
3	14	16	23	25	20	26	51	21	17	25	16	17
4	14	139	24	28	29	30	61	20	17	16	15	52
5	14	93	20	22	41	26	31	19	17	17	15	16
6	15	22	74	22	30	23	283	19	17	17	16	16
7	14	18	157	22	31	22	65	19	18	17	15	15
8	14	19	35	39	31	22	68	18	17	20	14	15
9	14	17	44	24	63	21	119	20	35	19	14	15
10	14	16	27	22	93	20	54	18	19	18	18	15
11	14	17	26	21	32	19	34	18	18	17	15	14
12	13	16	24	20	30	19	53	36	17	16	17	14
13	13	16	22	19	26	18	58	229	17	16	24	14
14	13	30	27	22	25	18	94	101	16	16	16	14
15	13	24	37	20	23	18	219	38	16	113	14	14
16	13	24	32	18	23	18	59	29	16	78	15	14
17	13	20	195	17	22	17	828	26	16	26	16	14
18	13	18	80	17	145	22	329	24	17	20	18	13
19	13	17	312	19	84	18	110	22	17	19	15	14
20	13	17	72	17	49	17	67	22	18	18	38	13
21	13	17	42	16	34	16	44	24	16	18	41	13
22	13	16	32	662	41	17	34	21	16	17	17	89
23	13	16	29	401	61	22	30	21	19	17	16	18
24	14	24	30	151	38	17	27	20	19	16	16	19
25	13	278	27	63	33	16	25	19	18	16	16	16
26	27	46	23	41	29	16	24	19	23	16	19	15
27	14	24	25	38	27	17	22	18	18	16	16	15
28	13	24	22	30	26	16	22	19	17	15	15	14
29	15	20	23	27	24	18	25	18	17	15	15	14
30	39	132	27	25	-----	16	28	18	17	15	19	14
31	20	-----	73	24	-----	16	-----	18	-----	16	-----	-----
TOTAL	467	1,168	1,640	1,930	1,253	667	3,010	960	540	718	562	557
MEAN	15.1	38.9	52.9	62.3	43.2	21.5	100	31.0	18.0	23.2	18.1	18.6
MAX	39	278	312	662	145	80	828	229	35	113	41	89
MIN	13	15	20	16	20	16	18	18	16	15	14	13
AC-FT	926	2,320	3,250	3,830	2,490	1,320	5,970	1,900	1,070	1,420	1,110	1,100

CAL YR 1971 TOTAL 12,477 MEAN 34.2 MAX 540 MIN 13 AC-FT 24,750  
WTR YR 1972 TOTAL 13,472 MEAN 36.8 MAX 828 MIN 13 AC-FT 26,720

PEAK DISCHARGE (BASE, 1,600 CFS).--Jan. 22 (0530) 3,020 cfs (6.25 ft); Apr. 17 (1730) 3,730 cfs (6.87 ft).

## HAWAII, ISLAND OF OAHU

16302000 Punaluu ditch near Punaluu

LOCATION.--Lat 21°33'41", long 157°54'11", on right bank 1,000 ft downstream from intake, 1.5 miles west of Kahana, and 1.7 miles southwest of Punaluu.

PERIOD OF RECORD.--May 1953 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 200 ft (from topographic map).

AVERAGE DISCHARGE.--19 years, 10.3 cfs (7,460 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 54 cfs Oct. 31, 1964; no flow for several days in 1963, 1966, 1969, 1972.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. Ditch diverts from Punaluu Stream for irrigation and domestic use in Punaluu Valley.

REVISIONS (FISCAL YEARS).--WSP 1719: 1954-55.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.3	2.2	1.8	.12	1.2	2.6	.05	2.3	1.5	3.0	3.7
2	3.1	1.1	1.5	1.5	.10	1.5	3.6	.07	3.1	1.4	2.7	3.7
3	3.0	1.8	1.2	1.4	.10	3.0	3.2	.04	2.4	1.5	2.8	3.8
4	2.7	1.8	1.1	1.3	3.4	1.0	4.1	.05	1.0	1.2	2.8	4.4
5	2.7	2.0	.87	1.2	.92	.25	3.3	.05	.77	1.2	2.7	4.0
6	2.8	2.4	5.6	1.2	.43	.80	3.6	.04	.69	1.2	1.9	4.0
7	2.8	1.8	11	1.4	.65	1.5	3.0	.27	1.1	1.2	1.1	3.9
8	2.8	1.8	3.4	1.4	.50	1.2	3.0	1.2	2.0	1.4	2.3	3.9
9	2.8	1.7	3.3	1.2	.46	1.2	3.0	1.3	2.2	1.4	3.0	3.9
10	2.0	1.6	2.0	1.1	.82	1.2	.23	.69	1.2	1.6	2.4	3.9
11	1.2	1.1	1.6	1.1	.33	1.0	.77	.61	1.2	1.2	2.3	3.9
12	.87	.53	1.4	1.1	.26	.80	2.6	.69	1.1	1.1	2.4	3.9
13	.87	.53	1.3	1.1	.21	1.5	.21	1.0	1.78	1.1	1.4	3.8
14	.87	1.5	1.8	1.5	.19	2.0	.41	.36	1.3	1.5	2.2	3.8
15	1.8	1.1	1.6	1.1	.17	3.5	.31	.50	2.2	1.8	3.9	1.9
16	3.4	1.2	1.6	1.1	.17	3.0	.05	.26	1.9	1.6	4.0	2.2
17	3.2	.82	7.1	1.0	.15	1.0	1.1	.36	2.2	1.7	4.0	3.3
18	3.1	.73	5.3	1.0	2.9	1.0	.23	.97	1.4	1.6	3.9	3.9
19	3.2	.65	7.4	1.2	2.0	1.7	.15	1.0	.92	1.6	3.9	4.1
20	3.2	.53	3.8	1.0	1.3	.80	.12	1.2	.92	2.4	4.1	4.1
21	3.2	.53	2.6	1.0	.40	1.5	.10	.92	1.7	3.3	4.4	4.4
22	3.2	.53	2.1	9.0	1.5	2.0	.04	.78	2.5	3.2	3.7	5.3
23	3.0	.50	1.8	2.0	.80	3.0	0	.73	2.9	3.1	3.9	4.1
24	3.2	.61	1.6	.80	.50	2.5	0	.61	2.8	3.0	3.8	4.5
25	3.1	4.2	1.4	.35	.40	2.5	0	.57	2.4	3.0	3.9	4.1
26	4.0	1.4	1.3	.25	.30	2.4	0	.65	1.1	2.8	4.0	4.0
27	2.3	.92	1.4	.35	.20	2.5	.01	1.1	.60	2.8	3.9	4.0
28	1.6	1.3	1.2	.27	.30	2.4	.04	.82	1.3	2.8	3.9	4.0
29	1.6	.92	1.1	.19	.50	1.4	.05	.87	1.5	2.8	3.8	3.9
30	2.9	7.6	1.3	.17	-----	1.4	.05	1.4	1.1	2.8	3.9	4.0
31	2.0	-----	3.7	.14	-----	2.4	-----	1.6	-----	2.7	3.8	-----
TOTAL	78.11	44.58	84.37	39.22	20.08	53.15	35.87	20.78	48.58	61.5	99.8	116.4
MEAN	2.52	1.48	2.72	1.27	.69	1.71	1.20	.67	1.62	1.98	3.22	3.88
MAX	4.0	7.6	11	9.0	3.4	3.5	4.1	1.6	3.1	3.3	4.4	5.3
MIN	.87	.50	.87	.14	.10	.25	0	.04	.60	1.1	1.1	1.9
AC-FT	155	88	167	78	40	105	71	41	96	122	198	231

CAL YR 1971 TOTAL 1,345.62 MEAN 3.69 MAX 23 MIN .50 AC-FT 2,670  
 WTR YR 1972 TOTAL 702.36 MEAN 1.92 MAX 11 MIN 0 AC-FT 1,390

NOTE.--No gage-height record Feb. 19 to Mar. 29.

16303000 Punaluu Stream near Punaluu

LOCATION.--Lat 21°33'33", long 157°54'06", on left bank at Punaluu ditch diversion dam, 1.4 miles west of Kahana, and 1.8 miles southwest of Punaluu.

DRAINAGE AREA.--2.78 sq mi.

PERIOD OF RECORD.--May 1953 to current year.

GAGE.--Water-stage recorder and masonry control. Altitude of gage is 212 ft (from topographic map).

AVERAGE DISCHARGE.--19 years, 16.4 cfs (11,880 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,090 cfs Apr. 17 (gage height, 4.83 ft), from rating curve extended as explained below; minimum, 12 cfs Oct. 1, 2, Nov. 23, 24.

Period of record: Maximum discharge, 3,180 cfs Feb. 1, 1969 (gage height, 6.33 ft), from rating curve extended above 170 cfs on basis of slope-area measurement at gage height 5.77 ft; no flow at times.

REMARKS.--Records fair except those for periods of stage-discharge relation indefinite, which are poor. Records do not include flow of Punaluu ditch (see sta 16302000). Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1956(P), 1957(M), 1959(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	15	20	20	20	20	23	23	16	22	15	15
2	12	15	18	18	19	23	35	23	14	21	13	15
3	13	16	17	16	19	40	30	23	15	17	13	15
4	13	16	16	16	73	22	30	22	15	15	13	20
5	13	17	15	16	35	21	24	21	16	15	13	16
6	14	26	20	15	28	19	28	21	17	14	15	16
7	13	15	50	17	32	20	23	20	17	15	15	16
8	14	15	19	18	29	21	24	21	16	16	14	15
9	14	14	25	15	29	20	36	28	27	16	14	15
10	13	14	22	15	33	19	27	20	17	19	15	15
11	14	13	20	15	25	18	23	19	16	16	15	15
12	15	13	19	14	23	17	52	22	16	15	15	15
13	15	13	18	14	22	18	38	51	16	15	20	15
14	15	20	19	17	20	17	54	27	15	16	17	15
15	15	17	20	15	19	15	70	23	15	89	15	14
16	14	19	19	14	19	15	34	21	15	25	15	14
17	13	15	72	13	19	19	454	19	15	15	16	14
18	13	14	50	13	62	20	105	18	15	15	16	14
19	14	14	68	14	37	18	53	18	15	14	16	15
20	14	13	36	13	34	16	43	18	15	15	16	15
21	14	13	29	13	28	15	35	22	16	15	19	16
22	15	13	23	272	39	16	31	19	18	14	15	29
23	15	12	21	137	39	22	29	18	19	14	15	18
24	16	13	20	65	30	19	27	17	16	14	14	22
25	15	47	19	40	28	15	25	18	15	15	15	16
26	23	19	17	31	24	15	24	17	16	15	16	16
27	14	15	18	30	22	16	23	17	16	15	15	16
28	13	14	16	24	21	15	25	18	16	15	15	15
29	14	13	15	23	21	21	28	17	16	15	15	15
30	26	40	16	22	-----	16	27	16	17	15	16	15
31	16	-----	39	21	-----	16	-----	16	-----	13	15	-----
TOTAL	455	513	796	986	849	584	1,480	653	488	565	471	482
MEAN	14.7	17.1	25.7	31.8	29.3	18.8	49.3	21.1	16.3	18.2	15.2	16.1
MAX	26	47	72	272	73	40	454	51	27	89	20	29
MIN	12	12	15	13	19	15	23	16	14	13	13	14
AC-FT	902	1,020	1,580	1,960	1,680	1,160	2,940	1,300	968	1,120	934	956

CAL YR 1971 TOTAL 7,448.4 MEAN 20.4 MAX 294 MIN 5.7 AC-FT 14,770  
 WTR YR 1972 TOTAL 8,322 MEAN 22.7 MAX 454 MIN 12 AC-FT 16,510

PEAK DISCHARGE (BASE, 930 CFS).--Jan. 22 (1000) 1,850 cfs (4.49 ft); Apr. 17 (0900) 2,090 cfs (4.83 ft).

HAWAII, ISLAND OF OAHU

16304200 Kaluanui Stream near Punaluu

LOCATION.--Lat 21°35'22", long 157°54'38", on right bank 0.8 mile downstream from Sacred Falls, 1.6 miles west of Punaluu Beach Park, and 1.7 miles south of cemetery in Hauula.

DRAINAGE AREA.--1.11 sq mi.

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 110 ft (from topographic map).

AVERAGE DISCHARGE.--5 years, 4.33 cfs (3,140 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,400 cfs Apr. 17 (gage height, 9.44 ft, from floodmark in well), from rating curve extended as explained below; minimum, 0.08 cfs Oct. 18, 21, 22.  
 Period of record: Maximum discharge, 2,010 cfs Feb. 1, 1969 (gage height, 10.0 ft), from rating curve extended above 14 cfs on basis of slope-area measurements at gage heights 8.85 and 10.0 ft; minimum, no flow for several days in July and August 1971.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.98	.57	3.0	3.1	1.1	.80	1.5	2.7	.33	.40	4.7	.79
2	.64	1.3	1.8	1.7	.90	3.7	12	1.2	.33	6.0	1.5	.64
3	.45	1.9	1.4	1.2	.85	15	18	1.3	.21	8.0	1.4	3.7
4	.39	2.4	1.1	1.9	76	2.1	21	.72	.18	3.0	.59	6.0
5	.35	11	1.0	2.9	15	1.8	2.8	.57	.15	1.2	.37	3.0
6	.43	1.6	5.0	2.4	4.5	1.1	3.7	.48	.14	.60	.31	1.5
7	.48	.90	30	4.0	11	2.1	2.3	.42	2.2	.35	.41	.80
8	.29	3.7	3.0	5.5	5.4	1.0	4.1	.39	.59	.30	.22	.50
9	.45	1.6	6.0	1.7	9.4	.68	23	4.0	8.4	1.5	.33	.40
10	.66	1.1	3.5	1.3	8.6	.60	5.0	.80	.95	10	1.9	.34
11	.48	.95	2.5	1.1	2.6	.51	2.2	.60	.54	4.0	.85	.30
12	.35	.72	2.3	.90	2.5	.48	13	.45	.37	2.0	1.5	.26
13	.27	.60	1.8	1.0	2.6	.42	4.2	1.2	.23	1.2	6.0	.24
14	.20	5.2	7.0	1.5	1.6	.37	11	2.8	.20	1.0	.74	.22
15	.15	6.7	3.0	1.2	1.3	.35	18	1.6	.16	20	.49	.20
16	.12	10	7.0	.76	1.0	.37	10	.72	.15	8.0	.41	.18
17	.18	2.8	20	.64	.90	.31	80	.45	.13	2.5	1.6	.16
18	.08	2.0	12	.54	41	.27	20	.37	1.3	1.2	2.6	.14
19	.09	1.7	50	.72	16	.29	8.0	.29	2.5	.70	1.3	.20
20	.10	1.1	4.5	.90	3.8	.25	3.0	.27	.45	.50	2.1	.16
21	.09	1.0	2.8	.51	2.6	.25	4.0	.75	.27	.40	11	.10
22	.10	.80	2.2	50	13	.51	2.5	.60	.25	.35	1.0	3.9
23	.16	.68	1.9	48	9.3	3.7	1.8	2.4	8.9	.45	1.3	.49
24	2.5	3.0	1.7	12	2.6	1.2	1.4	5.1	1.5	.35	.79	2.0
25	1.8	18	1.5	3.4	2.5	.39	1.1	.57	1.3	.30	.54	.49
26	4.7	4.6	1.4	2.3	1.7	.25	1.2	.37	3.1	.27	3.6	.25
27	1.1	1.7	1.7	9.3	1.3	.21	1.3	.29	1.2	.24	.85	.14
28	.51	3.5	3.0	2.3	1.1	.18	1.0	.25	.80	.25	.69	.16
29	.37	2.0	1.5	2.0	1.0	2.1	1.3	.33	.60	.31	2.4	.25
30	5.0	15	3.3	1.6	-----	.68	1.6	.39	.45	.28	6.9	.25
31	2.0	-----	18	1.2	-----	.37	-----	.31	-----	.37	1.4	-----
TOTAL	25.39	108.12	204.9	167.57	241.15	42.34	280.0	32.89	37.88	76.02	59.79	27.76
MEAN	.82	3.60	6.61	5.41	8.32	1.37	9.33	1.06	1.26	2.45	1.93	.93
MAX	5.0	18	50	50	76	15	80	5.1	8.9	20	11	6.0
MIN	.08	.57	1.0	.51	.85	.18	1.0	.25	.13	.24	.22	.10
AC-FT	50	214	406	332	478	84	555	65	75	151	119	55

CAL YR 1971 TOTAL 1,407.35 MEAN 3.86 MAX 153 MIN 0 AC-FT 2,790  
 WTR YR 1972 TOTAL 1,303.81 MEAN 3.56 MAX 80 MIN .08 AC-FT 2,590

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-31	1330	8.27	575	4-17	Unknown	9.44	1,400
2-4	1500	8.37	625				

NOTE.--No gage-height record Nov. 28 to Dec. 29.

16325000 Kamananui Stream at Pupukea Military Road, near Maunawai

LOCATION.--Lat 21°37'25", long 158°01'04", on right bank 75 ft upstream from Pupukea Military Road and 3.5 miles southeast of Maunawai.

DRAINAGE AREA.--3.13 sq mi.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1961, 1963, June 1963 to current year.

GAGE.--Water-stage recorder and combination pipe culverts and paved road control. Altitude of gage is 590 ft (from topographic map).

AVERAGE DISCHARGE.--9 years, 12.5 cfs (9,060 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 856 cfs Dec. 19 (gage height, 6.92 ft), from rating curve extended as explained below; minimum, no flow Oct. 15-25.

Period of record: Maximum discharge, 1,720 cfs Apr. 20, 1968 (gage height, 9.13 ft), from rating curve extended above 42 cfs on basis of slope-area measurement at gage height 8.12 ft; minimum, no flow Aug. 26 to Sept. 1, Sept. 23, Oct. 15-25, 1971.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	1.0	3.1	6.5	3.5	4.1	1.7	3.6	1.2	2.4	.09	1.7
2	1.0	.60	1.4	4.3	2.9	4.2	1.8	3.6	1.1	5.3	.06	1.0
3	.54	.37	1.0	3.0	2.6	20	9.7	2.9	1.4	11	.07	.96
4	.37	.18	.90	2.6	63	6.3	33	2.6	1.6	2.4	.08	11
5	.22	.08	.72	2.6	22	5.2	5.8	2.9	1.2	1.1	1.2	2.6
6	.15	.09	9.6	3.2	14	4.2	3.0	2.2	.96	.78	.90	1.4
7	.11	.18	26	6.4	11	4.6	4.2	2.1	.96	.60	.31	.96
8	.09	.09	3.7	9.4	6.8	4.3	2.9	2.0	1.8	.60	.11	.72
9	.22	.08	2.2	3.8	12	3.3	59	3.2	2.0	.66	.08	.60
10	.26	.42	3.9	2.6	15	3.1	18	3.2	1.9	2.0	6.1	.48
11	.18	3.6	1.7	2.2	5.6	2.8	5.8	2.3	1.1	2.0	3.8	.54
12	.13	1.8	1.7	2.0	5.2	2.6	15	2.1	.90	1.1	2.4	.60
13	.08	.96	1.6	1.8	5.3	2.6	16	2.2	.84	1.2	3.8	.54
14	.03	2.3	13	1.8	4.3	2.4	7.1	3.3	.78	1.2	3.1	.48
15	0	3.5	7.6	1.8	4.1	2.4	48	2.4	.78	6.7	1.4	.48
16	0	55	15	1.5	3.3	2.3	87	2.0	.78	8.8	.60	.54
17	0	4.9	31	1.5	3.0	2.2	128	1.8	.84	5.2	.26	.48
18	0	3.0	21	1.4	164	2.3	18	1.6	.96	2.3	1.0	.43
19	0	2.0	147	1.4	30	2.2	8.7	1.5	1.1	1.3	1.4	.48
20	0	1.4	14	1.5	13	2.1	6.0	1.4	1.5	.84	.90	.54
21	0	.96	7.2	1.4	7.6	2.0	5.5	1.5	1.2	.72	33	.48
22	0	.78	5.2	43	53	1.9	3.8	1.5	.96	.66	3.0	.43
23	0	.60	4.3	118	13	2.6	3.2	1.9	.96	.66	1.4	1.6
24	0	.60	3.7	25	8.1	4.2	3.0	5.3	1.9	.48	1.5	1.2
25	0	30	3.3	7.6	7.9	2.3	2.8	2.2	1.5	.37	1.1	1.5
26	.61	9.0	3.0	5.2	5.8	1.8	2.6	1.4	1.3	.31	5.0	.90
27	2.3	2.6	3.6	12	5.2	1.8	2.6	1.3	1.4	.15	2.4	.54
28	.72	3.1	3.9	6.4	4.6	1.8	2.8	1.2	1.1	.09	1.1	.26
29	.31	2.0	3.1	4.3	4.3	2.3	3.5	1.2	.90	.07	.72	.22
30	.43	6.9	13	3.9	-----	3.3	3.5	1.1	.84	.08	7.4	.22
31	1.0	-----	8.6	3.6	-----	2.2	-----	1.2	-----	.09	5.3	-----
TOTAL	11.35	139.19	364.52	341.7	500.1	109.4	512.0	68.2	35.96	61.16	89.58	33.88
MEAN	.37	4.64	11.8	11.0	17.2	3.53	17.1	2.20	1.20	1.97	2.89	1.13
MAX	2.6	55	147	118	164	20	128	5.3	2.0	11	33	11
MIN	0	.03	.72	1.4	2.6	1.8	1.7	1.1	.78	.07	.06	.22
AC-FT	23	276	723	678	992	217	1,020	135	71	121	178	67

CAL YR 1971 TOTAL 4,025.97 MEAN 11.0 MAX 441 MIN 0 AC-FT 7,990  
 WTR YR 1972 TOTAL 2,267.04 MEAN 6.19 MAX 164 MIN 0 AC-FT 4,500

PEAK DISCHARGE (BASE, 950 CFS).--No peak above base.

## 16330000 Kamananui Stream at Maunawai

LOCATION.--Lat 21°38'20", long 158°03'27", on right bank at Maunawai, 25 ft upstream from Elehaha Stream, 4.9 miles northeast of Waialua School, and 7.3 miles southwest of Kahuku School.

DRAINAGE AREA.--9.79 sq mi.

PERIOD OF RECORD.--February 1958 to current year.

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.

AVERAGE DISCHARGE.--14 years, 16.5 cfs (11,950 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,170 cfs Apr. 16 (gage height, 5.96 ft), from rating curve extended as explained below; minimum, no flow for many days.  
Period of record: Maximum discharge, 5,270 cfs Mar. 16, 1968 (gage height, 10.14 ft), from rating curve extended above 150 cfs on basis of slope-area measurements at gage heights 6.25, 8.13 and 10.14 ft; no flow at times.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1937: 1958-60.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	.30	5.3	10	4.8	5.8	1.9	4.8	.73	.81	.01	3.3
2	.89	.43	2.8	6.1	3.9	5.8	1.6	5.1	.66	3.0	.01	1.5
3	.30	.21	1.5	3.7	3.2	41	4.6	4.1	1.1	13	0	.89
4	.12	.09	.89	2.8	96	15	50	3.7	1.7	5.1	0	13
5	.05	.04	.60	2.7	62	9.6	12	3.2	1.9	1.9	0	5.6
6	.02	.02	10	2.8	32	7.6	4.6	2.8	1.1	.89	0	2.2
7	.01	0	43	6.4	16	7.3	5.3	2.7	.66	.43	0	1.1
8	0	0	8.9	12	12	7.0	4.1	2.5	.97	.24	0	.48
9	0	0	3.7	5.8	13	5.3	84	3.7	1.6	.17	0	.24
10	0	0	3.9	3.2	29	4.6	39	4.6	3.2	.15	0	.15
11	0	.73	2.5	2.4	11	3.9	11	3.0	1.7	2.2	3.7	.09
12	0	1.7	2.1	1.9	7.9	3.7	11	2.4	.89	1.1	1.6	.04
13	0	.89	2.2	1.6	7.3	3.3	38	2.1	.48	.54	1.5	.02
14	0	.48	13	1.4	6.4	3.2	12	3.0	.34	.38	4.6	.01
15	0	3.9	9.3	1.5	4.8	3.0	137	3.0	.21	2.2	1.6	.01
16	0	71	29	1.6	4.1	2.8	151	2.4	.17	7.9	.60	.01
17	0	7.6	74	1.1	3.7	2.7	183	1.9	.15	9.6	.24	0
18	0	4.3	60	.89	193	2.5	45	1.7	.10	3.2	.17	.01
19	0	2.8	245	.73	57	2.5	21	1.4	.10	1.6	.97	0
20	0	1.5	34	.66	31	2.2	15	1.3	.34	.73	1.1	0
21	0	.89	15	.73	14	2.1	13	1.3	.73	.34	35	0
22	0	.48	8.6	109	84	1.9	9.3	1.3	.38	.19	6.7	0
23	0	.30	6.1	218	34	2.7	7.6	1.5	.21	.13	2.4	0
24	0	.27	4.8	86	17	5.3	6.7	7.3	.19	.07	1.2	0
25	0	31	3.9	18	21	3.7	6.1	4.6	1.4	.05	1.2	0
26	0	13	3.3	10	13	2.4	5.8	2.2	.89	.02	3.5	0
27	0	4.1	3.2	16	9.6	1.8	5.6	1.4	.73	.01	5.8	0
28	0	2.5	5.1	15	7.9	1.7	5.6	.97	.66	.02	1.9	.05
29	0	4.1	3.3	7.3	6.7	2.4	5.6	.81	.43	.01	.89	.05
30	0	7.6	8.9	6.1	-----	5.3	5.3	.73	.27	.01	6.4	.03
31	0	-----	9.6	5.1	-----	3.2	-----	.73	-----	.01	10	-----
TOTAL	3.49	160.23	623.49	560.51	805.3	171.3	901.7	82.24	23.99	56.00	91.09	28.78
MEAN	.11	5.34	20.1	18.1	27.8	5.53	30.1	2.65	.80	1.81	2.94	.96
MAX	2.1	71	245	218	193	41	183	7.3	3.2	13	35	13
MIN	0	0	.60	.66	3.2	1.7	1.6	.73	.10	.01	0	0

CAL YR 1971 TOTAL 5,910.41 MEAN 16.2 MAX 810 MIN 0 AC-FT 11,720

WTR YR 1972 TOTAL 3,508.12 MEAN 9.59 MAX 245 MIN 0 AC-FT 6,960

PEAK DISCHARGE (BASE, 1,100 CFS).--Apr. 16 (1645) 1,170 cfs (5.96 ft).

16343000 Helemano Stream at Haleiwa

LOCATION.--Lat 21°34'40", long 158°06'12", on left bank at upstream side of private road bridge, 0.3 mile east of Weed Circle, and 1.1 miles southeast of Waialua School at Haleiwa,

DRAINAGE AREA.--14.2 sq mi.

PERIOD OF RECORD.--November 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1.57 ft above mean sea level.

EXTREMES.--Current year: Maximum discharge, 3,720 cfs Jan. 22 (gage height, 12.08 ft), from rating curve extended as explained below; minimum, no flow for many days.

Period of record: Maximum discharge, 11,300 cfs Feb. 1, 1969 (gage height, 17.63 ft, from floodmark in well), from rating curve extended above 300 cfs on basis of slope-area measurements at gage heights 10.54, 14.2, 15.34 and 17.63 ft; minimum, no flow on Oct. 20, 21, 1971 and for many days in 1972.

REMARKS.--Records fair. Minor regulation by reservoir on upstream tributary. Diversions into basin for irrigation of sugarcane; low flow affected by irrigation return flow and releases. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.05	24	12	2.1	1.9	.40	.63	.05	.03	0	0
2	.06	.05	5.8	6.0	2.2	2.1	.43	.83	.18	.03	0	0
3	.05	.05	2.0	3.0	2.4	34	.47	.37	.07	.02	.01	0
4	.05	.05	.84	2.0	205	16	.89	.15	.09	.02	0	0
5	.05	.04	.37	3.5	89	6.4	.38	.07	.08	.02	0	0
6	.07	.04	.24	6.0	25	4.0	1.5	.05	.07	.01	0	0
7	.02	.04	122	5.0	16	3.0	.78	.03	.07	.01	0	0
8	.02	.04	18	20	11	2.0	.59	.03	.07	.01	0	0
9	.02	.05	26	7.0	12	1.7	15	.04	.07	.01	0	0
10	.02	.08	22	2.0	51	1.4	25	.65	.07	.01	0	0
11	.03	.02	5.0	1.4	14	1.0	6.8	1.1	.06	.01	0	0
12	.03	.10	1.9	1.0	8.2	.73	2.0	.40	.05	.01	0	0
13	.03	.02	1.0	.59	4.0	.59	9.3	.24	.04	.08	0	0
14	.03	.02	2.8	.69	3.1	.55	8.5	.16	.26	.02	0	0
15	.03	8.4	15	.40	2.2	.59	108	.16	.03	51	.06	0
16	.03	41	20	.31	2.0	.55	20	.16	.04	9.0	0	0
17	.04	14	75	.26	1.3	.51	366	.16	.04	3.9	0	0
18	.53	4.2	85	.24	91	.51	138	.13	.06	.34	0	0
19	.01	1.0	252	.26	39	.55	22	.12	.07	.02	0	0
20	0	.40	49	.26	28	.55	5.2	.10	.07	0	0	.01
21	0	.13	20	.34	16	.64	3.4	.09	.07	0	0	0
22	.01	.09	11	895	47	.40	1.5	.10	.06	.01	0	0
23	.02	.07	5.8	251	38	.47	.68	.19	.05	0	0	0
24	.02	.07	3.7	130	18	.51	.37	.07	.03	0	0	0
25	.02	81	.03	27	9.3	.47	.24	.08	.03	0	0	0
26	.03	34	2.4	13	6.0	.47	.24	.09	.02	0	0	0
27	.33	9.3	2.2	12	3.8	.51	.12	.10	.02	0	0	.01
28	.04	2.1	2.2	25	2.8	.40	.06	.10	.02	0	0	0
29	.02	5.4	3.5	7.0	2.3	.51	.03	.08	.07	0	.02	.01
30	.04	63	7.0	4.0	-----	.47	.06	.07	.02	0	.04	0
31	.04	-----	50	3.1	-----	.43	-----	.06	-----	0	.01	-----
TOTAL	1.79	269.81	835.82	1,439.35	749.7	83.91	737.94	6.61	1.93	64.56	.14	.03
MEAN	.058	8.39	27.8	46.4	25.9	2.71	24.6	.21	.064	2.08	.005	.001
MAX	.58	81	252	895	205	34	366	1.1	.26	51	.06	.01
MIN	0	.02	.03	.24	1.3	.40	.03	.03	.02	0	0	0
AC-FT	3.6	535	1,660	2,850	1,490	166	1,460	13	3.8	128	.3	.06

CAL YR 1971 TOTAL 6,943.82 MEAN 19.0 MAX 1,080 MIN 0 AC-FT 13,776  
 WTR YR 1972 TOTAL 4,191.59 MEAN 11.5 MAX 895 MIN 0 AC-FT 8,310

PEAK DISCHARGE (BASE, 1,200 CFS).--Jan. 22 (1100) 3,720 cfs (12.08 ft); Apr. 17 (0800) 3,460 cfs (11.78 ft).

HAWAII, ISLAND OF OAHU

16345000 Opaepala Stream near Wahiawa

LOCATION.--Lat 21°33'55", long 158°00'10", on left bank 4.3 miles northeast of Leilehua High School in Wahiawa and 8.1 miles east of Waialua School.

DRAINAGE AREA.--2.98 sq mi.

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

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (from topographic map).

AVERAGE DISCHARGE.--13 years, 14.5 cfs (10,510 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,080 cfs Apr. 17 (gage height, 7.75 ft), from rating curve extended as explained below; minimum, 0.10 cfs Oct. 22.

Period of record: Maximum discharge, 3,900 cfs Feb. 1, 1969 (gage height, 10.12 ft), from rating curve extended above 110 cfs on basis of slope-area measurements at gage heights 6.74 and 10.12 ft; minimum, 0.03 cfs July 31, Aug. 31, 1971.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEAR).--WSP 1937: 1960.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	3.0	9.2	14	3.9	3.9	1.3	11	1.3	1.2	.66	3.0
2	3.2	1.6	5.1	6.7	3.2	4.5	4.4	6.3	1.2	8.2	3.8	1.5
3	1.7	2.8	4.7	3.6	2.9	46	6.8	3.6	1.4	9.2	2.9	1.7
4	1.1	4.9	3.6	3.5	220	11	46	3.5	1.1	4.8	1.9	31
5	.94	5.7	3.3	5.1	36	6.1	9.5	2.4	.81	1.9	1.3	5.6
6	.78	8.1	32	8.5	23	5.0	3.4	1.9	.64	1.1	.77	2.5
7	.66	6.2	114	6.7	20	4.6	7.8	1.7	.54	.84	.52	1.5
8	.55	4.5	9.7	23	17	5.3	4.8	1.7	2.0	.76	.40	1.1
9	.58	6.4	31	8.1	37	3.5	87	10	8.7	3.3	.85	.85
10	.55	5.8	11	4.2	48	2.8	27	6.8	5.6	17	.88	.70
11	.58	5.1	8.0	3.3	9.9	2.4	7.7	2.6	2.8	5.5	3.8	.62
12	.82	3.9	8.0	2.9	8.8	2.2	4.2	1.8	1.5	3.5	2.7	.52
13	.62	2.3	5.4	2.4	8.6	2.0	31	2.3	.93	1.8	12	.43
14	.46	15	32	2.2	6.7	1.9	18	3.6	.72	1.7	5.2	.40
15	.32	15	10	3.6	4.7	1.7	82	3.9	.60	47	1.7	.40
16	.25	77	26	2.9	4.4	1.7	35	3.7	.51	16	.90	.35
17	.19	12	80	2.1	3.8	1.6	314	2.0	.47	9.7	.66	.30
18	.32	8.3	38	1.8	186	1.5	51	1.6	.46	4.3	3.3	.30
19	.46	4.7	186	1.7	64	1.5	17	1.3	.54	2.1	3.9	.30
20	.28	3.5	21	2.1	23	1.4	9.0	1.2	2.7	1.5	2.5	.28
21	.17	2.9	10	2.5	14	1.3	11	1.3	1.4	1.3	24	.30
22	.13	2.4	7.5	346	53	1.2	6.2	3.7	.89	1.2	5.4	1.6
23	.13	2.0	6.0	149	29	3.3	5.5	2.9	.68	1.3	2.1	5.8
24	.17	1.8	4.9	53	11	9.5	4.3	11	6.6	.94	2.6	2.0
25	4.8	92	4.7	12	9.1	3.1	3.8	3.9	2.9	.83	1.8	3.2
26	19	19	4.2	7.5	6.9	1.7	3.9	1.8	3.1	.72	3.7	1.7
27	5.4	5.8	4.9	37	5.4	1.2	3.7	1.2	7.3	.61	4.9	.89
28	2.2	12	6.4	13	4.9	1.0	3.1	.98	2.7	.67	1.7	.67
29	1.4	6.4	4.2	6.2	4.3	1.2	6.0	.89	1.5	.67	1.2	.58
30	5.9	71	8.6	5.8	-----	1.3	7.7	.95	1.3	.68	13	.43
31	7.5	-----	57	4.6	-----	1.8	-----	1.3	-----	.68	8.8	-----
TOTAL	64.46	411.1	756.4	745.0	862.5	137.2	822.1	102.82	62.89	151.00	119.84	70.52
MEAN	2.08	13.7	24.4	24.0	29.7	4.43	27.4	3.32	2.10	4.87	3.87	2.35
MAX	19	92	186	346	220	46	314	11	8.7	47	24	31
MIN	.13	1.6	3.3	1.7	2.9	1.0	1.3	.89	.46	.61	.40	.28

CAL YR 1971 TOTAL 5,236.83 MEAN 14.3 MAX 430 MIN .04 AC-FT 10,390  
 WTR YR 1972 TOTAL 4,305.83 MEAN 11.8 MAX 346 MIN .13 AC-FT 8,540

PEAK DISCHARGE (BASE, 1,200 CFS).--Jan. 22 (1100) 1,770 cfs (7.31 ft); Apr. 17 (0600) 2,080 cfs (7.75 ft).

HAWAII, ISLAND OF MOLOKAI

109

16400000 Halawa Stream near Halawa

LOCATION.--Lat 21°09'31", long 156°45'53", on right bank 600 ft downstream from Hipuapua Stream and 1.5 miles west of Halawa.

DRAINAGE AREA.--4.62 sq mi.

PERIOD OF RECORD.--July 1917 to July 1932, November 1937 to current year.

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.

AVERAGE DISCHARGE.--48 years (1917-31, 1938-72), 29.9 cfs (21,660 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,770 cfs Jan. 24 (gage height, 8.32 ft), from rating curve extended as explained below; minimum, 1.3 cfs Oct. 18.  
 Period of record: Maximum discharge, 26,900 cfs Feb. 4, 1965 (gage height, 19.91 ft, from floodmarks), from rating curve extended above 86 cfs on basis of slope-area measurement of peak flow; minimum, 0.76 cfs about Nov. 23, 1962.

REMARKS.--Records fair. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1319: 1928, 1929(M), 1930-31, 1938-50(M), drainage area. WSP 1719: 1954.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	2.5	9.3	38	13	8.7	3.8	32	3.8	63	4.9	14
2	7.7	5.0	29	8.7	8.1	24	7.3	14	4.5	57	4.3	9.6
3	15	7.1	12	7.1	6.7	280	20	15	3.3	13	9.6	36
4	14	13	9.1	7.3	9.1	81	96	8.9	5.6	7.5	6.6	19
5	5.1	3.9	6.7	6.9	140	28	20	7.1	9.3	5.6	4.8	9.3
6	3.3	5.4	7.5	97	85	18	124	8.3	3.8	4.9	4.5	9.6
7	2.8	3.7	33	34	45	15	116	5.8	3.9	6.1	4.0	6.6
8	2.4	4.0	9.1	46	141	12	40	5.2	7.2	5.2	3.2	5.6
9	3.7	4.9	7.3	14	131	10	45	6.1	61	9.4	3.0	5.0
10	9.6	48	10	9.3	43	8.5	23	5.6	70	11	7.8	4.8
11	4.4	18	19	8.1	22	7.7	16	5.9	19	6.1	14	4.4
12	2.7	5.6	59	7.5	17	6.9	16	5.5	6.4	4.6	5.7	4.1
13	2.1	6.8	16	5.9	13	6.4	39	32	13	21	80	3.8
14	1.7	68	31	6.9	11	5.9	10	13	6.9	16	13	3.6
15	1.6	24	27	5.3	9.6	10	17	20	4.9	30	10	3.5
16	1.5	8.7	27	4.6	8.1	5.8	18	6.7	8.3	55	6.1	3.3
17	1.4	7.9	10	5.6	11	5.0	37	5.3	5.3	15	8.3	3.1
18	1.4	8.3	7.5	3.9	210	4.9	20	4.5	9.3	8.5	38	3.5
19	25	5.2	34	6.8	60	4.5	11	3.9	22	6.1	131	3.1
20	9.6	14	21	5.8	28	4.4	27	4.4	6.2	5.0	118	2.8
21	3.3	9.1	16	3.8	40	5.5	13	16	4.6	9.5	26	2.7
22	13	7.1	8.5	55	58	5.8	21	5.9	4.1	5.0	13	2.6
23	20	9.9	6.3	29	42	4.4	20	5.9	18	4.8	9.6	2.6
24	31	29	8.6	363	20	4.1	9.8	13	6.0	4.3	8.1	3.8
25	16	126	8.7	23	80	4.0	9.1	18	5.9	11	7.3	3.6
26	40	30	5.5	16	21	3.9	15	10	6.6	10	7.5	2.5
27	14	12	5.6	70	15	3.6	9.3	4.9	15	5.5	8.5	2.5
28	5.8	8.7	5.3	32	12	7.7	14	3.9	5.0	5.6	7.5	4.6
29	4.0	12	5.3	22	10	8.0	52	3.7	3.8	4.4	68	3.8
30	3.2	15	11	15	-----	9.7	32	3.3	7.5	6.8	87	3.0
31	2.7	-----	94	11	-----	4.5	-----	3.1	-----	7.0	20	-----
TOTAL	275.3	522.8	554.3	968.5	1,309.6	608.1	977.0	296.9	350.2	423.9	739.3	186.4
MEAN	8.88	17.4	17.9	31.2	45.2	19.6	32.6	9.58	11.7	13.7	23.8	6.21
MAX	40	126	94	363	210	280	124	32	70	63	131	36
MIN	1.4	2.5	5.3	3.8	6.7	3.6	3.8	3.1	3.3	4.3	3.0	2.5
AC-FT	546	1,040	1,100	1,920	2,600	1,210	1,940	589	695	841	1,470	370

CAL YR 1971 TOTAL 6,515.59 MEAN 17.9 MAX 218 MIN .86 AC-FT 12,920  
 WTR YR 1972 TOTAL 7,212.30 MEAN 19.7 MAX 363 MIN 1.4 AC-FT 14,310

PEAK DISCHARGE (BASE, 1,900 CFS).--No peak above base.

## HAWAII, ISLAND OF MOLOKAI

16403900 Kawainui Stream near Pelekunu

LOCATION.--Lat 21°07'59", long 156°52'38", on right bank 900 ft upstream from confluence with Kapuhi Stream, 2.1 miles south of former village of Pelekunu, and 5.7 miles north of Kamalo,

DRAINAGE AREA.--1.17 sq mi.

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 770 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 655 cfs Feb. 4 (gage height, 5.25 ft), from rating curve extended above 43 cfs; minimum, 1.0 cfs Oct. 13-19.

Period of record: Maximum discharge, 1,630 cfs Jan. 8, 1969 (gage height, 7.36 ft), from rating curve extended above 43 cfs; minimum, 0.70 cfs Sept. 22, 1968.

REMARKS.--Records good except those above 90 cfs, which are poor. No diversion above station.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	1.5	3.5	13	9.4	6.7	2.9	5.7	2.1	1.7	1.5	10
2	2.1	2.2	4.6	8.3	8.7	9.9	11	4.8	1.8	2.5	1.5	7.2
3	1.7	1.4	3.7	6.6	8.0	184	5.7	4.7	4.4	1.7	1.6	8.3
4	1.5	1.3	3.1	5.8	75	104	8.5	3.9	4.5	1.4	1.5	7.9
5	1.3	1.2	2.7	4.8	75	33	5.8	3.7	2.2	1.3	1.4	5.2
6	1.2	1.3	5.0	5.1	31	19	8.8	3.4	1.8	1.4	1.4	4.5
7	1.2	1.3	4.7	8.2	19	26	11	3.2	1.7	2.1	1.4	3.9
8	1.2	1.4	3.1	6.7	30	13	19	3.0	1.8	1.5	1.4	3.5
9	1.4	2.5	3.5	4.9	33	10	26	2.9	2.5	1.5	1.4	3.2
10	1.4	6.1	5.0	4.2	28	8.7	26	2.8	2.3	1.8	1.5	3.0
11	1.2	3.3	5.8	3.7	17	7.3	15	2.8	2.0	1.4	1.4	2.8
12	1.1	3.3	12	3.4	13	6.4	11	2.7	1.6	1.3	1.4	2.7
13	1.0	3.8	7.3	3.1	9.7	5.7	8.5	2.6	1.7	7.5	2.9	2.5
14	1.0	4.9	13	3.0	8.0	5.1	6.7	2.6	1.6	5.8	1.5	2.5
15	1.0	7.1	12	2.8	7.0	4.7	7.2	2.6	1.7	3.2	1.4	2.4
16	1.0	5.3	10	2.7	6.4	4.4	7.2	2.3	1.9	4.8	1.3	2.2
17	1.0	4.6	7.0	2.5	6.1	4.1	19	2.2	2.2	3.1	2.4	2.4
18	1.0	4.9	6.7	2.4	6.0	3.8	14	2.1	2.4	2.5	5.6	2.5
19	3.2	3.0	22	2.6	23	3.5	11	2.1	3.8	2.2	13	2.2
20	1.4	4.8	13	2.3	14	3.4	11	2.9	1.7	2.1	26	2.1
21	1.7	3.6	11	2.2	11	3.5	8.5	3.0	1.5	2.0	8.6	2.1
22	3.2	2.8	7.4	3.3	14	3.1	10	2.1	1.6	1.9	4.5	2.4
23	2.4	2.9	5.8	12	12	6.7	8.3	2.7	1.4	1.9	3.2	2.1
24	4.7	6.5	5.6	144	10	4.0	6.5	2.2	1.5	1.7	2.8	2.1
25	2.2	28	5.6	23	43	3.0	6.1	2.2	1.9	2.5	2.5	1.9
26	3.7	13	4.6	15	16	2.8	6.6	2.0	2.4	1.8	2.4	1.8
27	1.8	7.2	5.7	28	11	4.5	5.6	1.8	3.1	1.7	2.2	2.4
28	1.5	6.0	4.8	18	9.5	5.7	6.2	1.8	1.5	1.8	2.1	3.2
29	1.4	5.8	5.6	14	7.6	7.1	8.0	1.7	1.4	1.8	46	2.0
30	1.4	4.1	8.9	11	-----	4.2	6.9	1.7	1.5	1.9	45	2.0
31	1.4	-----	22	9.9	-----	3.2	-----	1.7	-----	1.6	17	-----
TOTAL	53.4	145.1	235.7	376.5	615.4	510.5	308.0	85.9	63.5	71.4	207.8	103.0
MEAN	1.72	4.84	7.60	12.1	21.2	16.5	10.3	2.77	2.12	2.30	6.70	3.43
MAX	4.7	28	22	144	75	184	26	5.7	4.5	7.5	46	10
MIN	1.0	1.2	2.7	2.2	6.1	2.8	2.9	1.7	1.4	1.3	1.3	1.8
AC-FT	106	288	468	747	1,220	1,010	611	170	126	142	412	204

CAL YR 1971 TOTAL 2,747.7 MEAN 7.53 MAX 134 MIN 1.0 AC-FT 5,450  
 WTR YR 1972 TOTAL 2,776.2 MEAN 7.59 MAX 184 MIN 1.0 AC-FT 5,510

## PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-24	0300	5.00	560	2-25	0200	4.42	376
2-4	2030	5.25	655	3-3	1700	5.05	578

16404000 Pelekunu Stream near Pelekunu

LOCATION.--Lat 21°08'11", long 156°52'43", on right bank, 0.4 mile upstream from Pilipililau Stream, 1.9 miles south of former village of Pelekunu, and 5.8 miles north of Kamalo.

DRAINAGE AREA.--2.59 sq mi.

PERIOD OF RECORD.--December 1919 to January 1929, September 1937 to November 1947, June 1948 to August 1957, August 1971 to current year. Occasional low-flow measurements and annual maximum, water years 1968-71.

GAGE.--Water-stage recorder. Altitude of gage is 552 ft above mean sea level (levels by Bureau of Reclamation). Prior to Aug. 25, 1957, at site 300 ft downstream at different datum.

AVERAGE DISCHARGE.--27 years (1920-28, 1937-47, 1948-56, 1972), 16.9 cfs (12,240 acre-ft per year).

EXTREMES.--August to September 1971: Maximum discharge during period, 42 cfs Sept. 3 (gage height, 1.62 ft); minimum, 2.6 cfs Sept. 26.

Water year 1972: Maximum discharge, 648 cfs Jan. 24 (gage height, 4.25 ft), from rating curve extended above 60 cfs; minimum, 2.6 cfs Oct. 13-18.

Period of record: Maximum discharge, 4,120 cfs Nov. 20, 1940 (gage height, 6.81 ft), from rating curve extended above 39 cfs by test on model of station site; minimum, 2.26 cfs Nov. 26, 27, 1943.

Flood of undetermined magnitude destroyed station on Jan. 26, 1948.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEAR).--WSP 1569: 1940(M).

DISCHARGE, IN CUBIC FEET PER SECOND, AUGUST TO SEPTEMBER 1971

DAY	AUG	SEP															
1	4.0	3.3	6	3.5	3.3	11	3.5	4.8	16	3.3	3.3	21	3.3	3.8	26	3.3	2.8
2	4.0	3.3	7	3.5	3.5	12	3.5	4.0	17	4.6	3.0	22	3.3	3.0	27	3.3	3.0
3	3.8	9.3	8	3.5	5.2	13	3.8	3.5	18	3.5	3.0	23	3.3	3.0	28	3.3	6.9
4	3.5	4.0	9	3.5	5.4	14	3.5	3.3	19	3.3	3.0	24	3.3	4.0	29	3.3	4.0
5	3.5	3.8	10	3.5	4.8	15	3.3	3.8	20	3.5	3.0	25	3.3	3.0	30	3.3	4.3
															31	3.0	---

TOTAL.....															108.1	118.4
MEAN.....															3.49	3.95
MAX.....															4.6	9.3
MIN.....															3.0	2.8
AC-FT.....															214	235

PEAK DISCHARGE (BASE, 460 CFS).--No peak above base.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	3.8	7.1	21	12	11	7.5	10	5.4	4.8	3.8	17
2	5.2	5.4	8.3	14	12	15	22	9.1	4.6	6.1	3.8	12
3	4.3	3.8	7.1	12	10	179	12	8.7	9.6	4.6	4.0	18
4	4.0	3.3	6.1	11	76	142	17	7.9	11	4.0	3.5	13
5	3.3	3.0	5.4	9.1	92	54	12	7.5	6.1	3.8	3.5	9.1
6	3.3	3.3	8.2	9.6	48	29	15	7.1	4.8	4.0	3.5	7.9
7	3.0	3.3	8.3	14	24	53	20	7.1	4.6	5.8	3.3	7.5
8	2.8	3.8	6.1	12	44	27	36	6.8	4.8	4.3	3.3	6.8
9	3.8	5.4	6.8	8.7	52	22	46	6.8	6.1	4.6	3.3	6.4
10	3.8	12	9.5	7.9	42	19	52	6.4	5.8	4.8	3.8	6.1
11	3.0	7.1	13	7.5	26	17	24	6.4	5.4	4.0	3.5	6.1
12	2.8	6.8	21	7.1	20	15	19	6.1	4.6	3.8	3.3	5.8
13	2.8	7.9	13	6.8	15	14	15	6.1	4.6	14	5.9	5.4
14	2.8	9.1	25	6.4	13	12	13	6.1	4.6	11	3.5	5.4
15	2.8	12	19	6.1	12	12	14	6.1	4.3	6.4	3.3	5.2
16	2.8	9.1	17	5.8	10	11	12	5.8	5.2	8.7	3.3	4.8
17	3.0	8.3	12	5.4	10	10	29	5.4	5.4	6.4	4.8	4.8
18	2.6	9.1	11	5.4	68	10	22	5.2	5.8	5.2	10	5.4
19	6.8	6.4	34	5.8	34	9.1	18	5.2	7.9	4.8	30	4.6
20	4.0	8.7	19	5.2	21	9.1	17	6.1	5.2	4.6	46	4.6
21	4.0	7.5	17	4.8	17	9.1	14	6.8	4.6	4.8	14	4.6
22	6.4	6.1	12	6.8	23	8.3	17	5.4	4.6	4.3	8.3	5.2
23	5.8	6.1	9.6	18	21	16	14	6.4	4.3	4.3	6.5	4.6
24	9.4	11	9.6	166	17	10	12	5.4	4.3	4.0	6.1	4.6
25	5.4	50	9.6	31	59	8.3	10	5.4	5.2	5.4	5.4	4.3
26	7.1	21	8.3	19	22	7.9	12	5.2	6.1	4.3	5.2	4.0
27	4.3	12	10	40	17	11	10	4.8	8.1	4.0	5.2	5.4
28	3.4	10	9.1	23	14	13	11	4.6	4.3	4.3	4.8	6.4
29	3.7	10	19	19	12	16	14	4.6	4.0	4.3	71	4.3
30	3.3	7.5	16	15	-----	10	12	4.6	4.6	4.3	76	4.3
31	3.5	-----	49	14	-----	8.3	-----	4.6	-----	3.8	26	-----
TOTAL	128.2	273.3	417.1	537.4	847	788.1	548.5	193.7	165.9	163.5	377.9	199.6
MEAN	4.14	9.11	13.5	17.3	29.2	25.4	18.3	6.25	5.53	5.27	12.2	6.65
MAX	9.4	50	49	166	92	179	52	10	11	14	76	17
MIN	2.6	3.0	5.4	4.8	10	7.9	7.5	4.6	4.0	3.8	3.3	4.0
AC-FT	254	542	827	1,070	1,680	1,560	1,090	384	329	324	750	396

WTR YR 1972 TOTAL 4,640.2 MEAN 12.7 MAX 179 MIN 2.6 AC-FT 9,200

PEAK DISCHARGE (BASE, 460 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-24	0400	4.25	648	3-3	1730	3.85	515
2-4	2100	3.95	545				

## HAWAII, ISLAND OF MOLOKAI

16404200 Pilipililau Stream near Pelekunu

LOCATION.--Lat 21°08'08", long 156°53'09", on right bank 500 ft downstream from left-bank tributary, 1.9 miles south of former village of Pelekunu, and 5.8 miles north of Kamalo.

DRAINAGE AREA.--0.49 sq mi.

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,000 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 86 cfs Feb. 4 (gage height, 2.97 ft), from rating curve extended above 3.8 cfs; minimum, 0.62 cfs Jan. 18-22.

Period of record: Maximum discharge, 214 cfs Nov. 25, 1970 (gage height, 3.58 ft), from rating curve extended above 3.8 cfs; minimum, 0.53 cfs Nov. 22, 1968.

REMARKS.--Records good except those above 8 cfs, which are poor. No diversion above station.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	.74	.68	.82	.86	1.1	1.0	1.1	.82	.78	.71	.86
2	.78	.74	.74	.74	.78	1.4	2.0	1.0	.78	.78	.71	.78
3	.71	.71	.66	.74	.78	1.4	1.3	1.0	1.1	.78	.71	.86
4	.71	.71	.65	.71	7.1	9.9	1.3	1.0	1.0	.74	.71	.82
5	.68	.71	.65	.71	6.9	4.2	1.1	1.0	.82	.74	.71	.74
6	.71	.74	.68	.71	3.4	2.8	1.2	.98	.78	.74	.71	.71
7	.71	.74	.66	.74	1.6	3.9	1.3	.98	.74	.82	.71	.71
8	.71	.71	.65	.71	3.5	2.6	1.6	.98	.78	.78	.71	.71
9	.71	.78	.65	.68	3.3	2.3	1.8	.98	.78	.78	.71	.71
10	.71	.86	.71	.68	2.1	2.0	2.4	.94	.78	.78	.71	.71
11	.71	.82	.82	.65	1.5	1.9	1.6	.94	.74	.74	.71	.71
12	.71	.78	.86	.65	1.3	1.7	1.4	.94	.74	.74	.68	.71
13	.68	.78	.82	.65	1.2	1.6	1.3	.94	.74	.94	.71	.68
14	.68	.82	1.1	.65	1.0	1.5	1.2	.90	.74	.82	.68	.68
15	.68	.78	.86	.65	.98	1.4	1.4	.82	.74	.74	.65	.68
16	.68	.82	.78	.65	.94	1.4	1.3	.82	.74	.78	.65	.68
17	.74	.78	.74	.65	.94	1.3	1.6	.82	.78	.74	.68	.65
18	.71	.78	.74	.62	4.1	1.3	1.3	.78	.78	.71	.78	.68
19	.90	.74	.82	.62	1.6	1.2	1.2	.78	.78	.71	2.1	.65
20	.74	.78	.78	.62	1.3	1.2	1.2	.86	.74	.71	1.3	.65
21	.78	.74	.74	.62	1.1	1.1	1.1	.82	.78	.74	.78	.65
22	.78	.71	.71	.65	1.7	1.1	1.2	.78	.78	.71	.68	.68
23	.78	.74	.68	.88	1.5	1.3	1.1	.82	.78	.71	.65	.65
24	.86	.82	.68	9.3	1.3	1.2	1.1	.82	.78	.71	.65	.68
25	.82	1.6	.68	1.2	5.1	1.1	1.1	.82	.78	.74	.65	.65
26	.82	.86	.68	.90	1.8	1.0	1.1	.82	.82	.71	.68	.65
27	.74	.74	.71	1.5	1.4	1.1	1.1	.78	.82	.71	.68	.68
28	.71	.74	.68	1.1	1.3	1.2	1.1	.78	.78	.71	.68	.68
29	.71	.74	.71	.98	1.2	1.5	1.2	.82	.74	.71	4.6	.65
30	.71	.71	.96	.86	-----	1.2	1.1	.82	.78	.71	3.1	.68
31	.71	-----	2.7	.82	-----	1.1	-----	.78	-----	.71	1.1	-----
TOTAL	22.42	23.72	25.00	32.46	61.58	71.6	39.7	27.42	23.74	23.22	30.29	21.03
MEAN	.74	.79	.81	1.05	2.12	2.31	1.32	.88	.79	.75	.98	.70
MAX	.90	1.6	2.7	9.3	7.1	14	2.4	1.1	1.1	.94	4.6	.86
MIN	.68	.71	.65	.62	.78	1.0	1.0	.78	.74	.71	.65	.65
AC-FT	45	47	50	64	122	142	79	54	47	46	60	42

CAL YR 1971 TOTAL 564.01 MEAN 1.55 MAX 14 MIN .65 AC-FT 1,120  
 WTR YR 1972 TOTAL 402.58 MEAN 1.10 MAX 14 MIN .62 AC-FT 799

PEAK DISCHARGE (BASE, 80 CFS).--Feb. 4 (2100) 86 cfs (2.97 ft).

HAWAII, ISLAND OF MOLOKAI

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16405100 Molokai tunnel at east portal

LOCATION.--Lat 21°08'38", long 156°55'16", on left bank 100 ft downstream from the east portal, 5.3 miles southeast of Kalaupapa, and 7.5 miles 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).

AVERAGE DISCHARGE.--6 years, 2.84 cfs (2,060 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 28 cfs Jan. 24, Feb. 5, 1972; no flow at times.

REMARKS.--Records good. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells in Waikolu Valley near the east portal.

DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.2	1.5	7.5	3.6	1.4	1.5	2.8	.82	1.1	.82	2.5
2	1.8	1.9	2.3	6.0	2.4	3.6	7.1	1.9	.82	1.1	.82	1.6
3	1.4	1.4	1.6	5.4	1.6	22	5.0	1.4	3.9	2.2	.82	1.9
4	1.3	1.2	1.5	6.1	3.0	25	11	1.9	7.4	1.1	.82	.64
5	1.1	1.1	1.2	5.9	28	15	3.6	.66	3.2	.99	.82	2.0
6	.99	.99	1.3	6.4	18	3.6	3.4	.99	1.3	.74	.82	1.2
7	.99	.99	1.2	7.4	4.2	16	9.3	.99	1.1	.99	1.7	.99
8	.99	1.2	1.2	6.1	15	5.2	15	2.5	.99	1.1	.82	.90
9	.99	2.4	1.2	2.2	20	3.6	15	.90	1.2	.99	.74	.82
10	.99	10	2.6	3.8	12	1.6	18	.90	1.2	.99	.74	.82
11	.90	5.8	11	5.2	3.2	1.9	4.2	.31	1.2	1.2	.74	1.4
12	1.1	2.0	13	5.6	2.4	1.8	2.6	.60	.99	1.1	.74	.82
13	.90	4.2	5.3	5.3	1.9	1.8	2.2	.90	.90	6.3	.90	.82
14	.90	4.4	15	5.3	1.8	1.6	1.6	.90	2.3	7.7	2.4	.82
15	.90	3.2	3.9	5.3	1.5	1.5	2.5	1.8	.82	2.2	.82	.82
16	.90	2.4	3.7	5.3	1.4	1.5	2.4	.90	.90	2.5	.82	.82
17	.90	2.4	2.2	2.7	1.3	1.4	3.8	.90	1.2	4.1	.82	.74
18	1.2	5.6	1.8	.99	25	1.4	2.8	.90	1.6	1.5	4.2	.74
19	1.7	2.4	3.8	.99	8.4	1.4	3.0	.82	4.0	1.1	26	.90
20	2.0	3.4	4.0	.99	3.2	1.4	2.8	.82	1.6	.99	20	.74
21	1.2	3.4	5.2	2.1	2.4	1.5	2.4	.90	1.1	.99	5.4	.74
22	4.0	2.0	4.2	3.0	11	3.3	4.2	2.6	.99	.99	1.8	.74
23	4.6	1.9	5.5	5.1	7.7	6.2	3.8	.90	.99	.90	1.2	.74
24	7.9	6.0	5.1	28	4.9	7.8	3.6	.90	.90	1.7	.99	.74
25	3.2	21	5.1	6.0	19	3.4	1.5	.99	1.8	.90	.90	.74
26	5.6	4.0	5.1	3.4	3.6	1.6	1.5	1.1	4.1	.99	.90	.74
27	1.6	2.5	7.2	15	2.4	1.6	1.6	.90	7.1	.90	.82	.74
28	1.2	2.2	7.2	7.9	2.5	2.4	1.9	.82	2.4	.82	.82	.99
29	1.1	4.0	6.9	6.6	1.5	6.3	5.1	.82	1.3	.82	19	.90
30	.99	2.2	9.4	4.4	-----	3.6	3.4	1.6	1.1	.82	27	.90
31	.99	-----	21	3.2	-----	1.9	-----	.82	-----	2.5	5.8	-----
TOTAL	55.65	114.28	162.2	179.17	217.9	152.0	145.8	36.14	59.22	52.32	130.99	29.96
MEAN	1.80	3.81	5.23	5.78	7.51	4.90	4.86	1.17	1.97	1.69	4.23	1.00
MAX	7.9	21	21	28	28	25	18	2.8	7.4	7.7	27	2.5
MIN	.90	.99	1.2	.99	1.3	1.4	1.5	.31	.82	.74	.74	.64
AC-FT	110	227	322	355	432	301	289	72	117	104	260	59

CAL YR 1971 TOTAL 1,210.05 MEAN 3.32 MAX 22 MIN .06 AC-FT 2,400  
 WTR YR 1972 TOTAL 1,335.63 MEAN 3.65 MAX 28 MIN .31 AC-FT 2,650

## HAWAII, ISLAND OF MOLOKAI

I6405300 Molokai tunnel at west portal

LOCATION.--Lat 21°07'27", long 156°59'50", on left bank 50 ft upstream from the west portal, 2.5 miles north-east of Kaunakakai, and 4.7 miles 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).

AVERAGE DISCHARGE.--7 years, 5.29 cfs (3,830 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 34 cfs Feb. 5, 1972; minimum daily, 1.8 cfs Oct. 15, 1967.

REMARKS.--Records excellent. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells in Waikolu Valley near east portal and one well in the tunnel near east portal. Water is used for irrigation in west-central Molokai.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	3.9	3.7	9.8	5.6	3.7	3.9	5.8	3.0	3.1	3.0	4.6
2	4.1	4.3	4.3	8.2	4.6	4.9	8.8	4.1	3.0	3.1	2.8	3.7
3	3.9	4.3	4.1	7.5	3.9	23	8.5	3.9	3.7	4.8	2.8	3.9
4	3.9	3.7	3.9	8.3	8.2	28	12	5.2	12	2.8	2.8	8.4
5	3.5	3.5	3.7	8.2	34	18	6.3	3.0	6.5	2.8	2.8	4.1
6	3.5	3.5	3.9	8.3	21	6.5	5.6	3.3	3.5	2.6	2.8	3.3
7	3.5	3.5	3.5	9.1	6.6	17	11	3.3	3.5	2.8	4.2	3.1
8	3.5	3.7	3.5	8.8	17	8.7	18	5.0	3.3	3.0	2.4	3.0
9	3.3	4.1	3.5	4.8	22	5.3	17	3.3	3.3	3.0	2.6	3.0
10	3.3	11	4.1	5.7	14	3.9	21	3.3	3.5	2.8	2.8	3.0
11	3.3	8.8	12	7.5	5.3	4.3	7.4	3.0	3.5	3.1	2.8	4.5
12	3.9	5.0	16	7.9	4.3	4.1	5.0	3.0	3.5	3.1	2.8	2.6
13	3.5	6.3	7.2	7.7	4.1	4.3	4.6	3.3	3.3	5.8	2.8	2.8
14	4.1	7.7	16	7.7	4.1	4.1	4.1	3.3	4.9	11	4.5	2.8
15	4.6	5.8	6.7	7.6	3.7	3.9	4.8	4.8	3.3	4.1	3.0	2.8
16	4.3	4.8	5.8	7.6	3.5	3.9	4.8	3.0	3.3	4.3	3.0	2.8
17	4.3	4.6	4.6	5.5	3.5	3.9	6.8	3.1	3.5	6.0	3.0	2.8
18	3.3	8.5	3.7	3.1	26	3.7	5.3	3.1	3.7	3.5	3.8	2.8
19	3.0	4.8	5.8	3.1	12	3.7	5.3	3.1	6.5	3.1	28	3.1
20	4.6	5.6	7.2	3.1	5.8	3.7	5.0	3.1	3.5	3.1	22	3.0
21	3.3	6.1	8.0	4.1	4.6	3.9	5.0	3.1	3.1	3.0	8.3	3.0
22	6.1	4.8	6.1	4.8	11	5.4	6.3	5.1	3.0	3.0	4.1	3.0
23	6.6	4.1	7.7	6.3	11	7.9	6.3	3.3	3.0	3.0	3.3	2.8
24	9.7	7.7	7.7	30	6.6	12	6.3	3.3	3.0	4.3	3.1	2.8
25	5.8	21	7.6	8.8	22	6.1	4.1	3.3	3.5	2.6	3.1	3.0
26	7.7	11	7.5	5.8	6.1	3.5	3.9	3.5	5.7	2.8	3.0	3.0
27	4.3	5.0	9.2	16	4.6	3.5	4.1	3.5	8.7	2.8	3.0	3.0
28	3.7	4.3	9.3	11	4.8	4.1	4.3	3.3	4.3	2.8	3.0	3.1
29	3.5	6.1	9.5	8.5	3.9	8.0	7.6	3.3	3.3	2.8	19	3.3
30	3.5	4.6	9.4	7.4	-----	6.3	6.1	4.7	3.1	3.0	30	3.1
31	3.5	-----	24	5.3	-----	4.1	-----	3.0	-----	4.6	8.9	-----
TOTAL	132.8	182.1	229.2	247.5	283.8	223.4	219.2	112.4	125.0	112.6	193.5	100.2
MEAN	4.28	6.07	7.39	7.98	9.79	7.21	7.31	3.63	4.17	3.63	6.24	3.34
MAX	4.7	21	24	30	34	26	21	5.8	12	11	30	8.4
MIN	3.0	3.5	3.5	3.1	3.5	3.5	3.9	3.0	3.0	2.6	2.4	2.6
AC-FT	263	361	455	491	563	443	435	223	248	223	384	199

CAL YR 1971 TOTAL 2,106.1 MEAN 5.77 MAX 24 MIN 2.6 AC-FT 4,180  
 WTR YR 1972 TOTAL 2,161.7 MEAN 5.91 MAX 34 MIN 2.4 AC-FT 4,290

## 16405500 Waikolu Stream at altitude 900 ft, near Kalaupapa

LOCATION.--Lat 21°08'43", long 156°55'18", on right bank 1.8 miles southwest of Haupu Bay, 2.3 miles upstream from mouth, and 5.2 miles southeast of Kalaupapa.

DRAINAGE AREA.--1.99 sq mi.

PERIOD OF RECORD.--May 1956 to October 1961, July 1962 to current year.

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.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--11 years (1960-61, 1962-72), 8.70 cfs (6,300 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 974 cfs Feb. 4 (gage height, 4.59 ft), from rating curve extended above 43 cfs; minimum, 0.09 cfs Jan. 15-18.

Period of record: Maximum discharge, 2,080 cfs Apr. 13, 1965 (gage height, 6.12 ft), from rating curve extended above 43 cfs; minimum, 0.09 cfs Jan. 15-18, 1972.

Flood of Oct. 31, 1961, reached a stage of 13.62 ft, from floodmarks, former site and datum (discharge, 6,220 cfs, by slope-area measurement).

REMARKS.--Records fair except those above 90 cfs, which are poor. Since Nov. 16, 1960, water diverted above station at times, either into or from Molokai tunnel. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEAR).--WSP 1719: 1959. (WATER YEARS).--WSP 2137: 1963(P), 1964(M), 1965(P).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.72	1.0	.88	.37	.37	.73	1.2	1.4	1.0	.73	.73	1.0
2	.72	1.0	.88	.28	.37	1.4	4.1	1.0	1.0	.73	.73	.88
3	.72	1.0	.88	.28	.28	1.64	1.6	1.0	2.2	.73	.73	.88
4	.72	1.0	.88	.28	73	58	3.1	1.0	2.6	.73	.73	1.4
5	.72	1.0	.88	.28	46	4.4	1.4	1.4	1.0	.73	.73	.88
6	.72	1.0	.88	.28	7.1	.88	1.6	1.0	.88	.88	.73	.88
7	.72	1.0	.88	.28	.88	24	3.1	1.0	.73	.73	.73	.88
8	.73	1.0	.88	.37	45	1.4	6.2	1.0	.73	.73	.73	.88
9	.73	1.2	1.0	.37	6.7	.88	8.8	1.0	.73	.73	.60	.88
10	.73	2.1	1.5	.37	2.9	1.3	7.3	1.2	.73	.88	.73	.88
11	.73	1.6	4.0	.37	.73	.88	1.6	1.8	.73	1.0	.73	.88
12	.73	1.0	4.0	.28	.60	.88	1.2	1.8	.73	.88	.60	.88
13	.73	1.0	1.4	.28	.60	.88	1.2	1.4	.73	2.2	.60	.88
14	.73	1.0	13	.20	.60	.88	1.4	1.4	.73	2.4	.60	.88
15	.73	1.0	3.6	.14	.73	.88	1.4	1.2	.73	1.0	.60	.88
16	.73	1.0	4.5	.14	.73	.88	1.4	1.0	.73	1.0	.60	.88
17	.73	.88	1.0	.14	.60	1.0	1.4	1.0	.73	.88	.60	.88
18	.73	1.4	1.0	.14	71	1.0	1.4	1.0	.73	.88	.74	.88
19	.88	.73	1.4	.20	2.1	1.2	1.4	1.0	.88	.88	41	.88
20	.88	.73	1.2	.20	.88	1.2	1.4	1.0	.73	.88	8.5	.88
21	.88	.73	1.2	.20	.60	1.2	1.4	.88	.73	.88	1.2	.88
22	1.0	.73	1.0	.32	3.1	1.2	1.8	.88	.73	.88	.73	.73
23	1.2	.88	.88	.53	2.1	1.8	1.6	.88	.73	.88	.73	.73
24	2.4	1.4	.73	102	1.4	1.4	1.2	.88	.73	.73	.73	.73
25	1.2	11	.60	.60	43	1.0	1.0	.88	.73	.73	.73	.73
26	1.6	2.1	.48	.37	.88	1.0	1.0	.88	.73	.73	.88	.73
27	1.0	1.0	.60	22	.73	1.2	1.0	.88	1.8	.88	.88	.73
28	1.0	1.0	.37	1.4	.60	1.2	1.0	1.0	.88	.88	.88	.73
29	1.0	1.0	.88	.88	.60	2.4	2.1	1.0	.73	.88	85	.60
30	1.0	1.0	3.4	.73	-----	1.4	1.4	1.0	.73	.88	26	.60
31	1.0	-----	14	.37	-----	1.2	-----	1.0	-----	.73	1.4	-----
TOTAL	28.11	42.48	68.78	134.65	314.18	281.67	65.7	33.76	27.57	28.68	180.90	25.43
MEAN	.91	1.42	2.22	4.34	10.8	9.09	2.19	1.09	.92	.93	5.84	.85
MAX	2.4	11	14	102	73	164	8.8	1.8	2.6	2.4	85	1.4
MIN	.72	.73	.37	.14	.28	.73	1.0	.88	.73	.73	.60	.60
AC-FT	56	84	136	267	623	559	130	67	55	57	359	50

CAL YR 1971 TOTAL 1,377.55 MEAN 3.77 MAX 115 MIN .37 AC-FT 2,730  
WTR YR 1972 TOTAL 1,231.91 MEAN 3.37 MAX 164 MIN .14 AC-FT 2,440

PEAK DISCHARGE (BASE, 590 CFS).--Feb. 4 (1930) 974 cfs (4.59 ft).

## 16408000 Waikolu Stream below pipeline crossing, near Kalaupapa

LOCATION.--Lat 21°09'45", long 156°55'54", on left bank 0.7 mile upstream from mouth and 4.4 miles southeast of Molokai Lighthouse near Kalaupapa.

DRAINAGE AREA.--3.68 sq mi.

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."

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.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--12 years (1960-72), 16.7 cfs (12,100 acre-ft per year).

EXTREMES.--Current year: Maximum gage height, 4.73 ft Feb. 4 (discharge not determined); minimum daily discharge, 4.2 cfs for several days in January.

Period of record: Maximum discharge, 6,600 cfs Oct. 31, 1961 (gage height, 13.75 ft, present datum, from floodmarks), from rating curve extended above 39 cfs on basis of slope-area measurement of peak flow; minimum, 2.0 cfs Nov. 1, 2, 1925, June 5, 1926.

REMARKS.--Records fair except those above 80 cfs, which are 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.

REVISIONS (FISCAL YEARS).--WSP 1155: 1932(M), 1938-44(M), 1946-48(M). WSP 1319: 1923(M), 1930(M), 1932, 1938-40, 1945(M), drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	5.0	4.9	4.7	4.8	6.0	5.6	6.0	5.4	5.0	4.5	4.7
2	4.9	5.0	5.0	4.6	4.7	6.4	9.1	5.8	5.4	5.0	4.5	4.6
3	4.9	5.0	5.0	4.5	4.5	181	6.2	5.8	5.8	5.0	4.5	4.7
4	4.9	5.0	5.0	4.5	76	85	10	5.8	8.4	5.0	4.4	4.9
5	4.9	5.0	5.0	4.4	65	14	6.6	5.9	5.6	5.0	4.3	4.5
6	4.9	5.0	5.0	4.3	16	7.3	6.5	5.6	5.4	5.2	4.4	4.5
7	4.9	5.0	5.0	4.3	6.0	29	7.6	5.6	5.4	5.0	4.3	4.5
8	4.9	5.0	5.0	4.3	55	8.5	14	5.4	5.4	5.0	4.4	4.5
9	5.0	5.3	4.9	4.3	21	7.5	19	5.4	5.4	5.0	4.4	4.5
10	5.2	6.0	5.2	4.3	9.1	7.3	17	5.4	5.4	5.0	4.6	4.5
11	5.0	5.9	7.2	4.3	6.0	6.4	8.0	5.9	5.4	5.0	4.4	4.5
12	5.0	5.2	8.3	4.3	5.8	6.4	7.0	6.0	5.4	5.0	4.4	4.5
13	4.9	5.2	5.2	4.2	5.8	6.4	6.5	5.6	5.4	6.2	4.6	4.5
14	4.9	5.2	10	4.2	5.6	6.2	6.5	5.6	5.3	6.9	4.5	4.5
15	4.9	5.2	6.1	4.2	5.6	6.2	6.5	5.4	5.3	4.8	4.4	4.5
16	4.9	5.0	4.4	4.2	5.6	6.2	6.2	5.4	5.3	4.9	4.4	4.5
17	4.9	5.0	5.4	4.2	5.6	6.0	6.2	5.4	5.4	4.8	4.5	4.5
18	4.8	5.6	5.8	4.2	140	6.0	6.0	5.4	5.3	4.7	4.9	4.5
19	5.4	5.3	5.9	4.2	11	6.0	6.0	5.4	5.4	4.7	60	4.5
20	5.2	5.3	5.9	4.2	6.5	6.0	6.0	5.4	5.3	4.7	14	4.5
21	5.3	5.2	5.9	4.2	5.9	6.0	5.9	5.4	5.3	4.7	5.5	4.5
22	5.3	5.2	5.6	4.3	8.8	5.8	6.4	5.4	6.4	4.6	4.6	4.5
23	5.0	5.4	5.2	4.5	7.5	6.5	6.4	5.4	5.3	4.6	4.5	4.5
24	6.0	5.4	5.0	114	6.5	6.4	5.8	5.4	5.2	4.7	4.5	4.5
25	5.3	13	4.4	5.2	62	5.4	5.8	5.4	5.0	4.6	4.5	4.5
26	5.6	7.1	4.8	4.8	7.3	5.6	5.8	5.4	5.0	4.6	4.6	4.5
27	5.0	5.3	4.8	31	6.2	5.6	5.8	5.4	5.9	4.6	4.5	4.6
28	5.0	5.2	4.7	7.4	6.0	5.8	5.8	5.4	5.0	4.6	4.5	4.5
29	5.0	5.0	5.0	5.3	6.0	7.0	6.5	5.4	4.9	4.6	106	4.5
30	5.0	5.0	6.3	5.2	-----	6.0	6.0	5.4	4.9	4.6	37	4.5
31	5.0	-----	19	4.8	-----	5.6	-----	5.4	-----	4.5	6.0	-----
TOTAL	156.8	166.0	196.4	277.1	576.0	479.5	226.7	171.4	164.0	152.6	340.6	136.0
MEAN	5.06	5.53	6.34	8.94	19.9	15.5	7.56	5.53	5.47	4.92	11.0	4.53
MAX	6.0	13	19	114	140	181	19	6.0	8.4	6.9	106	4.9
MIN	4.8	5.0	4.7	4.2	4.5	5.4	5.6	5.4	4.9	4.5	4.3	4.5
AC-FT	311	329	390	550	1,140	951	450	340	325	303	676	270

CAL YR 1971 TOTAL 3,824.6 MEAN 10.5 MAX 139 MIN 4.7 AC-FT 7,590  
 WTR YR 1972 TOTAL 3,043.1 MEAN 8.31 MAX 181 MIN 4.2 AC-FT 6,040

16411400 Kakaako Gulch near Mauna Loa

LOCATION.--Lat 21°10'39", long 157°12'31", on left bank 1.0 mile downstream from Kamakahi Gulch and 3.0 miles north of Mauna Loa School.

DRAINAGE AREA.--5.34 sq mi.

PERIOD OF RECORD.--July 1963 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Altitude of gage is 380 ft (from topographic map).

AVERAGE DISCHARGE.--9 years, 0,591 cfs (428 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 157 cfs Jan. 24 (gage height, 1.30 ft, floodmark), from rating curve developed as explained below; no flow most of time.

Period of record: Maximum discharge, 1,760 cfs Nov. 12 1965 (gage height, 6.28 ft), from rating curve based on slope-area measurements at gage heights 0.72, 1.43 and 6.28 ft; no flow most of time each year.

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

DISCHARGE, IN CURIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			0	0	0		0		0			
2			0	0	0		0		0			
3			0	0	0		0		.26			
4			0	0	4.0		0		0			
5			0	0	0		0		0			
6			0	0	0		0		0			
7			0	0	0		0		0			
8			0	0	0		0		0			
9			0	0	0		0		0			
10			0	0	0		0		0			
11			0	0	0		0		0			
12			0	0	0		0		0			
13			0	0	0		0		0			
14			0	0	0		0		0			
15			0	0	0		0		0			
16			0	0	0		1.2		0			
17			1.2	0	0		0		0			
18			0	0	0		1.8		0			
19			0	0	0		0		0			
20			0	0	0		0		0			
21			0	0	0		0		0			
22			0	0	4.8		0		0			
23			0	0	0		0		0			
24			0	9.3	.91		0		0			
25			0	0	2.0		0		0			
26			0	0	0		0		0			
27			0	0	0		0		0			
28			0	0	0		0		0			
29			0	0	0		0		0			
30			0	0	-----		0		0			
31		-----	0	0	-----		-----		-----			-----
TOTAL	0	0	1.2	9.3	11.71	0	3.0	0	.26	0	0	0
MEAN	0	0	.039	.30	.40	0	.10	0	.009	0	0	0
MAX	0	0	1.2	9.3	4.8	0	1.8	0	.26	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	2.4	18	23	0	6.0	0	.5	0	0	0

CAL YR 1971 TOTAL 70.80 MEAN .19 MAX 37 MIN 0 AC-FT 140  
 WTR YR 1972 TOTAL 25.47 MEAN .070 MAX 9.3 MIN 0 AC-FT 51

PEAK DISCHARGE (BASE, 340 CFS).--No peak above base.

## HAWAII, ISLAND OF MOLOKAI

16414000 Kaunakakai Gulch at Kaunakakai

LOCATION.--Lat 21°06'21", long 157°00'34", on left bank 0.6 mile upstream from Molokai Ranch pipeline crossing, 1.3 miles northeast of Kaunakakai Post Office, and 1.7 miles upstream from mouth.

DRAINAGE AREA.--6.57 sq mi.

PERIOD OF RECORD.--December 1949 to current year. Prior to July 1958, published as Kaunakakai Stream at Kaunakakai.

GAGE.--Water-stage recorder. Altitude of gage is 240 ft (from topographic map).

AVERAGE DISCHARGE.--22 years (1950-72), 1.66 cfs (1,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 532 cfs Mar. 3 (gage height, 5.55 ft), from rating curve extended as explained below; no flow most of time.

Period of record: Maximum discharge, 3,060 cfs Oct. 31, 1961 (gage height, 9.30 ft), from rating curve extended above 620 cfs on basis of slope-area measurement of peak flow; no flow at times each year.

REMARKS.--Records good. Flow has been augmented by occasional spillage from Molokai tunnel since May 1965. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1289: 1950-51. WSP 1569: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	0	0	0	0					0	
2		0	0	0	0	0					0	
3		0	0	0	0	81					0	
4		0	0	0	7.6	69					0	
5		0	0	0	46	7.4					0	
6		0	0	0	4.4	1.4					0	
7		0	0	0	.16	12					0	
8		0	0	0	0	2.6					0	
9		0	0	0	2.4	.08					0	
10		0	0	0	.39	0					0	
11		0	0	0	0	0					0	
12		0	4.8	0	0	0					0	
13		0	0	0	0	0					0	
14		0	0	0	0	0					0	
15		0	0	0	0	0					0	
16		0	0	0	0	0					0	
17		0	0	0	0	0					0	
18		0	0	0	0	0					0	
19		0	0	0	0	0					0	
20		0	0	0	0	0					0	
21		0	0	0	0	0					0	
22		0	0	0	0	0					0	
23		0	0	0	0	0					0	
24		0	0	20	0	0					0	
25		10	0	.36	26	0					0	
26		5.1	0	0	.61	0					0	
27		0	0	0	0	0					0	
28		0	0	0	0	0					0	
29		0	0	0	0	0					5.1	
30		0	0	0	-----	0					19	
31		-----	0	0	-----	0	-----				.45	-----
TOTAL	0	15.1	4.8	20.36	87.56	173.48	0	0	0	0	24.55	0
MEAN	0	.50	.15	.66	3.02	5.60	0	0	0	0	.79	0
MAX	0	10	4.8	20	46	81	0	0	0	0	19	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	30	9.5	40	174	344	0	0	0	0	49	0

CAL YR 1971 TOTAL 505.42 MEAN 1.38 MAX 80 MIN 0 AC-FT 1,000  
 WTR YR 1972 TOTAL 325.85 MEAN .89 MAX 81 MIN 0 AC-FT 646

PEAK DISCHARGE (BASE, 280 CFS).--Mar. 3 (1800) 532 cfs (5.55 ft).

HAWAII, ISLAND OF MOLOKAI

119

16416000 Punaula Gulch near Pukoo

LOCATION.--Lat 21°05'50", long 156°48'48", on right bank 1.8 miles northwest of Pukoo and 5.2 miles northeast of Kamalo.

DRAINAGE AREA.--0.24 sq mi.

PERIOD OF RECORD.--March 1947 to September 1972 (discontinued). Prior to July 1958, published as Punaula Stream near Pukoo.

GAGE.--Water-stage recorder. Altitude of gage is 1,200 ft (from topographic map).

AVERAGE DISCHARGE.--25 years, 1.24 cfs (898 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 325 cfs Jan. 24 (gage height, 4.59 ft), from rating curve extended as explained below; minimum, 0.04 cfs for several days.

Period of record: Maximum discharge, 622 cfs Apr. 21, 1970 (gage height, 7.62 ft), from rating curve extended above 14 cfs by test of model of station site; minimum, 0.02 cfs Mar. 13, 1947, Feb. 19, 1954, Aug. 15, 1971.

REMARKS.--Records good except those for period of no gage-height record, which are poor. No diversion above station.

REVISIONS.--WSP 1319: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	.06	.22	1.1	.14	.14	.07	1.5	.18	.67	.07	.60
2	.92	.07	.88	.30	.12	.53	5.4	.48	.14	1.7	.06	.35
3	1.6	.11	.36	.28	.11	36	.78	.65	.14	.28	.16	.20
4	.40	.33	.28	.30	7.6	5.0	3.4	.24	.28	.14	.08	.25
5	.14	.09	.20	.20	6.2	.70	.52	.18	.24	.10	.08	.21
6	.08	.08	.31	2.6	1.5	.30	7.4	.16	.10	.09	.11	.14
7	.07	.07	1.1	.76	.44	3.5	5.8	.14	.09	.10	.07	.12
8	.05	.10	.30	2.2	5.4	.40	1.7	.11	.10	.11	.05	.10
9	.19	.46	.24	.44	2.9	.24	2.0	.11	1.3	.12	.04	.09
10	.32	3.7	.44	.30	.70	.18	.76	.11	1.5	.39	.05	.08
11	.09	.70	.59	.26	.33	.14	.36	.14	.44	.12	.10	.08
12	.07	.22	3.1	.26	.24	.12	.47	.14	.16	.09	.08	.07
13	.06	.26	.44	.18	.20	.12	1.4	2.0	.95	1.5	.07	.07
14	.05	1.9	1.1	.16	.16	.12	.26	.48	.24	.77	.08	.06
15	.04	.56	1.6	.14	.12	.12	.68	.44	.14	.88	.07	.05
16	.04	.24	.84	.12	.11	.12	.52	.20	.16	1.5	.06	.05
17	.04	.40	.30	.12	.59	.11	1.0	.14	.22	.33	.10	.05
18	.04	.36	.22	.11	6.7	.11	.56	.12	.40	.16	.20	.20
19	.63	.18	1.3	.14	2.2	.16	.30	.11	1.4	.11	4.0	.12
20	.20	.49	1.7	.12	1.2	.10	1.2	.10	.22	.09	1.0	.08
21	.10	.24	.76	.10	.40	.11	.33	.26	.18	.20	.50	.07
22	.49	.20	.30	1.4	1.9	.09	1.4	.14	.16	.10	.30	.06
23	1.0	.45	.22	.70	1.6	.08	.56	.14	.33	.09	.16	.05
24	1.7	2.0	.22	34	.60	.08	.26	.40	.16	.08	.10	.20
25	1.2	5.1	.20	.52	7.5	.07	.20	.40	.18	.10	.12	.10
26	1.6	.70	.16	.24	.36	.07	.28	.24	.32	.10	.14	.06
27	.22	.28	.14	1.4	.24	.08	.44	.12	.76	.08	.16	.05
28	.12	.20	.14	.48	.20	.14	.28	.10	.18	.20	.18	.22
29	.08	.28	.20	.33	.16	.33	2.3	.09	.11	.14	8.0	.08
30	.07	.22	.55	.24	-----	.22	1.7	.10	.10	.28	2.0	.06
31	.06	-----	13	.18	-----	.08	-----	.11	-----	.11	1.0	-----
TOTAL	12.77	20.05	31.41	49.68	50.12	49.50	42.33	9.65	10.88	10.73	19.19	3.92
MEAN	.41	.67	1.01	1.60	1.73	1.60	1.41	.31	.36	.35	.62	.13
MAX	1.7	5.1	13	34	7.6	36	7.4	2.0	1.5	1.7	8.0	.60
MIN	.04	.06	.14	.10	.11	.07	.07	.09	.09	.08	.04	.05
AC-FT	25	40	62	99	99	98	84	19	22	21	38	7.8

CAL YR 1971	TOTAL 333.79	MEAN .91	MAX 35	MIN .02	AC-FT 662
WTR YR 1972	TOTAL 310.23	MEAN .85	MAX 36	MIN .04	AC-FT 615

PEAK DISCHARGE (BASE, 190 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-31	1900	4.22	273	3- 3	1700	3.99	238
1-24	0430	4.59	325				

NOTE.--No gage-height record Aug. 10 to Sept. 30.

## HAWAII, ISLAND OF MOLOKAI

16419500 Papio Gulch at Halawa

LOCATION.--Lat 21°08'55", long 156°44'16", on left bank 200 ft downstream from wooden bridge on Highway 45 and 0.8 mile south of Halawa.

DRAINAGE AREA.--0.94 sq mi.

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (from topographic map).

AVERAGE DISCHARGE.--9 years, 1.08 cfs (782 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 176 cfs Jan. 24 (gage height, 3.84 ft); no flow for many days.  
Period of record: Maximum discharge, 2,720 cfs Apr. 13, 1965 (gage height, 11.25 ft), from rating curve extended above 17 cfs on basis of slope-area measurements at gage heights 4.60, 7.15, and 11.25 ft; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are poor. Diversion above station for domestic use at Puu O Hoku Ranch. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				0	0	.14	.04	.25	0		0	.03
2				0	0	.12	1.0	.20	0		0	.01
3				0	0	16	.50	.24	0		0	0
4				0	.98	5.2	.80	.18	0		0	.04
5				0	4.8	1.6	.30	.14	0		0	.01
6				0	3.1	.81	2.0	.10	0		0	0
7				0	.53	.33	.50	.07	0		0	0
8				0	4.1	.24	.30	.05	0		0	0
9				0	6.8	.19	.40	.04	0		0	0
10				0	.33	.14	.25	.03	.02		0	0
11				0	.14	.12	.20	.03	.14		0	0
12				0	.06	.10	.25	.02	.03		0	0
13				0	.02	.10	.30	.02	.01		0	0
14				0	.01	.08	.20	.03	.01		0	0
15				0	0	1.0	.25	.02	.01		0	0
16				0	0	.22	.20	.01	.01		0	0
17				0	0	.14	.30	.01	0		0	0
18				0	2.4	.10	.20	.01	0		0	0
19				0	.32	.06	.10	.01	0		1.1	0
20				0	.02	.04	.35	.01	0		1.0	0
21				0	.01	.04	.20	0	0		.24	0
22				0	.01	.06	.40	0	0		.02	0
23				0	.41	.05	.20	0	0		0	0
24				15	.12	.04	.14	0	0		0	0
25				.30	8.9	.03	.08	0	0		0	0
26				.01	.86	.02	.12	0	0		0	0
27				0	.45	.03	.20	0	0		0	0
28				.38	.27	.22	.10	0	0		0	0
29				.01	.19	.25	.50	0	0		0	0
30				0	-----	.10	.35	0	0		.67	0
31		-----		0	-----	.06	-----	0	-----		.16	-----
TOTAL	0	0	0	15.70	34.83	27.63	10.73	1.47	.23	0	3.19	.09
MEAN	0	0	0	.51	1.20	.89	.36	.047	.008	0	.10	.003
MAX	0	0	0	15	8.9	16	2.0	.25	.14	0	1.1	.04
MIN	0	0	0	0	0	.02	.04	0	0	0	0	0
AC-FT	0	0	0	31	69	55	21	2.9	.5	0	6.3	.2

CAL YR 1971 TOTAL 259.55 MEAN .71 MAX 25 MIN 0 AC-FT 515  
WTR YR 1972 TOTAL 93.87 MEAN .26 MAX 16 MIN 0 AC-FT 186

PEAK DISCHARGE (BASE, 210 CFS).--No peak above base.

NOTE.--No gage-height record Mar. 28 to May 9.

16500100 Kepuni Gulch near Kahikinui House

LOCATION.--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 miles east of Kahikinui House, and 8.5 miles west of Kaupo.

DRAINAGE AREA.--1.91 sq mi.

PERIOD OF RECORD.--May 1963 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Altitude of gage is 750 ft (from topographic map). Prior to Feb. 13, 1964, at site 50 ft downstream at different datum.

AVERAGE DISCHARGE.--9 years, 0.226 cfs (164 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 242 cfs Feb. 4 (gage height, 4.84 ft), from rating curve defined as explained below; no flow most of time.

Period of record: Maximum discharge, 964 cfs Jan. 17, 1968 (gage height, 8.23 ft), from rating curve defined only by computation of peak flow over dam at gage heights 4.80, 6.38 and 7.95 ft; no flow most of time each year.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				0	0	0						
2				0	0	0						
3				0	0	0						
4				0	17	5.1						
5				0	18	0						
6				0	0	0						
7				0	0	0						
8				0	0	0						
9				0	0	0						
10				0	0	0						
11				0	0	0						
12				0	0	0						
13				0	0	0						
14				0	0	0						
15				0	0	0						
16				0	0	0						
17				0	0	0						
18				0	0	0						
19				0	0	0						
20				0	0	0						
21				0	0	0						
22				0	0	0						
23				0	0	0						
24				9.2	0	0						
25				0	0	0						
26				0	0	0						
27				0	0	0						
28				0	0	0						
29				0	0	0						
30				0	-----	0						
31		-----		0	-----	0	-----		-----			-----
TOTAL	0	0	0	9.2	35	5.1	0	0	0	0	0	0
MEAN	0	0	0	.30	1.21	.16	0	0	0	0	0	0
MAX	0	0	0	9.2	18	5.1	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	18	69	10	0	0	0	0	0	0

CAL YR 1971 TOTAL 196.12 MEAN .54 MAX 50 MIN 0 AC-FT 389  
 WTR YR 1972 TOTAL 49.3 MEAN .13 MAX 18 MIN 0 AC-FT 98

PEAK DISCHARGE (BASE, 78 CFS),--Feb. 4 (2300) 242 cfs (4.84 ft).

## HAWAII, ISLAND OF MAUI

16501000 Palikea Stream below diversion dam, near Kipahulu

LOCATION.--Lat 20°41'05", long 156°04'10", on left bank 50 ft downstream from old diversion dam, 2 miles north-west of Kipahulu, and 2.1 miles upstream from mouth.

DRAINAGE AREA.--6.29 sq mi.

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 current year. Published as Oheo Stream at elevation 1,550 ft, near Kipahulu 1927-29 and as Oheo Stream below diversion dam, near Kipahulu 1930-56.

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.

AVERAGE DISCHARGE.--37 years (1927-28, 1932-34, 1936-37, 1939-72), 59.0 cfs (42,750 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,800 cfs Feb. 21 (gage height, 9.45 ft); minimum, 0.01 cfs Oct. 13-18, Sept. 16, 17.

Period of record: Maximum discharge, 16,100 cfs Jan. 23, 1965 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 3,300 cfs on basis of computations of peak flow over dam at gage heights 12.68 and 17.5 ft; no flow at times.

REMARKS.--Records good except those for March which are fair. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--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).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	30	17	115	.62	10	.31	26	3.2	22	.07	168
2	11	76	140	11	.48	7.0	234	25	.15	31	.65	4.8
3	1.4	31	108	135	.42	22	11	6.3	.03	1.9	.15	20
4	.26	4.2	55	80	550	160	2.0	1.8	.03	.29	.03	63
5	.03	4.3	25	6.2	217	67	1.4	5.2	.03	.09	.02	1.4
6	.03	146	278	2.6	12	20	297	8.0	.02	.03	.37	.64
7	.17	93	180	200	4.2	9.0	114	1.1	.02	16	.05	.29
8	.03	26	210	378	90	5.0	114	1.0	.02	22	.02	.09
9	.03	16	136	23	547	2.5	595	.72	.64	67	.02	.03
10	.02	105	152	5.5	115	1.5	435	.48	11	70	.02	.02
11	.02	60	108	2.3	9.0	1.0	24	.91	.86	12	7.7	.02
12	.02	34	130	1.6	9.0	.50	18	41	.15	8.1	7.3	.02
13	.01	49	197	1.4	2.8	.20	163	66	.05	114	40	.02
14	.01	147	436	23	4.4	.10	18	15	.03	40	12	.02
15	.01	262	73	258	1.5	.05	18	12	.02	85	2.9	.02
16	.01	144	232	26	1.1	.03	398	1.5	.02	148	6.7	.01
17	.01	279	115	4.7	44	.03	365	.91	11	12	12	.02
18	.01	221	462	2.6	51	.03	162	.56	55	2.0	114	.03
19	2.5	36	630	2.4	68	.02	89	.29	65	.81	60	.03
20	3.2	54	54	2.3	51	.02	179	89	1.5	.41	712	.03
21	25	41	30	54	584	.03	50	100	.07	.19	19	.03
22	68	13	15	377	205	.05	269	11	.03	.07	3.0	6.8
23	43	44	23	50	68	.03	54	19	.64	.03	1.5	11
24	43	617	110	14	260	.02	22	7.4	2.2	.03	.81	5.6
25	7.4	614	236	7.0	380	.02	40	16	3.1	.03	.48	.05
26	31	107	46	4.0	80	.02	52	4.1	5.5	11	.35	.02
27	.14	21	88	2.9	25	.02	33	.35	101	25	.12	.12
28	.02	11	25	2.3	34	.17	60	.12	9.4	25	.03	10
29	11	69	26	1.6	17	49	67	.03	7.1	.91	.02	6.3
30	36	120	157	1.2	-----	1.8	36	.03	25	.24	.03	3.9
31	25	-----	453	.95	-----	.62	-----	.03	-----	.15	9.1	-----
TOTAL	334.33	3,474.5	4,947	1,795.55	3,431.52	357.76	3,920.71	460.83	302.81	715.28	1,010.44	302.31
MEAN	10.8	116	160	57.9	118	11.5	131	14.9	10.1	23.1	32.6	10.1
MAX	68	617	630	378	584	160	595	100	101	148	712	168
MIN	.01	4.2	15	.95	.42	.02	.31	.03	.02	.03	.02	.01
AC-FT	663	6,890	9,810	3,560	6,810	710	7,780	914	601	1,420	2,000	600

CAL YR 1971 TOTAL 25,827.70 MEAN 70.8 MAX 1,300 MIN 0 AC-FT 51,230  
 WTR YR 1972 TOTAL 21,053.04 MEAN 57.5 MAX 712 MIN .01 AC-FT 41,760

PEAK DISCHARGE (BASE, 3,700 CFS).--Feb. 21 (2230) 3,800 cfs (9.45 ft).

## 16508000 Hanawi Stream near Nahiku

LOCATION.--Lat 20°48'35", long 156°07'00", on left bank 200 ft upstream from Koolau ditch intake and trail, 1.9 miles southwest of Nahiku, and 4.5 miles southeast of Keanae.

DRAINAGE AREA.--3.49 sq mi.

PERIOD OF RECORD.--January 1914 to January 1916, November 1921 to current year. Monthly discharge only April to June 1915, published in WSP 1319.

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.

AVERAGE DISCHARGE.--50 years (1922-72), 23.0 cfs (16,660 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,490 cfs Apr. 16 (gage height, 9.42 ft), from rating curve extended as explained below; minimum, 1.9 cfs Oct. 17-19, Nov. 5.  
Period of record: Maximum discharge, about 5,570 cfs Jan. 18, 1916 (gage height, 11.6 ft, present site and datum), from rating curve extended above 410 cfs by test of model of station site; minimum, 1.6 cfs Nov. 14, 19, 20, 1962, Feb. 10, 11, 16, 17, 1963.

REMARKS.--Records good. No diversion above station. Records of chemical analyses for water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1045: 1922-43(M). WSP 1569: Drainage area. WSP 1719: 1915(M), 1922, 1924-25, 1927, 1930-35, 1937, 1939-40, 1942-43.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	2.2	4.9	14	3.7	3.8	2.5	67	3.1	3.6	4.6	29
2	3.6	2.5	12	9.9	3.5	3.7	4.1	24	3.0	8.4	3.6	5.1
3	3.3	2.2	6.0	9.0	3.4	3.7	3.9	7.9	3.0	4.9	3.5	9.0
4	3.0	2.0	5.5	10	18	3.7	11	6.3	2.9	3.5	3.1	34
5	2.7	2.0	5.4	7.9	24	3.5	6.2	14	3.1	3.2	2.9	5.4
6	3.8	3.1	5.7	16	4.2	3.4	5.9	8.0	2.8	3.8	3.1	4.1
7	3.1	3.6	5.6	20	17	3.3	25	5.6	2.8	16	2.8	3.8
8	2.9	9.5	5.3	48	161	3.2	109	5.4	2.8	13	2.7	3.7
9	2.7	9.5	6.0	11	214	3.2	316	4.9	3.0	9.6	2.6	3.5
10	2.6	49	17	8.8	64	3.1	190	4.6	2.7	5.4	4.0	3.6
11	2.4	22	32	7.6	9.7	3.1	18	4.4	2.6	4.0	16	3.8
12	2.4	12	38	6.6	7.5	3.1	8.8	4.3	2.5	3.7	4.5	3.4
13	2.3	11	118	6.0	6.8	3.0	5.7	4.2	2.5	40	13	3.3
14	2.2	7.0	150	5.6	6.1	3.0	4.8	4.1	2.4	20	14	3.2
15	2.1	8.1	21	5.6	4.9	2.9	4.1	4.0	2.4	7.3	5.5	3.1
16	2.1	21	13	5.1	4.4	2.8	207	3.8	2.4	13	8.4	3.1
17	2.0	42	8.9	4.8	4.2	2.8	51	3.7	2.5	5.5	7.4	3.1
18	2.0	27	25	4.6	124	2.8	7.6	3.7	3.7	4.5	67	3.1
19	3.6	9.5	89	4.4	42	2.7	6.0	3.6	7.6	3.8	58	3.1
20	2.4	11	28	4.4	9.0	2.8	7.6	4.2	3.0	3.5	108	3.0
21	2.8	8.0	21	6.6	6.3	2.9	6.3	4.9	2.6	3.2	11	3.0
22	2.2	6.1	12	8.4	6.9	2.7	32	3.9	2.5	3.0	6.6	3.1
23	6.2	22	8.6	4.6	5.5	2.6	25	5.6	2.9	2.9	5.0	3.6
24	3.6	117	7.8	4.3	4.8	2.6	9.8	4.2	2.6	2.8	4.5	3.4
25	2.8	58	7.7	4.1	6.9	2.6	6.8	5.5	2.6	3.0	4.1	2.9
26	2.5	13	7.5	3.9	5.0	2.5	9.1	4.6	2.8	12	3.8	2.8
27	2.3	7.0	8.3	5.5	4.5	3.0	9.8	3.7	28	42	3.6	3.1
28	2.2	5.5	8.0	6.2	4.1	5.4	11	3.5	9.4	11	3.4	3.7
29	2.3	5.2	7.6	4.7	4.0	3.1	19	3.4	4.1	7.8	4.2	5.0
30	2.4	5.0	111	4.4	-----	2.8	14	3.3	5.4	5.3	4.9	3.9
31	2.2	-----	87	3.8	-----	2.6	-----	3.2	-----	9.5	4.4	-----
TOTAL	109.1	503.0	882.8	265.8	779.4	96.4	1,137.0	233.5	123.7	279.2	390.2	167.9
MEAN	3.52	16.8	28.5	8.57	26.9	3.11	37.9	7.53	4.12	9.01	12.6	5.60
HAX	22	117	150	48	214	5.4	316	67	28	42	108	34
MIN	2.0	2.0	4.9	3.8	3.4	2.5	2.5	3.2	2.4	2.8	2.6	2.8
AC-FT	216	998	1,750	527	1,550	191	2,260	463	245	554	774	333

CAL YR 1971 TOTAL 8,621.5 MEAN 23.6 HAX 768 MIN 1.9 AC-FT 17,100  
WTR YR 1972 TOTAL 4,968.0 MEAN 13.6 HAX 316 MIN 2.0 AC-FT 9,850

PEAK DISCHARGE (BASE, 1,700 CFS).--Apr. 16 (1800) 3,490 cfs (9.42 ft).

HAWAII, ISLAND OF MAUI

16512000 Koolau ditch at Nahiku weir, near Nahiku

LOCATION.--Lat 20°48'55", long 156°07'15", on right bank between Kapaula and Waiohue Gulches, 1.8 miles southwest of Nahiku, and 3.8 miles 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.

AVERAGE DISCHARGE.--53 years, 34.2 cfs (24,780 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 99 cfs Apr. 27, May 11, 1963, May 25, 1964; no flow at times.

REMARKS.--Records excellent. Ditch diverts water from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	12	28	50	17	19	11	72	12	16	23	42
2	23	13	46	37	16	18	17	61	12	32	19	23
3	15	12	31	34	15	17	18	40	12	21	18	29
4	14	11	28	36	17	17	45	36	12	16	16	59
5	12	11	26	34	30	15	27	51	12	14	15	25
6	17	13	26	48	18	15	27	38	12	15	15	20
7	15	18	25	66	55	15	63	29	11	40	14	18
8	15	29	23	83	84	14	84	28	11	40	13	17
9	14	35	24	51	77	14	87	26	12	34	12	16
10	13	57	38	42	74	14	84	23	11	24	17	16
11	12	56	69	37	45	13	60	22	10	20	49	17
12	12	45	70	33	39	13	37	21	9.6	19	22	15
13	11	44	81	35	34	13	30	20	10	42	45	14
14	11	36	89	28	31	13	27	20	10	46	49	13
15	11	42	66	27	27	12	23	19	9.6	41	28	13
16	10	52	55	24	24	12	40	17	9.6	57	37	12
17	10	78	43	23	22	11	74	17	10	33	33	12
18	9.5	80	58	21	69	11	37	16	13	27	73	12
19	14	49	83	21	79	11	36	15	21	22	70	12
20	12	50	72	21	44	11	44	17	12	20	75	12
21	13	41	69	28	35	12	37	19	10	18	49	11
22	44	34	50	39	37	10	71	16	10	17	39	12
23	26	55	39	23	31	10	68	20	12	15	33	15
24	18	85	36	21	27	10	46	17	10	15	27	14
25	15	87	34	20	32	11	39	22	10	15	23	12
26	13	54	33	19	26	10	41	19	11	41	21	11
27	12	39	33	24	23	13	42	15	44	65	20	12
28	12	33	33	25	21	27	46	15	28	41	18	15
29	12	32	31	21	20	15	62	14	16	31	20	18
30	12	30	65	20	-----	13	52	13	23	25	21	16
31	12	-----	84	18	-----	11	-----	13	-----	30	19	-----
TOTAL	465.6	1,233	1,488	1,009	1,069	420	1,375	771	405.8	892	933	533
MEAN	15.0	41.1	48.0	32.5	36.9	13.5	45.8	24.9	13.5	28.8	30.1	17.8
MAX	44	87	89	83	84	27	87	72	44	.65	75	59
MIN	9.6	11	23	18	15	10	11	13	9.6	14	12	11
AC-FT	924	2,450	2,950	2,000	2,120	833	2,730	1,530	805	1,770	1,850	1,060

CAL YR 1971 TOTAL 10,984.0 MEAN 30.1 MAX 89 MIN 7.0 AC-FT 21,790  
 WTR YR 1972 TOTAL 10,594.4 MEAN 28.9 MAX 89 MIN 9.6 AC-FT 21,010

16518000 West Wailuaiki Stream near Keanae

LOCATION.--Lat 20°49'15", long 156°08'37", on left bank 500 ft upstream from Koolau ditch crossing and trail bridge and 2.8 miles south of Keanae Post Office.

DRAINAGE AREA.--3.66 sq mi.

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.

GAGE.--Water-stage recorder. Datum of gage is 1,343.6 ft above mean sea level (by vertical angles).

AVERAGE DISCHARGE.--52 years (1914-15, 1916-17, 1922-72), 36.0 cfs (26,080 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,420 cfs Feb. 8 (gage height, 6.43 ft), from rating curve extended above 650 cfs; minimum, 2.0 cfs Mar. 23, 24, 27.  
Period of record: Maximum discharge, 9,900 cfs Jan. 14, 1923 (gage height, 13.5 ft, from floodmarks), from rating curve extended above 650 cfs; minimum, 0.5 cfs July 26, 1922.

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. Records of chemical analyses for water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--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), (WATER YEARS) 1960(P), 1961(M), 1963(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	3.2	6.4	10	4.4	5.5	2.4	69	3.0	5.3	8.0	63
2	12	3.6	17	7.8	4.1	5.1	3.8	35	2.8	13	6.0	12
3	7.4	3.1	6.6	7.0	3.7	4.7	6.7	12	2.8	6.5	6.1	25
4	5.2	2.8	5.6	8.9	3.6	4.7	23	10	3.3	4.8	5.0	55
5	4.3	2.6	5.0	6.6	8.6	4.6	11	34	4.6	4.1	4.7	10
6	6.9	3.7	4.9	17	6.7	4.1	10	12	3.3	7.6	4.7	7.7
7	5.5	5.8	4.6	18	32	3.8	56	8.7	2.9	27	3.9	6.5
8	4.4	21	4.2	54	344	3.6	200	7.5	2.8	20	3.7	5.8
9	4.2	21	5.4	12	288	3.5	544	6.7	3.1	15	3.5	5.3
10	3.9	102	21	8.8	90	3.2	341	5.9	2.6	8.1	9.1	5.3
11	3.4	43	51	7.5	17	3.1	42	5.4	2.5	6.3	39	6.3
12	3.1	26	63	7.4	13	3.0	17	5.1	2.5	6.0	7.7	4.8
13	2.9	19	142	6.1	11	2.9	11	4.8	2.3	63	22	4.3
14	2.8	11	189	5.7	8.9	2.7	8.7	4.7	2.2	39	25	4.0
15	2.7	13	25	7.2	7.5	2.7	7.4	4.4	2.2	12	8.3	3.7
16	2.6	16	15	5.6	6.6	2.6	30	4.0	2.4	21	12	3.4
17	2.5	34	10	4.9	6.2	2.5	16	3.8	2.7	8.9	9.9	3.3
18	3.3	28	10	4.4	105	2.4	8.5	3.6	7.2	6.9	138	3.7
19	22	12	107	4.3	76	2.3	7.2	3.4	9.6	5.8	114	4.0
20	6.3	19	40	4.1	15	2.4	8.2	5.0	3.4	5.2	147	3.9
21	8.9	15	32	6.5	11	2.7	7.4	8.0	2.9	4.9	19	3.4
22	57	11	19	11	9.6	2.3	34	5.4	24	4.4	11	3.4
23	17	46	11	4.5	9.1	2.1	31	8.4	8.5	4.0	8.7	3.9
24	8.8	120	9.0	4.2	7.8	2.4	12	5.0	3.5	3.8	7.6	3.3
25	5.6	43	8.1	4.0	18	3.8	8.6	7.5	3.1	5.1	6.5	2.7
26	4.7	16	7.2	3.7	9.1	2.5	14	5.4	4.3	17	6.1	2.6
27	5.5	11	8.0	15	7.8	2.1	17	3.9	67	56	5.7	3.4
28	4.9	9.1	7.0	13	6.6	4.7	16	3.4	18	19	5.1	6.0
29	3.9	7.9	6.2	9.4	6.0	7.4	20	3.2	7.7	12	17	8.5
30	3.7	7.0	65	7.4	-----	5.4	14	3.1	8.0	8.6	16	4.2
31	3.4	-----	47	5.1	-----	2.8	-----	3.1	-----	10	-----	-----
TOTAL	249.8	675.8	922.2	291.1	1,216.3	107.6	1,527.9	301.4	215.2	430.3	697.3	278.4
MEAN	8.06	22.5	29.7	9.39	41.9	3.47	50.9	9.72	7.17	13.9	22.5	9.28
MAX	57	120	159	54	344	7.4	544	69	67	63	147	63
MIN	2.5	2.6	4.2	3.7	3.6	2.1	2.4	3.1	2.2	3.8	3.5	2.6
AC-FT	495	1,340	1,830	577	2,410	213	3,030	598	427	854	1,380	552

CAL YR 1971 TOTAL 10,063.8 MEAN 27.6 MAX 903 MIN 1.7 AC-FT 19,960  
WTR YR 1972 TOTAL 6,913.3 MEAN 18.9 MAX 544 MIN 2.1 AC-FT 13,710

PEAK DISCHARGE (BASE, 1,900 CFS).--No peak above base.

## HAWAII, ISLAND OF MAUI

16523000 Koolau ditch near Keanae

LOCATION.--Lat 20°49'53", long 156°10'30", on right bank on west side of Keanae Valley, 2.6 miles southwest of Keanae Post Office, and 5.1 miles 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.

AVERAGE DISCHARGE.--56 years (1910-12, 1918-72), 102 cfs (73,900 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 266 cfs Apr. 19, 1935; no flow at times.

REMARKS.--Records excellent. 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.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	32	64	118	44	47	27	201	33	44	62	166
2	86	36	118	84	42	45	45	189	32	130	50	96
3	55	33	69	74	40	44	58	115	31	56	50	136
4	44	29	59	99	43	44	181	95	33	43	45	193
5	38	28	54	71	83	42	83	182	37	39	42	90
6	68	39	54	115	58	40	69	126	32	60	44	65
7	51	59	53	186	165	39	202	80	30	191	40	56
8	44	109	49	201	199	37	196	72	29	162	38	51
9	41	119	55	126	198	37	196	64	34	112	36	48
10	38	166	98	93	202	36	196	56	29	67	65	48
11	35	175	197	80	134	34	203	53	27	52	184	56
12	32	157	194	70	108	34	131	49	26	50	73	44
13	31	156	201	63	89	32	85	48	25	129	159	41
14	30	90	198	60	75	32	68	46	25	152	176	39
15	29	131	199	69	62	31	58	44	25	124	83	38
16	28	117	152	55	56	30	94	42	25	170	142	35
17	28	201	105	50	54	30	167	41	27	86	122	35
18	26	203	122	48	146	29	82	40	53	67	219	36
19	81	128	192	47	198	29	75	39	74	56	220	37
20	48	158	200	47	135	29	105	48	53	50	219	36
21	48	129	200	65	90	33	84	67	28	46	188	35
22	185	97	151	117	96	28	188	43	65	43	128	35
23	133	166	100	52	80	27	188	78	55	41	97	43
24	70	196	84	48	66	27	121	47	32	40	80	41
25	45	199	78	45	126	32	91	71	32	46	67	32
26	40	160	72	43	70	28	124	52	37	149	61	30
27	40	107	78	87	60	27	138	41	166	188	57	36
28	37	85	70	95	53	61	142	38	124	157	51	58
29	35	76	65	68	50	49	173	36	52	96	99	76
30	36	70	165	56	-----	40	142	35	80	69	100	44
31	34	-----	188	46	-----	30	-----	34	-----	85	96	-----
TOTAL	1,669	3,451	3,684	2,478	2,822	1,103	3,712	2,172	1,351	2,800	3,093	1,776
MEAN	53.8	115	119	79.9	97.3	35.6	124	70.1	45.0	90.3	99.8	59.2
MAX	185	203	201	201	202	61	203	201	166	191	220	193
MIN	28	28	49	43	40	27	27	34	25	39	36	30
AC-FT	3,310	6,850	7,310	4,920	5,600	2,190	7,360	4,310	2,680	5,550	6,130	3,520
CAL YR 1971	TOTAL 32,055.2	MEAN 87.8	MAX 225	MIN 1.1	AC-FT 63,580							
WTR YR 1972	TOTAL 30,111	MEAN 82.3	MAX 220	MIN 25	AC-FT 59,730							

## 16531000 Kula diversion from Haipuaena Stream near Olinda

LOCATION.--Lat 20°28'24", long 156°13'27", on left bank of Haipuaena Stream, 3.4 miles east of Olinda, and 6.2 miles south of Kailua.

PERIOD OF RECORD.--July 1945 to current year.

GAGE.--Water-stage recorder and Parshall flume. Altitude of gage is 4,320 ft (from topographic map).

AVERAGE DISCHARGE.--27 years, 0.652 cfs (472 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 3.17 cfs Mar, 20, 1948; no flow Nov. 4, 1964, Dec. 3, 5, 1970.

REMARKS.--Records excellent. Water is diverted from Haipuaena Stream at station for domestic use and irrigation of truck crops in the Olinda and Kula areas.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	.09	.18	.25	.18	.19	.04	1.2	.07	.40	.19	.57
2	.73	.07	1.1	.18	.14	.15	.19	1.4	.06	1.4	.14	.45
3	.45	.06	.45	.15	.10	.12	.55	.88	.05	.64	.10	.95
4	.28	.05	.30	.19	.09	.12	.34	.47	.06	.34	.10	1.4
5	.19	.04	.19	.18	.83	.50	.76	.38	.06	.21	.14	.62
6	.55	.04	.21	.27	.70	.30	1.0	.32	.06	.17	.34	.38
7	.64	.04	.51	.73	.67	.17	1.3	.25	.05	.74	.19	.26
8	.32	.51	.25	1.3	.48	.11	1.1	.23	.06	.91	.12	.19
9	.25	1.0	.17	.85	.04	.08	.40	.34	.23	.67	.08	.17
10	.23	1.5	.34	.43	.80	.06	.03	.23	.19	.49	.28	.15
11	.15	.59	1.0	.26	.88	.05	.01	.17	.12	.30	1.6	.18
12	.25	.87	.91	.19	.57	.04	.87	.14	.09	.21	.88	.19
13	.40	1.1	.62	.15	.43	.03	1.2	.44	.07	.61	1.3	.12
14	.21	.52	.34	.14	.32	.03	.54	.70	.06	1.0	.79	.08
15	.14	.43	.65	.11	.25	.02	.38	.74	.05	.42	.52	.07
16	.10	.34	.64	.10	.18	.02	.32	.32	.05	.10	.28	.06
17	.08	.54	.43	.09	.15	.02	.81	.18	.06	.46	.39	.05
18	.07	1.1	.49	.07	.49	.02	.85	.12	.66	.47	1.4	.04
19	.63	.45	.67	.05	.38	.02	.67	.09	.86	.32	.73	.04
20	.80	.49	.45	.05	.32	.02	.59	.19	.32	.23	.45	.04
21	.55	.90	.43	.42	.30	.02	.57	1.2	.43	.19	.80	.04
22	1.5	.54	.40	1.1	.43	.02	1.2	.47	.78	.15	.57	.05
23	1.3	.82	.34	.62	.52	.02	1.2	.36	.91	.11	.38	.12
24	.57	.85	.34	1.0	.38	.02	.59	.40	.45	.09	.28	.14
25	.38	.76	.32	.49	1.1	.02	.45	.83	.28	.08	.19	.21
26	.36	.82	.26	.25	.76	.02	.83	.94	.19	.07	.17	.12
27	.47	.52	.23	.56	.47	.02	1.6	.36	1.2	.48	.18	.08
28	.30	.36	.18	1.1	.34	.02	.57	.21	.82	1.1	.15	.10
29	.19	.26	.17	.67	.25	.04	.97	.15	.40	.45	.76	.18
30	.15	.25	.34	.52	-----	.06	1.2	.10	.34	.40	.88	.48
31	.11	-----	.34	.30	-----	.06	-----	.08	-----	.38	.47	-----
TOTAL	13.65	15.91	13.25	12.77	12.55	2.39	21.13	13.89	9.03	13.59	14.85	7.53
MEAN	.44	.53	.43	.41	.43	.077	.70	.45	.30	.44	.48	.25
MAX	1.5	1.5	1.1	1.3	1.1	.50	1.6	1.4	1.2	1.4	1.6	1.4
MIN	.07	.04	.17	.05	.04	.02	.01	.06	.05	.07	.08	.04
AC-FT	27	32	26	25	25	4.7	42	28	18	27	29	15
CAL YR 1971	TOTAL 165.38	MEAN .45	MAX 2.2	MIN .02	AC-FT 328							
WTR YR 1972	TOTAL 150.54	MEAN .41	MAX 1.6	MIN .01	AC-FT 299							

## HAWAII, ISLAND OF MAUI

16538000 Spreckels ditch at Haipuaena weir, near Huelo

LOCATION.--Lat 20°51'15", long 156°11'25", on right bank new Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.7 miles west of Keanae, and 4.5 miles southeast of Huelo.

PERIOD OF RECORD.--April 1922 to current year. Published as "at Haipuaena, near Huelo" 1930-35.

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.

AVERAGE DISCHARGE (since termination of powerplant diversion).--11 years (1961-72), 29.9 cfs (21,660 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 150 cfs Feb. 10, 1955, Feb. 18, 1956; no flow at times.

REMARKS.--Records excellent. 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 cfs 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.

REVISIONS (FISCAL YEARS).--WSP 770: 1932-33.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	5.6	11	12	7.8	8.7	3.2	69	5.8	14	15	40
2	22	5.3	35	10	7.2	8.1	22	66	5.1	56	12	15
3	13	4.8	11	10	6.3	7.5	23	29	5.1	19	13	37
4	10	4.8	9.4	18	6.0	7.8	65	29	11	12	11	69
5	8.7	4.6	8.7	14	11	8.1	20	100	13	10	11	17
6	24	6.0	8.1	35	20	7.2	28	39	7.4	25	13	12
7	15	9.4	7.8	45	71	6.3	87	22	5.9	78	8.7	11
8	12	35	7.2	78	112	5.0	116	18	6.6	52	7.5	9.8
9	9.0	34	7.5	23	106	5.3	132	16	13	41	6.9	8.9
10	8.4	83	26	15	74	5.3	120	13	8.4	14	20	9.3
11	7.2	55	74	12	26	5.1	62	11	7.5	7.0	67	13
12	8.0	51	74	12	22	4.8	29	10	5.5	6.1	17	10
13	7.8	37	94	9.8	18	4.6	23	9.5	4.8	48	56	7.6
14	6.3	18	108	9.0	15	4.4	15	13	4.5	52	59	6.9
15	5.8	26	50	9.4	12	4.0	13	14	4.3	55	19	6.6
16	5.3	25	31	6.1	10	3.8	32	8.6	4.7	77	40	6.1
17	5.1	54	18	7.5	9.4	3.8	35	7.3	9.7	27	38	5.9
18	4.8	66	16	6.9	77	3.8	20	6.6	39	19	117	6.3
19	36	24	89	6.9	87	3.6	15	6.3	28	15	99	6.6
20	15	40	68	7.2	29	4.0	19	17	8.6	13	108	6.3
21	13	26	50	16	22	6.0	16	34	7.5	12	39	5.9
22	64	20	30	84	24	3.8	75	20	32	10	22	6.1
23	34	65	17	14	17	3.4	71	37	28	9.1	17	9.3
24	17	101	15	13	19	3.2	29	14	9.4	8.3	14	6.9
25	10	65	13	8.7	56	3.2	19	34	8.2	12	12	5.3
26	9.0	28	12	7.2	17	3.0	44	19	11	61	11	4.9
27	9.0	18	12	37	14	3.0	42	10	73	96	12	9.0
28	8.4	15	12	34	11	3.6	52	7.9	33	43	9.8	16
29	6.9	13	11	23	9.8	6.0	59	7.1	15	22	57	16
30	6.0	11	54	15	-----	5.8	39	6.6	25	16	32	8.6
31	6.0	-----	24	9.1	-----	3.6	-----	6.2	-----	21	14	-----
TOTAL	440.7	950.7	1,003.7	609.8	916.5	156.6	1,325.2	700.1	440.0	950.5	977.9	392.3
MEAN	14.2	31.7	32.4	19.7	31.6	5.05	44.2	22.6	14.7	30.7	31.5	13.1
MAX	64	101	108	84	112	8.7	132	100	73	96	117	69
MIN	4.6	4.8	7.2	6.9	6.0	3.0	3.2	6.2	4.3	6.1	6.9	4.9
AC-FT	874	1,890	1,990	1,210	1,820	311	2,630	1,390	873	1,890	1,940	778

CAL YR 1971 TOTAL 8,572.0 MEAN 23.5 MAX 114 MIN 3.5 AC-FT 17,000  
 WTR YR 1972 TOTAL 8,864.0 MEAN 24.2 MAX 132 MIN 3.0 AC-FT 17,580

16541000 Koolau ditch at Haipuaena, near Huelo

LOCATION.--Lat 20°51'17", long 156°11'19", on right bank at Haipuaena Stream, 1,000 ft upstream from intake at Puohokamoa Stream, 3.3 miles southeast of Kailua, and 4.5 miles 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.

AVERAGE DISCHARGE.--40 years, 118 cfs (85,490 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 300 cfs July 1, 17, 1963; no flow at times.

REMARKS.--Records excellent. 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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	32	70	122	47	53	26	216	33	48	70	143
2	78	36	124	91	44	50	54	204	31	127	56	88
3	56	32	77	82	41	48	63	122	30	63	57	118
4	44	28	66	102	44	48	180	102	32	47	50	190
5	38	27	61	79	86	46	89	230	38	40	46	84
6	62	35	60	127	64	41	76	131	33	59	48	64
7	52	58	98	183	109	40	221	98	29	190	41	57
8	44	105	54	216	279	38	266	81	29	163	39	52
9	41	123	60	129	260	37	287	72	34	128	37	49
10	38	178	102	99	230	36	255	64	28	82	53	49
11	34	166	189	88	142	35	206	60	26	66	171	56
12	32	156	202	79	114	34	138	56	25	64	70	45
13	30	156	235	71	98	32	95	54	24	162	143	41
14	28	95	254	66	86	32	76	51	24	164	153	39
15	28	134	200	75	73	30	66	49	24	138	82	37
16	27	119	153	62	65	30	100	46	25	189	125	35
17	27	197	108	56	62	29	170	43	27	94	102	34
18	27	196	123	53	212	28	91	41	56	75	254	36
19	77	131	232	51	240	28	84	39	79	64	239	37
20	49	156	209	52	142	28	110	46	33	58	253	36
21	42	130	208	64	99	32	92	73	27	52	168	34
22	179	101	153	135	103	27	195	52	68	48	114	36
23	120	176	105	58	89	26	205	83	60	44	90	43
24	68	245	91	53	76	26	126	52	32	41	78	41
25	46	210	85	50	134	31	98	75	31	50	67	32
26	41	160	80	46	80	27	126	56	38	160	63	30
27	40	111	84	87	70	26	145	43	179	205	58	34
28	37	92	79	103	62	67	150	38	122	156	53	54
29	34	85	72	74	57	55	172	36	59	98	97	71
30	35	78	171	63	-----	42	143	35	83	76	96	46
31	32	-----	188	51	-----	29	-----	34	-----	87	87	-----
TOTAL	1,602	3,548	3,945	2,687	3,288	1,131	4,105	2,372	1,359	3,038	3,060	1,711
MEAN	51.7	118	127	86.0	113	36.5	137	76.5	45.3	98.0	98.7	57.0
MAX	179	245	254	216	279	67	287	230	179	205	254	190
MIN	27	27	54	46	41	26	26	34	24	40	37	30
AC-FT	3,180	7,040	7,820	5,290	6,520	2,240	8,140	4,700	2,700	6,030	6,070	3,390

CAL YR 1971 TOTAL 32,473.46 MEAN 89.0 MAX 268 MIN .32 AC-FT 64,410  
 WTR YR 1972 TOTAL 31,826 MEAN 87.0 MAX 287 MIN 24 AC-FT 63,130

## HAWAII, ISLAND OF MAUI

16541500 Manuel Luis ditch at Puohokamoa Gulch, near Huelo

LOCATION.--Lat 20°51'48", long 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.2 miles west of Keanae, and 4.4 miles southeast of Huelo.

PERIOD OF RECORD.--December 1917 to November 1924, January 1925 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (from topographic map).

AVERAGE DISCHARGE.--53 years (1918-24, 1925-72), 8.63 cfs (6,250 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 142 cfs Jan. 3, 1927; no flow at times.

REMARKS.--Records excellent. Ditch is extension of Center ditch and picks up water from streams between the Kolea and the Waikamoi for irrigation in central Maui.

REVISIONS (FISCAL YEARS).--WSP 1719: 1918-30.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	.24	1.1	1.0	.58	1.3	.16	19	.30	.71	.64	4.0
2	.69	.26	2.3	.95	.52	1.1	2.7	10	.28	5.5	.54	1.3
3	.94	.21	1.0	.97	.48	1.0	1.1	2.3	.28	.87	.50	1.4
4	.44	.16	.89	1.0	.47	1.2	6.9	1.9	.40	.50	.42	4.5
5	.35	.16	.80	.91	.51	.94	1.1	23	.51	.38	.39	1.1
6	.89	.20	.84	5.2	1.1	.82	1.5	2.9	.31	1.0	.42	.87
7	.60	.37	.72	2.9	13	.76	8.6	1.7	.31	6.9	.35	.78
8	.43	1.0	.60	8.0	72	.69	62	1.5	.28	1.9	.35	.69
9	.39	2.7	.61	2.0	84	.63	124	1.4	.51	1.6	.33	.64
10	.31	20	1.6	1.4	21	.56	64	1.2	.32	.88	.39	.59
11	.28	3.9	4.5	1.2	4.1	.55	2.8	1.0	.26	.60	6.0	.82
12	.27	2.5	6.0	1.1	3.3	.48	1.4	.91	.22	.56	1.1	.61
13	.22	2.6	28	1.0	2.4	.45	1.1	.93	.22	16	5.0	.52
14	.24	1.3	40	1.0	2.0	.41	.91	.83	.20	6.1	5.6	.48
15	.24	3.1	4.6	1.0	1.7	.37	.81	.77	.16	16	1.2	.41
16	.22	2.1	3.3	.91	1.4	.34	2.8	.66	.16	14	3.1	.40
17	.22	5.9	2.0	.82	1.4	.34	1.7	.60	.20	2.4	2.3	.36
18	.22	6.4	1.7	.73	62	.32	1.0	.54	.33	1.5	25	.36
19	6.3	2.0	8.7	.82	20	.28	.86	.48	.42	1.2	19	.41
20	.75	2.6	3.7	.73	4.5	.33	1.8	.52	.22	.97	58	.34
21	.40	1.4	2.4	7.5	3.3	.51	1.1	.93	.16	.84	5.7	.37
22	9.3	1.2	1.7	1.5	3.2	.31	8.7	.52	1.3	.70	3.1	.54
23	1.3	5.3	1.4	1.0	2.5	.28	6.6	1.9	2.0	.63	2.2	.86
24	.84	35	1.2	.82	2.7	.26	1.9	.64	.25	.57	1.8	.93
25	.51	10	1.1	.73	5.5	.23	1.5	1.4	.22	.62	1.5	.42
26	.53	3.5	1.0	.64	2.2	.22	2.0	.86	.23	11	1.3	.34
27	.51	2.3	1.0	3.6	1.8	.22	1.6	.47	5.4	9.1	1.2	.48
28	.33	1.8	.94	1.6	1.6	.22	3.7	.39	.54	1.4	.96	.75
29	.28	1.6	.97	1.0	1.4	.32	8.2	.34	.31	.83	3.6	.64
30	.27	1.2	4.0	.82	-----	.25	3.3	.34	3.4	.73	2.2	.47
31	.24	-----	2.3	.64	-----	.19	-----	.31	-----	.68	.96	-----
TOTAL	31.51	121.00	130.97	53.49	320.66	15.88	325.84	80.24	19.70	106.67	155.15	26.38
MEAN	1.02	4.03	4.22	1.73	11.1	.51	10.9	2.59	.66	3.44	5.00	.88
MAX	9.3	35	40	8.0	84	1.3	124	23	5.4	16	58	4.5
MIN	.22	.16	.60	.64	.47	.19	.16	.31	.16	.38	.33	.34
AC-FT	63	240	260	106	636	32	646	159	39	212	308	52

CAL YR 1971 TOTAL 1,685.76 MEAN 4.62 MAX 75 MIN .08 AC-FT 3,340  
 WTR YR 1972 TOTAL 1,387.49 MEAN 3.79 MAX 124 MIN .16 AC-FT 2,750

## 16570000 Nailiilihaele Stream near Huelo

LOCATION.--Lat 20°52'28", long 156°13'06", on left bank 200 ft upstream from Wailoa ditch intake, 1,000 ft upstream from New Hamakua ditch trail, 1.5 miles south of Kailua, and 2.4 miles southeast of Huelo Church.

DRAINAGE AREA.--3.49 sq mi.

PERIOD OF RECORD.--December 1910 to December 1911, October 1913 to June 1918, August to October 1919, December 1919 to June 1924, January 1925 to current year. Gage-height records for July to December 1912 at site 700 ft downstream not equivalent owing to diversion. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 1,205 ft above mean sea level (by vertical angles). Dec. 9, 1910, to Dec. 31, 1911, nonrecording gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 20, 1922, water-stage recorder at present site at datum 0.50 ft higher.

AVERAGE DISCHARGE (since termination of upstream diversion).--48 years (1922-23, 1925-72), 35.3 cfs (25,570 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,190 cfs Feb. 8 (gage height, 7.56 ft), from rating curve extended above 600 cfs; minimum, 2.9 cfs Apr. 1, 2.  
Period of record: Maximum discharge, 6,410 cfs Nov. 18, 1930 (gage height, 10.74 ft), from rating curve extended above 600 cfs; minimum, 0.70 cfs July 14, 1920.

REMARKS.--Records good. No diversion above station since 1922. All low flow diverted into Wailoa ditch (see sta 16588000) 200 ft below station for domestic supply, power, and irrigation. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1569: 1925-56. WSP 1937: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	5.1	11	9.5	7.0	8.9	3.1	65	6.0	10	10	20
2	12	5.1	21	8.5	6.5	8.4	20	58	5.5	33	9.5	11
3	16	4.7	11	8.3	6.2	7.9	12	23	5.5	12	9.7	15
4	8.0	4.5	9.4	11	6.0	8.8	38	21	11	9.5	8.3	55
5	7.1	4.3	8.5	11	6.8	7.6	13	170	13	8.2	8.1	13
6	13	4.8	8.2	38	20	6.9	10	34	6.3	21	7.8	10
7	10	6.5	7.7	35	53	6.4	54	20	5.7	73	7.1	9.3
8	7.5	17	7.1	71	349	6.2	245	17	5.7	38	6.7	8.7
9	6.9	21	7.0	18	277	5.9	384	14	11	31	6.3	8.1
10	6.2	75	21	13	91	5.6	142	12	6.2	16	6.5	7.7
11	5.7	31	52	11	23	5.4	33	11	5.4	13	27	7.9
12	5.4	32	59	9.7	22	5.3	20	10	5.0	11	11	7.1
13	5.1	30	113	8.9	18	5.1	15	10	4.8	80	42	6.5
14	4.8	14	152	8.5	14	5.0	13	9.3	4.6	37	53	6.5
15	4.6	17	37	8.4	12	4.8	11	8.7	4.3	265	13	6.6
16	4.4	18	25	7.6	11	4.5	72	7.8	4.2	82	32	5.9
17	4.2	50	17	7.0	10	4.3	26	7.2	4.8	24	35	5.6
18	4.1	62	14	6.5	235	4.2	16	6.7	17	18	124	5.6
19	31	20	48	6.4	73	4.0	14	6.4	15	15	66	5.7
20	11	33	38	6.9	22	4.4	20	8.8	6.6	13	219	5.3
21	9.0	20	27	20	18	7.2	15	18	5.1	11	30	5.2
22	62	18	19	41	19	4.1	64	15	12	10	20	6.0
23	25	47	14	15	14	3.8	74	31	20	9.4	16	9.3
24	15	162	13	11	14	3.6	26	12	6.8	8.6	14	7.2
25	9.2	61	11	7.6	32	3.6	18	23	6.4	9.3	12	4.9
26	8.2	24	11	6.6	14	3.5	33	13	8.1	71	11	4.4
27	7.4	18	10	23	12	3.3	28	8.3	50	97	11	6.7
28	6.4	15	10	19	10	3.5	54	7.3	18	29	9.4	12
29	5.9	14	9.4	13	9.6	4.3	69	6.7	10	17	51	9.4
30	5.6	12	40	9.8	-----	3.7	29	6.4	26	13	24	6.0
31	5.4	-----	12	7.8	-----	3.2	-----	6.1	-----	11	11	-----
TOTAL	352.1	846.0	843.3	478.0	1,405.1	163.4	1,571.1	666.7	310.0	1,096.0	911.4	291.6
MEAN	11.4	28.2	27.2	15.4	48.5	5.27	52.4	21.5	10.3	35.4	29.4	9.72
MAX	62	162	152	71	349	8.9	384	170	50	265	219	55
MIN	4.1	4.3	7.0	6.4	6.0	3.2	3.1	6.1	4.2	8.2	6.3	4.4
AC-FT	698	1,680	1,670	948	2,790	324	3,120	1,320	615	2,170	1,810	578

CAL YR 1971 TOTAL 9,511.7 MEAN 26.1 MAX 662 MIN 3.0 AC-FT 18,870  
WTR YR 1972 TOTAL 8,934.7 MEAN 24.4 MAX 384 MIN 3.1 AC-FT 17,720

PEAK DISCHARGE (BASE, 1,700 CFS).--Feb. 8 (1745) 2,190 cfs (7.56 ft); July 15 (1630) 2,180 cfs (7.54 ft).

## HAWAII, ISLAND OF MAUI

16587000 Honopou Stream near Huelo

LOCATION.--Lat 20°53'20", long 156°15'20", on left bank 75 ft upstream from Wailoa ditch intake, 2.2 miles southwest of Huelo, and 2.5 miles west of Kailua.

DRAINAGE AREA.--0.64 sq mi.

PERIOD OF RECORD.--December 1910 to current year. Monthly discharge only for some periods, published in WSP 1319.

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.

AVERAGE DISCHARGE.--61 years (1911-72), 4.77 cfs (3,460 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 207 cfs July 15 (gage height, 2.91 ft), from rating curve extended as explained below; minimum, 0.29 cfs Oct. 17-19.

Period of record: Maximum discharge, 5,710 cfs Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 110 cfs by test of model of station site; minimum, 0.02 cfs several days in 1933, 1934.

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

REVISIONS (FISCAL YEARS).--WSP 1219: 1914(M), 1916-50(N). WSP 1249: 1948-50(P). WSP 1569: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	.41	1.8	1.2	.72	2.2	.63	4.4	.81	.55	1.1	4.5
2	.63	.41	1.9	1.1	.63	1.9	1.4	5.0	.72	.72	1.0	1.9
3	.81	.35	1.5	1.1	.63	1.9	.81	3.4	.72	.47	1.0	2.0
4	.47	.35	1.4	1.1	.63	2.4	2.2	3.2	.81	.41	.91	3.5
5	.47	.35	1.2	1.1	.81	1.0	.81	6.0	.81	.35	.81	1.8
6	.47	.41	1.2	1.9	1.6	1.6	.72	3.8	.72	.55	.81	1.6
7	.47	.41	1.1	1.9	1.9	1.5	1.8	3.2	.63	2.5	.72	1.5
8	.41	.47	1.1	2.7	2.9	1.4	8.6	3.0	.63	1.4	.72	1.5
9	.41	.47	1.0	1.4	2.0	1.2	9.9	2.7	.72	1.1	.72	1.4
10	.41	3.3	1.2	1.1	9.3	1.2	7.0	2.5	.63	.72	.81	1.4
11	.35	1.8	2.4	1.1	5.0	1.1	3.4	2.4	.55	.63	1.1	1.4
12	.35	1.9	4.0	1.0	4.6	1.1	2.5	2.2	.55	.63	.81	1.2
13	.35	1.9	5.2	1.0	3.8	1.0	2.0	2.2	.55	3.9	1.6	1.2
14	.35	.91	1.0	.91	3.4	1.0	1.9	2.0	.47	2.3	3.3	1.1
15	.35	1.0	3.5	.91	2.9	.91	1.8	1.9	.47	2.2	.91	1.1
16	.35	1.2	2.9	.81	2.7	.91	1.1	1.8	.47	6.8	1.6	1.0
17	.35	3.1	2.4	.81	2.5	.81	4.2	1.6	.47	2.7	2.2	1.0
18	.35	4.4	2.2	.72	2.6	.81	2.7	1.5	.55	2.2	6.0	1.0
19	1.2	1.6	3.2	.72	8.0	.61	2.5	1.5	.55	1.9	3.6	1.0
20	.55	2.2	3.0	.81	5.0	.91	3.0	1.6	.47	1.6	1.5	.91
21	.45	1.5	2.7	1.2	4.4	1.1	2.5	1.5	.41	1.5	3.6	.91
22	1.8	1.4	2.0	1.6	4.2	.81	4.1	1.2	.47	1.4	2.7	1.0
23	1.3	2.0	1.9	.91	3.8	.72	5.3	1.8	.63	1.2	2.5	1.1
24	.72	1.1	1.9	.81	3.8	.72	3.2	1.4	.47	1.2	2.2	1.0
25	.55	5.4	1.8	.91	5.2	.72	2.9	1.5	.47	1.1	2.0	.81
26	.47	2.9	1.6	.91	3.0	.72	3.6	1.2	.47	2.8	1.9	.72
27	.47	2.5	1.6	1.7	2.7	.72	3.2	1.1	1.1	3.8	1.8	.81
28	.47	2.2	1.5	1.2	2.5	.72	4.8	1.0	.72	1.8	1.6	1.1
29	.47	2.0	1.4	.91	2.4	.91	8.4	.91	.55	1.4	3.4	.81
30	.47	1.9	2.2	.81	-----	.72	3.8	.91	1.7	1.2	2.9	.72
31	.41	-----	1.4	.81	-----	.63	-----	.81	-----	1.1	1.8	-----
TOTAL	17.98	59.74	72.2	35.16	161.12	34.95	110.67	69.23	19.29	71.93	71.12	40.99
MEAN	.58	1.99	2.33	1.13	5.56	1.13	3.69	2.23	.64	2.32	2.29	1.37
MAX	1.8	11	10	2.7	29	2.4	11	6.0	1.7	22	15	4.5
MIN	.35	.35	1.0	.72	.63	.63	.63	.81	.41	.35	.72	.72
AC-FT	36	118	143	70	320	69	220	137	38	143	141	81

CAL YR 1971 TOTAL 1,153.75 MEAN 3.16 MAX 155 MIN .29 AC-FT 2,290  
 WTR YR 1972 TOTAL 764.38 MEAN 2.09 MAX 29 MIN .35 AC-FT 1,520

PEAK DISCHARGE (BASE, 270 CFS).--No peak above base.

## 16588000 Waiioa ditch at Honopou, near Huelo

LOCATION.--Lat 20°53'20", long 156°15'19", on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mile west of Lupi, and 2.2 miles 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).

AVERAGE DISCHARGE.--49 years (1923-72), 173 cfs (125,300 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 326 cfs Apr. 1, 1967; no flow Jan. 24-27, 1923.

REMARKS.--Records excellent. Waiioa 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. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	206	60	135	181	89	109	44	288	67	110	133	250
2	159	64	222	142	82	102	82	291	63	207	110	167
3	137	58	145	130	77	97	144	249	61	141	111	196
4	88	52	123	176	77	105	265	212	82	100	97	288
5	76	50	111	142	130	97	173	295	108	85	93	171
6	131	56	109	200	169	88	127	267	70	114	96	130
7	116	97	107	274	239	82	284	199	63	265	82	114
8	86	182	98	279	300	78	302	174	62	269	77	105
9	80	203	104	226	302	75	313	156	94	256	72	98
10	74	269	174	174	292	71	307	137	66	162	90	96
11	66	275	294	150	266	69	293	125	60	125	262	110
12	61	249	302	135	238	65	254	116	54	117	134	93
13	61	247	306	121	199	63	197	113	51	225	251	83
14	55	174	294	113	169	61	154	111	50	268	264	79
15	53	186	267	124	143	58	131	113	48	245	164	77
16	49	173	250	104	128	56	177	95	48	303	219	71
17	47	234	200	96	121	55	288	87	54	223	230	69
18	48	301	200	90	248	54	207	83	151	172	306	71
19	127	234	265	86	289	52	169	79	171	141	301	73
20	124	269	269	92	265	54	216	96	74	124	310	71
21	83	239	268	121	215	75	178	168	55	114	289	67
22	254	200	247	213	223	52	279	100	97	102	227	74
23	179	264	192	142	182	48	293	188	157	94	180	100
24	152	312	165	129	166	47	256	124	72	88	155	86
25	100	308	153	99	196	51	200	154	67	101	135	62
26	90	270	142	86	116	47	252	142	80	254	126	57
27	84	211	146	148	117	43	265	94	248	287	122	76
28	78	178	140	214	116	86	269	82	228	264	109	124
29	67	164	127	163	118	82	283	76	120	188	207	134
30	66	147	248	132	-----	68	270	72	174	148	227	85
31	62	-----	254	99	-----	48	-----	68	-----	152	159	-----
TOTAL	3,059	5,726	6,057	4,581	5,272	2,138	6,672	4,554	2,795	5,444	5,338	3,277
MEAN	98.7	191	195	148	182	69.0	222	147	93.2	176	172	109
MAX	254	312	306	279	302	109	313	295	248	303	310	288
MIN	47	50	98	86	77	43	44	68	48	85	72	57
AC-FT	6,070	11,360	12,010	9,090	10,460	4,240	13,230	9,030	5,540	10,800	10,590	6,500

CAL YR 1971 TOTAL 46,269.9 MEAN 127 MAX 312 MIN 1.8 AC-FT 91,780  
 WTR YR 1972 TOTAL 54,913.0 MEAN 150 MAX 313 MIN 43 AC-FT 108,900

HAWAII, ISLAND OF MAUI

16589000 New Hanakua ditch at Honopou, near Huelo

LOCATION.--Lat 20°53'28", long 156°15'22", on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, and 2.1 miles 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.

AVERAGE DISCHARGE.--54 years, 36.7 cfs (26,590 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 182 cfs Nov. 2, 1967; no flow at times.

REMARKS.--Records excellent. Ditch diverts from streams between Waikamoi Stream and Halehaku Gulch above Center and Lowrie ditches for irrigation in central Maui.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	.09	.89	1.7	.66	1.8	.15	99	.46	.85	1.3	47
2	.64	.09	26	.89	.56	1.7	25	135	.41	87	.77	4.2
3	2.5	.09	1.2	.82	.52	1.5	21	16	.39	1.5	.76	15
4	.38	.07	.82	1.6	.56	1.8	111	2.8	.42	.49	.66	110
5	.15	.67	.70	.76	.47	1.4	6.5	143	1.0	.34	.57	2.3
6	1.0	.07	.58	24	1.7	1.2	1.0	60	.49	8.0	.57	1.4
7	1.1	.07	.53	56	72	1.1	122	2.7	.39	146	.51	1.2
8	.22	.09	.43	141	145	1.1	157	2.3	.35	93	.47	1.1
9	.15	41	.34	16	54	.97	160	2.1	.65	30	.44	.99
10	.12	76	1.4	1.2	.06	.89	159	1.8	.49	1.6	.49	.92
11	.12	78	96	.96	.06	.84	143	1.7	.33	.66	67	.61
12	.12	57	115	.82	.06	.78	30	1.5	.26	.53	1.3	.51
13	.12	79	124	.72	4.7	.73	1.4	1.5	.22	37	67	.45
14	.12	4.0	154	.64	4.6	.67	1.1	1.4	.20	80	86	.41
15	.12	50	109	.68	2.5	.61	.96	1.3	.18	62	3.0	.40
16	.12	13	58	.57	2.1	.55	48	1.1	.15	136	45	.35
17	.09	127	9.6	.51	1.8	.50	89	1.1	.15	12	24	.33
18	.09	127	4.6	.53	105	.47	11	1.0	11	2.1	149	.30
19	15	13	112	.52	72	.42	1.6	.93	13	1.6	145	.36
20	8.0	44	125	.75	14	.45	6.5	2.1	.34	1.3	155	.31
21	5.5	7.9	100	2.6	5.5	.75	1.8	32	.14	1.2	88	.30
22	115	3.2	43	58	5.3	.45	109	1.4	.99	1.0	7.4	.46
23	55	66	2.0	1.4	3.7	.33	146	51	25	.93	3.2	1.4
24	3.0	149	.18	1.2	3.5	.31	25	1.9	.28	.87	2.5	1.3
25	.50	127	.18	.80	37	.30	2.5	37	.17	.88	2.2	.56
26	.40	33	.15	.71	46	.28	37	8.1	.15	84	2.0	.39
27	.34	8.7	2.2	24	15	.26	67	.80	87	121	1.8	.42
28	.22	4.0	1.1	34	2.8	.23	79	.65	25	69	1.6	1.3
29	.15	1.4	1.0	1.1	2.7	.25	110	.57	.50	3.0	55	.80
30	.12	1.1	56	.86	-----	.23	51	.52	49	1.1	46	.48
31	.09	-----	23	.67	-----	.17	-----	.47	-----	1.1	1.8	-----
TOTAL	237.48	1,110.94	1,168.90	376.01	603.85	23.04	1,723.51	612.74	219.11	986.05	960.34	195.55
MEAN	7.66	37.0	37.7	12.1	20.8	.74	57.5	19.8	7.30	31.8	31.0	6.52
MAX	115	149	154	141	145	1.8	160	143	87	146	155	110
MIN	.09	.07	.15	.51	.06	.17	.15	.47	.14	.34	.44	.30
AC-FT	471	2,200	2,320	746	1,200	46	3,420	1,220	435	1,960	1,900	388

CAL YR 1971 TOTAL 8,573.55 MEAN 23.5 MAX 170 MIN 0 AC-FT 17,010  
 WTR YR 1972 TOTAL 8,217.52 MEAN 22.5 MAX 160 MIN .06 AC-FT 16,300

## 16592000 Lowrie ditch at Honopou Gulch, near Huelo

LOCATION.--Lat 20°54'57", long 156°15'07", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.7 miles 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 miles downstream at different datum.

AVERAGE DISCHARGE.--58 years (1910-26, 1930-72), 38.8 cfs (28,110 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 116 cfs Oct. 31, 1921; no flow at times.

REMARKS.--Records excellent. Lowrie ditch receives water from Center ditch at Nailiilihaele Stream and diverts from additional streams westward to Maliko Gulch for irrigation in central Maui.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	7.7	17	12	13	12	4.8	44	6.4	14	14	34
2	17	5.2	22	10	13	17	5.9	69	6.1	15	6.1	13
3	15	3.5	18	11	14	16	19	29	6.0	9.9	5.9	12
4	16	3.1	15	21	8.5	19	29	26	6.2	8.5	11	49
5	14	3.0	8.2	23	8.3	15	23	69	8.0	10	5.0	22
6	12	2.8	15	21	9.3	14	16	44	5.7	9.6	5.0	31
7	10	3.1	9.6	27	40	13	43	25	5.7	45	4.6	30
8	8.1	4.0	8.2	67	93	13	89	18	5.3	27	4.4	17
9	11	18	7.7	34	48	17	94	23	7.2	21	7.4	14
10	8.2	37	8.5	32	9.6	13	76	21	6.1	14	8.4	14
11	6.9	58	38	28	11	9.3	59	23	5.1	14	31	13
12	2.8	37	73	18	12	11	20	22	4.7	10	14	12
13	2.6	53	77	14	20	28	22	21	4.5	18	39	8.2
14	2.5	16	87	12	28	26	24	20	4.4	55	50	7.8
15	2.4	24	61	8.8	31	15	21	20	4.2	43	26	7.5
16	2.4	29	52	6.8	28	12	46	15	4.0	80	23	7.0
17	2.2	62	30	6.1	24	11	37	14	4.0	22	27	6.7
18	2.2	71	28	5.9	63	8.5	18	12	4.3	22	70	6.7
19	12	24	53	5.9	84	6.4	18	13	5.3	13	78	7.0
20	19	35	62	6.4	56	6.8	23	12	4.1	13	90	6.2
21	11	17	45	7.7	39	16	21	13	4.8	8.2	57	6.0
22	48	23	28	37	43	7.6	54	8.0	8.1	15	36	7.4
23	37	60	14	19	28	6.4	66	15	12	14	30	9.7
24	15	84	12	17	31	6.1	20	8.8	8.9	14	33	12
25	17	82	11	16	74	5.9	22	18	7.9	15	28	6.7
26	14	53	11	11	46	5.9	22	14	2.7	47	30	5.7
27	14	40	14	14	36	5.4	27	7.0	28	58	21	5.9
28	8.2	42	32	19	19	5.7	42	10	21	28	20	9.6
29	9.1	34	30	12	4.8	6.8	67	10	9.9	30	26	6.8
30	9.1	19	41	6.6	-----	5.9	38	6.6	26	29	52	6.4
31	8.8	-----	17	15	-----	5.0	-----	6.3	-----	20	32	-----
TOTAL	388.5	950.4	945.2	544.2	934.5	359.7	1,066.7	656.7	236.6	742.2	884.8	394.3
MEAN	12.5	31.7	30.5	17.6	32.2	11.6	35.6	21.2	7.89	23.9	28.5	13.1
MAX	48	84	87	67	93	28	94	69	28	80	90	49
MIN	2.2	2.8	7.7	5.9	4.8	5.0	4.8	6.3	2.7	8.2	4.4	5.7
AC-FT	771	1,890	1,870	1,080	1,850	713	2,120	1,300	469	1,470	1,760	782

CAL YR 1971 TOTAL 8,216.46 MEAN 22.5 MAX 106 MIN .60 AC-FT 16,300  
 WTR YR 1972 TOTAL 8,103.8 MEAN 22.1 MAX 94 MIN 2.2 AC-FT 16,070

## HAWAII, ISLAND OF MAUI

16594000 Haiku ditch at Honopou Gulch, near Kailua

LOCATION.--Lat 20°55'05", long 156°14'55", on right bank on west side of Honopou Gulch, 160 ft below new Government Road, 2.5 miles northwest of Kailua, and 5 miles 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 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, at site 0.9 mile downstream at different datum.

AVERAGE DISCHARGE.--57 years (1910-11, 1913-14, 1915-28, 1930-72), 26.5 cfs (19,200 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 209 cfs Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

REMARKS.--Records excellent. Ditch diverts from all streams between Nailiilihaele Stream and Maliko Gulch for irrigation in central Maui.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	.46	1.4	1.3	1.5	7.1	1.2	13	1.3	1.3	.93	4.5
2	.70	.46	1.5	1.2	2.7	2.2	1.4	48	1.2	1.3	.83	2.7
3	.82	.46	1.3	1.1	1.5	2.0	1.5	6.3	1.2	1.0	1.6	1.5
4	.65	.43	1.2	1.1	.82	2.5	1.7	5.4	1.2	.94	3.0	29
5	.55	.43	1.1	1.1	1.0	2.0	1.4	64	1.2	.88	1.2	4.9
6	.50	.46	1.2	1.2	1.1	2.3	1.4	28	1.1	.88	.74	4.1
7	.50	.43	1.1	2.1	6.2	1.9	5.2	3.3	1.1	18	.68	2.9
8	.87	.55	1.0	44	102	2.8	92	2.8	1.1	3.2	.68	1.1
9	2.6	.50	1.0	3.3	44	2.1	89	2.4	1.6	4.0	.71	1.1
10	.76	13	1.1	4.6	19	1.9	53	2.4	1.7	3.3	.78	1.1
11	.46	19	1.5	3.7	70	1.8	23	5.2	1.1	1.8	2.7	1.2
12	.46	3.5	83	1.5	40	1.7	3.3	4.7	1.0	.84	.96	1.1
13	.46	7.5	51	1.0	19	1.8	1.8	4.1	1.0	9.5	3.0	1.1
14	.55	1.0	85	1.1	2.0	1.9	1.6	2.3	.98	40	19	.99
15	.50	1.2	18	1.1	3.2	1.8	1.5	1.9	.98	34	4.6	.95
16	.50	.82	18	1.0	3.5	1.6	26	1.8	1.0	74	3.5	.91
17	.50	19	5.4	.94	2.2	1.5	11	1.7	1.1	2.3	2.6	.88
18	.50	28	3.4	.82	58	1.6	5.5	1.7	1.1	2.5	77	.88
19	.72	4.0	27	.82	83	1.4	4.7	1.6	1.2	3.2	88	.90
20	1.5	2.5	14	.82	38	1.4	4.0	1.6	.99	2.9	88	.89
21	2.9	1.0	12	1.1	4.4	1.4	2.0	1.8	.97	2.5	15	.94
22	11	.88	4.7	14	5.6	1.4	26	1.6	.95	2.2	4.9	1.1
23	1.1	7.3	2.6	1.4	5.3	1.3	44	1.7	1.9	1.4	5.3	1.0
24	2.4	69	1.9	1.2	4.5	1.4	2.3	1.6	.88	.87	4.4	1.2
25	2.3	54	2.5	2.2	3.6	1.3	5.3	1.6	.90	.86	2.4	.92
26	5.8	6.7	2.3	1.8	.70	1.3	4.9	1.5	1.7	26	1.6	.91
27	2.3	4.6	2.0	1.1	.70	1.3	4.5	1.4	3.8	78	1.4	.95
28	.50	2.0	1.4	1.1	.70	1.4	9.6	1.3	1.1	5.7	1.3	1.2
29	.46	1.8	1.2	1.1	7.6	1.7	50	1.3	1.9	3.7	1.8	.92
30	.43	1.4	2.7	1.0	-----	1.4	5.0	1.3	3.9	3.1	15	.92
31	.43	-----	1.5	.94	-----	1.3	-----	1.3	-----	1.0	4.7	-----
TOTAL	44.54	252.38	333.0	100.74	531.82	58.5	483.8	218.6	41.15	331.17	358.31	72.76
MEAN	1.44	8.41	10.7	3.25	16.3	1.89	16.1	7.05	1.37	10.7	11.6	2.43
MAX	11	69	85	44	102	7.1	92	64	3.9	78	88	29
MIN	.43	.43	1.0	.82	.70	1.3	1.2	1.3	.88	.84	.68	.88
AC-FT	88	501	661	200	1,050	116	960	434	82	657	711	144

CAL YR 1971 TOTAL 3,698.86 MEAN 10.1 MAX 114 MIN .14 AC-FT 7,340  
 WTR YR 1972 TOTAL 2,826.77 MEAN 7.72 MAX 102 MIN .43 AC-FT 5,610

## 16599500 Opana tunnel at Kailiili

LOCATION.--Lat 20°51'04", long 156°16'17", on left bank at tunnel outlet, 0.3 mile north of Kailiili, and 2.7 miles 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).

AVERAGE DISCHARGE.--7 years, 3.46 cfs (2,510 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 13 cfs Apr. 1, 1969, Apr. 9, 10, 1972; minimum daily, 0.12 cfs Oct. 13-18, Nov. 4-7, 1971.

REMARKS.--Records good. Tunnel diverts from Opana Gulch for domestic use in the Kokomo, Makawao and Pukalani areas. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.47	.17	.72	1.8	1.0	2.0	.52	3.2	.72	.42	.27	2.6
2	.42	.14	1.1	1.2	.79	1.8	1.5	3.4	.72	.42	.27	1.6
3	.37	.14	.94	1.0	.72	1.6	2.0	2.6	.72	.37	.27	2.0
4	.23	.12	.65	1.1	.65	2.4	1.2	2.4	.94	.27	.23	6.8
5	.17	.12	.52	.94	2.0	3.2	1.1	2.6	1.0	.27	.23	2.5
6	.17	.12	.47	.94	3.0	2.2	.79	2.4	.72	.32	.20	1.4
7	.20	.12	.52	.94	2.0	1.8	1.1	2.0	.65	.37	.20	1.0
8	.20	.17	.42	1.6	8.1	1.6	5.5	2.0	.58	.37	.20	.79
9	.17	.42	.37	1.4	12	1.4	13	1.8	.65	.32	.17	.65
10	.14	3.8	.53	1.0	9.6	1.4	13	1.8	.58	.27	.20	.52
11	.14	6.0	2.7	.79	5.5	1.3	9.6	1.6	.52	.27	.27	.47
12	.14	2.8	6.6	.72	4.1	1.2	7.2	1.6	.47	.27	.27	.42
13	.12	2.5	9.2	.65	3.2	1.1	5.8	1.6	.42	1.2	.37	.37
14	.12	1.3	10	.58	2.6	1.1	4.4	1.6	.42	3.9	.47	.32
15	.12	.65	5.2	.58	2.3	1.0	3.7	1.4	.42	4.3	.32	.32
16	.12	.79	3.4	.58	2.0	.94	5.5	1.4	.42	5.1	.23	.32
17	.12	1.1	2.3	.52	2.0	.86	7.5	1.3	.47	1.8	.27	.27
18	.12	2.4	1.8	.47	7.5	.86	6.8	1.2	.72	1.1	4.5	.27
19	.45	1.4	2.9	.42	9.0	.79	4.9	1.2	.65	.79	9.2	.27
20	1.2	1.4	3.1	.42	5.1	.79	4.2	1.3	.47	.65	9.2	.27
21	.47	1.4	3.3	1.1	3.8	.86	3.7	1.6	.42	.52	4.4	.23
22	4.2	1.3	3.2	2.0	3.3	.72	4.6	1.4	.47	.47	1.8	.23
23	2.3	3.7	2.0	2.5	3.2	.72	4.8	1.4	.47	.42	1.1	.23
24	1.2	8.5	1.6	2.8	2.9	.65	3.8	1.2	.42	.37	.79	.20
25	.65	7.0	1.4	1.6	7.6	.65	3.3	1.2	.42	.37	.58	.20
26	.47	3.7	1.2	.94	4.5	.65	3.5	1.2	.42	.37	.47	.20
27	.37	2.2	1.1	2.1	3.1	.58	4.1	1.0	2.1	.42	.52	.20
28	.27	1.4	1.0	4.1	2.5	.65	3.8	.94	1.6	.47	.42	.23
29	.23	1.1	.94	2.6	2.3	.86	3.7	.86	.86	.42	3.3	.23
30	.20	.94	2.0	2.2	-----	.79	3.4	.79	.58	.37	5.6	.20
31	.17	-----	1.4	1.4	-----	.65	-----	.79	-----	.32	2.2	-----
TOTAL	15.72	56.90	72.58	40.99	116.36	37.12	138.01	50.78	20.02	27.30	48.52	25.31
MEAN	.51	1.90	2.34	1.32	4.01	1.20	4.60	1.64	.67	.88	1.57	.84
MAX	4.2	8.5	10	4.1	12	3.2	13	3.4	2.1	5.1	9.2	6.8
MIN	.12	.12	.37	.42	.65	.58	.52	.79	.42	.27	.17	.20
AC-FT	31	113	144	81	231	74	274	101	40	54	96	50

CAL YR 1971 TOTAL 653.78 MEAN 2.35 MAX 11 MIN .12 AC-FT 1,700

WTR YR 1972 TOTAL 647.61 MEAN 1.77 MAX 13 MIN .12 AC-FT 1,290

## 16620000 Honokohau Stream near Honokohau

LOCATION.--Lat 20°57'48", long 156°35'22", on right bank 1,000 ft upstream from intake of Honokohau ditch and 4.1 miles southeast of Honokohau.

DRAINAGE AREA.--4.11 sq mi.

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.

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.

AVERAGE DISCHARGE.--56 years (1913-19, 1922-72), 40.2 cfs (29,120 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 896 cfs Feb. 8 (gage height, 5.03 ft), from rating curve extended above 180 cfs; minimum, 9.3 cfs Apr. 1.

Period of record: Maximum discharge, 3,740 cfs Dec. 14, 1942, Aug. 30, 1957 (gage height, 8.40 ft), from rating curve extended above 180 cfs; minimum, 8.4 cfs May 1, 1945, Jan. 5, 1946.

REMARKS.--Records good. No diversion above station. All medium and low flow, together with the inflow from 2 development tunnels below station, is diverted into Honokohau ditch. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	11	17	11	10	11	9.7	72	12	28	13	17
2	20	12	55	11	10	11	85	52	12	71	12	13
3	16	13	14	11	10	17	17	19	15	16	16	18
4	14	11	12	16	92	121	34	15	18	13	12	20
5	13	11	11	12	73	26	19	105	15	13	13	13
6	12	11	12	15	20	12	15	27	13	20	15	13
7	12	13	12	17	36	17	51	15	12	47	12	12
8	13	32	11	65	251	13	205	16	14	16	13	12
9	15	22	11	15	170	11	297	23	27	20	12	12
10	13	101	11	12	89	10	80	15	14	16	16	12
11	12	30	35	11	15	10	23	14	12	13	24	12
12	13	30	36	11	15	10	35	15	12	13	16	12
13	12	21	23	10	13	10	18	14	12	44	68	12
14	12	17	32	10	12	10	14	16	12	25	34	12
15	12	13	13	10	13	10	15	18	12	35	14	12
16	11	24	14	10	12	9.7	14	13	13	112	21	12
17	11	17	11	10	11	10	49	13	20	17	53	12
18	11	26	11	10	153	10	29	13	32	14	60	12
19	60	14	34	11	55	9.7	48	13	20	13	62	12
20	15	20	45	11	17	10	37	40	13	12	239	12
21	12	12	20	13	13	17	16	30	12	14	21	12
22	30	12	12	25	12	11	35	44	18	12	15	12
23	20	53	11	11	16	10	37	34	19	12	14	12
24	14	59	11	87	79	11	19	19	14	13	13	13
25	20	27	11	15	80	10	19	20	15	12	13	12
26	20	16	11	11	13	9.7	17	15	14	98	13	11
27	17	13	11	26	12	9.7	18	13	40	37	13	13
28	12	13	14	17	11	11	25	13	14	28	13	18
29	12	16	12	12	11	12	79	13	12	14	83	13
30	11	17	30	11	-----	11	32	12	15	16	41	14
31	11	-----	15	10	-----	9.7	-----	12	-----	18	15	-----
TOTAL	497	687	578	527	1,324	470.5	1,391.7	753	483	832	979	392
MEAN	16.0	22.9	18.6	17.0	45.7	15.2	46.4	24.3	16.1	26.8	31.6	13.1
MAX	60	101	55	87	251	121	297	105	40	112	239	20
MIN	11	11	11	10	10	9.7	9.7	12	12	12	12	11
AC-FT	986	1,360	1,150	1,050	2,630	933	2,760	1,490	958	1,650	1,940	778

CAL YR 1971 TOTAL 10,642.0 MEAN 29.2 MAX 336 MIN 11 AC-FT 21,110  
 WTR YR 1972 TOTAL 8,914.2 MEAN 24.4 MAX 297 MIN 9.7 AC-FT 17,680

PEAK DISCHARGE (BASE, 1,100 CFS).--No peak above base.

16638500 Kahoma Stream at Lahaina

LOCATION.--Lat 20°53'10", long 156°40'36", on right bank 0.2 mile west of Kelaweia, 0.6 mile northeast of Lahaina, 0.6 mile downstream from Kanaha Stream, and 0.9 mile upstream from mouth.

DRAINAGE AREA.--5.22 sq mi.

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

GAGE.--Water-stage recorder. Altitude of gage is 90 ft (from topographic map).

AVERAGE DISCHARGE.--9 years (1963-72), 4.62 cfs (3,350 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 894 cfs Feb. 4 (gage height, 7.34 ft), from rating curve extended as explained below; no flow many days.

Period of record: Maximum discharge, 2,490 cfs July 11, 1965 (gage height, 11.03 ft), from rating curve extended above 21 cfs on basis of slope-area measurements at gage heights 5.90, 6.01, 7.58, 8.07 and 11.03 ft; no flow many days each year.

Maximum discharge of flood of May 13, 1960, 7,750 cfs, by slope-area measurement at site 0.5 mile upstream.

REMARKS.--Records fair except those below 100 cfs, which are poor. 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.

REVISIONS (WATER YEARS).--WSP 2137: 1963-65(P).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	0	0	0	.01	0	0	0	0	0	.40
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	.32	1.3	0	0	0	0	0	0
4	0	0	0	.82	64	127	0	.01	0	0	0	0
5	0	0	0	.08	28	4.3	0	.88	0	0	0	0
6	0	0	0	0	.26	1.4	0	1.1	0	0	.04	0
7	0	0	0	3.6	.04	1.8	.37	0	0	0	.05	0
8	0	0	0	26	15	.87	16	0	0	0	.05	0
9	0	0	0	.30	70	.62	107	0	0	0	0	0
10	0	53	0	.04	38	.52	113	0	0	0	0	0
11	0	.40	.02	0	.15	.47	1.8	0	0	0	0	0
12	0	.31	2.9	0	.52	.42	1.8	0	.03	0	0	0
13	0	.20	0	0	.42	.35	1.1	0	0	13	0	0
14	0	0	29	0	.12	.23	.57	0	0	9.9	0	0
15	0	0	0	.26	0	.21	.87	0	0	0	0	0
16	0	0	.42	0	0	.09	1.2	0	0	0	0	0
17	0	0	0	0	0	.07	.80	0	.75	0	.26	0
18	0	4.1	0	0	.72	.04	.47	0	1.8	0	12	0
19	.15	.18	0	0	.09	.02	.57	0	.18	0	3.8	0
20	0	1.4	0	0	.11	0	.47	0	0	0	10	0
21	0	.38	0	0	.06	.01	.38	.14	0	0	.03	0
22	3.1	.42	.04	0	.05	.02	.57	.45	0	0	0	0
23	0	2.7	0	0	.06	0	.47	.95	0	0	0	0
24	0	5.0	.03	35	48	0	.35	0	0	0	0	0
25	0	1.6	.30	1.7	23	0	.16	0	0	0	0	0
26	0	0	.58	0	.21	0	.27	0	0	0	0	0
27	0	0	.49	0	.07	0	.35	.05	.48	0	0	0
28	0	0	.83	0	.02	0	8.6	0	0	0	0	0
29	0	0	.76	.90	.01	0	2.8	0	0	0	0	0
30	0	0	.31	1.7	-----	0	.04	0	0	0	0	0
31	0	-----	0	1.4	-----	0	-----	0	-----	0	0	-----
TOTAL	3.25	69.69	35.68	71.80	289.23	139.75	260.01	3.58	3.24	22.9	26.23	.40
MEAN	.10	2.32	1.15	2.32	9.97	4.51	8.67	.12	.11	.74	.85	.013
MAX	3.1	53	29	35	70	127	113	1.1	1.8	13	12	.40
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	6.4	138	71	142	574	277	516	7.1	6.4	45	52	.8

CAL YR 1971 TOTAL 2,299.18 MEAN 6.30 MAX 390 MIN 0 AC-FT 4,560  
 WTR YR 1972 TOTAL 925.76 MEAN 2.53 MAX 127 MIN 0 AC-FT 1,840

PEAK DISCHARGE (BASE, 590 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2-4	2300	7.34	894	3-4	0600	7.30	650
2-24	2100	7.30	650	4-10	0030	7.34	674

HAWAII, ISLAND OF MAUI

16646200 Olowalu Stream at Olowalu

LOCATION.--Lat 20°49'23", long 156°37'15", on downstream side of center pier of plantation road bridge, 0.6 mile northeast of Olowalu, and 5.5 miles southeast of Lahaina.

DRAINAGE AREA.--4.08 sq mi.

PERIOD OF RECORD.--May 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

AVERAGE DISCHARGE.--9 years, 4.02 cfs (2,910 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 840 cfs Mar. 4 (gage height, 4.58 ft), from rating curve extended as explained below; no flow most of time.  
 Period of record: Maximum discharge, 1,300 cfs Mar. 24, 1967 (gage height, 5.40 ft), from rating curve extended above 66 cfs on basis of slope-area measurements at gage heights 3.39, 3.58, 3.72, 5.31 and 5.40 ft; no flow most of time each year.  
 Maximum discharge of flood of Nov. 2, 1961, 743 cfs, by slope-area measurement.

REMARKS.--Records good. All low flow is diverted 1.5 miles above station by Olowalu ditch for domestic use and irrigation of sugarcane in vicinity of Olowalu. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0		0	0	0	0		0		0	44
2	0	0		0	0	0	0		0		0	.38
3	0	0		0	0	18	0		.33		0	0
4	0	0		0	34	278	0		.06		0	0
5	0	0		0	67	49	0		0		0	0
6	0	0		0	4.0	6.8	0		0		0	0
7	0	0		0	0	26	0		0		0	0
8	0	0		0	11	.70	22		0		0	0
9	0	0		0	26	0	105		0		0	0
10	0	.25		0	13	0	55		0		0	0
11	0	0		0	.04	0	5.9		0		0	0
12	0	0		0	0	0	.40		0		0	0
13	0	0		0	0	0	0		0		0	0
14	0	0		0	0	0	0		0		0	0
15	0	0		0	0	0	0		0		0	0
16	0	0		0	0	0	0		0		0	0
17	0	0		0	0	0	0		0		0	0
18	0	0		0	0	0	0		0		0	0
19	.54	0		0	0	0	0		0		.25	0
20	0	0		0	0	0	0		0		33	0
21	0	0		0	0	0	0		0		.37	0
22	0	0		0	0	0	0		0		0	0
23	0	0		0	0	0	0		0		0	0
24	0	0		96	61	0	0		0		0	0
25	0	0		11	90	0	0		0		0	0
26	0	0		.23	12	0	0		0		0	0
27	0	0		0	3.4	0	0		0		0	0
28	0	0		0	.46	0	0		0		0	0
29	0	0		0	0	0	0		0		0	0
30	0	0		0	-----	0	0		0		0	0
31	0	-----		0	-----	0	-----		-----		46	-----
TOTAL	.54	.25	0	107.23	321.90	378.50	198.30	0	.39	0	79.62	44.38
MEAN	.019	.008	0	3.46	11.1	12.2	6.61	0	.013	0	2.57	1.48
MAX	.54	.25	0	96	90	278	105	0	.33	0	46	44
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	1.2	.5	0	213	638	751	393	0	.8	0	158	88

CAL YR 1971 TOTAL 1,069.85 MEAN 2.93 MAX 205 MIN 0 AC-FT 2,120  
 WTR YR 1972 TOTAL 1,131.15 MEAN 3.09 MAX 278 MIN 0 AC-FT 2,240

PEAK DISCHARGE (BASE, 340 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-24	0700	3.56	414	3- 4	0600	4.58	840
2- 4	2230	3.49	392	8-31	2200	3.60	427
2-24	2030	4.48	790				

16700000 Waiakea Stream near Mountain View

LOCATION.--Lat 19°38'30", long 155°10'28", on left bank 200 ft upstream from Olaa Flume Road, 7.3 miles northwest of Mountain View, and 8.0 miles southwest of Hilo Post Office.

DRAINAGE AREA.--17.4 sq mi.

PERIOD OF RECORD.--September 1930 to current year. Prior to July 1960, published as "at middle flume house, near Mountain View."

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.

AVERAGE DISCHARGE.--42 years, 11.9 cfs (8,620 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 537 cfs Apr. 16 (gage height, 4.41 ft), from rating curve extended above 160 cfs; minimum, 1.4 cfs Mar. 31, Apr. 1.  
 Period of record: Maximum discharge, 565 cfs Mar. 14, 1942, Aug. 26, 1970, from rating curve extended above 160 cfs; maximum gage height, 4.45 ft Aug. 26, 1970; no flow at times.

REMARKS.--Records good. No diversion above station. Large part of flow comes from 3 tunnels. Records of chemical analyses and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--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).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	3.8	26	18	13	7.7	1.8	23	5.1	10	17	9.2
2	4.3	4.2	28	17	12	7.3	13	25	4.9	9.6	19	8.8
3	4.0	4.0	26	18	11	6.9	6.3	22	4.7	9.0	16	8.3
4	3.8	3.8	23	18	10	6.6	5.2	24	4.5	8.3	14	11
5	3.4	4.8	22	18	9.6	6.3	6.5	24	4.2	7.7	13	9.3
6	9.0	9.9	27	18	8.9	6.1	6.6	21	4.0	7.2	12	8.8
7	11	9.7	26	18	8.1	5.7	6.0	19	3.9	8.8	11	8.3
8	8.2	9.0	24	19	7.5	5.4	14	18	3.8	8.9	10	7.7
9	7.1	11	24	17	15	5.2	22	17	3.6	11	9.4	7.0
10	6.4	9.9	22	17	18	4.8	32	15	3.7	10	8.5	6.5
11	6.0	11	24	16	15	4.6	29	14	3.6	9.8	7.9	6.2
12	5.6	13	24	15	15	4.3	29	13	3.3	9.6	7.5	5.8
13	5.2	13	36	14	15	4.1	27	12	3.0	9.8	7.6	5.6
14	5.0	16	51	14	14	4.0	26	11	2.9	13	8.5	5.3
15	4.8	26	67	13	13	3.8	22	11	2.6	13	7.5	5.0
16	4.6	21	60	12	12	3.6	37	9.8	2.4	14	6.9	4.6
17	4.4	39	54	11	11	3.4	38	9.3	2.4	13	6.9	4.5
18	4.1	44	51	10	12	3.2	36	8.7	3.5	13	13	4.3
19	4.0	50	65	9.4	13	3.0	37	7.9	4.1	12	13	4.4
20	4.0	48	56	8.7	12	2.8	38	7.9	3.3	11	21	4.1
21	3.8	43	48	12	13	2.6	39	8.4	2.9	11	17	4.0
22	4.4	36	41	18	12	2.4	36	7.7	2.8	9.9	16	3.9
23	4.0	32	34	15	12	2.4	35	7.3	2.8	9.3	16	3.8
24	3.8	37	29	24	12	2.2	32	7.0	3.3	8.7	16	3.8
25	3.6	46	27	20	11	2.0	29	6.9	3.0	8.1	14	3.6
26	3.5	48	24	19	10	2.0	29	6.6	2.9	19	13	3.4
27	3.3	44	22	19	9.7	1.7	27	6.3	5.6	20	12	3.6
28	3.2	38	20	18	9.0	1.7	26	6.1	9.0	19	11	3.8
29	3.2	33	19	17	8.3	1.7	26	5.8	8.7	19	10	4.2
30	3.8	28	19	16	-----	1.7	26	5.6	8.6	19	9.7	4.4
31	3.8	-----	19	14	-----	1.4	-----	5.3	-----	18	9.3	-----
TOTAL	150.0	736.1	1,038	493.1	342.1	120.6	737.4	385.6	123.1	369.7	373.7	173.2
MEAN	4.84	24.5	33.5	15.9	11.8	3.89	24.6	12.4	4.10	11.9	12.1	5.77
MAX	11	50	67	24	18	7.7	39	25	9.0	20	21	11
MIN	3.2	3.8	19	8.7	7.5	1.4	1.8	5.3	2.4	7.2	6.9	3.4
AC-FT	298	1,460	2,060	978	679	239	1,460	765	244	733	741	344

CAL YR 1971 TOTAL 4,822.80 MEAN 13.2 MAX 67 MIN .95 AC-FT 9,570  
 WTR YR 1972 TOTAL 5,042.6 MEAN 13.8 MAX 67 MIN 1.4 AC-FT 10,000

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1630	3.57	124	12-19	0600	3.77	188
12-15	1030	3.51	112	4-16	1900	4.41	537

## HAWAII, ISLAND OF HAWAII

16701750 Wailuku River near Humuula

LOCATION.--Lat 19°42'55", long 155°18'36", on right bank 300 ft upstream from trail terminus, 10 miles east of Humuula, and 14 miles west of Hilo.

DRAINAGE AREA.--34.8 sq mi.

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

GAGE.--Water-stage recorder. Altitude of gage is 4,250 ft (from topographic map).

AVERAGE DISCHARGE.--7 years, 2.84 cfs (2,060 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 129 cfs Nov. 18 (gage height, 4.31 ft), from rating curve extended above 18 cfs; no flow Oct. 16, 17, Mar. 18-28.

Period of record: Maximum discharge, 2,600 cfs Aug. 8, 1967 (gage height, 10.27 ft), from rating curve extended above 18 cfs; no flow at times in 1965, 1969-72.

REMARKS.--Records good except those above 40 cfs, which are poor. No diversion above station.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.06	1.3	.84	.20	.08	.04	.92	.11	.33	.15	.05
2	.07	.05	4.5	1.3	.16	.07	.28	.72	.11	.18	.10	.05
3	.04	.03	1.8	1.6	.15	.06	.08	.68	.11	.10	.10	.04
4	.02	.03	1.4	4.0	.13	.06	.04	.64	.11	.07	.08	.10
5	.01	.02	.96	.88	.13	.06	.03	.80	.11	.05	.08	.06
6	.06	.28	2.9	.72	.12	.05	.08	.68	.10	.04	.07	.05
7	.42	.30	2.8	1.2	.12	.05	.08	.51	.08	.06	.06	.04
8	.11	.11	1.2	1.4	.13	.04	.71	.45	.07	.14	.05	.05
9	.05	.06	1.4	.92	1.9	.04	8.9	.45	.07	.45	.05	.04
10	.03	.04	1.6	.64	2.9	.04	15	.39	.07	.39	.05	.05
11	.02	.15	2.4	.54	.72	.03	1.5	.36	.08	.16	.05	.08
12	.03	.30	1.7	.51	.36	.03	.72	.48	.07	.15	.05	.05
13	.04	.14	20	.78	.28	.03	.54	.45	.05	.11	.06	.04
14	.01	.24	47	1.4	.24	.03	.54	.39	.05	.33	.13	.03
15	.01	1.6	19	.68	.16	.02	.54	.33	.04	.16	.07	.03
16	0	1.1	8.7	.51	.14	.02	.48	.26	.04	.54	.05	.02
17	0	29	5.7	.42	.13	.01	.48	.22	.04	.30	.06	.02
18	.02	44	5.7	.36	.12	0	1.2	.20	.13	.14	.13	.02
19	.03	11	28	.33	.14	0	1.8	.18	.13	.11	.22	.05
20	.07	4.4	7.0	.28	.15	0	1.4	.30	.11	.08	2.0	.04
21	.04	2.5	4.1	.54	.14	0	1.3	1.0	.06	.06	.80	.03
22	.09	1.5	3.0	.84	.14	0	.96	.68	.05	.06	.22	.04
23	.05	1.2	2.1	.57	.46	0	.96	.36	.06	.05	.14	.04
24	.03	26	1.6	.88	.48	0	.80	.28	.06	.06	.11	.03
25	.02	34	1.5	.54	.18	0	.68	.24	.05	.06	.09	.02
26	.03	14	1.2	.36	.13	0	.80	.22	.04	1.0	.07	.02
27	.02	6.6	1.2	.28	.12	0	.88	.16	.06	3.0	.06	.02
28	.01	4.5	.84	.24	.11	0	.64	.14	.30	.80	.06	.02
29	.01	3.1	.80	.26	.10	.03	.80	.13	.18	.30	.05	.04
30	.05	2.1	1.1	.24	-----	.03	1.8	.13	.10	.20	.05	.06
31	.06	-----	.92	.22	-----	.03	-----	.11	-----	.15	.05	-----
TOTAL	1.57	188.41	183.42	24.28	10.24	.81	44.06	12.86	2.64	9.63	5.31	1.23
MEAN	.051	6.28	5.92	.78	.35	.026	1.47	.41	.088	.31	.17	.041
MAX	.42	44	47	4.0	2.9	.08	15	1.0	.30	3.0	2.0	.10
MIN	0	.02	.80	.22	.10	0	.03	.11	.04	.04	.05	.02
AC-FT	3.1	374	364	48	20	1.6	87	26	5.2	19	11	2.4

CAL YR 1971 TOTAL 705.02 MEAN 1.93 MAX 69 MIN 0 AC-FT 1,400

WTR YR 1972 TOTAL 484.46 MEAN 1.32 MAX 47 MIN 0 AC-FT 961

PEAK DISCHARGE (BASE, 310 CFS).--No peak above base.

16701800 Wailuku River near Kaumana

LOCATION.--Lat 19°43'15", long 155°16'08", on right bank 0.2 mile upstream from Waipahoehoe Gulch and 8.4 miles west of Kaumana.

DRAINAGE AREA.--43.4 sq mi.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,520 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 27.8 cfs (20,140 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,460 cfs Nov. 25 (gage height, 6.16 ft), from rating curve extended above 2,200 cfs; minimum, 0.25 cfs Mar. 28.  
 Period of record: Maximum discharge, 9,580 cfs Aug. 8, 1967 (gage height, 13.35 ft), from rating curve extended above 2,200 cfs; no flow Mar. 13, 14, 1970.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	1.4	12	9.2	3.4	1.6	.31	12	1.2	6.6	3.7	1.0
2	1.6	1.4	78	15	2.8	1.4	6.4	9.4	1.2	3.0	3.1	1.0
3	1.1	1.1	27	30	2.4	1.4	1.4	8.3	1.2	1.7	2.5	.95
4	.97	1.0	18	66	2.1	1.2	.86	7.2	1.0	1.3	2.2	3.0
5	.85	1.2	12	12	1.8	1.2	.76	9.0	1.0	1.2	1.8	1.0
6	4.4	11	50	9.7	1.5	1.1	1.3	7.4	1.0	1.0	1.7	1.0
7	9.1	6.7	39	22	1.5	1.0	1.6	5.4	.91	1.8	1.4	1.0
8	1.9	2.5	16	22	1.7	.94	36	5.2	.82	2.8	1.2	.95
9	1.4	1.9	25	14	70	.91	147	4.9	.82	9.4	1.2	.95
10	1.2	1.5	24	9.2	51	.82	240	4.1	.82	4.4	1.0	1.0
11	1.1	5.1	33	7.6	9.9	.79	23	3.8	.85	2.6	1.0	.90
12	1.2	6.8	29	6.6	6.6	.70	15	4.9	.85	2.7	1.0	.90
13	1.2	3.8	308	24	5.7	.67	13	5.1	.64	2.2	1.5	.80
14	.94	6.4	578	33	4.9	.64	12	4.1	.58	7.2	3.3	.90
15	.85	44	256	9.4	3.8	.58	11	3.8	.52	3.0	1.6	.95
16	.76	19	74	7.4	3.1	.55	9.9	2.7	.49	9.4	1.0	.75
17	.85	419	38	5.7	2.7	.52	15	2.3	.55	4.1	1.2	.70
18	1.0	526	61	4.9	2.5	.49	25	2.2	1.7	2.5	4.5	.70
19	2.5	175	377	4.3	3.0	.46	33	1.7	1.7	2.1	15	.80
20	3.3	50	70	4.0	2.7	.43	29	2.4	1.0	1.8	70	.70
21	1.2	24	31	30	2.6	.40	24	14	.70	1.6	7.0	.55
22	2.4	18	21	25	2.4	.37	18	8.8	.73	1.4	4.6	.61
23	1.3	17	16	13	14	.37	19	4.4	.86	1.2	3.4	.64
24	1.0	309	14	15	6.1	.34	15	3.8	.91	1.2	2.5	.67
25	.88	420	15	8.8	3.1	.31	12	3.4	.70	1.2	2.1	.52
26	1.1	146	12	6.5	2.5	.31	14	3.1	.67	17	1.7	.49
27	.94	45	9.7	5.2	2.3	.28	13	2.3	1.2	44	1.5	.52
28	.97	26	8.8	4.6	2.4	.37	8.8	1.8	5.2	13	1.4	.58
29	1.0	19	8.1	4.7	1.8	.64	14	1.6	2.2	7.2	1.2	.79
30	1.8	15	16	4.4	-----	.40	26	1.4	2.2	5.1	1.2	.97
31	2.1	-----	12	3.8	-----	.31	-----	1.3	-----	4.4	1.2	-----
TOTAL	53.41	2,323.8	2,288.6	437.0	220.3	21.50	785.35	151.8	34.24	168.1	147.7	26.29
MEAN	1.72	77.5	73.8	14.1	7.60	.69	26.2	4.90	1.14	5.42	4.76	.88
MAX	9.1	526	578	66	70	1.6	240	14	5.2	44	70	3.0
MIN	.76	1.0	8.1	3.8	1.5	.28	.31	1.3	.49	1.0	1.0	.49
AC-FT	106	4,610	4,540	867	437	43	1,560	301	68	333	293	52

CAL YR 1971 TOTAL 8,642.19 MEAN 23.7 MAX 775 MIN .09 AC-FT 17,140  
 WTR YR 1972 TOTAL 6,658.09 MEAN 18.2 MAX 578 MIN .28 AC-FT 13,210

PBAK DISCHARGE (BASE, 1,500 CFS).--No peak above base.

## HAWAII, ISLAND OF HAWAII

16704000 Wailuku River at Piihonua

LOCATION.--Lat 19°42'58", long 155°09'13", on left bank 0.2 mile downstream from Hookelekele Stream, 0.9 mile west of Piihonua, and 4.1 miles west of Hilo Post Office.

DRAINAGE AREA.--125 sq mi.

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."

GAGE.--Water-stage recorder. Altitude of gage is 1,070 ft (from topographic map).

AVERAGE DISCHARGE.--41 years (1928-39, 1941-47, 1948-72), 284 cfs (205,800 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 12,100 cfs Nov. 25 (gage height, 16.14 ft); minimum, 3.3 cfs Mar. 23-30.

Period of record: Maximum discharge, 63,400 cfs Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 11,000 cfs; minimum, 0.25 cfs Mar. 9, 1941.

REMARKS.--Records good. Hawaii County Board of Water Supply diverts about 6 cfs above station for domestic supply. Kapehu ditch diverted from Kapehu Stream into Wailuku River above station 1938-63. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 865: 1929-36(M). WSP 965: 1941.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	61	228	355	69	56	187	320	34	226	130	57
2	73	59	1,230	634	61	47	90	228	32	150	165	40
3	43	69	587	556	53	42	94	188	31	103	105	32
4	32	42	420	838	48	38	119	198	28	71	83	169
5	26	50	282	294	43	35	86	353	27	56	69	76
6	197	443	773	226	37	32	1,250	215	24	48	62	48
7	379	279	732	384	34	29	1,620	150	22	136	52	40
8	115	146	401	446	68	26	2,000	162	20	187	45	37
9	74	177	566	304	953	24	2,500	138	20	347	39	31
10	54	102	562	199	1,130	22	3,000	109	26	184	35	27
11	44	289	771	159	349	19	601	108	29	132	33	30
12	37	368	559	133	243	16	449	153	28	121	35	33
13	40	232	2,600	188	263	15	302	181	21	99	70	29
14	30	286	4,700	474	207	13	302	157	17	274	153	51
15	25	1,410	3,110	193	155	11	222	128	14	137	73	34
16	21	563	1,050	168	116	9.5	421	95	12	245	47	22
17	17	3,150	673	122	97	7.1	838	80	12	143	59	20
18	15	3,410	980	105	86	7.3	950	79	32	104	300	19
19	24	1,870	3,510	86	147	6.8	983	65	73	82	367	36
20	72	801	1,150	76	120	6.4	984	84	43	69	1,480	33
21	34	479	678	271	99	5.1	756	327	24	59	474	26
22	86	345	483	761	98	3.5	594	185	21	50	243	24
23	47	417	343	384	225	3.7	645	113	21	43	159	26
24	31	2,370	276	424	355	3.3	441	94	29	38	118	31
25	24	3,270	408	279	138	3.4	299	87	24	36	93	22
26	35	1,430	321	199	110	3.3	384	84	20	545	76	19
27	26	687	224	149	90	3.5	422	63	45	1,040	65	21
28	53	440	213	121	82	3.8	254	53	297	487	55	37
29	63	319	195	106	68	3.3	405	47	133	309	48	52
30	88	263	193	98	-----	109	687	44	102	203	44	68
31	89	-----	242	82	-----	486	-----	37	-----	153	40	-----
TOTAL	2,007	23,827	28,460	8,814	5,544	1,090.0	21,965	4,325	1,261	5,877	4,817	1,190
MEAN	64.7	794	918	284	191	35.2	732	140	42.0	190	155	39.7
MAX	379	3,410	4,700	838	1,130	486	3,000	353	297	1,040	1,480	169
MIN	15	42	193	76	34	3.3	86	37	12	36	33	19
AC-FT	3,980	47,260	56,450	17,480	11,000	2,160	43,570	8,580	2,500	11,660	9,550	2,360

CAL YR 1971	TOTAL	97,538.9	MEAN	267	MAX	5,000	MIN	2.0	AC-FT	193,500
WTR YR 1972	TOTAL	109,177.0	MEAN	298	MAX	4,700	MIN	3.3	AC-FT	216,600

## PEAK DISCHARGE (BASE, 8,700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-25	1915	16.14	12,100	4- 8	/2230	15.35	9,700
12-14	1300	15.86	11,300				

/ About.

## 16717000 Honolii Stream near Papaikou

(Hydrologic bench-mark station)

LOCATION.--Lat 19°46'00", long 155°09'16", on left bank 0.7 mile downstream from Pohakupaa Stream, 4.1 miles west of Papaikou, and 4.8 miles northwest of Hilo Post Office.

DRAINAGE AREA.--11.6 sq mi.

PERIOD OF RECORD.--June 1911 to March 1913 (published as "at Kaiwika, 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 mile upstream at different datum.

AVERAGE DISCHARGE.--6 years, 130 cfs (94,180 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 5,230 cfs Dec. 14 (gage height, 12.70 ft); minimum, 5.5 cfs Mar. 27.

Period of record: Maximum discharge, 9,450 cfs Aug. 3, 1967 (gage height, 16.95 ft); minimum, 0.8 cfs Jan. 31, 1912.

REMARKS.--Records good. No diversion above station. During period 1911-13, Honolii ditch diverted an average of about 3.2 cfs above station for fluming cane and domestic use. Records of chemical analyses, water temperatures, and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	47	58	75	26	24	29	78	20	141	57	23
2	51	48	439	293	23	21	281	66	19	83	79	20
3	29	51	177	403	21	19	85	55	16	47	43	17
4	21	30	88	294	20	18	38	89	14	35	36	108
5	17	62	76	62	18	17	61	171	14	29	31	37
6	139	228	371	52	18	17	81	66	25	27	30	26
7	155	110	195	283	17	15	54	49	29	108	27	24
8	38	67	100	211	96	14	609	61	14	101	25	23
9	26	120	267	91	660	14	934	54	16	233	22	19
10	21	47	174	53	576	13	1,440	42	22	78	20	17
11	21	156	307	43	82	12	140	42	24	54	22	19
12	17	229	185	38	76	11	88	77	21	56	24	18
13	17	90	1,250	145	77	10	93	74	16	49	66	17
14	14	292	1,750	204	62	9.8	101	60	14	204	156	19
15	12	732	1,050	75	49	9.2	79	47	12	57	52	16
16	10	208	165	59	37	8.8	218	38	14	109	33	15
17	9.0	1,470	100	41	34	8.4	416	31	22	57	42	14
18	9.2	1,170	505	35	51	8.0	516	38	60	40	556	16
19	24	652	1,280	31	95	7.7	282	30	105	34	408	29
20	55	143	284	28	56	7.5	372	35	40	31	961	33
21	29	71	127	143	60	7.6	187	130	28	28	123	27
22	65	59	87	387	51	7.0	249	85	29	25	57	30
23	35	180	58	94	85	6.8	301	52	23	23	43	28
24	23	1,150	55	95	52	6.5	115	41	33	21	35	38
25	17	1,220	134	67	34	6.5	73	42	26	22	30	24
26	27	357	93	54	32	6.5	147	43	25	552	27	21
27	20	99	58	39	31	6.0	207	31	119	627	25	29
28	33	61	63	33	45	6.5	67	27	266	187	22	34
29	44	53	61	33	27	9.0	219	24	72	99	21	50
30	60	60	330	42	-----	11	289	25	54	62	19	70
31	54	-----	96	30	-----	8.7	-----	21	-----	51	18	-----
TOTAL	1,195.2	9,262	9,983	3,533	2,511	346.5	7,771	1,724	1,192	3,270	3,110	861
MEAN	38.6	309	322	114	86.6	11.2	259	55.6	39.7	105	100	28.7
MAX	155	1,470	1,750	403	660	24	1,440	171	266	627	961	108
MIN	9.0	30	55	28	17	6.0	29	21	12	21	18	14
AC-FT	2,370	18,370	19,800	7,010	4,980	687	15,410	3,420	2,360	6,490	6,170	1,710

CAL YR 1971 TOTAL 43,074.2 MEAN 118 MAX 2,520 MIN 6.5 AC-FT 85,440  
WTR YR 1972 TOTAL 44,758.7 MEAN 122 MAX 1,750 MIN 6.0 AC-FT 88,780

PEAK DISCHARGE (BASE, 4,400 CFS).--Dec. 14 (1345) 5,230 cfs (12.70 ft).

## HAWAII, ISLAND OF HAWAII

16717600 Alia Stream near Hilo

LOCATION.--Lat 19°50'38", long 155°06'21", on left bank 10 ft downstream from culvert on Highway 19 at Pepeekeo, 2.0 miles south of Honoumuli, and 8 miles north of Hilo.

DRAINAGE AREA.--0.58 sq mi.

PERIOD OF RECORD.--April 1962 to May 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 489 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--9 years (1962-71), 12.9 cfs (9,350 acre-ft per year).

EXTREMES.--Maximum discharge during period October 1971 to May 1972, 432 cfs Feb. 8 (gage height, 4.23 ft); minimum, 3.5 cfs Oct. 19.  
Period of record: Maximum discharge, 432 cfs Feb. 8, 1972 (gage height, 4.23 ft); minimum, 0.85 cfs Nov. 13, 14, 1968.

REMARKS.--Records good. No diversion above station. Spring water not used by sugar mills enters stream above station.

## DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1971 TO MAY 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	9.4	16	13	10	11	18	11				
2	10	8.7	22	13	9.6	11	35	11				
3	8.3	9.6	17	13	9.4	11	13	9.9				
4	6.6	7.4	15	7.9	9.0	11	13	12				
5	5.1	6.6	16	5.4	8.5	11	15	16				
6	11	12	22	5.1	8.3	10	14	12				
7	13	11	18	15	9.9	10	13	12				
8	10	11	16	12	50	9.4	16	12				
9	7.9	13	17	7.0	27	9.2	14	11				
10	7.0	11	16	13	20	9.0	13	11				
11	7.4	13	18	16	15	8.3	12	10				
12	7.0	14	19	15	15	7.9	12	10				
13	5.6	12	55	15	14	7.7	11	9.6				
14	4.9	21	68	15	13	7.2	11	9.4				
15	4.5	39	33	14	13	7.0	11	9.2				
16	4.2	17	25	13	12	6.6	22	9.6				
17	4.5	25	22	13	12	6.6	42	12				
18	3.9	21	48	12	18	6.2	14	12				
19	4.5	17	69	12	15	6.0	13	11				
20	9.2	15	37	12	13	5.8	15	12				
21	8.1	15	31	12	14	6.2	12	10				
22	10	14	27	26	13	5.6	13	12				
23	9.0	17	24	13	13	5.3	13	12				
24	7.0	29	22	13	13	5.8	11	11				
25	5.4	44	21	12	12	6.0	11	12				
26	6.4	25	20	12	12	6.0	11	11				
27	6.4	20	17	12	12	6.0	10	11				
28	5.4	18	17	12	12	6.2	9.6	11				
29	6.6	17	13	12	11	7.9	17	10				
30	8.1	17	17	11	-----	6.8	13	10				
31	9.4	-----	15	11	-----	6.2	-----	9.9	-----			
TOTAL	228.4	509.7	793	387.4	413.7	239.9	447.6	342.6				
MEAN	7.37	17.0	25.6	12.5	14.3	7.74	14.9	11.1				
MAX	13	44	69	26	50	11	42	16				
MIN	3.9	6.6	13	5.1	8.3	5.3	9.6	9.2				
AC-FT	453	1,010	1,570	768	821	476	888	680				

CAL YR 1971 TOTAL 5,072.94 MEAN 13.9 MAX 69 MIN .94 AC-FT 10,060

## PEAK DISCHARGE (BASE, 190 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2- 8	2200	4.23	432	4-17	0430	3.46	207
4- 1	2200	3.50	215				

## 16717800 Pohakupuka Stream near Papaaloo

LOCATION.--Lat 19°57'20", long 155°11'20", on right bank 200 ft downstream from Highway 19, 2.8 miles northwest of Honohina, and 3.0 miles southeast of Papaaloo.

DRAINAGE AREA.--2.76 sq mi.

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

GAGE.--Water-stage recorder. Datum of gage is 250 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--10 years, 27.9 cfs (20,210 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,190 cfs Aug. 19 (gage height, 7.22 ft), from rating curve extended above 1,100 cfs; minimum, 0.70 cfs Nov. 6.  
Period of record: Maximum discharge, 5,340 cfs Nov. 26, 1967 (gage height, 13.37 ft), from rating curve extended above 1,100 cfs; minimum, 0.28 cfs Nov. 9, 1962.

REMARKS.--Records good. No diversion above station. Irrigation ditches in basin occasionally overflow, but amount reaching stream is small. Records of chemical analyses and suspended sediment loads for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	.98	5.4	13	5.6	5.8	19	16	4.3	10	5.3	6.1
2	4.7	1.2	53	26	5.4	5.6	52	18	4.3	12	6.1	4.9
3	2.7	1.7	8.3	43	5.1	5.4	8.2	12	4.0	7.9	4.8	4.9
4	2.0	1.2	6.9	54	5.1	5.3	21	27	4.0	4.5	3.9	28
5	1.6	.89	5.5	10	5.0	6.1	40	98	3.9	3.6	3.3	8.5
6	17	5.4	5.5	9.0	4.9	7.0	15	15	3.8	3.6	3.1	5.5
7	20	8.1	6.7	61	5.1	5.4	10	24	3.8	66	3.0	5.2
8	3.5	13	5.0	38	117	5.3	174	15	3.8	47	2.7	5.1
9	2.2	49	5.1	16	130	4.9	192	9.3	3.7	20	2.5	4.7
10	1.7	5.0	11	11	157	4.6	253	7.7	3.5	8.3	2.5	4.6
11	1.6	33	60	9.2	19	4.4	27	7.1	3.8	5.4	2.8	4.8
12	1.4	52	23	8.5	15	4.3	15	6.9	3.4	5.0	2.6	4.7
13	1.2	9.2	252	36	15	4.1	8.9	6.8	3.2	4.9	14	4.6
14	1.1	6.9	324	18	12	4.0	7.4	6.4	3.1	51	64	4.3
15	.96	82	178	9.2	8.4	4.0	10	6.1	3.1	6.4	7.5	4.0
16	.91	8.9	23	8.1	7.5	3.8	11	5.8	2.9	8.4	4.3	4.0
17	.86	178	14	7.5	7.0	3.8	64	5.6	3.0	5.3	5.4	3.8
18	.82	170	66	7.0	70	3.6	25	5.7	4.3	4.1	265	3.8
19	.88	85	157	6.7	66	3.5	25	5.5	13	3.6	257	6.3
20	3.5	20	81	6.5	15	3.5	40	5.4	5.3	3.2	205	5.0
21	2.4	9.3	35	46	9.5	3.5	20	6.4	3.4	3.1	28	5.0
22	8.3	7.5	20	85	8.2	3.3	39	6.5	3.1	3.1	12	5.7
23	3.2	22	13	9.4	11	3.3	71	6.5	3.0	2.7	8.9	4.8
24	1.7	116	11	8.1	9.3	3.1	18	5.4	2.9	2.5	7.5	5.2
25	1.3	108	13	8.0	7.8	3.2	11	5.5	2.8	2.5	6.6	3.9
26	1.1	30	22	6.9	7.3	3.1	32	7.0	2.8	197	6.1	3.4
27	1.4	11	10	6.7	7.1	2.9	33	5.4	19	111	5.8	3.6
28	1.1	7.9	13	9.5	6.6	3.9	10	4.9	67	38	5.4	5.3
29	.89	6.6	9.8	6.6	6.1	4.2	62	4.7	9.6	21	5.4	11
30	.86	5.9	55	6.4	-----	3.8	36	4.5	5.0	8.1	5.1	9.0
31	.91	-----	13	5.9	-----	3.5	-----	4.5	-----	7.2	4.9	-----
TOTAL	99.79	1,055.67	1,505.2	596.2	748.0	132.2	1,349.5	364.6	202.8	676.4	960.5	179.7
MEAN	3.22	35.2	48.6	19.2	25.8	4.26	45.0	11.8	6.76	21.8	31.0	5.99
MAX	20	178	324	85	157	7.0	253	98	67	197	265	28
MIN	.82	.89	5.0	5.9	4.9	2.9	7.4	4.5	2.8	2.5	2.5	3.4
AC-FT	198	2,090	2,990	1,180	1,480	262	2,680	723	402	1,340	1,910	356

CAL YR 1971 TOTAL 7,386.89 MEAN 20.2 MAX 774 MIN .82 AC-FT 14,650  
WTR YR 1972 TOTAL 7,870.56 MEAN 21.5 MAX 324 MIN .82 AC-FT 15,610

PEAK DISCHARGE (BASE, 1,400 CFS).--No peak above base.

HAWAII, ISLAND OF HAWAII

16720000 Kawainui Stream near Kamuela

LOCATION.--Lat 20°05'18", long 155°40'58", on left bank 250 ft upstream from Upper Hamakua ditch intake and 4.5 miles north of Kamuela.

DRAINAGE AREA.--1.58 sq mi.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,060 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 13.4 cfs (9,710 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 892 cfs Aug. 31 (gage height, 6.43 ft), from rating curve extended as explained below; minimum, 0.09 cfs Mar. 19, 28.  
 Period of record: Maximum discharge, 2,400 cfs Jan. 11, 1967 (gage height, 9.15 ft), from rating curve extended above 53 cfs on basis of computation of peak flow over dam; minimum, 0.03 cfs Oct. 5, 6, 1965.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	2.0	13	2.4	1.4	1.1	1.5	5.9	1.4	11	1.6	24
2	3.6	14	21	1.6	1.2	.86	3.2	4.7	1.2	16	1.2	4.0
3	2.9	11	6.6	2.8	.99	.74	4.6	3.1	.90	13	1.2	4.5
4	2.1	2.9	3.7	18	.85	91	4.6	2.2	.72	9.0	1.9	39
5	6.0	1.6	2.2	3.6	51	112	21	14	.62	9.2	2.3	6.6
6	43	1.2	1.5	2.4	6.6	8.7	9.5	5.0	.54	14	6.6	2.5
7	18	2.6	1.6	8.4	3.6	2.5	5.4	3.3	.48	48	2.5	1.5
8	3.5	27	1.4	19	3.3	1.5	91	5.0	.47	26	1.7	1.1
9	2.9	34	1.3	7.1	10	1.0	149	4.2	2.6	8.4	1.1	.75
10	4.6	9.9	22	2.9	32	.70	247	2.3	4.7	4.0	.86	1.2
11	3.9	25	63	1.9	6.2	.55	26	1.5	2.1	4.9	1.2	3.9
12	5.1	30	12	1.4	4.2	.46	17	1.2	1.3	6.9	3.9	1.3
13	5.3	14	6.4	1.3	10	.35	6.6	1.0	.99	16	21	.78
14	2.1	14	52	1.8	7.7	.30	3.0	.97	2.5	55	58	.56
15	1.4	5.0	62	3.4	4.1	.23	2.0	1.2	1.9	4.6	14	.44
16	1.2	2.7	9.5	2.7	2.3	.17	1.4	.90	1.5	4.9	3.8	.33
17	1.1	37	3.7	1.5	1.6	.11	1.2	.75	5.9	3.4	34	.25
18	1.2	89	2.2	1.2	29	.10	1.1	.76	15	4.9	215	.23
19	5.1	37	18	1.2	30	.10	6.2	.69	16	2.8	75	.21
20	6.0	8.1	38	1.9	6.9	.31	27	3.1	4.3	2.2	26	.19
21	14	4.0	20	2.8	3.5	2.1	12	4.9	2.0	2.8	11	1.9
22	26	5.2	9.0	11	2.1	1.1	15	3.2	1.4	1.7	4.0	1.9
23	4.5	27	3.2	2.6	1.5	.65	38	9.7	1.2	1.5	2.2	.94
24	2.1	29	2.1	32	1.4	.46	12	9.3	.93	1.8	1.4	.82
25	4.2	13	1.7	28	49	.33	14	7.6	1.9	5.2	1.1	.57
26	5.0	6.6	1.9	4.6	7.8	.23	28	5.7	12	92	.91	.42
27	6.8	3.2	15	5.6	2.7	.16	21	2.4	58	64	.98	9.5
28	2.5	3.5	17	11	1.7	.19	6.0	1.4	56	26	.73	18
29	1.6	6.4	9.6	4.5	1.3	47	31	1.4	5.9	14	3.4	34
30	1.2	14	27	3.6	-----	11	16	2.3	7.0	4.4	3.5	14
31	1.4	-----	4.5	2.1	-----	2.7	-----	1.6	-----	2.3	75	-----
TOTAL	193.7	479.9	452.1	194.3	283.94	288.70	821.3	111.27	211.45	479.9	577.08	175.39
MEAN	6.25	16.0	14.6	6.27	9.79	9.31	27.4	3.59	7.05	15.5	18.6	5.85
MAX	43	89	63	32	51	112	247	14	58	92	215	39
MIN	1.1	1.2	1.3	1.2	.85	.10	1.1	.69	.47	1.5	.73	.19
AC-FT	384	952	897	385	563	573	1,630	221	419	952	1,140	348

CAL YR 1971 TOTAL 3,584.34 MEAN 9.82 MAX 192 MIN .26 AC-FT 7,110  
 WTR YR 1972 TOTAL 4,269.03 MEAN 11.7 MAX 247 MIN .10 AC-FT 8,470

PEAK DISCHARGE (BASE, 440 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-4	2315	5.66	628	8-18	2230	5.17	482
4-10	0415	5.65	625	8-31	2000	6.43	892

16720300 Kawaiiki Stream near Kamuela

LOCATION.--Lat 20°05'13", long 155°40'59", on right bank 0.2 mile upstream from Upper Hamakua ditch intake and 4.4 miles north of Kamuela.

DRAINAGE AREA.--0.45 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,090 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 320 cfs Aug. 31 (gage height, 4.60 ft), from rating curve extended above 33 cfs; minimum, 0.07 cfs Mar. 27, 28.

Period of record: Maximum discharge, 366 cfs Nov. 5, 1970 (gage height, 4.83 ft), from rating curve extended above 33 cfs; minimum, 0.03 cfs Nov. 12-15, 1968.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	.32	3.2	.50	.30	.24	.29	1.6	.42	3.3	.52	5.6
2	.48	3.8	4.7	.38	.25	.21	2.9	1.3	.36	4.7	.45	1.1
3	.42	2.0	1.5	.62	.23	.20	2.4	.92	.32	3.5	.55	1.8
4	.21	.48	.78	4.0	.21	18	2.4	.73	.31	2.5	1.0	9.4
5	1.9	.29	.47	.70	10	22	7.7	5.0	.28	2.4	1.1	1.6
6	13	.21	.35	.54	1.4	1.6	2.3	1.4	.28	4.7	2.6	.70
7	2.2	1.2	.37	2.2	.79	.53	1.5	.98	.24	14	.85	.54
8	.42	7.9	.32	4.9	.91	.37	26	1.6	.25	6.7	.63	.47
9	.36	8.1	.34	1.5	4.6	.29	36	1.3	1.4	2.2	.50	.42
10	.76	2.9	5.3	.60	8.7	.24	57	.71	1.8	.95	.44	.86
11	.61	6.0	14	.42	1.3	.22	6.0	.55	.60	.95	.48	1.9
12	1.0	6.6	2.3	.33	.72	.21	3.7	.48	.35	1.5	2.2	.69
13	1.1	3.5	1.0	.33	1.4	.20	1.6	.45	.29	4.0	5.8	.53
14	.41	2.8	14	.60	1.1	.18	.75	.50	1.2	13	16	.48
15	.28	.95	14	.93	.75	.17	.54	.63	.53	.93	3.5	.42
16	.23	.56	1.9	.48	.40	.15	.45	.42	.44	1.4	.91	.38
17	.24	8.2	.69	.31	.31	.15	.41	.32	3.0	.88	10	.36
18	.24	20	.46	.28	8.7	.15	.44	.32	4.0	1.6	51	.36
19	1.9	7.4	6.2	.34	6.6	.12	3.0	.30	2.9	.77	16	.32
20	1.5	1.6	10	.49	1.8	.14	7.3	1.5	.76	.68	7.5	.32
21	4.2	.73	4.8	.89	.77	.82	2.9	1.5	.41	1.2	2.6	1.1
22	5.1	.97	1.9	3.2	.42	.28	4.1	1.5	.36	.61	.96	.59
23	.76	7.2	.67	.60	.34	.19	9.5	3.6	.32	.62	.63	.40
24	.36	7.3	.46	7.8	.31	.13	3.0	2.5	.27	.75	.50	.39
25	1.7	3.7	.42	5.8	11	.11	3.9	2.4	.88	2.9	.42	.33
26	1.5	1.6	.40	.86	1.4	.09	7.4	1.5	3.9	24	.38	.32
27	1.7	.67	3.8	1.8	.52	.08	4.4	.63	15	16	.43	2.2
28	.49	.94	3.5	2.9	.34	.08	1.3	.43	12	6.2	.42	3.9
29	.32	2.3	1.9	.94	.28	15	8.7	.46	1.5	3.4	.85	7.9
30	.24	4.4	7.0	.75	-----	2.2	3.5	.74	2.1	1.0	.74	4.1
31	.25	-----	.86	.42	-----	.52	-----	.48	-----	.63	27	-----
TOTAL	45.38	114.62	107.59	46.41	65.85	64.87	211.38	36.75	56.47	127.97	156.96	49.48
MEAN	1.46	3.82	3.47	1.50	2.27	2.09	7.05	1.19	1.88	4.13	5.06	1.65
MAX	13	20	14	7.8	11	22	57	5.0	15	24	51	9.4
MIN	.21	.21	.32	.28	.21	.08	.29	.30	.24	.61	.38	.32
AC-FT	90	227	213	92	131	129	419	73	112	254	311	98

CAL YR 1971 TOTAL 932.87 MEAN 2.56 MAX 48 MIN .07 AC-FT 1,850  
 WTR YR 1972 TOTAL 1,083.73 MEAN 2.96 MAX 57 MIN .08 AC-FT 2,150

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-4	2300	3.33	134	8-18	2215	2.89	100
4-10	0100	3.39	139	8-31	1500	4.60	320

## HAWAII, ISLAND OF HAWAII

16720500 Upper Hamakua ditch below Kawaiki Stream, near Kamuela

LOCATION.--Lat 20°05'15", long 155°40'42", on right bank 800 ft downstream from Kawaiki Stream intake and 4.4 miles 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).

AVERAGE DISCHARGE.--8 years, 9.42 cfs (6,820 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 49 cfs Nov. 2, 1967; minimum daily, 0.05 cfs Oct. 4-6, 1965.

REMARKS.--Records good. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela. Recording rain gage located at station.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	1.9	22	2.9	1.4	.89	1.8	13	1.6	21	2.5	13
2	4.8	9.8	24	1.8	1.0	.72	5.1	9.3	1.3	24	1.8	5.0
3	3.8	17	12	3.0	.84	.62	12	5.3	.94	21	1.9	6.1
4	2.3	3.5	5.6	21	.72	8.4	10	3.1	.84	17	4.4	17
5	9.7	1.5	2.5	5.2	25	26	26	18	.72	17	5.2	6.8
6	24	1.0	1.5	3.0	14	16	18	11	.62	20	14	3.2
7	18	4.4	1.6	15	6.0	4.6	9.5	5.7	.56	27	4.3	2.1
8	4.0	22	1.2	26	5.8	1.9	27	11	.56	26	2.3	1.6
9	3.5	24	1.1	13	12	1.2	28	8.3	6.0	16	1.3	1.2
10	5.0	11	7.9	3.8	27	.84	28	3.2	10	6.8	.89	2.3
11	4.0	25	27	2.0	13	.67	27	1.9	3.1	8.2	1.2	5.6
12	6.0	26	20	1.4	8.0	.62	26	1.4	1.4	13	5.3	2.1
13	6.0	23	11	1.2	15	.84	15	1.2	1.0	14	13	1.3
14	2.3	21	20	2.1	17	1.4	5.4	1.2	5.0	24	21	.94
15	1.3	8.6	27	5.3	8.6	1.5	2.9	1.8	2.5	8.3	12	.84
16	.94	3.5	17	3.1	2.9	1.4	1.8	1.2	1.8	9.6	4.1	.78
17	.84	17	5.4	1.4	1.6	1.3	1.4	.89	8.5	6.4	16	.67
18	1.0	27	2.5	1.0	12	1.3	1.4	.89	24	10	25	.67
19	6.8	27	14	1.0	26	1.3	10	.84	23	4.7	21	.67
20	11	15	27	2.0	18	1.3	24	7.1	7.1	3.5	19	.62
21	21	6.0	26	3.3	7.1	5.9	22	10	2.5	5.6	10	3.0
22	24	8.5	16	17	2.5	1.7	24	7.0	1.6	2.7	4.3	2.6
23	7.0	20	4.6	3.2	1.7	1.0	27	19	1.3	2.4	2.4	1.4
24	2.3	23	2.3	17	1.4	.78	22	18	.94	3.0	1.5	1.3
25	6.5	22	1.7	24	14	.78	22	16	3.3	6.2	1.2	.94
26	9.3	13	1.9	7.2	18	.72	27	11	19	28	1.0	.78
27	12	4.6	9.4	7.9	4.6	.67	26	3.5	27	27	1.1	7.9
28	3.0	5.4	24	18	1.8	.67	12	1.7	27	25	.94	13
29	1.5	12	17	7.1	1.2	23	20	1.7	11	21	3.4	16
30	1.0	14	23	5.6	-----	19	24	3.5	11	8.2	3.8	12
31	1.0	-----	7.4	2.3	-----	4.7	-----	2.1	-----	3.6	13	-----
TOTAL	214.88	417.7	383.6	227.8	268.16	131.72	506.3	199.82	205.18	430.2	218.83	131.41
MEAN	6.93	13.9	12.4	7.35	9.25	4.25	16.9	6.45	6.84	13.9	7.06	4.38
MAX	24	27	27	26	27	26	28	19	27	28	25	17
MIN	.84	1.0	1.1	1.0	.72	.62	1.4	.84	.56	2.4	.89	.62
AC-FT	426	829	761	452	532	261	1,000	396	407	853	434	261

CAL YR 1971 TOTAL 3,022.67 MEAN 8.28 MAX 27 MIN .20 AC-FT 6,000  
 WTR YR 1972 TOTAL 3,335.60 MEAN 9.11 MAX 28 MIN .56 AC-FT 6,620

16724800 Upper Hamakua ditch above Alakahi Stream, near Kamuela

LOCATION.--Lat 20°04'31", long 155°40'26", on right bank 0.1 mile upstream from Alakahi Stream and 3.6 miles 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).

EXTREMES.--Period of record: Maximum daily discharge, 41 cfs Aug. 18, 1972; no flow at times each year.

REMARKS.--Records good. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	.59	10	1.5	.72	.39	.84	6.3	.84	10	1.1	17
2	1.9	3.6	11	.96	.47	.22	3.2	4.5	.66	12	.78	4.1
3	1.1	6.7	5.0	.90	.32	.14	5.8	2.9	.45	10	.78	5.3
4	.58	1.4	2.6	9.4	.19	3.4	5.0	1.9	.30	8.0	1.2	23
5	1.6	.56	1.2	2.7	12	7.0	14	10	.22	8.4	1.9	7.1
6	12	.22	.72	1.5	5.7	3.0	9.0	5.3	.16	10	5.9	2.4
7	11	.89	.72	5.4	2.8	1.2	5.2	2.9	.10	17	2.0	1.5
8	2.5	8.7	.52	11	2.7	.36	19	5.1	.08	15	1.4	1.0
9	1.6	12	.37	5.4	4.7	.05	22	4.1	1.7	8.0	.78	.77
10	3.0	4.0	2.5	2.0	12	0	25	1.9	4.0	3.4	.52	1.6
11	2.6	12	14	1.1	5.5	0	17	1.2	1.4	3.2	.66	4.7
12	2.7	13	10	.66	3.1	0	15	.86	.67	5.7	3.8	1.3
13	4.4	10	4.6	.56	4.7	.01	7.2	.66	.43	5.2	16	.77
14	1.0	9.5	9.8	.66	5.9	.03	2.9	.66	1.7	14	28	.55
15	.49	3.8	16	1.7	3.2	.01	1.7	1.0	1.1	3.6	14	.44
16	.23	1.6	9.2	1.4	1.4	.01	1.1	.64	.84	3.8	3.2	.35
17	.09	6.6	3.0	.60	.81	0	.99	.47	2.6	2.6	17	.27
18	.24	14	1.5	.41	4.9	0	.95	.45	12	4.0	41	.25
19	1.7	13	5.9	.41	11	0	6.0	.39	13	1.9	31	.22
20	4.3	6.8	15	.84	6.0	.01	14	2.3	3.7	1.3	25	.20
21	7.7	2.6	13	.96	2.7	1.6	11	4.5	1.2	1.9	12	1.8
22	11	3.1	8.5	6.1	1.2	.64	13	2.7	.81	.96	3.8	1.5
23	3.2	8.4	2.6	1.5	.81	.28	16	8.0	.63	.78	1.9	.64
24	.96	10	1.3	6.8	.68	.13	12	9.2	.43	1.3	1.2	.54
25	2.4	10	.97	12	5.8	.05	12	6.7	.86	2.3	.91	.39
26	3.5	5.0	1.0	3.5	6.5	.01	16	5.6	7.9	20	.76	.25
27	4.4	2.0	2.9	3.6	1.9	0	15	1.9	14	19	.79	7.4
28	1.2	2.2	11	8.4	.95	0	5.9	.97	16	16	.60	14
29	.53	4.2	8.3	3.5	.58	13	12	.85	4.7	12	2.6	21
30	.23	6.1	11	2.6	-----	9.9	13	1.6	4.1	4.0	2.6	15
31	.20	-----	3.5	1.2	-----	2.1	-----	1.1	-----	1.8	20	-----
TOTAL	91.15	182.56	187.70	99.26	109.23	43.54	301.78	96.65	96.58	227.14	243.18	135.34
MEAN	2.94	6.09	6.05	3.20	3.77	1.40	10.1	3.12	3.22	7.33	7.84	4.51
MAX	12	14	16	12	12	13	25	10	16	20	41	23
MIN	.09	.22	.37	.41	.19	0	.84	.39	.08	.78	.52	.20
AC-FT	181	362	372	197	217	86	599	192	192	451	482	268

CAL YR 1971 TOTAL 1,569.88 MEAN 4.30 MAX 22 MIN 0 AC-FT 3,110  
 WTR YR 1972 TOTAL 1,814.11 MEAN 4.96 MAX 41 MIN 0 AC-FT 3,600

## HAWAII, ISLAND OF HAWAII

16725000 Alakahi Stream near Kamuela

LOCATION.--Lat 20°04'27", long 155°40'25", on right bank 25 ft upstream from Upper Hamakua ditch intake and 3.5 miles north of Kamuela.

DRAINAGE AREA.--0.87 sq mi.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,900 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 6.42 cfs (4,650 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 246 cfs Aug. 31 (gage height, 5.37 ft), from rating curve extended as explained below; minimum, 0.15 cfs June 4.

Period of record: Maximum discharge, 1,420 cfs Jan. 11, 1967 (gage height, 8.65 ft), from rating curve extended above 28 cfs on basis of computation of peak flow over dam; minimum, 0.03 cfs on several days in 1965.

REMARKS.--Records good. Parker Ranch pipeline diverts from tributary 0.4 mile above station for ranch use in Kamuela area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	.57	11	1.2	.85	.51	1.1	4.0	.48	6.2	1.2	16
2	2.4	2.3	7.5	.80	.47	.37	4.4	2.9	.43	8.9	1.0	7.2
3	1.4	5.3	3.6	.60	.36	.34	6.2	2.3	.33	7.1	1.1	7.6
4	1.1	1.7	2.4	5.3	.32	15	3.9	1.6	.28	4.4	1.4	20
5	1.1	.93	1.3	1.6	13	33	12	8.1	.26	5.0	2.7	8.2
6	17	.70	.85	1.2	3.1	4.7	4.9	3.6	.25	7.1	5.0	6.1
7	13	.73	.65	2.1	2.0	2.3	3.3	2.1	.25	23	2.1	3.6
8	2.7	9.2	.49	6.9	1.9	1.3	32	2.9	.28	13	1.4	1.4
9	1.5	21	15	3.6	6.4	.90	45	2.4	1.5	4.4	1.0	1.2
10	1.9	3.4	11	1.4	15	.66	65	1.5	3.1	2.5	.75	2.0
11	1.9	10	22	.90	3.7	.57	12	1.2	1.4	1.7	.70	3.3
12	1.3	13	4.4	.55	1.8	.43	8.9	.92	.77	3.0	2.8	1.6
13	3.6	5.4	2.3	.46	1.6	.39	4.2	.77	.54	4.2	12	1.1
14	1.4	6.8	17	.75	2.1	.42	2.7	.90	1.6	20	28	.90
15	.92	3.1	23	1.4	1.5	.39	1.9	1.3	1.3	3.0	9.6	.80
16	.72	1.9	4.2	1.2	.90	.41	1.4	.85	.84	2.5	2.8	.70
17	.65	5.4	2.1	.60	.59	.43	1.2	.58	2.0	2.1	19	.65
18	.60	24	1.2	.46	11	.43	1.1	.48	7.2	3.1	67	.65
19	1.3	23	9.1	.46	13	.43	3.9	.46	5.4	1.8	28	.60
20	2.8	4.9	19	.70	3.7	.48	12	1.2	2.1	1.4	18	.55
21	4.9	2.5	8.4	1.1	2.3	1.0	5.7	3.2	.94	2.1	8.2	1.2
22	7.9	1.6	4.2	4.6	1.1	.88	6.6	2.2	.57	1.3	3.3	1.5
23	2.3	6.1	2.0	1.4	.79	.55	16	5.4	.49	1.2	2.2	1.0
24	1.1	7.8	1.2	11	.67	.46	6.1	5.1	.39	1.4	1.6	.85
25	2.1	11	.90	11	15	.46	7.4	3.7	.35	5.2	1.3	.75
26	3.5	7.6	.85	2.7	4.2	.43	13	3.6	4.3	37	1.2	.65
27	3.5	2.5	3.6	2.5	1.7	.38	9.6	1.5	20	27	1.3	1.9
28	1.5	1.4	5.7	5.0	.96	.40	3.4	.84	21	14	1.1	4.3
29	.97	2.8	3.5	2.3	.64	22	14	.58	3.7	7.9	1.2	12
30	.74	5.4	10	1.8	-----	6.5	7.8	.79	3.8	3.0	1.3	6.3
31	.68	-----	2.4	.95	-----	2.2	-----	.67	-----	1.8	15	-----
TOTAL	89.08	192.03	200.84	76.53	110.65	98.72	316.7	67.64	85.85	226.3	243.25	114.60
MEAN	2.87	6.40	6.48	2.47	3.82	3.18	10.6	2.18	2.86	7.30	7.85	3.82
MAX	17	24	23	11	15	33	65	8.1	21	37	67	20
MIN	.60	.57	.49	.46	.32	.34	1.1	.46	.25	1.2	.70	.55
AC-FT	177	381	398	152	219	196	628	134	170	449	482	227

CAL YR 1971 TOTAL 1,650.53 MEAN 4.52 MAX 58 MIN .43 AC-FT 3,270  
 WTR YR 1972 TOTAL 1,822.19 MEAN 4.98 MAX 67 MIN .25 AC-FT 3,610

PEAK DISCHARGE (BASE, 120 CFS).--Apr. 10 (0900) 130 cfs (4.51 ft); Aug. 31 (1530) 246 cfs (5.37 ft).

## 16733000 Lower Hamakua ditch wasteway near Kukuihaele

LOCATION.--Lat 20°07'07", long 155°35'09", on left bank 50 ft downstream from Lower Hamakua ditch, 0.8 mile west of Kukuihaele School, and 1.0 mile northeast of Waipio.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 980 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 2.31 cfs (1,670 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 19 cfs Dec. 30, 1965, Jan. 2, 1966; no flow most of the time each year.

REMARKS.--Records good. The wasteway diverts excess water from Lower Hamakua ditch (see sta 16733100).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	12	0	0	0	0	3.2	0	7.9	0	.76
2	0	0	14	0	0	0	0	0	0	6.5	0	0
3	0	1.9	.49	0	0	0	2.2	0	0	8.7	0	0
4	0	0	2.4	5.4	0	0	2.0	0	0	1.4	0	2.4
5	0	0	4.0	0	1.5	3.8	11	4.1	0	0	0	2.5
6	4.6	0	4.0	.77	0	3.1	6.3	4.2	0	3.3	8.0	0
7	8.1	0	1.2	.66	0	0	0	0	0	13	1.9	0
8	.48	3.1	0	0	0	0	9.0	1.6	0	11	0	0
9	0	9.6	3.0	6.8	0	0	.66	0	0	3.1	0	0
10	0	1.2	4.4	0	5.4	0	0	0	0	0	0	1.3
11	0	7.0	16	0	4.0	0	1.9	0	0	0	0	6.8
12	0	12	9.6	0	0	0	10	0	0	0	0	0
13	2.2	5.6	8.4	0	0	0	6.9	0	0	0	16	0
14	0	4.8	11	0	0	0	0	0	0	7.8	14	0
15	0	0	17	0	0	0	0	0	0	1.0	8.8	0
16	0	0	11	0	0	0	0	0	0	0	0	0
17	0	1.4	5.3	0	0	0	0	0	0	0	0	0
18	0	10	3.7	0	1.4	0	0	0	0	0	13	0
19	.42	6.8	9.4	0	3.3	0	2.5	0	0	0	2.6	0
20	2.7	0	15	0	0	0	11	0	0	0	3.5	0
21	0	0	2.5	0	0	0	4.1	0	0	0	.65	0
22	5.2	0	0	8.1	0	0	2.1	0	0	0	0	0
23	.76	2.6	0	0	0	0	14	0	0	0	0	0
24	0	5.8	0	3.4	0	0	7.0	0	0	0	0	0
25	0	4.9	0	12	3.4	0	5.8	0	0	0	0	0
26	0	0	0	4.7	1.9	0	11	0	0	15	0	0
27	0	0	0	.68	0	0	12	0	0	12	0	0
28	0	0	1.8	14	0	0	.71	0	3.5	9.6	0	2.7
29	0	4.4	0	7.4	0	9.0	5.0	0	0	7.3	0	11
30	0	6.2	6.6	2.9	-----	6.4	13	0	3.9	3.2	0	6.2
31	0	-----	1.3	0	-----	0	-----	0	-----	0	3.7	-----
TOTAL	24.46	87.3	164.09	66.81	20.9	22.3	138.17	13.1	7.4	110.8	72.15	33.66
MEAN	.79	2.91	5.29	2.16	.72	.72	4.61	.42	.25	3.57	2.33	1.12
MAX	8.1	12	17	14	5.4	9.0	14	4.2	3.9	15	16	11
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	49	173	325	133	41	44	274	26	15	220	143	67

CAL YR 1971 TOTAL 694.89 MEAN 1.90 MAX 17 MIN 0 AC-FT 1,380  
WTR YR 1972 TOTAL 761.14 MEAN 2.08 MAX 17 MIN 0 AC-FT 1,510

HAWAII, ISLAND OF HAWAII

16733100 Lower Hamakua ditch below main weir, near Kukuihaele

LOCATION.--Lat 20°07'07", long 155°35'09", on left bank 30 ft upstream from main weir, 0.8 mile west of Kukuihaele School, and 1.0 mile northeast of Waipio.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 990 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 45.6 cfs (33,040 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 69 cfs Mar. 2, 1964, June 26, 1971; minimum daily, 0.08 cfs Dec. 6, 1965.

REMARKS.--Records good. At high flow, water can be diverted from the ditch 0.1 mile upstream and at the gage (see sta 16733000) to prevent flume damage downstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	39	36	39	35	33	32	46	42	54	43	44
2	45	42	34	37	34	35	32	45	41	58	45	41
3	43	53	33	36	34	34	41	43	41	56	45	37
4	42	41	35	46	34	37	39	40	39	44	45	47
5	42	40	35	38	31	45	48	47	35	48	47	40
6	52	39	34	36	30	51	45	46	35	52	53	42
7	52	39	36	42	32	39	43	42	36	56	45	45
8	50	48	37	50	40	36	56	51	37	52	45	42
9	46	53	34	39	41	35	44	47	43	50	44	41
10	46	44	34	37	52	34	31	41	48	44	43	43
11	46	57	37	35	44	34	35	39	41	44	42	50
12	47	57	34	34	38	34	50	38	38	46	43	43
13	52	52	33	34	37	34	50	38	38	44	50	41
14	45	53	34	34	41	34	47	38	39	53	52	40
15	44	47	32	34	39	33	44	41	38	39	52	40
16	44	40	28	34	34	33	42	40	37	38	44	39
17	44	42	31	34	34	33	41	41	39	40	53	39
18	44	52	32	34	40	32	41	40	50	46	50	42
19	45	50	35	34	47	32	48	39	44	45	44	44
20	51	46	35	34	40	33	51	44	38	44	42	44
21	51	37	42	34	35	37	51	50	34	46	43	45
22	53	36	42	4.3	35	34	52	43	34	44	43	45
23	44	42	40	16	36	32	50	46	34	43	41	44
24	41	45	38	41	36	31	52	52	36	44	44	44
25	43	50	36	38	41	31	53	44	36	43	43	44
26	50	46	36	35	42	31	52	45	43	56	42	44
27	51	37	36	38	34	31	52	38	56	57	41	46
28	43	37	45	40	32	34	47	36	54	57	41	48
29	41	36	44	36	32	46	48	36	42	53	43	53
30	40	37	47	39	-----	43	48	39	47	44	43	50
31	40	-----	41	36	-----	34	-----	42	-----	41	44	-----
TOTAL	1,422	1,337	1,126	1,098.3	1,080	1,095	1,365	1,317	1,215	1,481	1,395	1,307
MEAN	45.9	44.6	36.3	35.4	37.2	35.3	45.5	42.5	40.5	47.8	45.0	43.6
MAX	53	57	47	50	52	51	56	52	56	58	53	53
MIN	40	36	28	4.3	30	31	31	36	34	38	41	37
AC-FT	2,820	2,650	2,230	2,180	2,140	2,170	2,710	2,610	2,410	2,940	2,770	2,590

CAL YR 1971 TOTAL 16,671 MEAN 45.7 MAX 68 MIN 27 AC-FT 33,070  
 WTR YR 1972 TOTAL 15,238.3 MEAN 41.6 MAX 58 MIN 4.3 AC-FT 30,230

## 16733200 Honokaa diversion at Honokaa

LOCATION.--Lat 20°05'12", long 155°28'36", on left bank 50 ft downstream from Lower Hanakua ditch and 0.5 mile northwest of Honokaa Hospital.

PERIOD OF RECORD.--March 1964 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 950 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 15.5 cfs (11,230 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 26 cfs Dec. 11, 1971; no flow Dec. 8, 1965, Jan. 23, 1972.

REMARKS.--Records good. The diversion is from Lower Hamakua ditch (see sta 16733300) for use in Honokaa Sugar Co. mill.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	12	23	16	12	13	13	17	13	14	14	14
2	13	12	23	15	13	14	13	16	12	14	13	13
3	13	13	23	15	13	14	15	15	12	13	13	12
4	13	13	23	16	13	14	16	14	12	13	12	15
5	12	13	24	14	12	14	17	15	12	13	13	13
6	14	13	24	14	12	15	17	17	12	14	14	14
7	16	13	24	15	12	16	16	17	12	15	13	16
8	16	13	25	15	13	14	17	16	13	16	13	16
9	14	16	24	15	13	13	16	16	13	16	13	16
10	14	13	24	14	14	13	14	15	14	14	13	16
11	13	15	26	14	14	12	14	14	13	13	13	16
12	13	16	25	14	14	12	18	14	13	12	13	16
13	15	16	25	14	14	12	18	15	13	13	15	16
14	16	16	25	14	14	12	18	15	12	16	16	14
15	16	16	24	14	14	12	16	15	13	14	16	14
16	14	14	21	14	14	12	14	15	13	13	14	14
17	13	13	22	14	14	11	15	14	13	13	16	14
18	13	16	22	14	14	12	16	13	14	13	15	13
19	13	16	22	14	15	13	16	12	14	13	14	15
20	15	16	20	14	14	12	16	12	13	13	13	14
21	14	16	16	9.2	14	11	16	13	12	13	13	15
22	15	14	14	14.2	12	11	18	12	13	13	13	15
23	16	13	16	0	13	11	19	13	12	14	13	15
24	16	15	19	3.8	13	11	18	15	13	13	13	15
25	13	16	18	3.9	14	12	17	15	11	12	13	14
26	12	16	18	2.3	14	13	17	15	12	14	13	14
27	12	15	16	2.5	14	12	16	14	16	16	13	14
28	13	16	16	2.6	14	13	17	14	16	16	13	15
29	12	19	16	2.5	13	16	17	12	14	16	14	16
30	13	22	16	2.6	-----	17	17	13	14	16	14	16
31	13	-----	16	9.4	-----	13	-----	13	-----	15	14	-----
TOTAL	428	447	650	328.22	389	400	487	446	389	433	422	440
MEAN	13.8	14.9	21.0	10.6	13.4	12.9	16.2	14.4	13.0	14.0	13.6	14.7
MAX	16	22	26	16	15	17	19	17	16	16	16	16
MIN	12	12	14	0	12	11	13	12	11	12	12	12
AC-FT	849	887	1,290	651	772	793	966	885	772	859	837	873

CAL YR 1971 TOTAL 5,715.4 MEAN 15.7 MAX 26 MIN 6.3 AC-FT 11,340  
WTR YR 1972 TOTAL 5,259.22 MEAN 14.4 MAX 26 MIN 0 AC-FT 10,430

## 16733300 Lower Hanakua ditch below Honokaa diversion, at Honokaa

LOCATION.--Lat 20°05'12", long 155°28'34", on right bank 50 ft downstream from tunnel, 100 ft downstream from Honokaa diversion, and 0.5 mile northwest of Honokaa Hospital.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder and Parshall flume. Altitude of gage is 950 ft (from topographic map).

AVERAGE DISCHARGE.--8 years, 23.6 cfs (17,100 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 40 cfs May 19, 1968; no flow Dec. 7, 8, 1965, Apr. 16, 1967.

REMARKS.--Records good. Excess water is spilled at wasteway 8.5 miles above station (see sta 16733000) and water for Honokaa Sugar Co. mill is diverted 100 ft above station (see sta 16733200).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	21	11	22	21	18	19	25	21	33	21	24
2	26	20	6.2	21	20	18	18	24	21	36	25	27
3	25	29	6.9	20	20	18	24	23	21	36	25	21
4	24	22	7.3	26	20	19	20	21	19	30	24	25
5	23	21	8.2	24	20	26	27	24	17	29	29	28
6	29	21	7.5	20	16	35	26	26	15	28	31	21
7	32	22	8.6	25	17	22	23	23	17	31	26	26
8	29	26	9.4	28	24	21	33	27	18	28	24	23
9	28	30	8.2	25	24	21	28	26	22	30	23	22
10	30	26	7.1	23	28	21	21	22	25	26	22	23
11	28	31	10	21	25	20	17	20	22	26	22	27
12	26	33	7.1	20	24	20	28	19	20	27	22	24
13	30	30	8.2	19	21	20	29	20	19	25	28	21
14	25	35	6.4	19	26	19	28	21	20	29	26	22
15	23	31	11	20	24	19	27	22	22	22	27	22
16	23	26	7.8	19	20	18	26	19	19	22	26	21
17	26	26	9.6	18	19	20	24	22	18	22	26	21
18	26	34	10	18	21	19	22	22	28	26	28	21
19	24	32	12	18	29	18	26	22	26	26	26	22
20	28	29	12	19	24	18	29	24	21	25	23	23
21	27	22	24	18	20	21	31	31	17	26	24	22
22	30	20	26	4.5	19	19	29	26	16	25	24	22
23	26	24	22	4.7	21	18	26	26	17	26	22	25
24	23	27	18	25	21	18	28	28	19	26	24	25
25	22	30	18	22	23	17	31	23	20	23	24	22
26	28	28	18	20	27	17	32	25	22	33	22	21
27	31	21	18	23	19	17	31	18	28	34	22	22
28	24	19	26	28	18	16	26	18	32	36	21	25
29	21	14	26	24	17	23	26	18	23	34	21	27
30	22	10	28	26	-----	25	28	18	27	26	23	24
31	23	-----	24	23	-----	19	-----	21	-----	21	20	-----
TOTAL	808	760	22.5	643.2	628	620	783	704	632	867	751	699
MEAN	26.1	25.3	13.6	20.7	21.7	20.0	26.1	22.7	21.1	28.0	24.2	23.3
MAX	32	35	28	28	29	35	33	31	32	36	31	28
MIN	21	10	6.2	4.5	16	16	17	18	15	21	20	21
AC-FT	1,600	1,510	838	1,280	1,250	1,230	1,550	1,400	1,250	1,720	1,490	1,390

CAL YR 1971 TOTAL 8,958.5 MEAN 24.5 MAX 35 MIN 6.2 AC-FT 17,770

WTR YR 1972 TOTAL 8,317.7 MEAN 22.7 MAX 36 MIN 4.5 AC-FT 16,500

16743000 Awini ditch at East Honokane Iki Gulch, near Niulii

LOCATION.--Lat 20°09'55", long 155°43'10", at upper end of flume across East Honokane Iki Gulch and 4.5 miles southeast of Niulii.

PERIOD OF RECORD.--October 1927 to June 1938, September 1938 to June 1949, July 1950 to September 1972 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

AVERAGE DISCHARGE.--42 years (1927-37, 1938-48, 1950-72), 17.6 cfs (12,750 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 58 cfs Nov. 2, 1967, Dec. 13, 1968; no flow at times.

REMARKS.--Records good. Ditch diverts at altitude 2,000 ft from all streams between the Waikoloa and the Honokane for irrigation in vicinity of Kohala.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	2.7	22	9.9	8.0	6.0	5.6	17	5.7	18	9.0	30
2	5.6	7.6	28	8.1	6.5	7.2	5.4	15	5.0	18	8.7	16
3	3.4	17	15	7.2	5.7	6.8	7.3	13	4.5	19	8.4	16
4	2.5	7.4	11	22	5.1	16	18	11	4.9	14	7.7	35
5	4.4	4.2	8.4	12	24	37	30	23	4.6	14	8.0	18
6	39	2.9	6.8	8.5	19	19	21	16	4.0	16	19	12
7	26	2.3	6.2	13	14	12	21	13	3.6	35	12	9.7
8	11	6.7	5.6	19	13	9.5	45	21	3.4	27	9.0	8.3
9	7.0	28	4.9	15	20	8.4	50	22	14	16	7.4	7.4
10	5.9	14	11	10	26	7.3	46	13	14	12	7.8	15
11	7.7	21	32	7.7	14	6.5	28	10	8.3	9.0	10	27
12	15	27	18	6.4	12	6.0	24	9.0	5.4	9.9	9.6	12
13	18	19	12	6.0	11	5.7	18	8.3	5.1	9.2	28	9.2
14	7.7	21	20	5.7	13	5.2	13	8.7	5.6	26	48	7.7
15	4.6	17	39	5.7	13	4.6	11	14	6.2	12	28	7.0
16	3.3	10	23	5.0	9.2	4.5	11	9.0	4.5	10	17	6.4
17	4.3	23	14	4.5	7.3	4.4	14	7.4	3.9	8.8	34	6.2
18	8.8	48	9.8	4.1	21	4.4	12	6.9	16	11	54	6.0
19	12	38	27	5.7	27	4.0	23	6.4	19	8.4	45	5.6
20	18	21	37	11	15	6.5	23	14	11	7.0	48	5.0
21	16	14	29	11	12	23	17	17	6.2	7.0	30	6.4
22	21	13	22	23	9.4	11	16	10	4.5	6.3	21	6.8
23	11	23	14	11	7.3	6.9	36	12	3.7	5.4	16	5.9
24	5.8	29	11	15	6.2	5.2	19	12	3.1	6.0	13	6.2
25	9.7	23	9.7	20	18	4.5	18	12	2.8	6.2	11	5.1
26	16	16	11	11	15	4.0	28	13	4.3	39	10	4.6
27	21	11	12	18	9.8	3.8	23	8.7	20	35	10	18
28	9.7	8.8	21	26	7.2	3.6	16	6.4	32	21	8.8	24
29	5.6	13	16	23	5.9	21	32	6.0	14	20	21	30
30	3.9	13	28	16	-----	16	22	9.1	13	14	18	20
31	3.1	-----	14	11	-----	8.4	-----	7.0	-----	10	26	-----
TOTAL	333.2	501.6	538.4	371.5	374.6	288.6	653.3	370.9	252.3	470.2	603.4	386.5
MEAN	10.7	16.7	17.4	12.0	12.9	9.31	21.8	12.0	8.41	15.2	19.5	12.9
MAX	39	48	39	26	27	37	50	23	32	39	54	35
MIN	2.5	2.3	4.9	4.1	5.1	3.6	5.4	6.0	2.8	5.4	7.4	4.6
AC-FI	661	995	1,070	737	743	572	1,300	736	500	933	1,200	767

CAL YR 1971 TOTAL 3,961.00 MEAN 10.9 MAX 55 MIN 4.50 AC-FI 7,860  
 WTR YR 1972 TOTAL 5,144.5 MEAN 14.1 MAX 54 MIN 2.3 AC-FI 10,200

## HAWAII, ISLAND OF HAWAII

16744000 East Honokane Iki intake to Awini ditch near Niulii

LOCATION.--Lat 20°09'55", long 155°43'15", on intake tunnel leading from East Branch Honokane Iki Stream to Awini ditch, on west side of gulch, and 4.5 miles southeast of Niulii.

PERIOD OF RECORD.--October 1927 to May 1928, July 1928 to December 1936, July 1937 to June 1938, July 1939 to July 1940, September 1940 to June 1949, July 1951 to September 1972 (discontinued). Prior to July 1960, published as "at East Honokane Iki Gulch, near Niulii."

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

AVERAGE DISCHARGE.--37 years (1928-36, 1940-48, 1951-72), 1.70 cfs (1,230 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 13.0 cfs Aug. 6, 1957; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Records are of diversion from East Branch Honokane Iki Stream to Awini ditch (see sta 16743000) for irrigation in vicinity of Kohala.

REVISIONS (FISCAL YEARS).--WSP 725: 1928-30.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.29	.10	1.0	0	0	.20	.30	1.0	.30	1.5	.29	0
2	.20	.78	3.1	0	0	.40	.25	1.0	.25	1.5	.29	0
3	.13	1.4	.84	.02	0	.30	.40	1.0	.20	1.5	.29	0
4	.07	.39	.66	.06	0	1.0	1.5	.90	.25	1.0	.24	.10
5	.59	.20	.44	0	.03	4.0	3.5	2.0	.20	1.0	.20	0
6	5.1	.10	.39	0	0	1.0	2.0	1.0	.15	1.0	.44	0
7	2.0	.10	.34	0	0	.75	2.0	1.0	.10	3.5	.24	0
8	.54	.46	.34	0	0	.50	5.0	2.0	.10	3.0	.16	0
9	.29	2.4	.34	0	0	.45	6.0	2.0	1.0	1.0	.10	0
10	.24	.97	1.9	0	0	.40	5.0	1.0	1.0	1.0	.26	.03
11	.20	1.7	4.0	0	0	.30	3.0	.90	.75	.25	.54	.05
12	1.2	2.3	1.5	0	0	.25	2.5	.80	.30	.29	.27	.20
13	1.4	1.4	.72	0	0	.20	1.5	.70	.25	.36	2.6	.24
14	.39	2.0	2.6	0	0	.15	1.0	.75	.30	2.5	5.4	.20
15	.20	1.2	4.2	.01	.50	.15	.90	1.0	.35	.66	2.5	.20
16	.10	.60	2.0	.01	.40	.10	.90	.80	.20	.44	.66	.20
17	.61	1.9	.97	.01	.30	.10	1.0	.60	.15	.29	2.8	.16
18	1.0	3.1	.66	.01	2.0	.10	.90	.50	1.0	.34	4.9	.16
19	1.3	1.4	2.6	.01	2.5	.05	2.0	.50	1.0	.20	.98	.13
20	1.4	.91	3.3	.01	.90	.30	2.0	1.0	.90	.16	.72	.13
21	1.1	.84	2.6	.04	.70	2.0	1.0	1.5	.40	.13	.39	.16
22	1.6	.84	1.8	.03	.40	.75	1.0	.90	.20	.10	.34	.13
23	.60	1.0	.97	.03	.30	.30	3.5	1.0	.15	.10	.29	.10
24	.29	1.1	.72	.07	.20	.20	1.5	1.0	.10	.10	.29	.13
25	.66	.91	.60	.03	1.5	.15	1.0	1.0	.05	.07	.29	.10
26	1.1	.78	.66	0	1.0	.10	3.0	1.0	.20	2.3	.29	.07
27	1.5	.72	1.1	.11	.80	.05	2.5	.75	1.5	1.2	.29	1.1
28	.49	.60	1.9	0	.40	.05	1.0	.50	3.0	.49	.29	2.1
29	.24	.72	1.1	0	.20	2.0	3.0	.40	1.0	.49	.39	4.5
30	.20	.72	.11	0	-----	1.0	2.0	.80	1.0	.34	.29	1.0
31	.13	-----	0	0	-----	.45	-----	.60	-----	.29	.26	-----
TOTAL	25.16	31.64	43.46	.45	12.13	17.75	61.15	29.90	16.35	27.10	27.29	11.19
MEAN	.81	1.05	1.40	.015	.42	.57	2.04	.96	.55	.87	.88	.37
MAX	5.1	3.1	4.2	.11	2.5	4.0	6.0	2.0	3.0	3.5	5.4	4.5
MIN	.07	.10	0	0	0	.05	.25	.40	.05	.07	.10	0
AC-FT	50	63	86	.9	24	35	121	59	32	54	54	22

CAL YR 1971 TOTAL 231.27 MEAN .63 MAX 5.8 MIN 0 AC-FT 459  
 WTR YR 1972 TOTAL 303.57 MEAN .83 MAX 6.0 MIN 0 AC-FT 602

NOTE.--No gage-height record Feb. 15 to July 11.

16745500 Awini ditch at Awini weir, near Kohala

LOCATION.--Lat 20°08'20", long 155°43'55", on right bank at Awini weir, 6.0 miles south of Niulii, and 8.0 miles southeast of Kohala.

PERIOD OF RECORD.--July 1907 to June 1917 (published as Kohala ditch at Awini weir, near Kohala), May 1963 to September 1972 (discontinued).

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,840 ft (from topographic map). July 1, 1907, to June 30, 1917, nonrecording gage at same site at different datum.

AVERAGE DISCHARGE.--18 years (1907-16, 1963-72), 18.6 cfs (13,480 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 56 cfs May 20, 24, 1964; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Ditch diverts at altitude 2,000 ft from all streams between the Waikoloa and the Honokane and empties into Kohala ditch (see sta 16750900) for irrigation in vicinity of Kohala.

DISCHARGE: IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	2.7	27	10	9.0	4.7	5.2	18	5.2	19	6.7	30
2	5.5	6.7	35	9.0	7.0	5.2	4.9	14	4.9	19	6.7	14
3	3.5	21	17	8.0	6.0	4.9	6.1	12	4.4	21	7.4	15
4	2.5	8.0	12	24	5.5	12	14	11	4.7	13	6.7	35
5	2.2	4.4	9.0	14	28	29	29	26	4.4	13	6.7	22
6	41	3.3	7.0	9.0	21	16	22	18	3.8	16	15	14
7	32	2.2	6.5	15	15	7.7	20	12	3.3	37	11	11
8	12	5.4	8.0	21	14	3.8	40	24	2.7	32	7.7	9.4
9	7.4	31	5.0	17	22	2.7	44	26	12	16	6.1	8.6
10	6.1	15	12	11	28	.49	45	14	14	11	6.1	13
11	7.7	27	36	8.5	16	0	30	11	8.0	8.0	10	31
12	14	32	20	7.0	14	0	26	8.6	4.9	8.6	6.1	13
13	23	22	14	6.5	12	0	19	8.0	4.7	8.0	28	9.8
14	8.0	26	22	6.0	15	0	13	8.6	4.9	28	41	8.0
15	6.4	21	42	6.0	15	0	9.8	13	5.5	12	31	7.0
16	3.5	11	25	5.5	8.0	0	9.0	8.6	4.1	9.0	18	6.4
17	3.8	23	16	5.0	6.4	0	12	7.0	3.5	7.7	32	6.1
18	10	44	11	4.5	16	0	11	6.4	15	9.8	50	5.8
19	11	39	30	6.0	25	0	26	6.1	21	8.0	41	5.5
20	18	26	40	12	11	.05	31	15	11	6.4	41	4.9
21	15	16	32	12	8.0	4.9	19	19	5.8	6.1	34	5.8
22	22	14	24	25	5.2	0	15	10	4.1	5.8	24	6.4
23	11	25	16	12	3.5	0	38	9.4	3.3	4.9	16	5.8
24	5.5	31	12	17	2.5	0	22	11	2.7	4.9	12	5.8
25	7.9	28	10	22	12	0	19	11	2.2	4.7	9.8	4.9
26	18	20	12	12	12	0	32	12	3.5	33	8.0	4.7
27	25	12	14	20	6.4	0	27	7.7	19	33	8.3	17
28	10	9.8	23	28	4.4	0	16	5.8	36	19	7.0	25
29	5.8	14	18	25	3.8	19	31	5.2	14	16	16	39
30	4.1	14	30	18	-----	17	27	7.7	12	10	17	24
31	3.3	-----	16	12	-----	8.0	-----	6.4	-----	6.7	25	-----
TOTAL	351.6	554.5	599.5	408.0	353.7	135.44	663.0	372.5	244.6	446.6	555.3	407.9
MEAN	11.3	18.5	19.3	13.2	12.2	4.37	22.1	12.0	8.15	14.4	17.9	13.6
MAX	41	44	42	28	28	29	45	26	36	37	50	39
MIN	2.2	2.2	5.0	4.5	2.5	0	4.9	5.2	2.2	4.7	6.1	4.7
AC-FT	697	1,160	1,190	809	702	269	1,320	739	485	886	1,100	809

CAL YR 1971 TOTAL 4,065.11 MEAN 11.1 MAX 48 MIN 0 AC-FT 8,060  
 WTR YR 1972 TOTAL 5,092.64 MEAN 13.9 MAX 50 MIN 0 AC-FT 10,100

NOTE.--No gage-height record Dec. 2 to Feb. 16.

## HAWAII, ISLAND OF HAWAII

16750900 Kohala ditch at Honokane, near Niulii

LOCATION.--Lat 20°09'50", long 155°43'50", on land of Honokane, on Honokane trail at tunnel adit, 28 ft from right side of tunnel, and 4.4 miles south of Niulii.

PERIOD OF RECORD.--May 1963 to September 1972 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 960 ft (from topographic map).

AVERAGE DISCHARGE.--9 years, 36.1 cfs (26,150 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 96 cfs May 24, 1964; no flow at times.

REMARKS.--Records good. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,000 ft from East and West Branches Honokane Nui Stream. Water is used for irrigation in vicinity of Kohala.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	19	46	28	25	22	22	40	20	35	24	50
2	23	24	48	26	24	23	21	35	19	32	23	30
3	20	46	36	24	22	22	22	28	19	35	22	30
4	19	25	28	42	22	35	27	26	19	30	22	60
5	19	20	23	31	47	38	42	36	19	30	22	39
6	53	19	23	26	25	7.1	43	34	19	28	30	27
7	51	18	22	29	21	15	35	27	18	50	25	24
8	31	31	21	39	23	27	55	36	17	50	22	22
9	25	61	21	36	36	25	72	36	25	36	21	21
10	24	34	27	28	54	24	80	28	27	28	20	25
11	25	52	71	25	37	23	25	25	22	24	24	41
12	29	57	45	24	27	22	22	23	19	26	20	26
13	40	47	34	23	28	21	24	22	19	25	44	22
14	25	51	48	22	36	21	31	22	19	57	61	21
15	21	40	71	22	30	20	27	27	19	30	47	20
16	19	28	46	22	25	20	25	23	18	26	33	19
17	20	45	35	21	23	20	30	21	18	24	49	19
18	26	82	28	21	38	20	26	21	28	25	88	19
19	26	72	37	21	56	19	35	20	41	22	44	18
20	41	46	59	28	34	20	47	26	28	21	24	18
21	38	33	50	23	29	37	40	32	20	21	19	19
22	55	31	45	37	25	26	36	24	18	20	24	19
23	30	44	34	28	23	22	56	27	17	19	30	19
24	23	58	29	37	22	20	42	33	17	19	26	19
25	24	50	27	38	38	20	38	28	17	19	24	18
26	35	38	28	34	13	19	50	31	20	35	24	17
27	41	30	29	32	10	19	48	23	44	63	24	30
28	26	26	47	48	15	19	38	21	69	45	22	42
29	22	31	40	39	22	47	41	20	51	39	33	59
30	20	34	51	35	-----	44	50	22	25	30	36	41
31	19	-----	34	29	-----	27	-----	21	-----	26	42	-----
TOTAL	893	1,192	1,183	918	830	744.1	1,150	838	731	970	969	834
MEAN	28.8	39.7	38.2	29.6	28.6	24.0	38.3	27.0	24.4	31.3	31.3	27.8
MAX	55	82	71	48	56	47	80	40	69	63	88	60
MIN	19	18	21	21	10	7.1	21	20	17	19	19	17
AC-FT	1,770	2,360	2,350	1,820	1,650	1,480	2,280	1,660	1,450	1,920	1,920	1,650

CAL YR 1971 TOTAL 11,330.4 MEAN 31.0 MAX 87 MIN 5.9 AC-FT 22,470

WTR YR 1972 TOTAL 11,252.1 MEAN 30.7 MAX 88 MIN 7.1 AC-FT 22,320

16751000 Kohala ditch at Pololu, near Niulii

LOCATION.--Lat 20°10'19", long 155°44'20", on right bank of open section of ditch, on land of Pololu, 0.5 mile upstream from Pololu Stream, and 3.7 miles south of Niulii.

PERIOD OF RECORD.--August 1927 to June 1938, September 1938 to September 1972 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 960 ft (from topographic map).

AVERAGE DISCHARGE.--44 years (1927-37, 1938-72), 40.8 cfs (29,560 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 102 cfs May 24, Oct. 19, 1964; no flow at times.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,000 ft from East and West Branches Honokane Nui Stream and all streams west. Water is used for irrigation in vicinity of Kohala.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	20	48	28	25	24	23	42	21	36	26	52
2	24	26	50	26	25	25	22	37	21	34	25	32
3	21	48	38	25	24	24	23	30	21	38	24	32
4	20	26	30	44	24	41	31	27	20	32	24	62
5	20	22	24	31	49	35	45	37	21	31	24	41
6	56	20	24	26	26	6.0	41	34	20	30	32	29
7	55	20	23	31	23	18	38	28	20	51	27	26
8	32	33	23	40	25	29	67	36	19	56	24	24
9	26	64	22	35	38	27	76	37	26	39	23	23
10	26	35	28	28	56	25	66	29	29	31	22	27
11	26	56	71	25	39	24	26	26	24	26	26	43
12	30	62	47	23	29	23	22	25	21	28	22	28
13	41	50	35	23	30	23	30	24	21	27	46	24
14	26	54	50	22	38	22	30	24	21	59	63	24
15	22	42	73	22	32	22	28	28	22	32	49	24
16	21	30	47	22	27	22	28	24	20	28	35	23
17	21	48	35	21	24	22	31	23	20	26	51	23
18	28	79	28	21	43	21	28	22	30	27	85	23
19	27	70	39	21	59	21	38	22	42	24	46	22
20	44	48	64	27	36	24	50	27	32	23	26	22
21	38	35	54	23	31	38	38	34	23	23	21	23
22	60	33	47	38	27	27	40	26	21	22	26	23
23	31	46	35	28	25	23	61	28	20	21	32	23
24	24	60	29	41	24	22	40	33	19	21	28	23
25	25	52	27	57	41	21	41	29	19	21	26	22
26	35	40	28	33	14	21	54	32	21	37	26	21
27	42	32	31	35	11	20	50	25	43	65	26	34
28	28	27	49	51	18	20	40	22	74	47	24	44
29	23	33	40	41	24	59	43	22	40	41	35	61
30	21	36	56	36	-----	40	52	24	28	32	38	43
31	21	-----	35	30	-----	27	-----	23	-----	28	44	-----
TOTAL	938	1,247	1,230	954	887	796.0	1,202	880	779	1,036	1,026	921
MEAN	30.3	41.6	39.7	30.8	30.6	25.7	40.1	28.4	26.0	33.4	33.1	30.7
MAX	60	79	73	57	59	59	76	42	74	65	85	62
MIN	20	20	22	21	11	6.0	22	22	19	21	21	21
AC-FT	1,860	2,470	2,440	1,890	1,760	1,580	2,380	1,750	1,550	2,050	2,040	1,830

CAL YR 1971 TOTAL 11,967.9 MEAN 32.8 MAX 82 MIN 5.3 AC-FT 23,740  
 WTR YR 1972 TOTAL 11,896.0 MEAN 32.5 MAX 85 MIN 6.0 AC-FT 23,600

NOTE.--No gage-height record July 12 to Sept. 13.

## HAWAII, ISLAND OF HAWAII

16756000 Kohakohau Stream near Kamuela

LOCATION.--Lat 20°02'38", long 155°41'10", on left bank 0.6 mile upstream from Oolamakapehu Gulch and 1.7 miles northwest of Kamuela.

DRAINAGE AREA.--2.51 sq mi.

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 mile upstream at different datums.

AVERAGE DISCHARGE.--16 years, 8.94 cfs (6,480 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 435 cfs Mar. 4 (gage height, 4.65 ft), from rating curve extended above 46 cfs on basis of computation of flow over dam at gage height 6.20 ft; no flow for many days.  
Period of record: Maximum discharge, 3,880 cfs Aug. 7, 1958 (gage height, 10.76 ft, site and datum then in use); from rating curve extended above 70 cfs by test of model of station site; no flow at times in 1968, 1971-72.

REMARKS.--Records good. Parker Ranch pipeline diverts above station at altitude 4,250 ft. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.01	8.6	1.5	.58	.88	1.1	5.5	0	3.4	.97	23
2	0	.03	8.1	1.2	.48	.67	2.7	3.4	0	5.8	.77	3.3
3	0	.29	2.6	.95	.40	.56	3.6	2.7	0	4.4	.75	2.3
4	0	.23	1.6	1.7	.33	48	4.0	1.5	0	2.5	.71	19
5	0	.12	1.2	1.2	17	92	13	3.2	0	3.0	.95	4.8
6	7.0	.06	.94	1.1	2.1	9.4	8.3	2.2	0	4.0	1.2	2.0
7	11	.67	.81	.95	1.2	2.4	3.5	1.9	0	29	.74	1.4
8	.23	4.8	.67	1.3	.97	1.5	43	1.4	0	15	.53	1.2
9	0	23	.56	4.1	2.6	1.2	85	1.3	0	3.1	.40	1.1
10	0	2.1	.54	1.5	19	.99	167	.99	0	1.5	.32	.95
11	0	6.0	34	1.0	3.4	.85	21	.44	0	1.1	.31	1.1
12	0	13	4.6	1.0	1.3	.69	12	.97	0	1.2	.23	.87
13	0	3.2	1.6	.12	.99	.60	5.0	.87	0	1.1	4.4	.75
14	0	2.9	17	.67	1.2	.56	2.2	.60	0	33	31	.62
15	0	1.5	44	.81	.90	.47	1.0	.68	0	3.4	8.7	.57
16	0	1.1	4.7	.81	.68	.41	.55	.52	0	3.2	1.7	.50
17	0	10	2.1	.56	.52	.38	.69	.11	0	3.0	13	.46
18	0	44	1.5	.52	5.6	.33	.66	0	0	3.1	145	.43
19	0	25	6.4	.47	20	.28	.40	0	0	3.1	62	.37
20	0	3.2	27	.43	2.3	.28	8.7	0	0	3.1	15	.33
21	0	1.4	10	.40	1.2	.49	3.6	1.5	0	3.2	7.4	.42
22	3.3	1.1	5.4	.40	.81	.31	6.4	.55	0	3.3	2.9	.40
23	.97	5.5	2.2	1.0	.60	.23	23	.98	0	3.3	1.8	.31
24	.41	11	1.6	15	.52	.17	8.4	2.8	0	3.1	1.4	.30
25	.40	17	1.3	30	44	0	6.7	1.4	0	3.4	1.2	.22
26	.55	5.3	1.2	4.0	6.0	0	16	1.9	0	75	1.1	.19
27	.52	1.9	1.1	1.5	1.8	0	16	.27	18	67	1.0	.25
28	0	1.5	5.3	2.4	1.4	0	6.2	0	31	21	.90	.32
29	0	2.8	2.9	1.3	1.1	37	14	0	2.9	5.1	.98	8.8
30	0	14	11	1.1	-----	7.8	12	0	1.9	2.3	.88	3.4
31	0	-----	2.7	.80	-----	.01	-----	.03	-----	1.2	46	-----
TOTAL	24.38	202.11	213.22	79.79	138.98	208.46	495.70	37.71	53.8	314.9	354.24	79.66
MEAN	.79	6.74	6.88	2.57	4.79	6.72	16.5	1.22	1.79	10.2	11.4	2.66
MAX	11	44	44	30	44	92	167	5.5	31	75	145	23
MIN	0	.01	.54	.12	.33	0	.40	0	0	1.1	.23	.19
AC-FT	48	401	423	158	276	413	983	75	107	625	703	158

CAL YR 1971 TOTAL 1,784.18 MEAN 4.89 MAX 110 MIN 0 AC-FT 3,540  
WTR YR 1972 TOTAL 2,202.95 MEAN 6.02 MAX 167 MIN 0 AC-FT 4,370

## PEAK DISCHARGE (BASE, 310 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-4	2130	4.65	435	8-18	2215	4.39	316
4-10	0900	4.44	336				

16756500 Keanuimano Stream near Kamuela

LOCATION.--Lat 20°01'48", long 155°42'05", on left bank 150 ft upstream from Highway 25 at Waiaka and 2.0 miles west of Kamuela.

DRAINAGE AREA.--4.30 sq mi.

PERIOD OF RECORD.--November 1963 to September 1972 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,410 ft (from topographic map).

AVERAGE DISCHARGE.--8 years (1964-72), 9.76 cfs (7,070 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 860 cfs Mar. 5 (gage height, 5.80 ft); no flow for many days.  
 Period of record: Maximum discharge, 3,540 cfs Apr. 20, 1968 (gage height, 10.02 ft), from rating curve extended above 910 cfs on basis of contracted-opening measurement at gage height 8.26 ft; no flow at times most years.

REMARKS.--Records good. Two Parker Ranch pipeline diversions above station. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	9.4	.88	.15	.57	.04	4.9	0	2.2	.66	35
2	0	0	5.9	.66	.12	.43	1.8	1.7	0	4.2	.55	3.4
3	0	0	2.1	.48	.10	.31	2.7	1.6	0	3.7	.48	1.5
4	0	0	1.1	.85	.08	26	2.6	1.2	0	1.7	.45	19
5	0	0	.70	.70	13	178	8.1	1.4	0	2.1	.63	5.1
6	0	0	.52	.55	1.7	12	7.9	1.8	0	2.0	.70	1.6
7	13	0	.40	.46	.82	2.1	3.2	1.0	0	27	.63	1.1
8	.38	.50	.30	.85	.61	1.2	76	1.1	0	14	.45	.82
9	.01	22	.21	2.7	.59	.91	156	.79	0	2.9	.30	.66
10	0	1.5	.17	.68	13	.70	376	.68	0	1.2	.22	.57
11	0	3.5	36	.12	3.5	.57	20	.45	0	.76	.18	.66
12	0	8.4	4.3	.15	1.0	.48	11	.50	0	.73	.14	.55
13	0	2.3	1.3	.08	.66	.43	5.2	.48	0	.57	2.4	.43
14	0	2.1	15	.03	.66	.45	2.0	.36	0	43	40	.38
15	0	.97	73	.13	.66	.31	.88	.66	0	2.6	9.1	.33
16	0	.52	4.7	.16	.45	.27	.48	.18	0	1.2	1.6	.28
17	0	5.9	1.5	.09	.31	.22	.48	.31	0	.88	9.7	.22
18	0	51	.85	.05	1.3	.18	.33	.05	0	.94	326	.18
19	0	27	3.5	.05	18	.15	.19	0	0	.76	135	.16
20	0	2.9	32	.03	2.1	.14	5.1	0	0	.50	14	.12
21	0	1.0	13	.03	.91	.16	3.9	.23	0	.45	7.1	.09
22	.60	.59	6.0	.03	.59	.21	4.2	.57	0	.41	2.0	.18
23	.52	2.8	1.5	.12	.43	.13	20	.60	0	.27	1.2	.12
24	.05	7.5	.94	12	.34	.08	7.8	1.3	0	.31	.91	.07
25	0	22	.76	22	83	.05	4.9	1.4	0	.27	.79	.05
26	0	6.0	.59	3.1	7.9	.02	14	.81	0	71	.66	.02
27	.01	1.4	.52	.76	1.5	0	14	.61	.14	66	.66	.01
28	.02	.88	4.0	.57	.82	0	4.9	.10	45	16	.55	.03
29	0	1.2	2.0	.31	.73	47	11	.01	3.1	4.6	.55	5.6
30	0	18	7.4	.22	-----	11	11	0	1.3	2.0	.57	2.8
31	0	-----	2.0	.18	-----	.33	-----	0	-----	.94	90	-----
TOTAL	14.59	189.96	231.66	49.02	155.03	284.40	775.70	24.79	49.54	275.19	648.18	81.03
MEAN	.47	6.33	7.47	1.58	5.35	9.17	25.9	.80	1.65	8.88	20.9	2.70
MAX	13	51	73	22	83	178	376	4.9	45	71	326	35
MIN	0	0	.17	.03	.08	0	.04	0	0	.27	.14	.01
AC-FT	29	377	459	97	308	564	1,540	49	98	546	1,290	161

CAL YR 1971 TOTAL 2,275.74 MEAN 6.23 MAX 258 MIN 0 AC-FT 4,510  
 WTR YR 1972 TOTAL 2,779.09 MEAN 7.59 MAX 376 MIN 0 AC-FT 5,510

PEAK DISCHARGE (BASE, 600 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-5	0430	5.80	860	8-18	2230	5.43	675
4-10	0900	5.50	710	8-31	2130	5.47	695

## HAWAII, ISLAND OF HAWAII

16758000 Waikoloa Stream at Marine Dam, near Kamuela

LOCATION.--Lat 20°02'48", long 155°39'58", on right bank 160 ft upstream from Marine Dam, 0.4 mile east of Puu Ohu, and 1.6 miles north of Kamuela.

DRAINAGE AREA.--1.18 sq mi.

PERIOD OF RECORD.--May 1947 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,460 ft (from topographic map).

AVERAGE DISCHARGE.--25 years, 8.78 cfs (6,360 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 546 cfs Aug. 31 (gage height, 4.31 ft), from rating curve extended as explained below; minimum, 1.5 cfs Nov. 6, 7.

Period of record: Maximum discharge, 3,390 cfs Oct. 23, 1957 (gage height, 6.99 ft), from rating curve extended above 120 cfs on basis of computations of flow over dam at gage heights 5.46 and 5.96 ft; minimum, 0.59 cfs Oct. 3-6, 1965.

REMARKS.--Records good. Diversion above station for livestock and domestic use. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (FISCAL YEARS).--WSP 1569: Drainage area. WSP 1937: 1948(M), 1949-51(P), 1952(M), 1954(M), 1955, 1956-57(P), 1958-60.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.6	10	3.1	2.9	2.4	2.4	5.2	1.8	8.5	2.8	23
2	1.7	1.9	9.7	2.8	2.8	2.3	2.4	3.7	1.7	9.9	2.6	5.8
3	1.7	2.6	4.4	2.7	2.7	2.2	2.9	2.9	1.7	7.8	2.8	4.7
4	1.6	1.9	3.4	4.6	2.6	6.4	4.0	2.3	1.6	4.3	4.1	14
5	1.6	1.7	2.8	3.4	4.6	59	16	6.3	1.6	4.9	4.8	6.8
6	13	1.6	2.5	3.3	4.1	8.7	8.1	4.5	1.5	6.5	6.1	3.9
7	8.3	1.7	2.4	4.2	3.8	3.6	4.0	3.1	1.5	21	3.5	3.3
8	2.8	6.3	2.3	7.9	3.8	2.9	54	3.8	1.5	13	2.8	2.9
9	2.2	17	2.3	6.2	5.7	2.7	64	3.1	2.5	4.9	2.6	2.7
10	2.2	3.9	2.2	3.5	14	2.5	95	2.6	3.6	3.3	2.5	3.0
11	2.0	6.0	14	2.9	5.7	2.4	12	2.4	2.5	2.8	2.5	4.6
12	2.7	9.2	4.7	2.7	3.7	2.3	7.9	2.1	1.8	2.8	2.8	3.1
13	4.6	5.3	3.1	2.7	3.2	2.3	5.0	2.0	1.8	2.7	9.8	2.7
14	2.4	4.8	8.9	2.8	3.0	2.2	3.6	2.2	3.0	19	2.9	2.6
15	1.9	3.0	27	2.8	3.0	2.1	3.0	2.4	2.4	4.0	9.4	2.5
16	1.8	2.5	5.9	2.7	2.8	2.0	2.7	2.2	1.9	3.3	3.8	2.4
17	1.7	3.8	3.6	2.6	2.7	2.0	2.6	2.1	2.2	3.0	11	2.4
18	1.6	18	2.9	2.5	14	2.0	2.5	2.0	4.3	4.6	116	2.4
19	1.9	13	13	2.5	21	1.8	4.5	1.9	3.5	3.1	59	2.3
20	2.3	4.2	24	2.5	4.8	2.0	8.7	3.0	2.5	2.7	19	2.3
21	3.9	2.9	11	2.6	3.4	2.5	5.2	4.6	1.9	3.7	10	2.6
22	5.0	2.5	6.2	5.2	2.9	2.2	4.4	3.2	1.8	2.9	5.2	2.5
23	2.6	3.6	3.8	3.2	2.7	1.9	11	3.5	1.7	2.7	3.8	2.4
24	1.9	8.4	3.2	11	2.6	1.8	6.4	4.3	1.6	3.4	3.3	2.3
25	2.2	17	3.0	12	32	1.8	5.4	3.3	1.7	4.9	3.0	2.2
26	3.0	7.6	2.8	5.1	7.7	1.8	9.8	3.3	2.3	49	2.9	2.2
27	3.5	3.6	3.3	4.1	3.4	1.8	8.6	2.4	10	32	3.0	2.5
28	2.2	3.6	5.4	8.5	2.7	2.2	4.0	2.0	15	12	2.8	2.7
29	1.8	6.2	4.3	5.1	2.5	25	9.3	1.9	4.1	5.8	3.6	6.3
30	1.7	14	7.9	4.6	-----	7.5	8.8	1.9	5.7	3.9	3.3	6.7
31	1.6	-----	4.1	3.4	-----	3.0	-----	1.8	-----	3.2	87	-----
TOTAL	89.1	179.4	204.1	133.2	170.8	165.3	378.2	92.0	90.9	255.6	424.8	129.8
MEAN	2.87	5.98	6.58	4.30	5.89	5.33	12.6	2.97	3.03	8.25	13.7	4.33
MAX	13	18	27	12	32	59	95	6.3	15	49	116	23
MIN	1.6	1.6	2.2	2.5	2.5	1.8	2.4	1.8	1.5	2.7	2.5	2.2
AC-FT	177	356	405	264	339	328	750	182	180	507	843	257

CAL YR 1971 TOTAL 2,082.2 MEAN 5.70 MAX 109 MIN 1.5 AC-FT 4,130  
 WTR YR 1972 TOTAL 2,313.2 MEAN 6.32 MAX 116 MIN 1.5 AC-FT 4,590

## PEAK DISCHARGE (BASE, 180 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3- 5	0415	3.42	209	8-18	2130	3.56	248
4- 9	2330	3.45	218	8-31	1530	4.31	546

16759000 Hauani Gulch near Kamuela

LOCATION.--Lat 20°02'28", long 155°39'05", on left bank 800 ft downstream from small tributary and 1.8 miles northeast of Kamuela.

DRAINAGE AREA.--0.47 sq mi.

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).

AVERAGE DISCHARGE.--16 years, 1.54 cfs (1,120 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 180 cfs Aug. 31 (gage height, 3.14 ft), from rating curve extended above 54 cfs; minimum, 0.02 cfs Oct. 31, Nov. 1, 2, 6, 7.

Period of record: Maximum discharge, 503 cfs Oct. 23, 1957 (gage height, 4.65 ft), from rating curve extended above 11 cfs on basis of slope-conveyance study; no flow at times.

REMARKS.--Records good. Diversion above station for livestock and domestic use.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.02	1.2	.14	.10	.12	.11	.54	.09	1.0	.26	3.2
2	.05	.24	1.3	.11	.08	.10	.10	.34	.08	1.3	.22	.66
3	.05	.28	.46	.10	.08	.10	.10	.30	.08	1.1	.23	.58
4	.04	.08	.26	.26	.06	.61	.33	.22	.08	.49	.21	1.8
5	.05	.05	.19	.16	.10	12	1.9	.45	.07	.49	.24	.75
6	1.6	.03	.15	.13	.14	1.0	.66	.31	.07	.62	.48	.40
7	.66	.04	.13	.19	.16	.31	.31	.23	.07	2.3	.23	.35
8	.16	1.0	.11	.73	.10	.20	18	.33	.08	1.6	.18	.31
9	.09	2.0	.10	.45	.38	.14	19	.23	.22	.55	.15	.28
10	.07	.26	.07	.17	1.8	.12	32	.19	.29	.32	.16	.31
11	.06	.60	1.4	.12	.40	.12	2.4	.16	.15	.25	.14	.43
12	.11	.86	.28	.10	.16	.10	.98	.15	.09	.25	.16	.31
13	.38	.55	.14	.09	.11	.09	.50	.14	.08	.23	.92	.27
14	.09	.43	1.3	.09	.09	.10	.32	.15	.27	3.9	5.6	.25
15	.06	.18	4.1	.09	.09	.09	.24	.15	.15	.41	1.1	.21
16	.05	.12	.50	.07	.07	.08	.20	.13	.09	.37	.36	.18
17	.04	.11	.20	.06	.07	.08	.19	.12	.16	.29	2.8	.18
18	.03	1.6	.14	.06	1.2	.08	.18	.12	.47	.38	40	.18
19	.04	.76	3.3	.06	1.8	.08	.37	.11	.19	.23	17	.17
20	.09	.32	4.5	.05	.34	.09	.63	.41	.11	.20	3.4	.16
21	.34	.17	1.4	.06	.21	.12	.38	.43	.08	.22	1.3	.19
22	.63	.13	.72	.22	.18	.09	.31	.26	.08	.18	.74	.17
23	.15	.31	.31	.18	.18	.08	1.0	.17	.07	.23	.51	.16
24	.08	1.6	.22	.83	.16	.07	.57	.24	.06	.32	.40	.15
25	.07	1.4	.18	1.1	11	.07	.45	.17	.06	1.1	.36	.14
26	.11	.65	.16	.28	.95	.07	.86	.18	.14	10	.33	.13
27	.11	.26	.16	.28	.34	.06	.80	.13	2.0	5.7	.31	.15
28	.08	.41	.34	1.1	.22	.12	.31	.11	2.8	1.3	.27	.13
29	.05	.65	.25	.37	.14	3.1	1.7	.10	.48	.66	.34	.19
30	.04	2.0	.45	.31	-----	.48	.96	.10	1.1	.42	.29	.30
31	.03	-----	.22	.14	-----	.17	-----	.09	-----	.32	17	-----
TOTAL	5.46	17.11	24.24	8.10	20.71	20.04	85.86	6.76	9.76	36.73	95.69	12.69
MEAN	.18	.57	.78	.26	.71	.65	2.86	.22	.33	1.18	3.09	.42
MAX	1.6	2.0	4.5	1.1	11	12	32	.54	2.8	10	40	3.2
MIN	.03	.02	.07	.05	.06	.06	.10	.09	.06	.18	.14	.13
AC-FT	11	34	48	16	41	40	170	13	19	73	190	25

CAL YR 1971 TOTAL 321.24 MEAN .88 MAX 38 MIN .02 AC-FT 637  
 WTR YR 1972 TOTAL 343.15 MEAN .94 MAX 40 MIN .02 AC-FT 681

PEAK DISCHARGE (BASE, 78 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2-25	1345	2.68	92	8-18	2130	2.65	88
3-5	0415	2.64	87	8-31	1445	3.14	180

## HAWAII, ISLAND OF HAWAII

16759200 Right Branch Waiaha Stream near Holualoa

LOCATION.--Lat 19°38'41", long 155°54'55", on right bank 1,000 ft upstream from reservoir, 1.0 mile northeast of Holualoa Makai Camp, and 2.9 miles northeast of Holualoa School.

DRAINAGE AREA.--1.89 sq mi.

PERIOD OF RECORD.--April 1960 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,280 ft (from topographic map).

AVERAGE DISCHARGE.--12 years, 0.407 cfs (295 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 78 cfs Feb. 5 (gage height, 3.32 ft), from rating curve extended as explained below; no flow for many days.

Period of record: Maximum discharge, 1,630 cfs Oct. 3, 1968 (gage height, 5.78 ft), from rating curve extended above 9.1 cfs on basis of slope-area measurements at gage heights 4.07 and 5.78 ft; no flow at times each year.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 2137: 1963-65(M).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	0	.02	.01	.07	.01	.01	.17	0	.02	.01	.07
2	.01	0	.01	0	.05	.01	.01	.07	.01	.01	0	.05
3	.02	0	.10	0	.02	.01	.04	.02	.01	.01	0	.02
4	.01	0	.09	.02	.02	.59	.03	.01	0	.01	0	.01
5	.01	0	.07	.79	7.8	3.3	.08	.01	0	.01	0	.02
6	.01	0	.03	.25	.19	.30	.06	.01	.01	.01	0	.16
7	.01	0	.02	.07	.08	.09	.04	.11	.01	.01	0	.06
8	.01	0	.01	.04	.07	.04	.04	.06	.01	.01	0	.02
9	.01	0	.01	.30	.06	.02	.04	.02	.02	.01	0	.01
10	.01	0	.01	.16	.03	.01	.02	.01	.11	.10	0	.01
11	.01	0	.01	.06	.02	.01	.02	.01	.50	.02	.08	.46
12	.01	0	.01	.03	.01	.01	.02	0	.63	.02	.02	.21
13	.01	0	.01	.02	.01	.01	.01	0	.23	.04	0	.06
14	.01	0	.01	.02	.02	.01	.01	0	.12	.44	0	.02
15	0	0	.01	.48	.01	.01	.01	0	.14	.42	0	.02
16	0	0	.01	.48	.01	0	.01	0	.11	.08	0	.01
17	.01	0	.01	.21	0	0	.01	0	.08	.04	0	.01
18	.06	.03	0	.10	0	0	.01	.01	.11	.03	0	.01
19	.01	.09	0	.06	0	0	.01	.01	3.2	.03	0	0
20	0	.04	.31	.04	0	0	.03	0	.55	.02	.22	0
21	0	.02	.09	.02	0	0	.01	.13	.16	.03	.07	0
22	0	.01	.04	.02	0	0	.01	.06	.08	.04	.04	0
23	0	.01	.02	.02	0	0	0	.02	.07	.02	.01	0
24	0	.01	.01	1.3	0	0	0	.01	.07	.02	.01	0
25	0	.01	.01	.72	8.2	0	0	.02	.04	.01	0	0
26	0	.01	.01	.14	.36	0	0	.02	.04	.01	0	0
27	0	.05	.01	.07	.09	0	0	.01	.03	.26	0	0
28	0	.04	0	1.4	.03	.70	0	0	.03	.11	0	0
29	0	.04	0	3.8	.02	.88	0	0	.02	.04	0	0
30	0	.03	0	.45	-----	.16	0	0	.02	.02	0	0
31	0	-----	.02	.12	-----	.04	-----	0	-----	.01	.06	-----
TOTAL	.23	.39	.96	11.20	17.17	6.21	.53	.79	6.41	1.91	.52	1.23
MEAN	.007	.013	.031	.36	.59	.20	.018	.026	.21	.062	.017	.041
MAX	.06	.09	.31	3.8	8.2	3.3	.08	.17	3.2	.44	.22	.46
MIN	0	0	0	0	0	0	0	0	0	.01	0	0
AC-FT	.5	.8	1.9	22	34	12	1.1	1.6	13	3.8	1.0	2.4

CAL YR 1971 TOTAL 147.59 MEAN .40 MAX 45 MIN 0 AC-FT 293  
 WTR YR 1972 TOTAL 47.55 MEAN .13 MAX 8.2 MIN 0 AC-FT 94

PEAK DISCHARGE (BASE, 115 CFS).--No peak above base.

16759800 Kiilae Stream near Honaunau

LOCATION.--Lat 19°24'52", long 155°50'56", on right bank 2.4 miles northeast of Kealia and 3.0 miles southeast of Honaunau Post Office.

DRAINAGE AREA.--0.67 sq mi.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,898 ft above mean sea level (by stadia traverse).

AVERAGE DISCHARGE.--14 years, 0.217 cfs (157 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 30 cfs Feb. 10, Mar. 4 (gage height, 1.63 ft); no flow for many days.

Period of record: Maximum discharge, 104 cfs Jan. 13, 1959 (gage height, 2.32 ft), from rating curve extended above 5.7 cfs; no flow at times each year.

REMARKS.--Records good. No diversion above station. Banks overflow at high stage and part of overflow is lost in lava. Recording rain gage located at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.39	.01	0	.02	0	0	0	.04	0	0	0	.48
2	.04	.10	0	0	0	0	0	.18	0	0	0	.15
3	0	.02	0	0	0	0	0	.07	.06	0	0	1.0
4	0	.10	0	2.4	0	1.2	.13	0	.02	0	.02	.09
5	0	.01	0	.72	1.4	2.0	.10	1.2	0	0	0	.13
6	0	0	0	.20	.04	.05	.03	.12	0	0	0	.17
7	0	0	0	.17	.01	0	.22	.42	0	0	0	.06
8	0	0	0	.09	0	0	.05	.10	0	.02	0	0
9	0	0	0	.07	.01	0	.78	0	.02	.04	0	0
10	0	0	.02	.07	2.2	0	.09	0	.13	.06	0	0
11	0	0	.07	.01	.12	0	.06	.01	.31	0	0	.03
12	0	.02	.32	0	.04	0	.02	.02	.12	.01	0	.02
13	0	.05	.02	0	.01	0	0	0	.03	.11	0	0
14	0	.01	0	0	0	0	0	0	0	.89	0	0
15	0	0	1.2	1.7	0	0	0	0	.02	.22	0	0
16	0	0	.07	1.4	0	0	0	.03	.05	.03	0	0
17	0	0	.01	.37	0	0	0	.06	0	0	0	0
18	.07	.29	0	.14	0	0	0	.04	.15	0	0	.01
19	.02	.26	0	.04	0	0	0	.11	2.1	0	2.7	.07
20	0	.40	.34	.02	0	0	0	0	.26	0	.63	0
21	0	.04	.07	0	0	0	0	.11	.12	0	.15	0
22	0	0	0	0	0	0	0	.92	.07	0	.26	0
23	0	0	0	0	0	0	.77	.10	.30	0	.04	0
24	0	0	0	.16	0	0	.61	.03	.12	0	.01	0
25	0	.82	.01	.10	1.2	0	.28	0	.06	0	0	0
26	.13	.13	.01	.03	.10	0	.20	0	.04	0	0	0
27	.05	.24	0	0	.01	0	.13	0	.01	.27	0	0
28	.01	.10	0	.01	0	.51	.11	0	0	.52	0	0
29	0	.01	.01	.58	0	.34	.05	0	.10	.16	0	0
30	0	0	.01	.05	-----	.02	.13	0	.04	.32	1.1	0
31	.19	-----	.07	.02	-----	0	-----	0	-----	.06	1.3	-----
TOTAL	.90	2.61	2.23	8.37	5.14	4.12	3.76	3.56	4.13	2.71	6.21	2.21
MEAN	.029	.087	.072	.27	.18	.13	.13	.11	.14	.087	.20	.074
MAX	.39	.82	1.2	2.4	2.2	2.0	.78	1.2	2.1	.89	2.7	1.0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	1.8	5.2	4.4	17	10	8.2	7.5	7.1	8.2	5.4	12	4.4

CAL YR 1971 TOTAL 52.44 MEAN .14 MAX 8.0 MIN 0 AC-FT 104  
 WTR YR 1972 TOTAL 45.95 MEAN .13 MAX 2.7 MIN 0 AC-FT 91

PEAK DISCHARGE (BASE, 25 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-15	0200	1.62	29	3- 4	2330	1.63	30
2-10	1730	1.63	30	6-19	1700	1.59	26

16764000 Hilea Gulch tributary near Honuapo

LOCATION.--Lat 19°10'27", long 155°35'58", on right bank 0.5 mile upstream from mouth, 6.6 miles northwest of Honuapo, and 6.7 miles west of Punaluu.

DRAINAGE AREA.--9.17 sq mi.

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,940 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 8.06 cfs (5,840 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 882 cfs Nov. 24 (gage height, 5.68 ft), from rating curve extended above 75 cfs; no flow for many days.

Period of record: Maximum discharge, 1,220 cfs Dec. 30, 1966 (gage height, 6.35 ft), from rating curve extended above 75 cfs; no flow at times each year.

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	.95	5.5	1.2	.15	.05	0	9.4	.15	10	6.8	1.6
2	.80	6.3	2.9	.72	.09	.05	4.5	54	.10	1.5	17	1.9
3	2.3	3.8	16	31	.06	.05	1.5	6.2	.10	.27	1.1	.32
4	13	.69	3.5	6.4	.03	10	1.0	31	.10	.17	.29	.31
5	1.8	52	20	2.0	4.4	20	6.5	40	.05	.12	.19	7.5
6	50	25	37	29	.06	2.0	1.0	8.0	.05	.10	.14	1.1
7	21	6.5	7.4	43	14	.50	7.0	5.8	.05	24	.12	.20
8	2.8	1.5	6.8	32	2.6	.15	28	24	.13	41	.12	.22
9	.87	1.1	2.4	12	.06	.10	42	7.6	.50	7.2	.09	.09
10	.35	1.2	1.1	4.8	.03	.10	3.0	.93	.41	.69	21	.29
11	10	2.4	.38	1.5	.06	.05	.35	.76	1.3	.41	53	.19
12	1.4	.96	.26	.40	.19	.05	.40	2.7	1.6	.34	5.3	.06
13	.38	.60	.18	.55	.10	.05	15	5.1	.35	.18	.48	.03
14	.26	67	.16	11	.10	.05	8.4	.72	.19	1.8	.27	.02
15	.16	33	36	3.6	.10	.05	.37	1.5	.10	1.0	.17	.02
16	.16	3.2	4.7	4.2	.05	0	22	1.4	2.0	.42	.12	.02
17	.16	28	3.0	1.6	.05	0	31	.38	32	.27	.11	.32
18	.11	77	23	1.2	.05	0	9.1	10	30	.14	.06	.28
19	.10	18	18	.52	10	0	27	6.0	31	.14	1.3	.16
20	5.0	3.1	40	1.5	5.0	0	25	.43	23	.14	14	.47
21	.15	.72	6.2	3.9	.50	0	21	34	2.7	.62	1.2	2.8
22	.08	.38	1.4	6.8	.10	0	5.7	28	3.2	.31	.38	.50
23	.04	.23	.40	2.4	.10	0	1.5	9.9	4.1	.13	14	.40
24	.03	200	5.9	78	.07	0	.50	10	24	.09	1.3	.35
25	.02	99	5.8	2.9	.03	0	17	15	2.4	.05	.18	.30
26	.20	25	1.4	.71	.05	0	18	5.0	.68	.11	.10	.25
27	5.8	4.7	.40	.35	.05	0	3.3	1.5	.33	35	.06	.20
28	1.1	5.2	.18	.19	.05	0	28	.50	.19	2.7	.04	.15
29	6.5	22	2.6	4.8	.05	0	12	.30	12	1.2	.03	.15
30	12	14	18	2.0	-----	0	18	.20	12	17	.03	25
31	4.5	-----	2.6	.33	-----	0	-----	.15	-----	3.2	1.1	-----
TOTAL	143.77	703.53	273.16	290.57	38.18	33.25	358.12	320.47	184.78	150.30	140.08	45.20
MEAN	4.64	23.5	8.81	9.37	1.32	1.07	11.9	10.3	6.16	4.85	4.52	1.51
MAX	50	200	40	78	14	20	42	54	32	41	53	25
MIN	.02	.23	.16	.19	.03	0	0	.15	.05	.05	.03	.02
AC-FT	285	1,400	542	576	76	66	710	636	367	298	278	90

CAL YR 1971 TOTAL 2,925.07 MEAN 8.01 MAX 200 MIN .01 AC-FT 5,800  
 WTR YR 1972 TOTAL 2,681.41 MEAN 7.33 MAX 200 MIN 0 AC-FT 5,320

PEAK DISCHARGE (BASE, 600 CFS).--Nov. 24 (2330) 882 cfs (5.68 ft); Dec. 15 (1430) 698 cfs (5.22 ft).

## 16765000 Hilea Gulch tributary No. 2 near Honuapo

LOCATION.--Lat 19°10'17", long 155°36'05", on right bank 0.5 mile upstream from mouth, 6.3 miles northwest of Honuapo, and 6.6 miles west of Punaluu.

DRAINAGE AREA.--1.86 sq mi.

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,880 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 3.12 cfs (2,260 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 415 cfs Nov. 24 (gage height, 6.58 ft), from rating curve extended above 41 cfs; no flow for many days.

Period of record: Maximum discharge, 523 cfs Dec. 30, 1966 (gage height, 7.16 ft), from rating curve extended above 41 cfs; no flow many days each year.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.25	0	1.3	.19	0	0	0	.88	0	.56	.66	0
2	.03	1.6	.11	.11	0	0	.25	21	0	.02	6.6	0
3	.75	.11	6.3	15	0	0	0	1.0	0	0	.05	0
4	4.7	0	.64	2.9	0	1.2	0	16	0	0	0	0
5	.18	23	7.6	.19	4.2	5.9	1.5	19	0	0	0	.34
6	20	8.1	18	14	0	0	.05	1.9	0	0	0	.03
7	6.8	.58	3.0	20	0	0	1.6	1.3	0	10	0	0
8	.36	.01	1.7	10	0	0	18	6.4	0	10	0	0
9	0	0	.25	3.1	9.2	0	17	12	0	.59	0	0
10	0	0	.03	.94	4.3	0	.58	0	0	0	6.1	0
11	1.5	.37	0	.07	.13	0	0	0	0	0	19	0
12	.13	.06	0	0	0	0	0	.34	0	0	1.2	0
13	0	0	0	0	0	0	4.1	.15	0	0	0	0
14	0	26	0	.95	0	0	2.1	0	0	0	0	0
15	0	16	22	.06	0	0	0	0	0	0	0	0
16	0	.74	1.0	.44	0	0	9.9	0	9.2	0	0	0
17	0	12	.42	.01	0	0	11	1.5	7.8	0	0	0
18	0	39	6.4	.01	0	0	1.7	1.8	15	0	0	0
19	.16	6.5	6.9	0	0	0	8.4	.08	10	0	0	0
20	.04	.40	13	0	0	0	8.7	9.1	.99	0	1.2	0
21	0	0	.20	.35	0	0	7.2	18	.04	0	.01	0
22	0	0	.19	.60	0	0	1.2	4.2	.01	0	0	0
23	0	0	0	.22	0	0	.06	11	5.2	0	3.0	0
24	0	89	1.4	38	0	0	0	1.4	1.1	0	.07	0
25	0	105	1.5	.60	0	0	4.0	3.6	.05	0	0	0
26	0	12	.19	.01	0	0	6.5	.70	0	0	0	0
27	.07	.87	0	0	0	0	.78	0	0	11	0	0
28	0	1.0	0	0	0	0	14	0	5.5	.29	0	0
29	2.0	13	.48	.13	0	0	5.1	0	2.6	0	0	0
30	1.5	4.1	6.2	.07	-----	0	4.9	0	2.5	3.3	0	11
31	.32	-----	.94	0	-----	0	-----	0	-----	.42	.30	-----
TOTAL	38.79	359.44	99.75	107.95	17.83	7.1	128.62	131.35	59.99	36.18	38.19	11.37
MEAN	1.25	12.0	3.22	3.48	.61	.23	4.29	4.24	2.00	1.17	1.23	.38
MAX	20	105	22	38	9.2	5.9	18	21	15	11	19	11
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	77	713	198	214	35	14	255	261	119	72	76	23

CAL YR 1971 TOTAL 1,259.82 MEAN 3.45 MAX 114 MIN 0 AC-FT 2,500  
 WTR YR 1972 TOTAL 1,036.56 MEAN 2.83 MAX 105 MIN 0 AC-FT 2,060

PEAK DISCHARGE (BASE, 310 CFS).--Nov. 24 (2330) 415 cfs (6.58 ft); Dec. 15 (1430) 377 cfs (6.36 ft).

## HAWAII, ISLAND OF HAWAII

16767000 Ninole Gulch near Punaluu

LOCATION.--Lat 19°10'44", long 155°33'46", on right bank 300 ft downstream from forest-reserve boundary, 4.6 miles northwest of Punaluu, and 6.0 miles north of Honuapo.

DRAINAGE AREA.--15.5 sq mi.

PERIOD OF RECORD.--March 1966 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,080 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 4.19 cfs (3,040 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,460 cfs Nov. 24 (gage height, 5.97 ft), from rating curve extended above 30 cfs; no flow for many days.

Period of record: Maximum discharge, 2,430 cfs Apr. 11, 1970 (gage height, 6.62 ft), from rating curve extended above 30 cfs; no flow for many days each year.

REMARKS.--Records fair except those above 60 cfs, which are poor. No diversion above station.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	.64	0	0	0	0	.15	0	0	5.3	0
2	0	0	.06	.02	0	0	.70	42	0	0	5.1	0
3	.04	0	.34	17	0	0	0	.64	0	0	0	0
4	.58	0	.02	.47	0	0	.07	40	0	0	0	0
5	.02	58	2.8	.02	0	.52	0	22	0	0	0	.74
6	17	9.9	15	17	0	0	0	.54	0	0	0	.02
7	1.8	.18	1.1	12	0	0	18	2.1	0	17	0	0
8	.08	0	0	17	0	0	30	32	0	17	0	0
9	0	0	0	3.8	17	0	24	.87	0	.39	0	0
10	0	0	0	.31	3.9	0	.19	0	0	0	13	0
11	.22	0	0	.01	.22	0	0	0	0	0	27	0
12	.01	0	0	0	0	0	0	.08	0	0	.78	0
13	0	0	0	.01	0	0	10	.02	0	0	0	0
14	0	26	0	3.7	0	0	1.5	0	0	0	0	0
15	0	9.0	19	.16	0	0	0	0	0	0	0	0
16	0	.06	1.1	.17	0	0	14	0	4.2	0	0	0
17	0	4.0	.68	0	0	0	6.4	0	3.4	0	0	0
18	0	32	9.8	.01	0	0	.48	0	8.5	0	0	0
19	0	2.1	3.3	0	0	0	6.7	0	2.7	0	.68	0
20	0	.02	15	.01	0	0	2.9	.12	.11	0	.71	0
21	0	0	.51	.25	.05	0	3.9	3.6	.06	0	.04	0
22	0	0	6	.38	.02	0	.20	.53	.04	0	0	0
23	0	0	0	.18	0	0	0	3.5	5.8	0	.04	0
24	0	121	0	43	0	0	0	.23	.34	0	0	0
25	0	160	0	.12	0	0	1.0	1.9	0	0	0	0
26	0	3.3	0	0	.02	0	1.0	.23	0	0	0	0
27	2.7	.03	0	0	0	0	.17	0	0	1.6	0	0
28	.03	0	0	0	0	0	13	0	0	0	0	0
29	.12	5.4	0	.67	0	0	.50	0	0	0	0	.03
30	.14	3.4	1.4	.11	-----	0	2.8	0	0	3.1	0	12
31	.01	-----	.09	0	-----	0	-----	0	-----	.33	0	-----
TOTAL	22.75	434.39	70.84	116.40	21.21	.52	137.51	150.51	25.15	39.42	52.65	12.79
MEAN	.73	14.5	2.29	3.75	.73	.017	4.58	4.86	.84	1.27	1.70	.43
MAX	17	160	19	43	17	.52	30	42	8.5	17	27	12
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	45	862	141	231	42	1.0	273	299	50	78	104	25

CAL YR 1971 TOTAL 1,156.43 MEAN 3.17 MAX 160 MIN 0 AC-FT 2,290

WTR YR 1972 TOTAL 1,084.14 MEAN 2.96 MAX 160 MIN 0 AC-FI 2,150

PEAK DISCHARGE (BASE, 1,000 CFS).--Nov. 5 (1545) 1,040 cfs (5.59 ft); Nov. 24 (2400) 1,460 cfs (5.97 ft).

16770500 Paauau Gulch at Pahala

LOCATION.--Lat 19°12'39", long 155°28'48", on right bank 100 ft downstream from bridge on Wood Valley Road and 0.7 mile north of Pahala.

DRAINAGE AREA.--1.74 sq mi.

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

GAGE.--Water-stage recorder. Datum of gage is 972 ft above mean sea level (by stadia survey).

AVERAGE DISCHARGE.--10 years, 0.592 cfs (429 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,060 cfs Nov. 25 (gage height, 5.33 ft); no flow most of time.  
 Period of record: Maximum discharge, 3,600 cfs Jan. 5, 1969 (gage height, 5.90 ft), from rating curve extended above 360 cfs on basis of slope-area measurement at gage height 4.40 ft; no flow most of time.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	0	0	0	0	0	0			0	
2		0	0	0	0	0	0	0			0	
3		0	0	0	0	0	0	0			0	
4		0	0	.22	0	0	0	2.8			0	
5		0	0	.60	0	0	0	.32			0	
6		0	0	.70	0	0	0	0			0	
7		0	0	.40	0	0	0	0			0	
8		0	0	0	0	0	0	0			0	
9		0	0	.01	0	0	.23	0			0	
10		0	0	0	0	0	0	0			0	
11		0	0	0	0	0	0	0			0	
12		0	0	0	0	0	0	0			0	
13		0	0	0	0	0	0	0			0	
14		0	0	.49	0	0	0	0			0	
15		0	0	0	0	0	0	0			0	
16		0	.83	0	0	0	4.7	0			0	
17		0	.07	.02	0	0	.82	0			0	
18		0	.28	0	0	0	0	0			0	
19		0	2.1	0	0	0	0	0			8.5	
20		0	0	.06	0	0	0	0			0	
21		0	0	0	1.9	0	0	0			0	
22		0	0	0	.05	0	0	0			0	
23		0	0	0	0	0	0	0			0	
24		24	0	32	0	0	0	0			0	
25		26	0	1.1	0	.02	0	0			0	
26		4.8	0	.01	0	.01	0	0			0	
27		2.0	0	0	0	0	0	0			0	
28		.28	0	0	0	0	0	0			0	
29		.28	0	0	0	0	0	0			0	
30		.09	0	.03	-----	0	0	0			0	
31		-----	0	0	-----	0	-----	0	-----		0	-----
TOTAL	0	57.45	3.28	35.64	1.95	.03	5.75	3.12	0	0	8.5	0
MEAN	0	1.92	.11	1.15	.067	.001	.19	.10	0	0	.27	0
MAX	0	26	2.1	32	1.9	.02	4.7	2.8	0	0	8.5	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	114	6.5	71	3.9	.06	11	6.2	0	0	17	0

CAL YR 1971 TOTAL 166.46 MEAN .46 MAX 26 MIN 0 AC-FT 330  
 WTR YR 1972 TOTAL 115.72 MEAN .32 MAX 32 MIN 0 AC-FT 230

PEAK DISCHARGE (BASE, 180 CFS).--Nov. 25 (0930) 2,060 cfs (5.33 ft); Jan. 24 (0800) 286 cfs (3.86 ft).

## MARIANA ISLANDS, ISLAND OF SAIPAN

16800000 Denni Spring

LOCATION.--Lat 15°11'57" N., long 145°46'05" E., 2.8 miles southeast of Tanapag, 3.1 miles east of Garapan, and 5.6 miles northeast of Chalan Kanoa.

PERIOD OF RECORD.--August 1952 to June 1954 (published as Donni Spring near Garapan), March 1968, January 1969 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 261 ft (from U.S. Navy).

EXTREMES.--Period of record: Maximum daily discharge, 2.7 cfs Aug. 11-16, 1972; minimum daily, 0.02 cfs Sept. 16, 17, 1969.

REMARKS.--Records poor.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.72	.71	.56	.44	.31	.22	.20	.15	.13	.12	1.3	.78
2	.72	.71	.56	.44	.28	.22	.20	.15	.13	.12	1.2	.72
3	.66	.66	.56	.44	.28	.22	.20	.15	.13	.12	1.1	.72
4	.67	.66	.56	.44	.28	.22	.20	.14	.13	.12	1.1	.72
5	.67	.66	.56	.40	.28	.22	.18	.14	.13	.12	1.5	.68
6	.73	.66	.56	.40	.28	.22	.18	.13	.13	.12	1.8	.68
7	.85	.61	.56	.40	.28	.22	.18	.13	.12	.12	2.4	.68
8	1.1	.61	.51	.40	.28	.22	.16	.13	.12	.12	2.4	.68
9	1.2	.57	.51	.40	.28	.22	.16	.13	.12	.12	2.4	.68
10	1.2	.57	.51	.40	.28	.22	.16	.13	.12	.12	2.1	.68
11	1.2	.57	.47	.37	.28	.22	.16	.13	.12	.12	2.7	.68
12	1.1	.57	.47	.37	.28	.22	.16	.13	.12	.12	2.7	.68
13	1.0	.57	.47	.37	.25	.22	.15	.13	.12	.12	2.7	.68
14	.98	.67	.47	.37	.25	.22	.15	.13	.12	.12	2.7	.68
15	.92	.68	.43	.37	.25	.24	.15	.13	.12	.12	2.7	.68
16	.87	.68	.43	.37	.25	.24	.15	.13	.12	.12	2.7	.68
17	.81	.68	.43	.34	.23	.27	.15	.13	.12	.12	2.1	.68
18	.81	.68	.47	.34	.23	.27	.15	.13	.12	.12	1.8	.68
19	.81	.63	.47	.34	.23	.27	.15	.13	.12	.12	1.5	.68
20	.81	.63	.47	.34	.23	.24	.15	.13	.12	.12	1.4	.79
21	.81	.63	.47	.34	.23	.24	.15	.13	.12	.12	1.3	.91
22	.81	.63	.47	.34	.21	.22	.15	.13	.12	.48	1.2	1.0
23	.81	.63	.47	.34	.23	.22	.15	.13	.12	.72	1.1	1.0
24	.76	.59	.47	.34	.23	.22	.15	.13	.12	.84	1.1	1.1
25	.76	.59	.47	.34	.23	.22	.15	.13	.12	1.0	1.0	1.2
26	.76	.59	.47	.34	.24	.22	.15	.13	.12	1.3	.96	1.2
27	.76	.60	.47	.31	.24	.22	.15	.13	.12	1.4	.90	1.1
28	.76	.60	.44	.31	.24	.20	.15	.13	.12	1.5	.90	1.0
29	.71	.55	.44	.31	.24	.20	.15	.13	.12	1.5	.84	.97
30	.71	.55	.44	.31	-----	.20	.15	.13	.12	1.4	.84	.91
31	.71	-----	.44	.31	-----	.20	-----	.13	-----	1.3	.78	-----
TOTAL	26.19	18.74	15.08	11.33	7.40	6.97	4.84	4.11	3.66	13.96	51.22	24.32
MEAN	.84	.62	.49	.37	.26	.22	.16	.13	.12	.45	1.65	.81
MAX	1.2	.71	.56	.44	.31	.27	.20	.15	.13	1.5	2.7	1.2
MIN	.66	.55	.43	.31	.21	.20	.15	.13	.12	.12	.78	.68
AC-FT	52	37	30	22	15	14	9.6	8.2	7.3	28	102	48

CAL YR 1971 TOTAL 243.21 MEAN .67 MAX 2.0 MIN .21 AC-FT 482  
 WTR YR 1972 TOTAL 187.82 MEAN .51 MAX 2.7 MIN .12 AC-FT 373

MARIANA ISLANDS, ISLAND OF SAIPAN

173

16801000 South Fork Talofof Stream

LOCATION.--Lat 15°12'58" N., long 145°46'31" E., on left bank 0.3 mile upstream from confluence with Middle and North Forks, 1.4 miles south of Ogso Dogas, and 2.2 miles southeast of Tanapag.

DRAINAGE AREA.--0.69 sq mi. Area at site used prior to Mar. 31, 1971, 0.73 sq mi.

PERIOD OF RECORD.--October 1968 to current year. Low-flow records not equivalent prior to Mar. 31, 1971, due to undetermined amount of underflow between sites.

GAGE.--Water-stage recorder. Concrete control since Mar. 31, 1971. Altitude of gage is 30 ft (from topographic map). Prior to Mar. 31, 1971, at site 0.2 mile downstream at different datum.

EXTREMES.--Current year: Maximum discharge, 924 cfs July 23 (gage height, 5.24 ft, from floodmark in well), from rating curve extended above 59 cfs; minimum, 0.05 cfs May 13, 15-17.

Period of record: Maximum discharge, 1,230 cfs Nov. 19, 1968 (gage height, 7.18 ft, site and datum then in use), from rating curve extended above 1.2 cfs on basis of estimate of discharge from high-water marks; maximum gage height, 8.14 ft Nov. 2, 1968, site and datum then in use, from floodmark (backwater from vegetation); no flow at times prior to Mar. 31, 1971, at site then in use.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	1.3	.56	.23	.16	.09	.16	.14	.07	.16	2.0	.78
2	2.0	2.9	.56	.26	.14	.10	.13	.12	.08	.29	1.5	.78
3	1.5	1.2	.51	.26	.14	.12	.10	.11	.08	.26	7.6	.73
4	1.3	1.0	.46	.26	.12	.08	.09	.11	.10	.11	23	.68
5	1.1	.95	.40	.29	.12	.09	.08	.11	.12	.11	6.3	1.5
6	2.9	.90	.46	.36	.14	.12	.08	.09	.14	.29	32	1.5
7	4.2	.84	.40	.26	.12	.15	.08	.09	.14	.16	9.0	3.2
8	9.6	.84	.36	.23	.14	.09	.09	.08	.10	.14	4.3	1.1
9	3.0	.78	.51	.23	.14	.09	.09	.08	.09	.12	3.4	.95
10	2.2	.84	.40	.20	.12	.10	.09	.08	.10	.11	83	1.0
11	2.0	.73	.40	.20	.14	.09	.08	.07	.09	.12	13	1.6
12	2.6	2.4	.36	.18	.11	.12	.08	.07	.09	.12	6.1	1.9
13	1.9	1.4	.32	.18	.11	.15	.09	.07	.09	.11	4.2	1.3
14	1.6	.84	.32	.16	.11	.20	.10	.07	.12	.14	3.3	1.1
15	1.5	.78	.32	.18	.11	.20	.10	.07	.32	.14	2.6	1.1
16	1.4	.73	.46	.68	.10	.25	.11	.06	.32	.14	2.2	.95
17	1.3	.68	.36	.40	.11	.15	.11	.07	.12	.14	2.0	1.3
18	1.3	.68	.29	.78	.11	.15	.10	.07	.20	.12	1.8	1.1
19	1.5	.68	.32	.36	.10	.15	.09	.20	.16	.12	1.6	1.1
20	1.2	.68	.32	.29	.10	.15	.10	.11	.14	.11	1.9	1.1
21	1.1	.68	.29	.26	.10	.20	.11	.11	.11	.14	1.4	3.1
22	1.4	.68	.26	.23	.10	.20	.09	.11	.10	1.0	1.4	1.3
23	1.2	.90	.29	.20	.09	.17	.08	.14	.10	20	1.3	5.0
24	1.1	.68	.29	.20	.09	.16	.08	.10	.10	4.0	1.2	2.6
25	1.1	.62	.26	.18	.09	.14	.10	.09	.11	15	1.1	1.7
26	.95	.56	.26	.18	.09	.12	.11	.09	.12	3.0	1.0	1.4
27	.95	.68	.29	.16	.09	.11	.10	.08	.14	10	1.1	1.3
28	1.0	.73	.26	.20	.11	.11	.09	.08	.14	4.5	1.2	1.1
29	.95	.62	.23	.18	.09	.12	.09	.08	.16	6.0	1.0	1.1
30	.90	.56	.23	.16	-----	.12	.29	.07	.23	2.8	.90	1.2
31	.90	-----	.23	.18	-----	.12	-----	.07	-----	2.3	.90	-----
TOTAL	57.45	27.86	10.98	8.12	3.29	4.21	3.09	2.89	3.98	71.75	223.30	44.57
MEAN	1.85	.93	.35	.26	.11	.14	.10	.093	.13	2.31	7.20	1.49
MAX	9.6	2.9	.56	.78	.16	.25	.29	.20	.32	20	83	5.0
MIN	.90	.56	.23	.16	.09	.08	.08	.06	.07	.11	.90	.68
AC-FT	114	55	22	16	6.5	8.4	6.1	5.7	7.9	142	443	88

CAL YR 1971 TOTAL 560.21 MEAN 1.53 MAX 22 MIN 0 AC-FT 1,110  
 WTR YR 1972 TOTAL 461.49 MEAN 1.26 MAX 83 MIN .06 AC-FT 915

PEAK DISCHARGE (BASE, 40D CFS)

NOTE.--No gage-height record Mar. 1 to Apr. 12, July 23-27,

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7-23	/0300	5.24	924	8-10	1500	4.65	595
8-6	0200	4.61	575				

/ About.

## MARIANA ISLANDS, ISLAND OF SAIPAN

## 16801500 Middle Fork Talofofa Stream

LOCATION.--Lat 15°13'05" N., long 145°46'36" E., on left bank 700 ft upstream from confluence with South and North Forks, 2.2 miles southeast of Tanapag, and 3.7 miles east of Garapan.

DRAINAGE AREA.--0.35 sq mi.

PERIOD OF RECORD.--March 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Feb. 28, 1971. Altitude of gage is 25 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 445 cfs Aug. 6 (gage height, 4.53 ft), from rating curve extended above 15 cfs; minimum, 0.10 cfs May 7.

Period of record: Maximum discharge, 526 cfs Nov. 19, 1968 (gage height, 5.22 ft), from rating curve extended above 5.1 cfs; minimum, 0.08 cfs July 3, 1969.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	.80	.55	.42	.28	.23	.25	.21	.17	.21	.55	.46
2	1.0	1.3	.55	.46	.28	.25	.23	.19	.15	.38	.42	.46
3	.80	.75	.50	.46	.28	.28	.19	.19	.15	.34	1.8	.46
4	.70	.65	.50	.46	.28	.21	.17	.19	.15	.21	5.5	.42
5	.60	.65	.50	.46	.28	.23	.17	.17	.15	.23	1.5	.85
6	1.5	.65	.55	.42	.28	.28	.17	.17	.15	.38	11	.75
7	2.0	.60	.50	.42	.28	.31	.17	.15	.25	.23	2.3	1.0
8	2.5	.60	.50	.42	.25	.19	.19	.13	.19	.21	1.3	.46
9	.95	.60	.55	.42	.28	.19	.19	.13	.19	.23	1.2	.42
10	.80	.65	.50	.46	.25	.19	.19	.15	.19	.19	26	.46
11	.70	.60	.50	.46	.28	.19	.19	.15	.19	.19	2.5	.70
12	.95	.89	.46	.46	.28	.23	.19	.15	.17	.19	1.3	.60
13	.75	.88	.46	.46	.28	.25	.19	.15	.17	.19	1.0	.55
14	.75	.60	.46	.42	.25	.34	.19	.17	.17	.19	.90	.46
15	.75	.65	.46	.46	.25	.28	.19	.13	.42	.19	.85	.50
16	.75	.70	.55	.60	.25	.50	.21	.13	.25	.21	.75	.50
17	.70	.75	.46	.50	.24	.21	.21	.13	.23	.21	.65	.70
18	.75	.80	.46	.60	.23	.21	.23	.13	.25	.21	.60	.50
19	.85	.70	.46	.42	.23	.21	.25	.25	.23	.21	.60	.75
20	.70	.60	.42	.42	.23	.21	.31	.21	.19	.19	.75	.60
21	.70	.60	.42	.38	.23	.23	.21	.17	.23	.21	.60	1.1
22	.80	.65	.46	.34	.23	.23	.23	.13	.23	1.4	.65	.65
23	.70	.70	.50	.34	.23	.23	.23	.21	.23	6.6	.65	1.7
24	.65	.55	.46	.31	.23	.23	.21	.21	.23	1.5	.60	.95
25	.70	.55	.46	.31	.21	.25	.23	.17	.23	4.9	.55	.65
26	.65	.55	.50	.31	.25	.21	.25	.15	.21	1.1	.55	.60
27	.65	.60	.50	.31	.23	.21	.25	.13	.23	4.0	.65	.55
28	.70	.60	.46	.31	.23	.21	.28	.13	.23	1.0	.55	.50
29	.65	.55	.42	.31	.23	.23	.31	.13	.23	.80	.46	.46
30	.60	.50	.42	.28	-----	.23	.28	.13	.23	.60	.46	.65
31	.65	-----	.42	.28	-----	.23	-----	.17	-----	.60	.46	-----
TOTAL	26.95	20.27	14.91	12.68	7.33	7.48	6.56	5.01	6.29	27.30	67.65	19.41
MEAN	.87	.68	.48	.41	.25	.24	.22	.16	.21	.88	2.18	.65
MAX	2.5	1.3	.55	.60	.28	.50	.31	.25	.42	6.6	.26	1.7
MIN	.60	.50	.42	.28	.21	.19	.17	.13	.15	.19	.42	.42
AC-FT	53	40	30	25	15	15	13	9.9	12	54	134	38

GAL YR 1971 TOTAL 250.03 MEAN .69 MAX 5.2 MIN .19 AC-FT 496  
 WTR YR 1972 TOTAL 221.84 MEAN .61 MAX 26 MIN .13 AC-FT 440

## PEAK DISCHARGE (BASE, 150 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7-23	0300	4.14	286	8-10	1500	4.48	422
8-6	0200	4.53	445				

‡ From floodmark in well.

MARIANA ISLANDS, ISLAND OF ROTA

175

16806000 Lupug Spring

LOCATION.--Lat 14°07'22" N., long 145°11'13" E., on right bank 20 ft downstream from mouth of large cave where spring originates, 2.8 miles east of Rota School, and 3.1 miles west of Haaniya Cape.

PERIOD OF RECORD.--April 1971 to April 1972. May to September 1972, no record due to recorder not in operation most of the time.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (from vertical-angle survey).

EXTREMES.--Period of record: Maximum daily discharge, 7.6 cfs Aug. 6, 1971; minimum daily, 0.27 cfs Mar. 5, 1972.

REMARKS.--Records fair. About 0.75 cfs is diverted from the cave above station for domestic use in the village of Songsong.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	2.2	1.3	.80	.49	.31	1.5					
2	2.8	2.1	1.3	.80	.49	.30	1.4					
3	2.8	2.1	1.2	.80	.49	.30	1.4					
4	2.8	2.0	1.2	.80	.46	.28	1.3					
5	2.8	2.0	1.2	.85	.46	.27	1.3					
6	2.7	2.0	1.2	1.0	.46	.31	1.3					
7	2.7	2.0	1.2	1.0	.44	.36	1.2				/ .80	
8	3.1	2.0	1.2	1.0	.44	.82	1.2					
9	4.3	2.0	1.2	.95	.41	1.1	1.2					
10	3.7	1.9	1.2	.95	.41	.98	1.2					
11	3.5	1.9	1.1	.90	.38	.76	1.2					
12	3.2	1.9	1.1	.90	.36	.60	1.2					
13	3.1	1.8	1.1	.85	.36	.57	1.1					
14	2.9	1.8	1.1	.85	.36	.80	1.1					
15	2.9	1.8	1.0	.80	.36	1.0	1.1					
16	3.1	1.7	1.0	.80	.36	1.0	1.0					
17	3.1	1.7	1.0	.75	.36	1.2	1.0					
18	2.9	1.7	1.0	.70	.36	1.2	1.0				/ .55	
19	2.9	1.6	1.0	.65	.36	1.4	1.0					
20	2.8	1.6	1.0	.60	.33	1.5	1.0					
21	2.8	1.6	1.0	.55	.33	1.6	1.0					
22	2.8	1.6	.98	.52	.33	1.6	1.0					
23	2.8	1.5	.93	.49	.33	1.6	1.0					
24	2.7	1.5	.93	.46	.36	1.5	1.0					
25	2.7	1.5	.93	.44	.38	1.4	1.0					
26	2.5	1.5	.93	.41	.36	1.3	.98			/ .88		
27	2.5	1.5	.90	.41	.33	1.2	.98					
28	2.4	1.4	.90	.44	.33	1.1	.98					
29	2.4	1.4	.85	.44	.31	1.3	.95					
30	2.4	1.3	.85	.44	-----	1.5	.95					
31	2.2	-----	.85	.46	-----	1.5	-----		-----			-----
TOTAL	89.0	52.6	32.65	21.81	11.20	30.66	33.54					
MEAN	2.87	1.75	1.05	.70	.39	.99	1.12					
MAX	4.3	2.2	1.3	1.0	.49	1.6	1.5					
MIN	2.2	1.3	.85	.41	.31	.27	.95					
AC-FT	177	104	65	43	22	61	67					

/ Result of discharge measurement.

## MARIANA ISLANDS, ISLAND OF GUAM

16808300 Finile Creek at Agat

LOCATION.--Lat 13°22'39" N., long 144°39'26" E., on right bank 0.4 mile upstream from estuary and 0.4 mile south of Agat School.

DRAINAGE AREA.--0.28 sq mi.

PERIOD OF RECORD.--April 1960 to current year. Prior to October 1969, published as Finile River at Agat.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

AVERAGE DISCHARGE.--12 years, 1.51 cfs (1,090 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 193 cfs Sept. 17 (gage height, 2.68 ft), from rating curve extended above 50 cfs on basis of slope-area measurement at gage height 3.66 ft; minimum, 0.06 cfs June 11-13.  
 Period of record: Maximum discharge, 319 cfs Oct. 17, 1969 (gage height, 3.81 ft, from floodmark in well), from rating curve extended above 30 cfs on basis of slope-area measurement at gage height 3.66 ft; minimum, 0.06 cfs June 11-13, 1972.

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

REVISIONS.--WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	1.2	.58	.38	.38	.33	.24	.20	.12	.24	1.3	.96
2	1.3	1.3	.58	.44	.38	.28	.28	.16	.12	.24	16	1.2
3	1.3	1.1	.51	.51	.44	.28	.24	.12	.12	.24	12	.96
4	1.2	1.1	.51	2.1	.38	.28	.24	.12	.12	.28	9.6	.96
5	1.6	.85	.51	.75	.38	1.4	.24	.12	.12	.24	4.7	1.8
6	2.1	.75	.51	.51	.33	.38	.24	.12	.33	.24	3.6	.85
7	8.9	.75	.51	.48	.33	.28	.28	.12	.12	4.6	3.9	1.5
8	8.8	.75	.51	.44	.33	.28	.24	.12	.12	5.9	2.8	1.6
9	2.2	.75	.58	.38	.28	.28	.24	.12	.09	1.3	2.5	2.3
10	1.8	.85	.75	.38	.33	.28	.24	.12	.09	2.7	2.2	1.1
11	3.9	.66	.58	.33	.38	.28	.24	.12	.09	2.5	3.0	2.2
12	1.8	.66	.58	.33	.51	.24	.28	.16	.09	1.1	4.3	1.8
13	1.6	.58	.66	.33	.66	1.7	.24	.16	.09	.75	5.1	1.2
14	1.5	1.2	.85	.33	.44	.44	.24	.16	.09	.66	2.2	6.6
15	1.3	.66	.66	.33	.38	.38	.24	.12	.16	.66	2.0	1.8
16	1.3	.66	.66	.38	.38	.33	.24	.12	.20	.66	1.8	1.3
17	1.5	.66	.58	.51	.33	.85	.24	.12	.20	.75	1.5	14
18	1.3	2.1	.51	.44	.33	.96	.24	.12	.44	.58	1.6	2.2
19	1.3	.75	.51	.38	.38	1.8	.20	.12	.28	.51	1.8	2.0
20	1.2	.85	.51	.38	.33	.44	.24	.12	.66	.51	1.3	2.0
21	2.0	.66	.51	.38	.33	.38	.24	.16	.33	.44	1.2	1.8
22	1.5	.66	.51	.38	.38	.33	.20	.12	4.0	.44	1.1	1.6
23	1.1	.66	.44	.38	.33	.33	.24	.24	.58	13	1.1	1.5
24	.96	.85	.44	.38	.28	.33	.20	.28	.33	4.2	1.1	8.9
25	.96	.66	.44	.38	.28	.33	.16	.24	.33	1.5	1.5	1.8
26	.96	.85	.44	.38	.28	.33	.24	.24	.28	2.0	1.6	1.6
27	.96	.66	.38	.33	.33	.33	.20	.20	.66	1.3	6.3	1.5
28	.85	.66	.38	.33	.28	.28	.20	.20	.38	15	1.3	1.3
29	.85	.58	.38	.33	.33	.28	.24	.20	.28	2.2	1.2	1.3
30	.85	.58	.44	.33	-----	.33	.28	.16	.24	1.6	1.1	1.2
31	.96	-----	.38	.38	-----	.28	-----	.16	-----	1.5	.96	-----
TOTAL	59.65	25.00	16.39	14.09	10.50	15.02	7.08	4.84	11.06	67.84	101.66	70.83
MEAN	1.92	.83	.53	.45	.36	.48	.24	.16	.37	2.19	3.28	2.36
MAX	8.9	2.1	.85	2.1	.66	1.8	.28	.28	4.0	15	16	14
MIN	.85	.58	.38	.33	.28	.24	.16	.12	.09	.24	.96	.85
AC-FT	118	50	33	28	21	30	14	9.6	22	135	202	140

CAL YR 1971 TOTAL 687.08 MEAN 1.88 MAX 35 MIN .38 AC-FT 1,360  
 WTR YR 1972 TOTAL 403.96 MEAN 1.10 MAX 16 MIN .09 AC-FT 801

PEAK DISCHARGE (BASE, 170 CFS).--Sept. 17 (0400) 193 cfs (2.68 ft).

MARIANA ISLANDS, ISLAND OF GUAM

177

16816000 Umatac River at Umatac

LOCATION.--Lat 13°17'48" N., long 144°39'46" E., on left bank 0.2 mile upstream from mouth, 0.3 mile southeast of Umatac, and 5.8 miles northwest of Inarajan.

DRAINAGE AREA.--2.11 sq mi.

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

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 8 ft (from topographic map). Prior to Oct. 16, 1953, at datum 0.62 ft higher.

AVERAGE DISCHARGE.--20 years, 8.79 cfs (6,370 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,300 cfs Aug. 2 (gage height, 5.44 ft), from rating curve extended as explained below; minimum, 0.64 cfs May 30 to June 2.  
 Period of record: Maximum discharge, 7,460 cfs Oct. 19, 1960 (gage height, 7.04 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 3.51 and 7.04 ft; minimum, 0.20 cfs June 23, 1960.

REMARKS.--Records fair. Upstream diversion at Piga Spring for domestic use at Umatac. Recording rain gage located at station.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	10	3.2	1.8	2.2	1.3	1.6	1.6	.64	2.4	7.2	7.8
2	10	5.1	3.2	2.0	1.6	1.2	2.0	1.6	.84	3.2	483	59
3	7.0	3.8	3.0	6.6	1.5	1.2	1.8	1.3	.74	2.6	127	11
4	5.0	4.5	3.2	33	1.2	1.1	2.6	1.2	.84	2.2	28	9.5
5	40	3.5	3.2	6.8	1.2	1.1	1.6	1.2	.84	2.2	20	21
6	40	2.8	3.2	15	1.2	4.7	1.5	1.2	1.1	2.2	18	12
7	80	2.6	2.8	3.8	1.2	3.0	2.2	1.1	1.1	28	26	12
8	80	8.6	2.8	3.2	1.2	2.8	1.6	1.1	1.2	28	20	28
9	20	3.2	2.6	2.8	1.2	2.0	1.5	.84	.94	13	18	23
10	15	10	3.5	2.6	1.2	1.6	1.8	.84	.94	7.6	18	10
11	12	3.0	2.6	2.4	1.8	1.8	1.3	.84	.94	10	25	15
12	10	2.6	2.6	2.4	3.2	1.3	1.3	1.1	.84	61	25	7.6
13	8.0	2.6	4.0	2.0	3.8	11	1.5	1.3	.84	14	18	7.2
14	7.0	10	3.2	2.0	2.2	4.6	1.3	1.2	.84	7.6	14	6.8
15	6.0	3.8	2.8	2.0	2.0	2.6	1.3	.94	1.1	6.0	13	6.4
16	5.0	4.3	2.8	2.0	1.8	2.2	1.3	.84	1.3	5.3	12	5.6
17	4.5	5.0	2.6	7.7	1.7	3.5	1.3	.84	1.3	4.6	11	86
18	4.0	15	2.4	3.8	1.6	14	1.2	.84	3.8	4.0	13	8.0
19	12	5.6	2.6	2.8	2.0	25	1.1	.84	3.0	3.2	14	8.0
20	6.0	28	2.4	2.4	1.6	6.8	1.2	.84	7.6	3.0	12	34
21	5.3	7.6	2.4	2.2	1.5	3.8	1.3	1.1	3.8	2.8	10	8.0
22	3.5	7.2	2.2	2.4	1.4	3.0	1.1	.84	44	2.8	9.0	6.0
23	3.0	7.6	2.2	2.0	1.3	2.6	13	.94	9.5	47	8.0	5.3
24	3.0	5.6	2.2	1.8	1.3	3.2	2.4	1.3	4.6	39	6.8	128
25	2.8	4.3	2.4	1.8	1.2	2.6	1.6	1.1	3.2	14	90	10
26	2.8	5.3	2.4	1.6	1.2	2.4	7.0	.94	2.8	26	14	6.8
27	12	3.8	2.2	1.5	1.2	2.2	2.4	.84	12	15	46	7.2
28	3.2	7.0	1.8	1.5	1.1	2.0	1.6	.74	3.8	98	12	5.3
29	3.5	3.8	1.6	1.5	1.2	2.0	1.3	.74	3.0	15	8.5	5.0
30	2.8	3.5	3.2	1.3	-----	2.4	1.3	.64	2.6	10	7.6	4.3
31	2.6	-----	2.0	2.0	-----	1.8	-----	.64	-----	8.0	6.4	-----
TOTAL	466.0	194.7	83.3	126.7	46.8	120.8	64.0	31.38	120.04	487.7	1,140.5	555.8
MEAN	15.0	6.49	2.69	4.09	1.61	3.90	2.13	1.01	4.00	15.7	36.8	18.5
MAX	80	28	4.0	33	3.8	25	13	1.6	44	98	483	128
MIN	2.6	2.6	1.6	1.3	1.1	1.1	1.1	.64	.64	2.2	6.4	4.3
AC-FT	924	386	165	251	93	240	127	62	238	967	2,260	1,100

CAL YR 1971 TOTAL 4,201.80 MEAN 11.5 MAX 330 MIN 1.6 AC-FT 8,330  
 WTR YR 1972 TOTAL 3,437.72 MEAN 9.39 MAX 483 MIN .64 AC-FT 6,820

PEAK DISCHARGE (BASE, 1,400 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7-12	1900	4.32	2,530	9- 2	1500	3.68	1,660
8- 2	2130	5.44	4,300	9-17	0600	3.95	1,980
8-27	1130	3.50	1,460	9-24	0300	4.36	2,590

## MARIANA ISLANDS, ISLAND OF GUAM

16821000 Geus River near Merizo

LOCATION.--Lat 13°16'13" N., long 144°40'38" E., on left bank 0.7 mile northeast of Merizo, 2.2 miles southeast of Umatac, and 4.7 miles west of Inarajan.

DRAINAGE AREA.--0.93 sq mi.

PERIOD OF RECORD.--April 1953 to current year.

GAGE.--Water-stage recorder and broad-crested weir. Altitude of gage is 60 ft (from topographic map).

AVERAGE DISCHARGE.--19 years, 3.12 cfs (2,260 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 498 cfs Aug. 2 (gage height, 2.91 ft), from rating curve extended as explained below; no flow part of June 12.

Period of record: Maximum discharge, 2,940 cfs Oct. 19, 1960 (gage height, 4.16 ft), from rating curve extended above 66 cfs on basis of slope-area measurements at gage heights 4.00 and 4.16 ft; no flow at times in 1966, 1969-70, 1972.

REMARKS.--Records poor. Water is diverted 0.5 mile upstream for domestic use and at station for irrigation.

REVISIONS (FISCAL YEARS).--WSP 1937: 1954(P), 1959(P). WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	2.4	.82	.55	.40	.34	.20	.16	.05	.55	1.6	2.4
2	4.3	1.3	.82	.55	.34	.31	.25	.20	.06	.68	57	27
3	4.6	1.0	.77	.59	.34	.28	.14	.18	.09	.68	47	3.3
4	2.8	1.8	.77	3.3	.28	.25	.36	.14	.07	.72	7.9	1.7
5	4.3	.82	.72	1.2	.25	.23	.20	.16	.05	.87	4.8	3.7
6	11	.68	.68	1.0	.20	1.3	.16	.18	.06	1.2	4.0	3.6
7	17	.63	.55	.68	.18	.82	.31	.18	.07	12	6.3	3.0
8	22	2.3	.51	.51	.16	.82	.18	.12	.14	17	4.4	3.1
9	8.2	1.3	.55	.47	.14	.47	.16	.12	.10	9.5	7.8	2.3
10	6.0	2.2	.63	.43	.12	.47	.18	.08	.06	3.8	5.4	1.8
11	4.2	1.7	.63	.40	.18	.43	.14	.12	.06	11	9.6	5.6
12	3.8	1.4	.68	.43	.34	.40	.16	.14	.05	12	9.1	2.3
13	3.1	1.4	.77	.40	.40	2.1	.18	.16	.05	7.4	4.4	1.7
14	2.7	2.5	.68	.40	.25	1.4	.18	.28	.05	2.2	3.0	1.5
15	2.3	2.2	.63	.37	.20	.98	.14	.20	.10	1.4	2.1	1.2
16	2.1	2.2	.68	.34	.16	.82	.14	.14	.16	1.1	1.8	1.2
17	2.1	2.1	.59	.55	.14	1.2	.18	.12	.10	.77	1.5	29
18	2.3	4.3	.59	.68	.14	2.9	.16	.09	.61	.77	1.7	3.6
19	3.0	1.9	.63	.40	.14	3.4	.14	.12	.25	.63	2.7	4.8
20	2.3	5.0	.59	.34	.14	1.6	.18	.10	1.1	.51	2.6	18
21	2.3	1.7	.63	.28	.18	.87	.23	.12	.51	.40	2.2	4.4
22	1.5	1.4	.55	.23	.23	.55	.18	.14	25	.40	1.4	2.7
23	1.3	1.4	.55	.23	.16	.51	1.9	.14	5.0	16	1.3	3.3
24	1.2	1.2	.55	.25	.25	.51	.51	.20	1.4	23	1.2	33
25	1.2	.87	.55	.28	.34	.40	.25	.16	.77	9.0	11	4.8
26	1.2	1.3	.55	.34	.25	.40	.87	.16	.72	16	2.4	2.6
27	1.4	.98	.55	.25	.20	.34	.34	.12	.87	7.6	18	2.7
28	1.2	.98	.55	.23	.28	.28	.20	.08	.72	36	3.2	1.9
29	1.3	.98	.55	.28	.28	.28	.16	.06	.63	6.6	3.3	1.7
30	1.2	.87	.77	.34	-----	.28	.10	.06	.59	3.2	2.2	1.5
31	1.2	-----	.59	.40	-----	.25	-----	.05	-----	2.2	4.8	-----
TOTAL	130.9	50.81	19.68	16.70	6.67	25.19	8.48	4.28	39.49	205.18	235.7	179.4
MEAN	4.22	1.69	.63	.54	.23	.81	.28	.14	1.32	6.62	7.60	5.98
MAX	22	5.0	.82	3.3	.40	3.4	1.9	.28	25	36	57	33
MIN	1.2	.63	.51	.23	.12	.23	.10	.05	.05	.40	1.2	1.2
AC-FT	260	101	39	33	13	50	17	8.5	78	407	468	356

CAL YR 1971 TOTAL 1,061.64 MEAN 2.91 MAX 176 MIN .37 AC-FT 2,110  
 WTR YR 1972 TOTAL 922.48 MEAN 2.52 MAX 57 MIN .05 AC-FT 1,830

PEAK DISCHARGE (BASE, 350 CFS).--Aug. 2 (1730) 498 cfs (2.91 ft).

MARIANA ISLANDS, ISLAND OF GUAM

179

16835000 Inarajan River near Inarajan

LOCATION.--Lat 13°16'41" N., long 144°44'15" E., on right bank 0.6 mile northwest of Inarajan and 4.9 miles east of Merizo.

DRAINAGE AREA.--4.42 sq mi.

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

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

AVERAGE DISCHARGE.--20 years, 17.6 cfs (12,750 acre-ft per year).

EXTREMES.--Current year: Maximum gage height, 12.27 ft Aug. 2 (discharge not determined); minimum discharge, 1.4 cfs June 12.

Period of record: Maximum gage height, 12.90 ft Oct. 11, 1963 (discharge not determined); minimum discharge, 0.99 cfs July 14, 1959.

REMARKS.--Records fair. Stage-discharge relation not determined above gage height 11.0 ft owing to ungaged overbank flow. Village of Inarajan diverts about 40,000 gallons a day above station for domestic use and during dry periods about 250,000 gallons a day for irrigation.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	57	7.5	4.6	5.6	4.2	3.8	3.6	2.0	2.7	11	20
2	45	17	7.0	5.2	4.4	3.1	4.2	3.3	2.2	5.0	195	17
3	28	10	7.0	5.6	4.2	3.1	3.6	3.3	2.0	3.5	195	14
4	18	11	8.0	6.4	4.0	2.9	4.4	2.9	1.9	3.5	38	13
5	88	8.4	10	11	4.2	2.9	3.5	2.9	2.0	3.6	26	27
6	93	7.9	8.0	15	3.8	15	3.3	3.1	2.4	5.8	23	15
7	183	7.4	7.0	7.4	3.6	7.0	4.9	2.7	2.0	2.9	76	19
8	181	39	6.5	6.2	3.6	5.8	3.5	2.6	2.7	31	27	22
9	50	12	6.2	5.8	3.6	4.8	3.3	2.6	1.7	15	32	15
10	30	17	10	5.6	3.5	3.8	3.8	2.6	1.7	8.4	23	14
11	21	8.7	6.0	5.6	4.6	4.0	3.3	2.6	1.7	6.5	46	17
12	15	8.2	5.8	5.4	11	3.5	3.3	3.7	1.6	66	125	13
13	13	7.7	10	5.2	7.7	21	3.8	4.0	2.0	15	29	12
14	9.4	90	6.5	5.2	5.0	8.2	3.6	3.6	1.9	7.4	21	11
15	10	15	5.8	5.2	4.2	5.2	3.5	2.9	2.4	6.0	17	11
16	9.7	10	6.0	5.6	3.8	4.8	3.3	2.6	2.7	5.6	16	11
17	9.4	9.0	5.4	9.6	3.8	5.8	3.1	2.4	2.7	4.8	15	116
18	8.7	40	5.2	7.0	3.5	26	2.9	2.4	6.4	4.4	15	15
19	11	20	5.4	5.6	4.6	28	2.9	2.2	4.7	4.2	23	15
20	9.7	40	5.2	5.0	3.6	9.7	2.9	2.2	6.0	4.2	23	40
21	13	15	5.4	5.0	3.5	6.2	3.1	3.3	4.6	4.0	17	17
22	10	13	5.0	4.8	3.6	5.2	2.9	2.2	4.4	3.8	13	15
23	9.1	15	4.8	4.4	3.5	4.6	18	2.9	10	59	13	13
24	8.4	15	4.8	4.6	3.3	4.8	4.8	3.5	5.4	74	12	87
25	8.2	10	4.6	4.6	3.3	4.4	4.0	3.1	4.4	21	124	18
26	7.9	12	4.6	4.4	3.3	4.0	6.6	3.1	3.6	40	26	14
27	12	9.0	4.6	4.2	3.3	3.8	4.2	2.6	5.0	39	178	16
28	8.2	15	4.6	4.2	3.1	3.6	3.5	2.4	3.6	235	26	13
29	8.4	9.0	4.4	4.2	3.3	4.0	3.5	2.2	3.5	25	25	12
30	7.4	8.0	6.5	4.0	-----	4.4	3.5	2.0	2.9	16	20	11
31	7.4	-----	4.8	5.2	-----	3.8	-----	2.0	-----	13	16	-----
TOTAL	1,034.9	556.3	192.6	239.4	122.5	217.6	125.0	87.5	139.7	761.4	1,446	653
MEAN	33.4	18.5	6.21	7.72	4.22	7.02	4.17	2.82	4.66	24.6	46.6	21.8
MAX	183	90	10	64	11	28	18	4.0	44	235	195	116
MIN	7.4	7.4	4.4	4.0	3.1	2.9	2.9	2.0	1.6	2.7	11	11
AC-FT	2,050	1,100	382	475	243	432	248	174	277	1,510	2,870	1,300

CAL YR 1971 TOTAL 10,400.5 MEAN 28.5 MAX 893 MIN 4.4 AC-FT 20,630  
 WTR YR 1972 TOTAL 5,575.9 MEAN 15.2 MAX 235 MIN 1.6 AC-FT 11,060

PEAK DISCHARGE (BASE, 1,700 CFS).--Aug. 2 (2200) discharge not determined (12.27 ft); Aug. 25 (0330) 1,780 cfs (10.80 ft).

## MARIANA ISLANDS, ISLAND OF GUAM

16840000 Tinaga River near Inarajan

LOCATION.--Lat 13°17'10" N., long 144°45'04" E., on right bank 0.3 mile upstream from mouth, 0.9 mile northeast of Inarajan, and 4.5 miles south of Talofofa.

DRAINAGE AREA.--1.89 sq mi.

PERIOD OF RECORD.--October 1952 to current year. Prior to October 1969, published as Pauliluc River near Inarajan.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

AVERAGE DISCHARGE.--20 years, 5.77 cfs (4,180 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 722 cfs Aug. 2 (gage height, 6.01 ft), from rating curve extended above 210 cfs; minimum recorded, 0.44 cfs May 22, but may have been less on May 11, June 2, 3, 12.  
Period of record: Maximum discharge, 2,980 cfs Oct. 15, 1953 (gage height, 13.11 ft), from rating curve extended above 210 cfs; minimum, 0.15 cfs May 16, 21-23, 29, 1966.

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

REVISIONS.--WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	6.7	2.5	1.4	1.6	.83	1.0	.74	.50	.99	4.1	6.4
2	6.1	4.1	2.4	2.0	1.1	.74	1.0	.74	.45	.88	61	4.7
3	6.4	4.1	2.4	1.8	1.0	.70	1.0	.74	.45	.78	70	4.1
4	5.8	5.2	2.6	2.3	.99	.62	1.1	.70	.58	.74	16	3.5
5	32	3.5	2.8	5.2	1.0	.62	.99	.65	.50	.58	9.7	9.1
6	30	3.2	2.6	2.9	.93	2.4	.93	.65	.70	.93	8.5	4.9
7	52	3.0	2.2	2.2	.93	2.0	1.2	.60	.62	11	19	8.5
8	57	5.4	2.1	2.0	.88	1.6	.93	.55	.62	12	11	7.7
9	11	4.3	2.1	1.7	.88	1.3	.88	.50	.62	4.5	8.1	4.9
10	12	5.2	2.6	1.6	.88	.99	1.1	.50	.66	2.6	8.9	4.5
11	7.7	3.4	2.0	1.5	1.2	.93	.88	.45	.54	2.0	19	4.3
12	6.7	3.0	1.9	1.4	3.7	.88	.88	.84	.45	2.0	48	3.9
13	6.1	2.9	2.8	1.4	3.2	2.1	.93	1.4	.54	3.9	8.0	3.5
14	5.2	27	2.2	1.4	1.8	2.6	.88	.93	.66	2.4	7.0	3.4
15	4.9	3.5	2.0	1.3	1.4	1.2	.83	.83	.78	1.6	6.0	3.2
16	4.5	3.2	1.9	1.4	1.2	1.1	.74	.66	.66	1.5	5.5	3.2
17	4.7	3.0	1.8	1.7	1.1	1.3	.74	.60	.70	1.4	5.0	39
18	4.1	11	1.7	1.9	1.0	3.2	.70	.60	1.2	1.2	5.0	4.9
19	4.1	5.5	1.7	1.4	1.2	8.2	.70	.55	1.3	1.1	13	5.9
20	4.1	13	1.6	1.4	.99	2.9	.66	.50	2.8	1.1	8.5	27
21	4.1	4.7	1.6	1.3	.93	1.8	.70	.70	1.5	.93	5.5	6.7
22	4.1	4.1	1.5	1.2	.88	1.5	.66	.44	9.5	.88	4.7	5.5
23	3.9	4.3	1.4	1.2	.88	1.4	3.4	.70	3.9	16	4.3	5.5
24	3.5	4.3	1.4	1.1	.83	1.4	1.4	.99	1.5	18	4.1	28
25	3.4	3.2	1.4	1.0	.78	1.3	.83	1.2	1.1	4.5	32	6.1
26	3.2	3.7	1.4	1.0	.74	1.2	1.9	.86	1.3	8.9	8.5	4.7
27	4.1	2.9	1.3	1.0	.74	1.2	1.4	.74	2.1	9.3	86	5.2
28	3.4	4.1	1.3	1.0	.66	1.1	1.0	.70	1.5	70	9.3	4.3
29	3.5	2.9	1.2	.99	.70	1.1	.93	.62	1.1	8.1	7.0	3.9
30	3.5	2.6	2.1	.93	-----	1.0	.83	.55	.88	4.9	6.7	3.5
31	3.2	-----	1.6	1.1	-----	1.0	-----	.50	-----	4.3	5.2	-----
TOTAL	325.3	157.0	60.1	70.42	34.12	50.21	31.12	21.75	39.71	199.01	514.6	230.0
MEAN	10.5	5.23	1.94	2.27	1.18	1.62	1.04	.70	1.32	6.42	16.6	7.67
MAX	57	27	2.8	23	3.7	8.2	3.4	1.4	9.5	70	86	39
MIN	3.2	2.6	1.2	.93	.66	.62	.66	.44	.45	.58	4.1	3.2
AC-FT	645	311	119	140	68	100	62	43	79	395	1,020	456

CAL YR 1971 TOTAL 3,003.13 MEAN 8.23 MAX 280 MIN .93 AC-FT 5,960  
WTR YR 1972 TOTAL 1,733.34 MEAN 4.74 MAX 86 MIN .44 AC-FT 3,440

PEAK DISCHARGE (BASE, 400 CFS).--Aug. 2 (2300) 722 cfs (6.01 ft).

MARIANA ISLANDS, ISLAND OF GUAM

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16847000 Imong River near Agat

LOCATION.--Lat 13°20'17" N, long 144°41'55" E., on left bank 500 ft upstream from Fena Valley Reservoir, 1.4 miles south of Fena Dam spillway, and 4.1 miles southeast of Agat School.

DRAINAGE AREA.--1.95 sq mi.

PERIOD OF RECORD.--March 1960 to March 1971. April to September 1971, no record due to military restriction to station. Current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 120 ft (from topographic map).

AVERAGE DISCHARGE.--11 years, 10.8 cfs (7,820 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,290 cfs Aug. 2 (gage height, 7.96 ft), from rating curve extended as explained below; minimum, 1.5 cfs Mar. 3-5, June 1-5.

Period of record: Maximum discharge, 3,370 cfs Oct. 19, 1960 (gage height, 10.06 ft), from rating curve extended above 110 cfs on basis of slope-area measurements at gage heights 7.46 and 10.06 ft; minimum, 0.37 cfs May 21, 22, 26, 1966.

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

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	20	4.0	3.2	3.0	2.0	2.4	2.2	1.5	3.0	7.5	5.6
2	10	8.9	4.0	3.8	2.4	1.6	2.8	1.6	1.5	3.0	217	11
3	15	8.0	3.8	9.0	2.4	1.5	2.4	1.6	1.5	2.6	300	6.3
4	10	25	4.0	22	2.4	1.5	2.6	1.6	1.5	2.4	100	5.6
5	20	6.3	4.3	11	2.4	1.5	2.4	1.6	1.6	2.4	50	13
6	25	5.2	4.6	5.6	2.2	2.6	2.6	1.6	6.4	3.8	35	8.0
7	100	4.6	3.8	4.0	2.4	2.2	2.8	1.6	2.2	50	30	19
8	100	5.6	3.5	3.8	2.4	2.4	2.4	1.6	2.0	29	25	12
9	25	8.3	3.5	3.5	2.4	2.0	2.2	1.6	1.8	15	20	12
10	30	9.8	4.3	3.2	2.2	1.8	2.6	1.6	1.8	14	15	7.1
11	15	4.9	3.5	3.2	2.4	2.0	2.0	1.6	1.6	15	20	8.5
12	11	4.3	3.2	3.0	3.5	1.8	2.0	2.4	1.6	23	30	6.7
13	9.0	4.3	4.0	3.0	5.2	13	2.0	2.6	1.8	12	50	5.6
14	8.0	17	7.3	3.0	3.0	4.3	1.8	2.2	1.8	6.7	30	5.2
15	7.5	5.9	3.5	3.2	2.6	2.6	1.8	1.8	2.2	5.6	15	4.9
16	7.0	5.2	3.5	3.5	2.4	2.4	1.8	1.8	2.4	4.9	10	4.6
17	6.5	5.2	3.2	7.1	2.2	4.9	1.8	1.8	2.4	4.3	7.1	160
18	6.0	18	3.2	4.0	2.0	9.0	1.8	2.0	3.5	3.8	10	20
19	6.0	6.7	3.5	3.2	2.8	16	1.8	1.8	3.5	3.8	16	19
20	6.7	42	3.2	2.8	2.0	5.6	1.8	1.8	13	3.5	13	33
21	9.7	7.1	3.2	2.8	1.8	3.5	1.8	2.8	4.6	3.5	8.5	15
22	11	8.0	3.0	2.8	2.0	2.8	1.8	1.8	26	3.5	7.1	10
23	5.6	7.5	3.0	2.6	1.8	2.6	3.8	2.2	9.0	54	6.7	8.0
24	7.4	9.0	3.0	2.6	1.8	5.3	2.0	4.9	4.6	39	6.3	187
25	5.2	5.2	3.0	2.6	1.8	2.8	1.8	2.4	3.2	13	19	22
26	4.9	5.6	3.0	2.4	1.6	2.6	4.0	2.0	2.6	51	9.5	12
27	15	4.6	3.0	2.4	1.8	2.8	2.2	1.8	27	22	39	9.0
28	8.6	9.0	3.0	2.4	1.6	2.4	1.8	1.8	5.9	104	11	5.9
29	8.5	4.0	2.8	2.4	1.8	2.4	1.6	1.8	4.6	16	7.1	5.2
30	5.6	4.0	7.1	2.4	-----	2.4	1.8	1.6	3.5	10	6.3	4.6
31	6.8	-----	3.2	2.8	-----	2.2	-----	1.6	-----	9.0	5.6	-----
TOTAL	518.0	279.2	115.2	133.3	68.3	112.5	66.4	61.1	146.6	532.8	1,126.7	645.8
MEAN	16.7	9.31	3.72	4.30	2.36	3.63	2.21	1.97	4.89	17.2	36.3	21.5
MAX	100	42	7.3	22	5.2	16	4.0	4.9	27	104	300	187
MIN	4.9	4.0	2.8	2.4	1.6	1.5	1.6	1.6	1.5	2.4	5.6	4.6
AC-FT	1,030	554	228	264	135	223	132	121	291	1,060	2,230	1,280

WTR YR 1972 TOTAL 3,805.9 MEAN 10.4 MAX 300 MIN 1.5 AC-FT 7,550

PEAK DISCHARGE (BASE, 1,400 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7-26	1600	6.14	1,500	9-17	0500	6.56	1,660
8- 2	2200	7.96	2,290				

## MARIANA ISLANDS, ISLAND OF GUAM

16848000 Almagosa Springs near Agat

LOCATION (revised).--Lat 13°20'43" N., long 144°40'45" E., on left bank 2.9 miles southeast of Agat and 3.5 miles northeast of Umatac.

DRAINAGE AREA.--0.70 sq mi (revised).

PERIOD OF RECORD.--September 1951 to December 1967, current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 620 ft, revised, (from topographic map).

AVERAGE DISCHARGE.--16 years (1951-67), 3.68 cfs (2,670 acre-ft per year).

EXTREMES.--Maximum discharge during period December 1971 to September 1972, 459 cfs Aug. 2 (gage height, 4.03 ft), from rating curve extended above 9.3 cfs; no flow for several days.  
Period of record: Maximum discharge, 770 cfs Oct. 15, 1953 (gage height, 5.02 ft), from rating curve extended above 53 cfs by test on model of station site; no flow at times.

REMARKS.--Records fair. Up to 3.9 cfs diverted above station for municipal use.

REVISIONS.--WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, DECEMBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			.70	.08	.03	.01	.02	.01	.01	.83	6.1	2.7
2			.55	.10	.01	.01	.04	.01	.01	.10	59	4.4
3			.41	.21	.01	.01	.02	.01	.01	.01	123	2.6
4			.17	6.7	.01	0	.01	.01	.01	.02	29	1.9
5			.48	2.7	.01	0	.01	.01	.01	.17	21	7.2
6			.17	1.0	.01	.01	.01	.01	.45	.13	16	4.2
7			.08	.10	.01	.01	.01	.01	.02	10	14	12
8			.08	.04	.01	.01	.01	.01	.01	19	12	8.4
9			.10	.22	.01	.01	.01	.01	.01	16	11	7.6
10			.17	.41	.01	0	.01	.01	.01	13	10	7.6
11			.13	.34	.01	0	.01	.01	.01	16	8.4	7.0
12			.13	.28	.01	0	.02	.01	.01	17	14	6.4
13			.13	.28	.17	3.8	.02	.01	.01	10	18	5.3
14			1.8	.22	.01	1.6	.02	.01	.01	5.5	12	4.4
15			.22	.17	0	.01	.02	.01	.01	3.7	9.0	3.7
16			.34	.17	0	.02	.02	.01	.01	2.7	6.4	3.4
17			.22	.34	0	.04	.02	.01	.01	1.6	4.8	30
18			.28	.22	0	2.1	.02	.01	.04	.97	4.6	12
19			.28	.13	.01	5.9	.02	.01	.01	.28	6.7	9.0
20			.06	.04	.01	5.5	.02	.01	4.7	.02	5.7	11
21			.06	.03	.01	1.7	.02	.01	3.4	.02	4.8	7.8
22			.06	.05	.01	.55	.02	.01	13	.02	3.8	5.7
23			.13	.02	.01	.01	.03	.01	14	21	3.0	4.2
24			.13	.02	.01	.03	.01	.01	5.5	32	2.3	23
25			.13	.02	.01	.01	.01	.01	2.4	14	3.5	13
26			.13	.02	.01	.01	1.9	.01	1.0	22	2.6	8.7
27			.10	.02	.01	.02	1.5	.01	14	19	12	5.7
28			.10	.02	.01	.03	.01	.01	7.0	66	9.9	4.0
29			.08	.01	.01	.03	.01	.01	3.7	20	5.7	3.2
30			.32	.02	-----	.03	.01	.01	1.8	12	4.0	2.4
31		-----	.17	.02	-----	.02	-----	.01	-----	9.3	3.2	-----
TOTAL			7.91	14.00	.43	21.48	3.86	.31	71.17	332.37	445.5	228.5
MEAN			.26	.45	.015	.69	.13	.010	2.37	10.7	14.4	7.62
MAX			1.8	6.7	.17	5.9	1.9	.01	14	66	123	30
MIN			.06	.01	0	0	.01	.01	.01	.01	2.3	1.9
AC-FT			16	28	.9	43	7.7	.6	141	659	884	453

## PEAK DISCHARGE (BASE, 90 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7-28	0400	2.56	149	9-17	0700	2.53	144
8- 2	2200	4.03	459				

16848100 Almagosa River near Agat

LOCATION.--Lat 13°20'43" N., long 144°41'36" E., on right bank 400 ft upstream from Fena Valley Reservoir and 3.5 miles southeast of Agat.

DRAINAGE AREA.--1.31 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 155 ft (from topographic map).

EXTREMES.--Maximum discharge during period, 1,700 cfs Aug, 2 (gage height, 6.64 ft), from rating curve extended above 81 cfs; minimum, 0.19 cfs June 4, 5.

REMARKS.--Records good. Up to 3.9 cfs diverted above upstream station (see sta 16848000) for domestic use.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR APRIL TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							.45	.46	.24	1.5	6.6	3.5
2							.60	.36	.27	1.0	112	9.9
3						f.47	.50	.36	.24	.68	170	3.8
4							.50	.34	.22	.62	52	2.6
5							.40	.31	.31	.89	31	14
6							.35	.31	8.2	1.0	20	6.7
7							.41	.31	.68	30	18	19
8							.36	.29	.36	35	14	12
9							.36	.29	.31	22	12	8.4
10							.46	.29	.31	20	10	7.4
11							.36	.29	.31	27	12	7.4
12							.39	.36	.29	24	26	7.4
13							.36	.36	.34	12	32	5.4
14							.34	.36	.29	5.6	14	4.3
15							.31	.29	.46	4.0	10	3.6
16							.34	.27	.83	2.7	7.1	3.1
17							.34	.27	.78	2.0	5.6	70
18							.31	.27	1.5	1.5	5.6	15
19							.31	.27	.78	1.1	9.4	12
20							.31	.27	8.9	.83	6.6	21
21							.31	.39	4.2	.73	5.4	8.7
22							.29	.29	31	.68	4.3	6.3
23							.66	.39	21	60	3.8	5.0
24							.39	.52	6.3	65	3.3	66
25							.34	.36	2.8	20	6.0	15
26							1.8	.34	1.6	50	4.0	9.0
27							1.7	.31	33	35	31	6.6
28							.39	.31	7.4	114	11	9.0
29							.36	.29	3.8	32	6.3	4.0
30					-----		.41	.27	2.1	16	5.0	3.3
31		-----			-----			.27	-----	10	3.8	-----
TOTAL							14.41	10.07	138.82	596.83	657.8	365.4
MEAN							.48	.32	4.63	19.3	21.2	12.2
MAX							1.8	.52	33	114	170	70
MIN							.29	.27	.22	.62	3.3	2.6
AC-FT							29	20	275	1,180	1,300	725

PEAK DISCHARGE (BASE, 800 CFS)

f Result of discharge measurement,

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
7-26	1430	5.13	895	9-17	0530	5.71	1,180
8-2	2200	6.64	1,700	9-24	0300	4.95	820

MARIANA ISLANDS, ISLAND OF GUAM

16848500 Maulap River near Agat

LOCATION.--Lat 13°21'14" N., long 144°41'44" E., on right bank 600 ft upstream from Fena Valley Reservoir and 3.2 miles southeast of Agat.

DRAINAGE AREA.--1.14 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 130 ft (from topographic map).

EXTREMES.--Maximum discharge during period, 934 cfs Sept. 17 (gage height, 7.06 ft, from floodmark in well), from rating curve extended above 6.5 cfs; minimum, 0.40 cfs May 29 to June 1.

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

DISCHARGE, IN CUBIC FEET PER SECOND, JANUARY TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				1.1	1.1	1.2	.88	1.0	.40	1.7	4.5	3.4
2				1.4	.96	.88	1.1	.88	.46	1.6	87	7.0
3				1.8	.88	.80	.88	.73	.52	1.4	120	4.0
4				7.8	.96	.80	.96	.73	.52	1.2	40	3.5
5				2.4	.96	.73	.80	.66	.66	1.5	20	10
6				1.8	.88	1.0	.73	.59	3.4	1.1	15	8.0
7				1.6	.88	1.0	.73	.59	1.2	14	15	15
8				1.5	.88	1.0	.80	.52	.88	13	12	10
9				1.4	.88	.96	.73	.46	.59	6.1	10	7.0
10				1.4	.80	.88	.73	.66	.59	11	9.0	6.0
11				1.4	.73	.88	.73	.59	.80	12	10	6.0
12				1.2	1.0	.80	.73	.73	.96	11	20	5.0
13				1.2	1.8	3.6	.73	1.4	1.1	5.4	25	4.5
14				1.1	1.0	1.6	.66	1.1	1.2	4.0	10	4.0
15				1.1	.96	1.2	.66	.88	1.5	3.2	6.0	3.5
16				1.4	.88	1.1	.66	.80	2.2	2.8	4.3	3.5
17				2.2	.80	2.4	.73	.80	1.2	2.4	4.0	40
18				1.8	.80	3.9	.73	.80	2.6	2.2	4.3	10
19				1.7	.96	5.8	.66	.80	1.5	1.8	7.0	8.0
20				1.4	.80	2.4	.66	.73	4.3	1.7	4.0	15
21				1.2	.73	1.7	.73	.96	2.8	1.6	3.6	9.0
22				1.2	.73	1.6	.73	.80	16	1.6	3.4	7.0
23				1.1	.73	1.5	1.0	.88	5.4	37	3.0	6.0
24				1.1	.73	1.4	.73	1.2	2.9	20	3.0	40
25				1.1	.66	1.2	.66	.73	2.2	7.6	4.8	10
26				1.0	.73	1.1	1.7	.66	1.7	20	4.9	7.0
27				1.0	.88	1.0	1.0	.52	16	8.8	19	6.0
28				.96	.88	.88	.66	.46	3.2	48	4.7	5.0
29				.96	.84	.80	.52	.46	2.8	9.0	4.0	4.5
30				.96	-----	.88	.66	.40	2.0	6.4	3.6	4.0
31		-----		1.1	-----	.80	-----	.40	-----	5.1	3.0	-----
TOTAL				48.38	25.82	45.79	23.68	22.92	81.58	264.2	484.1	271.9
MEAN				1.56	.89	1.48	.79	.74	2.72	8.52	15.6	9.06
MAX				7.8	1.8	5.8	1.7	1.4	16	48	120	40
MIN				.96	.66	.73	.52	.40	.40	1.1	3.0	3.4
AC-FT				96	51	91	47	45	162	524	960	539

PEAK DISCHARGE (BASE, 600 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
8- 2	2200	6.75	825	9-24	0300	6.72	816
9-17	0530	7.06	934				

NOTE.--No gage-height record Sept. 2-30.

MARIANA ISLANDS, ISLAND OF GUAM

16849000 Fena Dam spillway near Agat

LOCATION.--Lat 13°21'28" N., long 144°42'12" E., on left bank 3.5 miles southeast of Agat and 5.8 miles southwest of Yona.

DRAINAGE AREA.--5.88 sq mi.

PERIOD OF RECORD.--September 1951 to July 1952, November 1952 to current year.

GAGE.--Water-stage recorder and concrete-dam control. Datum of gage is 111.35 ft above mean sea level (from U.S. Navy construction plans).

AVERAGE DISCHARGE.--19 years (1953-72), 18.7 cfs (13,550 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, about 3,000 cfs Aug. 2 (gage height, not determined); no flow for many days.

Period of record: Maximum discharge, not determined, occurred Oct. 15, 1953 (gage height, at least 4.5 ft); no flow for many days each year.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. About 10 cfs is diverted from Fena Valley Reservoir and tributary springs for military and civilian use. Records represent only flow over spillway.

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	71	.54	0						0	17	7.9
2	22	14	0	0						0	350	17
3	44	17	0	0						0	600	20
4	28	79	0	0						0	200	7.9
5	31	22	0	7.9						0	100	38
6	48	9.9	.54	2.8						0	60	20
7	243	7.9	1.5	0						0	40	67
8	224	9.9	0	0						0	30	48
9	55	2.8	0	0						0	25	22
10	38	22	0	0						0	22	17
11	22	9.9	0	0						0	30	25
12	22	4.3	0	0						0	50	12
13	20	.54	0	0						0	150	9.9
14	14	22	7.9	0						0	35	6.0
15	12	14	4.3	0						0	25	4.3
16	7.9	4.3	.54	0						0	17	2.8
17	7.9	4.3	0	0						0	12	220
18	6.0	44	0	0						0	15	34
19	7.9	28	0	0						0	30	22
20	6.0	93	0	0						0	20	59
21	6.0	25	0	0						0	15	25
22	17	17	0	0						0	10	14
23	9.9	12	0	0						0	8.0	9.9
24	7.9	28	0	0						150	6.0	246
25	2.8	14	0	0						50	50	41
26	1.5	17	0	0						150	17	20
27	14	6.0	0	0						80	150	17
28	9.9	12	0	0						300	40	12
29	17	7.9	0	0						70	25	6.0
30	7.9	1.5	0	0						30	15	2.8
31	7.9	-----	0	0	-----		-----		-----	20	9.9	-----
TOTAL	1,008.5	620.24	15.32	10.7	0	0	0	0	0	850	2,173.9	1,053.5
MEAN	32.5	20.7	.49	.35	0	0	0	0	0	27.4	70.1	35.1
MAX	243	93	7.9	7.9	0	0	0	0	0	300	600	246
MIN	1.5	.54	0	0	0	0	0	0	0	0	6.0	2.8
AC-FT	2,000	1,230	30	21	0	0	0	0	0	1,690	4,310	2,090

CAL YR 1971 TOTAL 9,900.72 MEAN 27.1 MAX 900 MIN 0 AC-FT 19,640  
 WTR YR 1972 TOTAL 5,732.16 MEAN 15.7 MAX 600 MIN 0 AC-FT 11,370

NOTE.--No gage-height record Aug. 2-30.

MARIANA ISLANDS, ISLAND OF GUAM

16858000 Ylig River near Yona

LOCATION.--Lat 13°23'28" N., long 144°45'06" E., on right bank 2.2 miles upstream from mouth, 1.9 miles southwest of Yona, and 5.6 miles south of Agana.

DRAINAGE AREA.--6.48 sq mi.

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

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

AVERAGE DISCHARGE.--20 years, 28.8 cfs (20,870 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,570 cfs Sept. 24 (gage height, 16.22 ft), from rating curve extended as explained below; minimum, 1.6 cfs June 13, 14.

Period of record: Maximum discharge, 4,900 cfs Sept. 9, 1963 (gage height, 19.77 ft, from floodmarks), from rating curve extended above 620 cfs on basis of slope-area measurements at gage heights 11.24 and 15.87 ft; minimum not determined; minimum daily, 0.10 cfs May 15 to June 14, June 16-20, 1966.

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

REVISIONS (FISCAL YEARS).--WSP 1937: 1957-58, WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	34	6.5	3.9	4.7	34	5.1	4.3	1.9	4.7	25	19
2	15	11	6.5	4.5	3.5	4.7	7.6	3.5	2.2	5.3	330	20
3	33	11	6.2	5.3	3.4	3.7	5.1	2.8	2.1	6.2	600	18
4	21	14	6.0	91	3.4	3.2	4.7	2.7	2.0	6.5	200	16
5	45	11	6.2	16	3.1	6.7	4.5	2.5	1.9	5.8	70	55
6	47	9.5	6.0	8.3	2.8	8.6	4.3	2.5	2.0	5.5	50	18
7	344	8.6	6.0	6.8	2.8	9.2	5.8	2.5	2.0	149	120	119
8	306	8.0	5.5	6.0	2.5	7.0	4.7	2.5	2.0	295	50	83
9	53	7.2	5.3	5.8	2.5	6.2	4.1	2.4	1.8	37	40	28
10	78	14	12	5.5	2.5	4.5	4.1	2.2	1.7	93	170	27
11	35	8.3	6.0	5.1	2.5	4.7	3.9	2.2	1.8	97	60	86
12	28	7.5	5.5	4.9	3.9	4.1	4.3	2.5	1.7	37	170	26
13	26	9.5	15	4.9	23	13	4.1	4.7	1.7	26	80	22
14	24	39	23	4.7	8.3	12	3.9	2.7	1.7	20	50	95
15	21	12	7.2	4.5	4.3	9.5	3.9	2.5	2.5	14	40	30
16	19	11	7.5	5.1	3.5	4.9	3.5	2.1	2.1	16	30	23
17	18	13	6.2	7.1	3.2	50	3.5	2.0	2.0	15	25	268
18	17	70	5.5	7.8	2.9	66	3.1	2.1	3.9	12	50	33
19	22	14	5.8	5.1	4.1	198	2.9	2.0	7.0	11	100	30
20	18	15	5.3	4.7	3.1	23	2.8	1.9	16	11	30	34
21	14	12	4.9	4.3	2.8	15	2.8	2.9	24	9.8	25	24
22	22	10	4.9	4.1	2.9	12	2.8	2.2	148	8.9	25	27
23	13	9.8	4.5	3.9	2.7	10	4.3	6.5	21	341	20	21
24	12	28	4.5	3.5	2.4	8.9	3.9	13	9.5	175	20	575
25	12	11	4.3	3.9	2.2	8.0	2.9	5.3	7.0	40	20	38
26	12	22	4.3	3.7	2.2	7.2	7.1	3.5	5.8	42	45	29
27	13	9.5	4.3	3.5	3.4	7.2	4.7	3.2	19	32	180	26
28	11	8.3	4.1	3.4	3.1	6.2	3.2	2.9	7.2	405	40	23
29	10	7.8	3.7	3.2	17	6.0	2.8	2.5	7.0	51	25	21
30	9.8	7.0	4.7	3.4	-----	6.8	2.9	2.1	5.3	36	20	19
31	11	-----	4.3	4.3	-----	5.5	-----	1.9	-----	29	20	-----
TOTAL	1,330.8	453.0	201.7	248.2	128.7	561.6	123.3	98.6	313.8	2,036.7	2,730	1,853
MEAN	42.9	15.1	6.51	8.01	4.44	18.1	4.11	3.18	10.5	65.7	88.1	61.8
MAX	344	70	23	91	23	198	7.6	13	148	405	600	575
MIN	9.8	7.0	3.7	3.2	2.2	3.2	2.8	1.9	1.7	4.7	20	16
QC-FT	2,640	899	400	492	255	1,110	245	196	622	4,040	5,410	3,680

CAL YR 1971 TOTAL 15,289.7 MEAN 41.9 MAX 1,100 MIN 3.7 AC-FT 30,330  
 WTR YR 1972 TOTAL 10,079.6 MEAN 27.5 MAX 600 MIN 1.7 AC-FT 19,990

PEAK DISCHARGE (BASE, 2,000 CFS).--Aug. 2 (2230) 2,900 cfs (14.16 ft); Sept. 24 (0600) 3,570 cfs (16.22 ft).

MARIANA ISLANDS, ISLAND OF GUAM

187

16865000 Pago River near Ordot

LOCATION.--Lat 13°26'08" N., long 144°45'14" E., on left bank 0.8 mile south of Ordot, 2.6 miles south of Agana, and 3.6 miles southeast of Asan.

DRAINAGE AREA.--5.67 sq mi.

PERIOD OF RECORD.--September 1951 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 25 ft (from topographic map). Prior to Apr. 10, 1972, at datum 1.00 ft lower.

AVERAGE DISCHARGE.--21 years, 25.9 cfs (18,760 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,700 cfs Aug. 3 (gage height, 11.50 ft), from rating curve extended as explained below; minimum, 1.0 cfs Feb. 26, 27.

Period of record: Maximum discharge, 9,470 cfs Aug. 2, 1962 (gage height, 18.87 ft, from floodmarks), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 13.22, 15.07 and 18.87 ft; no flow for many days in 1959 and 1966.

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

REVISTONS (FISCAL YEARS).--WSP 1937: 1954(M), 1958(M). WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	11	5.8	3.2	3.6	22	6.1	4.4	2.0	4.4	18	14
2	12	7.5	5.4	3.4	2.5	4.7	9.2	3.3	2.5	7.4	174	16
3	190	6.8	5.4	4.1	2.5	3.6	6.1	3.1	2.2	7.0	521	13
4	25	9.2	5.4	73	2.5	2.7	5.4	2.9	2.0	6.5	146	12
5	45	7.8	5.0	9.2	2.2	91	5.0	2.7	2.0	6.0	50	14
6	36	6.4	4.7	5.0	2.0	20	4.7	2.7	3.1	4.5	36	18
7	331	5.8	4.7	4.0	2.0	14	5.0	2.7	2.0	111	108	45
8	169	5.4	4.7	3.8	2.0	12	4.7	2.5	1.8	156	41	36
9	38	4.7	4.7	3.8	1.8	9.6	4.5	2.5	1.6	32	31	29
10	127	6.8	6.8	3.8	1.8	7.2	4.4	2.2	1.6	143	131	24
11	28	6.8	4.7	3.6	2.0	6.4	4.4	2.2	1.6	33	52	143
12	22	4.7	4.7	3.4	3.2	5.4	4.4	2.9	1.5	26	135	26
13	20	6.1	9.2	3.4	7.2	43	4.4	4.0	1.8	18	64	24
14	21	33	7.2	3.2	5.0	15	4.4	2.7	1.6	15	39	113
15	15	8.7	4.7	3.2	3.2	9.2	4.4	2.5	2.0	13	31	36
16	14	6.8	5.4	2.9	2.2	8.7	4.0	2.2	1.6	12	26	24
17	14	23	4.3	3.2	1.8	50	4.0	2.2	1.6	11	22	234
18	12	112	4.0	3.6	1.7	149	3.8	2.2	3.3	9.3	41	33
19	12	16	4.3	3.2	1.8	184	3.8	2.0	2.0	8.3	82	26
20	12	13	3.8	2.9	1.7	32	3.8	2.0	6.7	7.8	26	44
21	11	12	3.8	2.9	1.5	18	3.6	2.9	6.7	7.4	22	21
22	62	8.7	3.8	2.9	1.5	14	3.6	2.9	95	7.0	18	18
23	13	7.8	3.6	2.7	1.3	12	5.5	7.0	20	247	16	17
24	10	20	3.4	2.5	1.2	11	4.0	13	11	145	16	209
25	9.2	8.2	3.2	2.9	1.2	9.6	3.6	5.9	8.8	39	16	26
26	10	39	2.9	2.9	1.2	8.7	4.0	3.6	6.7	35	35	21
27	9.2	9.6	2.9	2.7	3.2	7.8	3.6	2.9	8.8	35	140	17
28	7.8	7.5	2.9	2.5	2.0	7.5	3.6	2.9	6.3	326	33	15
29	7.5	6.8	2.7	2.2	86	7.2	3.3	2.5	6.3	42	20	14
30	7.2	6.1	3.8	2.2	-----	7.2	3.3	2.0	5.5	28	17	13
31	7.2	-----	3.2	2.7	-----	6.4	-----	2.0	-----	23	15	-----
TOTAL	1,316.1	427.2	141.1	175.0	151.8	798.9	134.6	101.5	219.6	1,565.6	2,122	1,295
MEAN	42.5	14.2	4.55	5.65	5.23	25.8	4.49	3.27	7.32	50.5	68.5	43.2
MAX	331	112	9.2	73	86	184	9.2	13	95	326	521	234
MIN	7.2	4.7	2.7	2.2	1.2	2.7	3.3	2.0	1.5	4.4	15	12
AC-FT	2,610	847	280	347	301	1,580	267	201	436	3,110	4,210	2,570

CAL YR 1971 TOTAL 15,399.1 MEAN 42.2 MAX 1,160 MIN 2.7 AC-FT 30,540  
 WTR YR 1972 TOTAL 8,448.4 MEAN 23.1 MAX 521 MIN 1.2 AC-FT 16,760

PEAK DISCHARGE (BASE, 2,700 CFS).--Aug. 3 (0400) 2,700 cfs (11.50 ft).

## CAROLINE ISLANDS, PALAU ISLANDS

16890600 Adeiddo River, Babelthuap

LOCATION.--Lat 7°36'01" N., long 134°35'38" E., on right bank at Ngardnau, 0.3 mile upstream from left-bank tributary, and 0.6 mile northwest of Mount Megilon.

DRAINAGE AREA.--4.43 sq mi.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 2,200 cfs Sept. 29 (gage height, 12.96 ft), from rating curve extended above 82 cfs; minimum, 10 cfs Aug. 15-17, 20-22.  
Period of record: Maximum discharge, 2,200 cfs Sept. 29, 1972 (gage height, 12.96 ft), from rating curve extended above 82 cfs; minimum, 4.1 cfs May 16, 1970.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	51	20	100	70	47	39	129	15	86	18	44
2	34	49	19	50	28	42	37	48	13	109	19	40
3	42	62	18	40	24	38	35	38	12	95	19	71
4	41	48	19	35	21	36	32	32	12	111	17	50
5	35	61	19	30	21	33	38	29	16	87	25	45
6	33	54	17	28	19	34	28	26	21	74	17	40
7	48	56	33	25	19	60	26	33	28	116	16	39
8	152	48	26	33	17	37	25	24	24	69	15	38
9	158	42	28	37	17	79	23	22	18	70	14	42
10	132	39	29	29	16	81	22	21	16	93	14	35
11	88	36	20	26	16	52	21	21	18	66	13	32
12	73	35	18	24	16	64	23	20	30	57	12	30
13	67	48	19	28	60	72	22	19	20	50	12	28
14	63	38	18	34	30	60	22	18	17	45	11	27
15	52	32	17	28	20	331	23	19	16	42	11	26
16	53	31	20	25	17	102	20	18	17	38	10	27
17	76	34	16	22	15	82	18	18	16	35	18	26
18	84	32	15	21	40	69	17	16	16	32	16	24
19	64	27	30	23	70	65	17	17	17	30	12	23
20	55	26	20	31	40	92	19	16	23	28	11	22
21	59	27	15	22	50	53	15	15	15	26	10	22
22	120	27	14	21	30	62	14	14	20	24	11	21
23	83	24	13	20	25	61	13	14	19	23	34	21
24	108	27	13	19	20	53	13	13	23	22	84	20
25	68	22	15	19	90	51	13	13	21	21	36	23
26	88	57	50	26	80	44	12	14	29	20	25	21
27	78	24	150	19	70	103	25	12	105	19	34	20
28	81	30	150	21	60	57	15	12	52	18	187	79
29	68	25	70	23	50	50	17	13	42	18	83	395
30	61	21	50	21	-----	44	79	18	51	19	64	79
31	55	-----	30	22	-----	41	-----	28	-----	18	49	-----
TOTAL	2,255	1,133	991	902	1,051	2,095	723	750	742	1,561	917	1,410
MEAN	72.7	37.8	32.0	29.1	36.2	67.6	24.1	24.2	24.7	50.4	29.6	47.0
MAX	158	62	150	100	90	331	79	129	105	116	187	395
MIN	33	21	13	19	15	33	12	12	12	18	10	20
AC-FT	4,470	2,250	1,970	1,790	2,080	4,160	1,430	1,490	1,470	3,100	1,820	2,800

CAL YR 1971 TOTAL 13,485.7 MEAN 36.9 MAX 237 MIN 8.3 AC-FT 26,750  
WTR YR 1972 TOTAL 14,530 MEAN 39.7 MAX 395 MIN 10 AC-FT 28,820

## PEAK DISCHARGE (BASE, 600 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 8	1800	7.69	678	8-28	1800	9.24	1,010
10-22	2100	7.56	652	9-29	0530	12.96	2,200
3-15	0700	12.93	2,190				

CAROLINE ISLANDS, PALAU ISLANDS

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16890900 Tabagaten River, Babelthuap

LOCATION.--Lat 7°27'00" N., long 134°32'05" E., on left bank 0.3 mile downstream from unnamed tributary, 0.7 mile northeast of Mount Karukail, and 1.0 mile south of Ngatpang.

DRAINAGE AREA.--6.34 sq mi.

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,980 cfs Aug. 24 (gage height, 7.58 ft), from rating curve extended above 124 cfs; minimum, 9.4 cfs Aug. 15-17.

Period of record: Maximum discharge, 1,980 cfs Aug. 24, 1972 (gage height, 7.58 ft), from rating curve extended above 124 cfs; minimum, 9.4 cfs Aug. 15-17, 1972.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	41	27	266	110	34	45	454	50	101	16	50
2	29	39	24	74	38	31	150	85	35	287	21	84
3	33	34	22	57	31	28	90	53	30	259	23	71
4	36	36	33	62	27	27	60	43	33	288	14	183
5	30	90	33	50	25	33	70	37	64	140	13	99
6	22	75	23	44	22	28	50	33	76	100	66	65
7	38	83	25	40	22	95	45	100	174	90	33	63
8	144	66	25	48	20	40	40	37	75	80	20	50
9	193	55	27	50	20	75	35	31	50	150	17	52
10	169	45	26	39	19	73	30	28	42	90	16	39
11	74	40	20	34	18	41	25	28	44	70	15	34
12	51	36	18	30	16	107	30	25	54	60	12	31
13	42	38	25	30	70	82	80	36	62	50	12	28
14	55	33	20	31	34	50	30	22	41	45	11	26
15	37	29	18	32	22	46	90	100	34	40	10	36
16	35	30	18	26	18	139	40	39	64	35	10	25
17	116	87	28	23	16	87	30	28	39	50	23	30
18	206	49	21	22	42	58	25	31	39	35	31	22
19	109	53	36	26	86	62	23	26	31	30	16	20
20	66	34	26	25	44	52	60	34	43	25	12	18
21	61	31	20	22	65	45	23	26	29	22	11	17
22	71	31	18	19	34	43	19	22	32	19	16	16
23	100	30	17	18	28	96	16	20	28	30	123	16
24	101	58	15	25	25	111	15	18	154	16	264	15
25	70	33	17	28	93	113	14	17	51	19	106	14
26	68	45	59	32	88	90	14	32	57	16	60	14
27	68	33	190	21	82	209	48	26	192	15	50	13
28	110	47	222	46	45	90	23	18	80	14	118	85
29	62	41	117	27	47	68	18	20	53	13	84	531
30	51	29	58	35	-----	54	211	51	166	18	72	136
31	45	-----	44	28	-----	48	-----	144	-----	13	48	-----
TOTAL	2,328	1,371	1,272	1,310	1,207	2,205	1,449	1,664	1,922	2,220	1,343	1,883
MEAN	75.1	45.7	41.0	42.3	41.6	71.1	48.3	53.7	64.1	71.6	43.3	62.8
MAX	206	90	222	266	110	209	211	454	192	288	264	531
MIN	22	29	15	18	16	27	14	17	28	13	10	13
AC-FT	4,620	2,720	2,520	2,600	2,390	4,370	2,870	3,300	3,810	4,400	2,660	3,730

CAL YR 1971 TOTAL 16,721 MEAN 45.8 MAX 300 MIN 11 AC-FT 33,170  
 WTR YR 1972 TOTAL 20,174 MEAN 55.1 MAX 531 MIN 10 AC-FT 40,020

PEAK DISCHARGE (BASE, 700 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-28	1930	6.53	1,160	7- 2	1300	5.71	794
1- 1	1030	6.81	1,330	8-24	1900	7.58	1,980
5- 1	0300	7.48	1,880	9-29	0500	7.40	1,800
6-24	1200	5.59	752				

## CAROLINE ISLANDS, PALAU ISLANDS

16891200 Gihmel River, Babelthuap

LOCATION.--Lat 7°21'59" N., long 134°32'06" E., on right bank at Garuruon, 400 ft downstream from dam, and 0.5 mile upstream from coast road.

DRAINAGE AREA.--1.09 sq mi.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 117 cfs May 1 (gage height, 6.32 ft), from rating curve extended above 6.4 cfs; minimum, 0.07 cfs Dec. 16.

Period of record: Maximum discharge, 117 cfs May 1, 1972 (gage height, 6.32 ft), from rating curve extended above 6.4 cfs; minimum, 0.01 cfs Apr. 10, 12, 13, 1970.

REMARKS.--Records poor. An 8-inch pipeline diverts an average of about 0.75 cfs from above the dam, 400 ft upstream from the gage, for consumption on the island of Koror.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	3.5	.40	5.4	5.1	2.6	2.0	22	7.4	4.0	.66	2.3
2	4.5	3.4	.40	4.6	4.8	2.3	2.5	8.9	5.0	11	.78	7.7
3	3.2	2.8	.35	3.4	3.2	1.8	2.0	5.0	3.5	10	.84	7.2
4	2.8	2.4	.50	4.5	2.9	1.6	1.8	3.0	3.0	11	.84	10
5	2.6	7.2	.50	4.0	2.4	1.8	1.6	2.5	5.0	7.2	.84	7.8
6	1.8	6.7	.30	3.5	2.2	1.8	1.5	2.0	6.0	5.6	1.4	5.7
7	3.1	5.3	.50	3.0	2.0	3.8	1.3	5.0	6.5	4.8	1.9	6.6
8	8.6	4.1	.70	3.2	1.8	2.0	1.2	3.0	5.0	4.9	.78	4.8
9	9.4	4.1	.50	3.0	1.8	4.2	1.1	2.5	4.0	9.0	.75	4.3
10	9.1	3.5	.70	2.3	1.8	5.7	1.1	2.0	3.5	4.8	.60	3.1
11	5.3	2.9	.55	1.6	1.7	3.0	1.1	1.5	3.0	3.8	.50	2.2
12	3.2	2.6	.50	1.4	1.6	2.8	1.1	1.2	5.0	3.1	.50	2.0
13	2.6	2.2	.50	1.2	2.0	2.6	3.0	2.0	3.0	2.5	.40	2.0
14	3.5	2.0	.50	2.0	3.0	1.8	2.1	1.0	2.5	2.1	.50	2.0
15	2.0	1.6	.40	1.2	3.2	4.5	2.0	2.0	2.0	2.0	.40	2.2
16	2.3	1.1	.30	.80	2.6	4.3	1.9	1.2	3.0	1.8	.40	2.3
17	4.4	1.7	.20	.65	2.2	3.7	1.8	1.0	2.0	1.8	1.0	3.0
18	11	2.3	.15	.40	2.3	2.4	1.7	1.0	1.5	1.8	1.0	2.0
19	8.7	.80	.30	1.6	5.3	5.0	1.7	.80	1.0	1.2	.60	1.8
20	5.6	.50	.15	1.4	5.4	4.5	3.0	1.5	1.1	1.0	.50	1.5
21	5.9	.40	.20	1.4	4.0	3.0	2.1	1.0	1.1	.85	.40	1.2
22	5.3	.50	.15	.65	3.8	3.8	2.0	.85	1.1	.78	.45	1.0
23	5.6	1.1	.20	.80	2.9	13	2.0	.72	1.1	.78	1.7	.80
24	8.1	4.5	.30	1.1	2.6	5.0	1.6	.66	4.2	.72	4.5	.70
25	5.7	2.2	.40	1.1	2.9	6.0	1.4	.60	4.0	.72	4.1	.60
26	5.1	1.4	.40	2.2	4.9	4.0	1.4	.60	4.0	.72	2.1	.60
27	5.1	.95	4.1	1.8	4.9	16	1.3	.84	7.4	.78	7.2	.60
28	11	.65	7.6	2.8	3.5	5.0	1.1	.90	5.2	.66	8.7	.72
29	5.4	1.1	11	3.5	3.4	4.0	1.1	1.0	3.2	.66	5.6	17
30	4.1	1.4	5.7	3.2	-----	3.0	5.3	1.5	5.4	.66	4.1	7.4
31	3.5	-----	3.5	4.5	-----	2.5	-----	7.7	-----	.66	2.6	-----
TOTAL	165.7	74.90	41.95	72.20	90.2	127.5	54.8	85.47	109.7	101.09	56.64	111.12
MEAN	5.35	2.50	1.35	2.33	3.11	4.11	1.83	2.76	3.66	3.26	1.83	3.70
MAX	11	7.2	11	5.4	5.4	16	5.3	22	7.4	11	8.7	17
MIN	1.8	.40	.15	.40	1.6	1.6	1.1	.60	1.0	.66	.40	.60
AC-FT	329	149	83	143	179	253	109	170	218	201	112	220

CAL YR 1971 TOTAL 1,059.75 MEAN 2.90 MAX 50 MIN .10 AC-FT 2,100  
 WTR YR 1972 TOTAL 1,091.27 MEAN 2.98 MAX 22 MIN .15 AC-FT 2,160

## PEAK DISCHARGE (BASE, 30 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-23	1230	5.00	53	5-31	1200	4.33	31
3-27	0600	5.23	62	8-24	1930	4.45	34
5-1	0130	6.32	117	9-29	0500	4.94	51

CAROLINE ISLANDS, PALAU ISLANDS

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16891300 Gaden River, Babelthuap

LOCATION.--Lat 7°22'57" N., long 134°33'40" E., on left bank 750 ft upstream from confluence with Kumekumeyel River, 1.0 mile southwest of Mount Kabekobekushi, and 1.8 miles north of Airai.

DRAINAGE AREA.--4.23 sq mi.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 7 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 2,170 cfs May 1 (gage height, 15.73 ft), from rating curve extended above 61 cfs; minimum, 11 cfs for many days in December and August.

Period of record: Maximum discharge, 2,170 cfs May 1, 1972 (gage height, 15.73 ft), from rating curve extended above 61 cfs; minimum, 4.3 cfs May 15, 1970.

REMARKS.--Records fair except those for periods of no gage-height record, which are poor. No diversion above gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	41	14	114	74	30	30	520	34	46	17	36
2	27	42	14	39	38	25	80	66	24	188	36	150
3	22	33	13	30	31	23	50	46	20	130	21	80
4	24	32	15	28	28	21	30	37	20	156	14	130
5	20	105	15	37	28	20	35	31	40	77	13	80
6	17	69	12	27	24	22	27	28	41	58	74	50
7	30	54	15	26	22	30	25	100	61	52	31	50
8	76	58	16	37	20	23	23	37	40	49	20	40
9	144	50	15	31	20	35	21	29	29	86	16	40
10	102	41	17	25	19	40	20	27	27	43	16	30
11	50	35	12	22	18	25	18	26	24	37	14	25
12	39	32	11	21	16	50	25	24	38	32	14	25
13	33	30	12	40	40	30	55	28	37	29	13	20
14	44	27	12	40	28	25	25	21	23	27	14	20
15	29	25	11	33	18	60	43	32	21	25	12	25
16	32	24	11	24	16	70	30	22	28	23	12	20
17	54	32	12	21	14	50	23	20	21	24	22	40
18	119	28	11	19	43	30	20	19	18	22	23	20
19	68	28	26	29	64	40	21	17	18	19	14	18
20	45	22	12	25	35	30	36	19	21	18	12	17
21	48	21	11	21	47	25	20	20	16	16	12	16
22	49	21	12	18	27	25	18	17	24	16	13	15
23	56	25	11	18	23	90	17	14	17	24	92	15
24	71	31	12	17	21	50	16	13	84	16	234	15
25	53	21	13	35	64	110	16	13	29	16	62	14
26	63	20	37	25	64	65	16	23	35	14	36	13
27	57	18	132	18	52	130	21	17	63	14	46	12
28	129	18	146	44	37	60	16	12	40	13	80	21
29	57	20	69	27	34	50	15	15	30	13	51	398
30	47	15	35	55	-----	40	150	24	97	16	41	60
31	41	-----	27	35	-----	35	-----	116	-----	13	32	-----
TOTAL	1,680	1,018	781	981	965	1,359	942	1,433	1,020	1,312	1,107	1,495
MEAN	54.2	33.9	25.2	31.6	33.3	43.8	31.4	46.2	34.0	42.3	35.7	49.8
MAX	144	105	146	114	74	130	150	520	97	188	234	398
MIN	17	15	11	17	14	20	15	12	16	13	12	12
AC-FT	3,330	2,020	1,550	1,950	1,910	2,700	1,870	2,840	2,020	2,600	2,200	2,970

CAL YR 1971 TOTAL 12,728.0 MEAN 34.9 MAX 457 MIN 6.1 AC-FT 25,250  
 WTR YR 1972 TOTAL 14,093 MEAN 38.5 MAX 520 MIN 11 AC-FT 27,950

PEAK DISCHARGE (BASE, 800 CFS, REVISED)

NOTE.--No gage-height record Mar. 1 to Apr. 5, May 1.

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-28	2000	10.90	1,000	8-24	2000	14.79	1,900
5- 1	0230	15.70	2,170	9- 2	1400	9.98	868
7- 2	1130	9.58	806	9-29	0430	13.03	1,430

CAROLINE ISLANDS, PALAU ISLANDS

16891400 South Fork Ngardok River, Babelthuap

LOCATION.--Lat 7°26'15" N., long 134°35'03" E., on right bank 0.3 mile upstream from left-bank tributary, 0.6 mile northwest of Garasho Mountain, and 1.3 miles west of village of Ngarsul.

DRAINAGE AREA.--2.26 sq mi.

PERIOD OF RECORD.--March 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 65 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,200 cfs May 1 (gage height, 7.10 ft), from rating curve extended above 70 cfs; minimum recorded, 5.2 cfs Dec. 12, Aug. 16, but may have been less during Dec. 14-25.

Period of record: Maximum discharge, 1,200 cfs May 1, 1972 (gage height, 7.10 ft), from rating curve extended above 70 cfs; minimum, 2.4 cfs Apr. 16-18, 1971.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	19	7.2	60	47	17	17	187	17	33	14	29
2	14	21	7.2	25	19	15	48	36	12	88	17	112
3	14	16	6.7	20	16	14	34	25	18	82	14	45
4	15	17	12	18	13	13	21	20	14	86	9.2	74
5	14	42	9.9	18	12	11	24	17	28	47	9.2	44
6	9.9	32	7.2	14	11	13	17	16	21	35	37	29
7	19	39	7.2	14	11	18	15	59	42	30	18	28
8	63	26	6.7	25	9.2	14	14	20	25	27	11	21
9	90	29	7.2	17	11	20	13	17	18	44	9.2	21
10	64	22	6.7	14	9.9	22	12	14	16	25	8.4	17
11	30	19	6.2	11	9.2	14	11	15	17	21	7.2	15
12	23	17	5.7	11	7.7	25	14	13	33	18	6.2	14
13	19	18	7.2	19	33	20	29	13	22	16	5.7	12
14	31	15	6.5	16	14	15	11	11	17	14	6.2	11
15	17	13	6.0	13	11	29	31	14	15	14	5.7	16
16	19	14	6.0	11	9.2	39	17	9.9	44	13	5.2	11
17	36	23	6.5	9.2	8.4	26	12	11	21	19	13	24
18	75	20	6.0	9.2	21	19	11	9.2	17	13	16	11
19	41	19	15	11	39	22	14	8.4	15	11	7.7	9.2
20	27	14	7.0	11	21	18	19	8.4	16	9.9	6.2	8.4
21	25	12	6.0	9.2	28	16	11	7.2	13	9.2	5.7	7.7
22	26	14	7.0	7.7	17	17	9.2	6.7	14	8.4	9.9	7.2
23	33	12	6.0	7.7	14	51	8.4	6.7	11	15	60	7.2
24	37	13	7.0	8.4	12	28	7.7	6.2	34	8.4	96	7.2
25	35	11	8.0	14	44	65	7.7	6.2	20	9.2	37	6.7
26	37	11	20	13	40	36	7.2	7.7	22	7.2	21	6.2
27	30	9.2	75	8.4	37	76	18	7.7	46	6.7	21	6.2
28	56	9.9	80	17	22	33	9.2	6.2	26	6.7	50	14
29	29	11	40	14	20	27	7.7	7.7	20	6.7	30	177
30	25	7.7	20	20	-----	22	99	17	79	7.2	26	44
31	20	-----	15	15	-----	20	-----	52	-----	6.2	20	-----
TOTAL	989.9	545.8	434.1	480.8	566.6	775	569.1	655.2	713	736.8	602.7	835.0
MEAN	31.9	18.2	14.0	15.5	19.5	25.0	19.0	21.1	23.8	23.8	19.4	27.8
MAX	90	42	80	60	47	76	99	187	79	88	96	177
MIN	9.9	7.7	5.7	7.7	7.7	11	7.2	6.2	11	6.2	5.2	6.2
AC-FT	1,960	1,080	861	954	1,120	1,540	1,130	1,300	1,410	1,460	1,200	1,660

WTR YR 1972 TOTAL 7,904.0 MEAN 21.6 MAX 187 MIN 5.2 AC-FT 15,680

PEAK DISCHARGE (BASE, 400 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-25	2000	4.00	400	8-24	1930	6.98	1,160
5- 1	0200	7.10	1,200	9- 2	1400	5.93	849
5- 7	0330	4.00	400	9-29	0400	5.24	670

CAROLINE ISLANDS, YAP ISLANDS

16892400 Aringel Stream, Yap

LOCATION.--Lat 9°31'01" N., long 138°05'11" E., on right bank at Aringel and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.24 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 35 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 290 cfs Mar. 6 (gage height, 5.57 ft), from rating curve extended above 20 cfs; no flow for many days.

Period of record: Maximum discharge, 408 cfs Aug. 21, 1970 (gage height, 6.35 ft), from rating curve extended above 20 cfs; no flow for many days most years.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	.25	.08	.40	.07	.15	.03	.05	.08	2.0	10	.23
2	5.0	.17	.05	.17	.13	.07	.02	.03	.06	2.8	.76	.13
3	7.8	.10	.04	.10	.07	.05	.02	.02	.61	.64	.79	.08
4	.33	.09	.04	.36	.07	.04	.01	.02	.35	.86	4.7	.07
5	.84	.15	.05	7.2	.08	.02	.01	.02	.09	2.6	3.0	.23
6	.60	.31	.04	1.1	.05	27	0	.10	.10	7.4	2.2	4.8
7	13	.25	.03	.72	.03	1.4	0	.05	.06	4.4	.76	.76
8	1.1	.09	.25	2.3	.02	4.9	0	.03	.05	2.7	.23	21
9	10	.11	.31	5.9	.01	.88	0	.02	.03	1.4	.13	5.6
10	1.5	11	2.6	2.4	.01	.31	0	.01	2.8	.48	.93	2.0
11	.37	.92	.84	.31	0	.39	0	.01	.23	.56	.37	.68
12	.25	.27	.21	.15	0	2.9	0	.01	.05	.19	.52	11
13	.15	.15	.10	.10	.01	.35	0	0	.33	.09	.21	1.9
14	.15	.09	.05	.08	.01	.17	0	0	.29	.05	.11	.49
15	.10	.11	.05	.05	0	.23	0	0	.10	.03	.08	4.8
16	.10	.21	.04	.05	0	.09	0	0	.23	.02	.06	17
17	5.0	3.1	.09	.05	0	.09	0	0	.13	.02	.08	1.6
18	3.0	.80	.08	.07	0	.40	1.3	0	.10	.02	.87	4.5
19	.40	.56	.08	.17	0	.09	.17	0	.08	.01	2.4	.40
20	1.5	2.0	.05	.09	0	.05	.05	0	.07	0	.68	.21
21	.40	1.7	.04	.06	0	.04	.03	0	5.1	0	2.7	2.7
22	.35	.46	1.8	.30	5.8	.04	.02	.01	1.1	0	.35	2.3
23	.29	.33	5.5	.15	.40	.22	.02	.01	.17	0	.19	.33
24	3.3	.17	1.4	.09	6.4	.81	.01	0	6.4	0	.15	.15
25	.80	2.6	.37	.05	1.6	2.5	.01	.06	6.7	0	4.2	.09
26	.37	3.3	.17	.05	9.3	8.8	.01	.07	.40	.41	1.4	.06
27	.36	.37	1.2	.04	20	.49	.50	.03	.11	.37	.46	.03
28	3.9	.56	.52	.04	1.7	.17	.40	.55	.05	.15	.35	2.1
29	.72	.25	.29	.02	.43	.07	.20	.60	.05	.06	7.2	1.1
30	.27	.11	.37	.01	-----	.04	.10	.25	.04	.07	1.3	.43
31	.17	-----	2.4	.02	-----	.03	-----	.17	-----	.26	.40	-----
TOTAL	62.80	30.58	19.14	22.60	46.19	52.79	2.91	2.12	25.96	27.59	47.58	86.77
MEAN	2.03	1.02	.62	.73	1.59	1.70	.097	.068	.87	.89	1.53	2.89
MAX	13	11	5.5	7.2	20	27	1.3	.60	6.7	7.4	10	21
MIN	.10	.09	.03	.01	0	.02	0	0	.03	0	.06	.03
AC-FT	125	61	38	45	92	105	5.8	4.2	51	55	94	172

CAL YR 1971 TOTAL 533.94 MEAN 1.46 MAX 18 MIN .01 AC-FT 1060  
 WTR YR 1972 TOTAL 427.03 MEAN 1.17 MAX 27 MIN 0 AC-FT 847

PEAK DISCHARGE (BASE, 200 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3- 6	1130	5.57	290	9-16	1430	4.93	204
9- 8	0200	4.95	207				

CAROLINE ISLANDS, YAP ISLANDS

16892800 Dalolab Stream, Yap

LOCATION.--Lat 9°31'04" N., long 138°06'04" E., on left bank at Taiagu and 0.9 mile upstream from mouth.

DRAINAGE AREA.--0.09 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

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

EXTREMES.--Current year: Maximum discharge, 106 cfs Sept. 7 (gage height, 3.97 ft), from rating curve extended above 17 cfs; no flow for many days.

Period of record: Maximum discharge, 143 cfs Aug. 21, 1970 (gage height, 4.42 ft), from rating curve extended above 17 cfs; no flow for many days each year.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	.05	.01	.08	.02	.10	.01	.02	0	.60	3.2	.02
2	1.5	.03	.01	.02	.04	.08	.01	.01	0	1.0	.17	.01
3	2.5	.01	0	.02	.02	.05	.01	.01	.15	.25	.14	.01
4	.10	.04	0	.06	.02	.03	.01	0	.06	.30	2.8	.02
5	.30	.17	.01	2.4	.02	.02	0	0	.01	1.0	.49	1.6
6	.20	.17	.01	.36	.01	10	0	.03	.01	2.5	.46	3.2
7	4.0	.05	0	.22	.01	.50	0	.02	.01	1.5	.14	2.1
8	.40	.02	.04	.27	.01	1.5	0	.01	.01	.90	.03	5.2
9	3.0	.02	.04	1.1	0	.30	0	0	0	.50	.01	1.8
10	.50	4.0	.73	1.2	0	.15	0	0	2.0	.20	.22	.40
11	.15	.33	.19	.06	0	.15	0	0	.05	.20	.04	.12
12	.10	.10	.02	.02	0	.50	0	0	.01	.10	.10	2.3
13	.05	.05	.01	.01	0	.15	0	0	.16	.05	.05	.27
14	.05	.03	.01	.01	0	.10	0	0	.10	.03	.01	.06
15	.04	.03	.01	.02	0	.15	0	0	.05	.02	.01	2.2
16	.03	.08	.01	.02	0	.10	0	0	.04	.01	0	4.7
17	1.5	1.2	.03	.03	0	.08	0	0	.03	0	0	.78
18	1.0	.27	.03	.04	0	.20	.40	0	.03	0	.12	1.3
19	.20	.10	.02	.10	0	.08	.05	0	.02	0	.67	.06
20	.50	.56	.01	.04	0	.05	.01	0	.02	0	.08	.04
21	.20	.33	.01	.02	0	.04	0	0	1.5	0	.24	.40
22	.15	.17	.17	.10	2.0	.03	0	0	.50	0	.02	.70
23	.10	.08	1.3	.05	.15	.08	0	0	.10	0	.01	.15
24	1.5	.05	.30	.03	2.5	.20	0	0	2.0	0	.02	.05
25	.22	.64	.06	.02	.50	.50	0	0	2.0	0	2.2	.04
26	.08	.88	.02	.02	3.0	2.0	0	0	.20	.25	.27	.03
27	.04	.10	.45	.01	7.0	.15	.20	0	.10	.14	.03	.02
28	.80	.27	.12	.01	.60	.05	.15	.03	.05	.03	.04	.50
29	.14	.05	.05	0	.20	.03	.10	.06	.04	.01	2.4	.30
30	.04	.02	.05	0	-----	.02	.05	.02	.03	.01	.22	.15
31	.01	-----	.69	0	-----	.02	-----	.01	-----	.01	.04	-----
TOTAL	19.60	9.90	4.41	6.34	16.10	17.41	1.00	.22	9.28	9.61	14.23	28.53
MEAN	.63	.33	.14	.20	.56	.56	.033	.007	.31	.31	.46	.95
MAX	4.0	4.0	1.3	2.4	7.0	10	.40	.06	2.0	2.5	3.2	5.2
MIN	.01	.01	0	0	0	.02	0	0	0	0	0	.01
AC-FT	39	20	8.7	13	32	35	2.0	.4	18	19	28	57

CAL YR 1971 TOTAL 181.80 MEAN .50 MAX 6.1 MIN 0 AC-FT 361  
 WTR YR 1972 TOTAL 136.63 MEAN .37 MAX 10 MIN 0 AC-FT 271

PEAK DISCHARGE (BASE, 75 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1- 9	2400	3.84	97	9- 7	2400	3.97	106
3- 6	/1130	-	Unknown				

NOTE.--No gage-height record Jan. 13 to May 19, June 16 to July 17.

/ About.

CAROLINE ISLANDS, YAP ISLANDS

16892900 Pengoy Stream, Yap

LOCATION.--Lat 9°31'07" N., long 138°06'18" E., on right bank at Talagu, 100 ft upstream from Talagu Stream, and 0.8 mile upstream from mouth.

DRAINAGE AREA.--0.17 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 100 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 173 cfs Sept. 8 (gage height, 4.17 ft, from floodmark in well), from rating curve extended above 11 cfs; no flow for many days.

Period of record: Maximum discharge, 207 cfs Sept. 19, 1970 (gage height, 4.47 ft), from rating curve extended above 11 cfs; no flow for many days most years.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	.12	.06	.16	.02	.22	.03	.01	.04	.75	4.1	.05
2	2.5	.07	.04	.09	.05	.20	.02	0	.03	1.1	.22	.04
3	4.0	.07	.04	.09	.01	.19	.02	0	.35	.21	.46	.03
4	.20	.14	.06	.21	.01	.17	.01	0	.15	.58	3.8	.14
5	.50	.53	.11	3.9	.01	.15	.01	.01	.05	2.1	.83	3.1
6	.40	.48	.07	.74	.01	12	.01	.04	.04	5.9	.29	4.3
7	7.0	.14	.06	.27	.01	.58	0	.02	.03	2.5	.18	1.1
8	.70	.09	.16	.21	0	1.6	0	0	.03	1.5	.06	9.5
9	6.0	.11	.14	1.2	0	.44	0	0	.30	1.0	.04	1.8
10	2.0	5.4	.99	1.1	0	.30	0	0	1.5	.30	.21	.32
11	.25	.68	.53	.14	0	.28	0	0	.10	.30	.10	.16
12	.15	.14	.11	.07	0	.55	0	0	.02	.15	.30	3.3
13	.10	.07	.07	.09	0	.29	0	0	.40	.08	.09	.32
14	.10	.04	.07	.07	0	.29	0	0	.25	.04	.06	.12
15	.07	.06	.07	.05	0	.27	0	0	.20	.02	.04	1.3
16	.07	.11	.07	.04	0	.21	0	0	.15	.01	.03	3.9
17	3.0	.87	.16	.06	0	.19	.01	0	.10	0	.04	.56
18	2.0	.39	.09	.09	0	.28	.53	0	.05	0	.15	1.0
19	.30	.09	.07	.21	0	.18	.06	0	.03	0	.66	.12
20	1.0	.31	.06	.06	0	.12	.01	0	.02	0	.17	.07
21	.30	.35	.04	.03	0	.11	0	0	.90	0	.22	.24
22	.15	.18	.35	.14	3.5	.10	0	.04	.42	0	.09	.54
23	.24	.09	1.4	.09	.15	.13	0	.04	.19	0	.04	.15
24	2.5	.06	.48	.06	4.0	.19	0	0	1.1	0	.23	.09
25	.48	.12	.11	.04	.70	.39	0	0	3.6	.04	1.9	.08
26	.16	1.0	.06	.03	5.1	3.2	0	0	.25	.42	.33	.06
27	.11	.20	1.1	.02	13	.20	.31	0	.15	.25	.11	.04
28	.74	.60	.27	.02	.78	.11	.24	.07	.10	.09	.08	.19
29	.35	.15	.11	.01	.33	.07	.11	.15	.08	.05	1.8	.23
30	.11	.10	.07	.01	-----	.05	.04	.07	.05	.07	.26	.12
31	.06	-----	.96	.01	-----	.04	-----	.05	-----	.10	.08	-----
TOTAL	35.94	12.76	7.98	9.31	27.68	23.10	1.41	.50	10.68	17.56	16.97	32.97
MEAN	1.16	.43	.26	.30	.95	.75	.047	.016	.36	.57	.55	1.10
MAX	7.0	5.4	1.4	3.9	13	12	.53	.15	3.6	5.9	4.1	9.5
MIN	.06	.04	.04	.01	0	.04	0	0	.02	0	.03	.03
AC-FT	71	25	16	18	55	46	2.8	1.0	21	35	34	65

CAL YR 1971 TOTAL 247.21 MEAN .68 MAX 7.8 MIN .01 AC-FT 490  
 WTR YR 1972 TOTAL 196.86 MEAN .54 MAX 13 MIN 0 AC-FT 390

PEAK DISCHARGE (BASE, 70 CFS)

NOTE.--No gage-height record Jan. 24 to Feb. 25.

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 3	/0030	3.54	112	6-25	0130	3.09	76
3- 6	1100	3.96	151	9- 8	0030	4.17	173

/ About.

## CAROLINE ISLANDS, YAP ISLANDS

16893000 Talagu Stream, Yap

LOCATION.--Lat 9°31'08" N., long 138°06'13" E., on left bank at Talagu, 300 ft upstream from mouth, and 0.9 mile upstream from mouth of Pengoy Stream.

DRAINAGE AREA.--0.07 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 117 cfs Sept. 8 (gage height, 3.00 ft, from floodmark in well), from rating curve extended above 29 cfs; no flow for many days.

Period of record: Maximum discharge, 145 cfs Aug. 21, 1970 (gage height, 3.30 ft), from rating curve extended above 29 cfs; no flow for many days most years.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.15	.07	.03	.04	.01	.10	.02	.01	.02	.36	2.4	.06
2	1.0	.05	.02	.02	.02	.09	.02	0	.02	1.2	.20	.04
3	1.5	.02	.01	.01	.01	.08	.01	0	.18	.22	.24	.03
4	.10	.05	.01	.02	.01	.06	.01	0	.07	.24	2.2	.04
5	.20	.18	.02	2.0	0	.06	.01	0	.02	1.5	1.2	1.3
6	.15	.20	.01	.20	0	9.6	0	.02	.02	2.8	.44	2.5
7	3.5	.08	.01	.09	0	.30	0	.01	.02	1.6	.18	.22
8	.30	.05	.02	.09	0	.94	0	0	.02	.75	.03	5.2
9	2.5	.04	.02	.99	0	.24	0	0	.24	.62	.01	1.4
10	1.0	3.5	.25	1.0	0	.13	0	0	.85	.16	.19	.35
11	.12	.28	.09	.03	0	.09	0	0	.05	.16	.06	.11
12	.08	.07	.02	.02	0	.37	0	0	.01	.09	.18	1.7
13	.05	.03	.01	.01	0	.13	0	0	.19	.05	.02	.35
14	.05	.02	.01	.01	0	.12	0	0	.13	.03	0	.05
15	.03	.02	.01	.02	0	.13	0	0	.04	.02	0	.90
16	.03	.06	.01	.02	0	.06	0	0	.04	.01	0	2.6
17	2.0	.57	.03	.03	0	.08	0	0	.02	0	.01	.30
18	1.0	.20	.02	.04	0	.20	.30	0	.01	0	.12	.70
19	.15	.05	.02	.10	0	.08	.04	0	.01	0	.54	.07
20	.60	.12	.02	.04	0	.07	.01	0	0	0	.08	.03
21	.15	.16	.01	.02	0	.06	0	0	1.1	0	.12	.16
22	.10	.08	.05	.07	1.5	.05	0	0	.62	0	.02	.50
23	.16	.04	.40	.04	.10	.07	0	0	.09	0	0	.12
24	1.8	.01	.12	.03	2.0	.10	0	0	1.4	0	.03	.04
25	.35	.04	.03	.03	.40	.30	0	0	2.7	0	1.0	.03
26	.16	.50	.01	.02	2.9	2.0	0	0	.26	.29	.20	.03
27	.08	.08	.25	.02	6.9	.13	.20	0	.08	.19	.02	.02
28	.56	.25	.06	.01	.66	.04	.10	.04	.05	.05	.01	.33
29	.22	.07	.03	.01	.20	.03	.05	.08	.03	.01	.98	.20
30	.06	.04	.02	0	-----	.02	.03	.04	.02	.01	.24	.09
31	.04	-----	.34	.01	-----	.02	-----	.03	-----	.03	.10	-----
TOTAL	18.19	6.93	1.96	5.04	14.71	15.75	.80	.23	8.31	10.39	10.82	19.47
MEAN	.59	.23	.063	.16	.51	.51	.027	.007	.28	.34	.35	.65
MAX	3.5	3.5	.40	2.0	6.9	9.6	.30	.08	2.7	2.8	2.4	5.2
MIN	.03	.01	.01	0	0	.02	0	0	0	0	0	.02
AC-FI	36	14	3.9	10	29	31	1.6	.5	16	21	21	39

CAL YR 1971 TOTAL 179.79 MEAN .49 MAX 5.7 MIN .01 AC-FI 357  
 WTR YR 1972 TOTAL 112.60 MEAN .31 MAX 9.6 MIN 0 AC-FI 223

PEAK DISCHARGE (BASE, 50 CFS).--Mar. 6 (1100) 115 cfs (2.98 ft); Sept. 8 (0200) 117 cfs (3.00 ft).

NOTE.--No gage-height record Jan. 13 to Feb. 25.

CAROLINE ISLANDS, YAP ISLANDS

16893100 Burong Stream, Yap

LOCATION.--Lat 9°31'59" N., long 138°07'05" E., on left bank at Dugor and 0.1 mile upstream from mouth.

DRAINAGE AREA.--0.29 sq mi.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 242 cfs Sept. 8 (gage height, 4.71 ft), from rating curve extended above 15 cfs; no flow for many days.

Period of record: Maximum discharge, 242 cfs Sept. 8, 1972 (gage height, 4.71 ft), from rating curve extended above 15 cfs; no flow for many days most years.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	.66	.10	.20	.04	.18	.03	.05	.03	1.3	11	.16
2	1.1	.28	.08	.08	.08	.09	.03	.03	.05	3.0	.64	.07
3	10	.14	.08	.07	.02	.08	.02	.02	.61	.28	.35	.06
4	.55	.22	.08	.09	.02	.06	.01	.01	.64	.58	5.0	.05
5	.40	1.3	.16	6.1	.01	.06	.01	.01	.12	3.9	2.5	15
6	.22	.91	.08	2.6	.01	21	.01	.10	.09	9.3	1.5	6.8
7	4.6	.34	.08	.49	.01	1.8	0	.05	.28	4.1	.60	.86
8	1.8	.16	.31	.34	.01	5.8	0	.03	.12	2.3	.30	22
9	4.6	.12	.10	1.4	0	.91	0	.02	.05	1.1	.15	5.0
10	6.9	7.7	.73	3.1	0	.31	0	.01	.78	.22	1.0	1.0
11	.60	1.2	.60	.35	0	.20	0	0	.12	.10	.40	1.8
12	.28	.43	.12	.20	0	1.4	0	0	.04	.07	.60	11
13	.18	.20	.08	.15	0	.73	0	0	1.7	.06	.20	1.7
14	.20	.12	.07	.09	0	.57	0	0	.40	.03	.10	.37
15	.12	.10	.06	.07	0	2.0	.01	0	.10	.02	.05	1.3
16	.12	.46	.04	.06	0	.34	0	0	.28	.01	.03	6.8
17	6.3	.82	.12	.09	0	.25	.01	0	.16	.01	.03	1.6
18	3.4	.68	.08	.14	0	.91	.88	0	.05	.01	.22	5.1
19	.52	.22	.06	.84	0	.18	.07	0	.03	0	1.9	.46
20	2.0	.28	.04	.18	0	.09	.03	0	.02	0	.55	.25
21	.52	1.6	.03	.09	0	.07	.01	0	3.5	0	.68	3.0
22	.40	.49	.16	.57	2.3	.06	.01	0	.73	0	.49	2.5
23	.82	.20	.31	.10	.22	.18	.01	0	.12	0	.22	.40
24	4.6	.12	.49	.06	3.7	.20	.01	0	.27	0	1.3	.20
25	1.0	.10	.14	.04	1.3	.16	.01	.05	4.5	0	3.6	.10
26	.55	1.3	.08	.05	6.5	2.0	0	.05	.55	.60	1.2	.07
27	.34	.34	1.8	.03	19	.34	.50	.03	.14	.55	.31	.05
28	.91	.68	.49	.02	1.9	.09	.40	.05	.40	.10	.14	.06
29	.43	.28	.12	.01	.46	.06	.20	.10	.10	.05	2.3	.07
30	.22	.14	.08	.01	-----	.04	.10	.03	.06	.60	.86	.06
31	.16	-----	.37	.03	-----	.03	-----	.03	-----	.52	.20	-----
TOTAL	54.84	21.59	7.14	17.65	35.58	40.19	2.36	.67	16.04	28.81	38.42	87.89
MEAN	1.77	.72	.23	.57	1.23	1.30	.079	.022	.53	.93	1.24	2.93
MAX	10	7.7	1.8	6.1	19	21	.88	.10	4.5	9.3	11	22
MIN	.12	.10	.03	.01	0	.03	0	0	.02	0	.03	.05
AC-FT	109	43	14	35	71	80	4.7	1.3	32	57	76	174

CAL YR 1971 TOTAL 457.67 MEAN 1.25 MAX 15 MIN .01 AC-FT 908  
 WTR YR 1972 TOTAL 351.18 MEAN .96 MAX 22 MIN 0 AC-FT 697

PEAK DISCHARGE (BASE, 75 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3- 6	1030	4.26	174	9- 8	0130	4.71	242
9- 5	1230	4.50	210				

NOTE.--No gage-height record Apr. 23 to May 29.

## CAROLINE ISLANDS, YAP ISLANDS

16893300 Bileiy Spring, Gagil-Tomil

LOCATION.--Lat 9°32'19" N., long 138°10'59" E., on right bank at Binau, 200 ft downstream from main spring, and 0.6 mile upstream from mouth.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 70 ft (from topographic map).

EXTREMES.--Period of record: Maximum daily discharge, 1.5 cfs Sept. 8, 1972; no flow for many days in 1968 and 1969.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	.15	.04	.04	.06	.45	.19	.07	.04	.04	.33	.08
2	.40	.14	.04	.04	.06	.40	.19	.06	.03	.04	.28	.08
3	.84	.14	.04	.03	.06	.35	.19	.06	.03	.04	.24	.08
4	.56	.15	.05	.03	.06	.30	.17	.06	.03	.04	.39	.07
5	.43	.12	.05	.20	.06	.30	.16	.06	.03	.04	.51	1.0
6	.43	.12	.04	.15	.06	.80	.13	.05	.03	.12	.45	.80
7	.56	.11	.04	.10	.05	.70	.12	.05	.03	.17	.36	.70
8	.50	.10	.04	.15	.05	.65	.11	.05	.03	.14	.28	1.5
9	.60	.20	.04	.20	.05	.60	.10	.06	.03	.12	.24	1.0
10	.80	.20	.04	.20	.05	.55	.09	.05	.03	.11	.24	.90
11	.70	.18	.04	.17	.04	.50	.08	.05	.03	.10	.22	1.0
12	.60	.16	.04	.14	.04	.45	.08	.04	.03	.09	.21	.90
13	.50	.15	.04	.12	.04	.40	.07	.04	.02	.08	.17	.85
14	.40	.14	.04	.10	.03	.35	.07	.04	.02	.08	.16	.80
15	.35	.13	.04	.09	.03	.40	.07	.04	.02	.07	.14	.80
16	.30	.12	.04	.08	.03	.35	.06	.03	.02	.07	.13	1.0
17	.40	.11	.04	.08	.03	.30	.06	.03	.02	.07	.16	.90
18	.33	.10	.03	.08	.03	.28	.06	.03	.03	.06	.14	.80
19	.28	.09	.03	.08	.03	.26	.06	.03	.03	.06	.14	.72
20	.26	.08	.03	.07	.03	.24	.06	.03	.03	.06	.12	.68
21	.24	.08	.02	.07	.03	.22	.07	.03	.06	.06	.11	.68
22	.24	.07	.03	.08	.10	.21	.07	.05	.04	.06	.11	.64
23	.32	.06	.03	.07	.07	.20	.07	.03	.04	.06	.11	.64
24	.29	.06	.03	.07	.05	.19	.07	.04	.05	.06	.10	.54
25	.26	.07	.02	.07	.05	.19	.06	.03	.04	.06	.10	.45
26	.24	.06	.03	.07	.10	.21	.06	.04	.04	.13	.10	.39
27	.29	.06	.05	.07	.70	.19	.10	.03	.03	.10	.09	.36
28	.22	.05	.04	.07	.60	.19	.08	.05	.04	.07	.09	.33
29	.22	.05	.04	.06	.50	.19	.08	.04	.03	.07	.09	.30
30	.20	.04	.03	.06	-----	.19	.07	.03	.04	.07	.08	.26
31	.18	-----	.05	.06	-----	.19	-----	.03	-----	.09	.08	-----
TOTAL	12.29	3.29	1.16	2.90	3.09	10.80	2.85	1.33	.97	2.43	5.97	19.25
MEAN	.40	.11	.037	.094	.11	.35	.095	.043	.032	.078	.19	.64
MAX	.84	.20	.05	.20	.70	.80	.19	.07	.06	.17	.51	1.5
MIN	.18	.04	.02	.03	.03	.19	.06	.03	.02	.04	.08	.07
AC-FT	24	6.5	2.3	5.8	6.1	21	5.7	2.6	1.9	4.8	12	38

CAL YR 1971 TOTAL 61.97 MEAN .17 MAX 1.3 MIN .02 AC-FT 123  
 WTR YR 1972 TOTAL 66.33 MEAN .18 MAX 1.5 MIN .02 AC-FT 132

NOTE.--No gage-height record Feb. 12 to Mar. 23, Sept. 3-18.

CAROLINE ISLANDS, TRUK ISLANDS

199

16893700 Wichen River at altitude 55 m, Moen

LOCATION.--Lat 7°26'45" N., long 151°52'02" E., on left bank at Peniesence, 1.0 mile upstream from mouth, and 1.6 miles west of Saint Xaviers Academy.

DRAINAGE AREA.--0.23 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 180 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 192 cfs June 4 (gage height, 4.07 ft), from rating curve extended above 15 cfs; minimum, 0.15 cfs Feb. 13-17.

Period of record: Maximum discharge, 193 cfs Nov. 25, 1969 (gage height, 4.08 ft), from rating curve extended above 15 cfs; minimum, 0.01 cfs Mar. 29-31, 1969.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	.80	.47	.30	.30	.29	.62	1.9	1.9	1.7	5.2	.62
2	1.1	.70	.26	5.3	.26	5.8	.70	1.6	1.3	1.2	3.5	.62
3	1.3	.54	.23	1.3	.23	3.1	.90	1.0	1.0	1.3	4.9	.62
4	12	.47	.20	.70	.20	2.1	.62	.62	23	2.7	1.9	.70
5	2.3	.47	.20	.54	.17	1.4	.41	1.9	5.2	1.7	4.0	.54
6	1.4	.54	.20	.41	.17	1.1	.30	3.2	2.3	3.1	2.3	.90
7	2.1	.47	.20	.35	.17	1.0	.30	1.0	1.6	2.1	2.1	1.2
8	1.3	.41	.20	.35	.26	.80	.30	.70	1.3	1.6	1.7	2.9
9	.90	.41	.20	.30	.30	.54	.26	.47	1.1	1.3	2.9	1.7
10	.70	.30	.23	.26	.30	.47	.30	.41	1.2	1.2	1.9	1.1
11	.54	.26	.23	.23	.23	.54	.41	.35	1.6	1.0	1.5	4.7
12	.47	.47	.23	.23	.20	.41	.35	1.2	1.2	.80	1.3	9.8
13	.41	.30	.26	.23	.17	1.3	.62	1.0	1.0	.80	1.1	3.1
14	.35	.23	.23	.23	.17	7.8	.41	.41	.80	.80	.90	1.9
15	.35	.47	.20	.23	.15	1.7	3.1	.35	.70	.90	.80	1.5
16	.47	.30	.23	.26	.15	1.0	1.1	.70	.62	.80	.70	2.7
17	.41	.23	.23	.23	.26	4.2	3.5	2.3	.62	.80	.62	1.5
18	.35	.20	.35	.23	.41	5.2	1.4	1.3	1.4	.80	.70	1.2
19	.30	.17	.23	.23	.23	3.7	1.0	1.3	2.7	.80	1.7	1.0
20	.26	4.4	.30	.26	.62	2.3	10	2.5	1.5	.90	1.7	.80
21	5.3	1.4	.23	.23	.54	1.2	3.5	1.7	1.2	.80	1.0	.70
22	.90	.70	.62	.23	1.2	1.0	2.1	1.1	1.1	.70	3.5	.62
23	1.4	.47	.35	.17	.47	.62	1.3	1.4	.80	1.4	2.1	.54
24	1.5	.35	.30	5.8	.62	1.1	.90	1.0	.70	1.4	1.4	1.4
25	2.9	.35	.30	1.3	.54	1.0	.80	.70	.62	1.6	2.9	1.3
26	3.5	.30	.90	.54	.41	.90	.62	.54	.62	1.5	1.4	1.3
27	9.3	.26	4.4	5.8	.30	1.0	.47	1.5	1.0	1.3	1.1	1.1
28	5.2	.26	1.3	1.6	5.2	.47	.62	8.6	.70	1.2	1.0	.90
29	2.3	.26	.70	.80	1.3	.30	.47	8.8	.62	9.1	.80	.80
30	1.4	.23	.47	.41	-----	.26	.70	3.1	.62	2.7	.70	4.3
31	1.1	-----	.41	.35	-----	.30	-----	5.7	-----	7.1	.70	-----
TOTAL	62.91	16.72	14.86	29.40	15.53	81.61	38.08	58.35	60.02	55.10	58.02	52.06
MEAN	2.03	.56	.48	.95	.54	2.63	1.27	1.88	2.00	1.78	1.87	1.74
MAX	12	4.4	4.4	5.8	5.2	29	10	8.8	23	9.1	5.2	9.8
MIN	.26	.17	.20	.17	.15	.26	.26	.35	.62	.70	.62	.54
AC-FT	125	33	29	58	31	162	76	116	119	109	115	103

CAL YR 1971 TOTAL 390.53 MEAN 1.07 MAX 17 MIN .13 AC-FT 775  
WTR YR 1972 TOTAL 542.66 MEAN 1.48 MAX 29 MIN .15 AC-FT 1,080

PEAK DISCHARGE (BASE, 70 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3- 1	0600	3.11	110	6- 4	0500	4.07	192
4-20	1430	3.50	141				

## CAROLINE ISLANDS, TRUK ISLANDS

16893800 Wichen River at altitude 18 m, Moen

LOCATION.--Lat 7°27'05" N., long 151°52'18" E., on left bank at Peniesence and 0.5 mile upstream from mouth.

DRAINAGE AREA.--0.60 sq mi.

PERIOD OF RECORD.--April 1955 to March 1956 (published as "at Peniesence"), June 1968 to current year. All figures of discharge above 3 cfs (2 mgd) prior to April 1956, published in WSP 1751, are unreliable and should not be used.

GAGE.--Water-stage recorder. Altitude of gage is 60 ft (from topographic map). Prior to Apr. 1, 1956, non-recording gage at site 100 ft downstream at different datum.

EXTREMES.--Current year: Maximum discharge, 910 cfs June 4 (gage height, 6.80 ft, from floodmark in well), from rating curve extended above 26 cfs; minimum, 0.07 cfs Feb. 16.  
Period of record: Maximum discharge, 910 cfs June 4, 1972 (gage height, 6.80 ft), from rating curve extended above 26 cfs; minimum, 0.03 cfs Mar. 31, 1969.

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

REVISTONS.--WSP 2137: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	2.0	1.2	.72	.72	76	1.6	4.6	4.4	4.4	14	1.5
2	3.0	1.7	.96	16	.64	15	1.8	4.1	3.2	2.8	8.9	1.5
3	3.3	1.3	.72	3.6	.56	8.2	2.2	2.3	2.7	3.0	12	1.5
4	31	1.1	.68	1.8	.48	5.0	1.6	1.6	60	5.9	4.4	1.8
5	6.1	1.0	.56	1.3	.40	3.4	1.0	4.0	13	4.4	12	1.4
6	3.4	1.1	.40	1.0	.32	2.8	.72	7.7	5.0	7.9	5.9	2.2
7	7.0	.96	.48	.88	.32	2.4	.80	2.6	4.0	5.2	5.3	3.2
8	3.6	.96	.48	.88	.64	2.0	.80	1.7	2.7	4.3	3.9	7.5
9	2.2	.88	.48	.80	.76	1.3	.64	1.2	2.4	3.2	6.0	4.5
10	1.7	.72	.56	.72	.72	1.2	.80	1.0	3.2	2.4	4.1	2.7
11	1.3	.72	.56	.64	.48	1.3	1.0	.88	4.2	1.7	3.9	10
12	1.1	1.4	.56	.64	.40	1.1	.88	3.3	3.2	1.6	3.2	25
13	.96	.72	.56	.56	.32	4.6	1.6	2.7	2.4	1.6	2.6	8.0
14	.80	.56	.48	.56	.32	20	1.1	1.3	1.9	1.5	2.3	5.0
15	.72	1.9	.40	.48	.25	4.8	8.8	.80	1.7	1.9	2.0	3.5
16	1.2	.80	.48	.72	.19	2.6	3.0	1.6	1.5	1.8	1.7	7.0
17	.96	.56	.56	.64	.75	8.9	8.9	6.8	1.5	1.7	1.5	4.0
18	.80	.48	.80	.56	1.0	13	4.1	3.2	3.4	1.6	1.7	3.0
19	.64	.40	.56	.56	.48	7.7	2.6	3.6	6.8	1.6	4.0	2.5
20	.56	11	.84	.64	2.3	5.2	26	6.4	3.9	2.2	4.3	2.0
21	13	4.3	.48	.56	1.3	2.8	7.2	4.4	2.8	1.8	2.2	1.7
22	2.3	2.0	2.0	.48	3.0	2.2	4.4	2.6	2.7	1.5	9.0	1.5
23	3.5	1.2	.88	.32	1.1	1.6	3.2	3.3	2.0	3.5	5.2	1.3
24	4.3	.88	.72	17	1.7	2.6	2.2	2.4	1.7	4.2	3.5	3.9
25	7.6	.80	.64	3.3	1.2	2.3	1.8	1.8	1.5	4.0	7.5	3.3
26	7.9	.72	2.9	1.2	.88	2.4	1.6	1.3	1.5	3.6	3.5	3.3
27	23	.72	12	15	.72	2.0	1.2	4.9	2.5	3.3	2.8	3.2
28	11	.72	3.6	3.6	15	.96	1.6	15	1.7	2.7	2.5	2.4
29	5.0	.64	1.8	2.3	3.4	.64	1.2	21	1.5	23	2.0	1.9
30	3.2	.64	1.2	1.8	-----	.40	1.8	7.9	1.5	7.0	1.8	11
31	2.6	-----	.88	.96	-----	.64	-----	14	-----	19	1.7	-----
TOTAL	197.04	42.88	39.42	80.22	40.35	205.04	96.14	139.98	150.5	134.3	145.4	131.3
MEAN	5.07	1.43	1.27	2.59	1.39	6.61	3.20	4.52	5.02	4.33	4.69	4.38
MAX	31	11	12	17	15	76	26	21	60	23	14	25
MIN	.56	.40	.40	.32	.19	.40	.64	.80	1.5	1.5	1.5	1.3
AC-FT	311	85	78	159	80	407	191	278	299	266	288	260

CAL YR 1971 TOTAL 1,017.63 MEAN 2.79 MAX 62 MIN .19 AC-FT 2,020  
 WTR YR 1972 TOTAL 1,362.57 MEAN 3.72 MAX 76 MIN .19 AC-FT 2,700

## PEAK DISCHARGE (BASE, 170 CFS)

NOTE.--No gage-height record June 4-8, Aug. 22 to Sept. 23.

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 4	0330	3.32	176	4-20	1600	5.00	410
3- 1	0830	4.54	343	6- 4	Unknown	6.80	910

CAROLINE ISLANDS, TRUK ISLANDS

201

16894200 Nachiponong Stream, Moen

LOCATION.--Lat 7°25'45" N., long 151°51'31" E., on left bank at Wichap, 300 ft downstream from dam site, and 0.2 mile upstream from mouth.

DRAINAGE AREA.--0.16 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Aug. 10, 1971. Altitude of gage is 33 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 102 cfs June 4 (gage height, 3.86 ft), from rating curve extended above 11 cfs; minimum, 0.01 cfs Dec. 12-15.

Period of record: Maximum discharge, 102 cfs June 4, 1972 (gage height, 3.86 ft), from rating curve extended above 11 cfs; no flow Mar. 26-31, 1969.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.96	.64	.17	.12	.40	18	.61	2.0	1.3	1.5	3.9	.40
2	1.0	.51	.10	2.2	.34	3.4	.37	1.0	1.0	.55	2.0	.37
3	2.3	.47	.08	.47	.28	1.9	.37	.69	.88	.84	3.2	.40
4	7.4	.37	.07	.28	.22	1.5	.25	.58	11	.96	.74	.51
5	1.7	.31	.06	.25	.17	1.1	.22	1.1	1.7	1.2	1.7	.34
6	1.6	.34	.06	.20	.15	.84	.20	2.4	1.3	1.7	.84	.50
7	2.2	.25	.06	.17	.17	.64	.12	.84	1.1	1.5	1.2	.80
8	1.1	.25	.03	.22	.40	.51	.15	.74	.96	1.0	.74	1.5
9	.84	.25	.02	.15	.55	.47	.15	.64	.84	.84	.83	1.0
10	.96	.17	.02	.12	.74	.40	.20	.47	.84	.74	.70	.80
11	.69	.15	.02	.10	.31	.40	.20	.40	.79	.59	.59	2.0
12	.59	.20	.01	.09	.20	.34	.17	.83	.69	.51	.47	5.0
13	.64	.15	.01	.07	.12	.64	.22	.64	.64	.43	.37	2.0
14	.50	.15	.01	.06	.10	3.8	.31	.37	.59	.40	.34	1.3
15	.40	.31	.01	.04	.10	.74	1.6	.31	.55	.51	.34	1.0
16	1.0	.15	.03	.20	.15	.51	.47	1.1	.55	.40	.34	1.3
17	.59	.10	.02	.07	.25	2.1	3.7	1.6	.64	.34	.31	.80
18	.43	.09	.05	.07	.31	5.2	.84	.84	1.2	.31	.55	.60
19	.34	.09	.02	.04	.12	2.2	.55	.64	3.3	.40	.59	.59
20	.28	3.3	.03	.04	.66	1.3	6.2	.79	1.0	.31	.84	.59
21	3.4	.64	.03	.07	.37	1.0	1.5	.55	.84	.31	.40	.55
22	.69	.34	.39	.04	1.6	.84	1.0	.47	.74	.28	4.6	.47
23	1.3	.20	.05	.02	.43	.74	.96	.45	.64	.37	1.3	.43
24	1.8	.15	.23	5.0	.59	.90	.90	.40	.59	.34	1.1	.84
25	1.9	.22	.12	.64	.43	.51	.90	.37	.55	.55	1.3	.79
26	1.5	.17	.68	.28	.31	.43	.64	.34	.55	.40	.90	.47
27	4.1	.12	3.1	6.9	.34	.40	.55	1.6	.69	.47	.74	.40
28	2.1	.12	.55	1.2	4.6	.31	.51	7.3	.64	.55	.69	.51
29	1.3	.10	.28	.79	1.0	.25	.55	3.7	.51	8.4	.59	.40
30	1.0	.08	.15	.59	-----	.20	.69	1.8	.59	1.3	.51	1.6
31	.79	-----	.15	.47	-----	.22	-----	3.0	-----	5.8	.47	-----
TOTAL	45.40	10.39	6.61	20.96	15.41	51.79	25.10	37.96	37.21	33.80	33.19	28.26
MEAN	1.46	.35	.21	.68	.53	1.67	.84	1.22	1.24	1.09	1.07	.94
MAX	7.4	3.3	3.1	6.9	4.6	18	6.2	7.3	11	8.4	4.6	5.0
MIN	.28	.08	.01	.02	.10	.20	.12	.31	.51	.28	.31	.34
AC-FT	90	21	13	42	31	103	50	75	74	67	66	56

CAL YR 1971 TOTAL 248.00 MEAN .68 MAX 7.4 MIN .01 AC-FT 492  
 WTR YR 1972 TOTAL 346.08 MEAN .95 MAX 18 MIN .01 AC-FT 686

PEAK DISCHARGE (BASE, 40 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 4	0030	2.33	50	5-28	0900	2.50	59
10-21	0400	2.31	50	6- 4	0430	3.86	102
1-27	1230	2.40	54	7-29	0200	2.20	45
3- 1	0600	2.68	69	8-22	1300	2.93	46
4-20	1430	3.83	96				

CAROLINE ISLANDS, TRUK ISLANDS

16895000 Echapachik Stream, Tol

LOCATION.--Lat 7°20'57" N., long 151°37'26" E., on right bank 0.2 mile upstream from mouth and 0.6 mile north of Mount Tumuital.

DRAINAGE AREA.--0.15 sq mi.

PERIOD OF RECORD.--April 1955 to March 1957 (published as "at Fasan"), June 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Nov. 6, 1971. Altitude of gage is 10 ft (from topographic map). Prior to Apr. 1, 1957, nonrecording gage at same site at different datum.

AVERAGE DISCHARGE.--5 years (1956, 1969-72), 0.52 cfs (377 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 34 cfs Aug. 22 (gage height, 3.62 ft), from rating curve extended above 13 cfs; minimum, 0.04 cfs Jan. 13.

Period of record: Maximum discharge, 51 cfs Sept. 1, 1970 (gage height, 3.23 ft), from rating curve extended above 0.7 cfs; no flow Mar. 24, 25, 1957, and for many days in 1969.

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

REVISIONS.--WSP 2137: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.24	.24	.24	.09	.14	4.5	.21	.78	.97	3.5	3.0	.90
2	.18	.18	.21	.09	.12	2.0	.35	1.0	.66	2.6	1.7	.54
3	1.2	.14	.18	.06	.16	1.1	.27	.72	.44	2.7	4.1	1.5
4	5.4	.12	.16	.06	.12	.72	.18	.44	5.7	2.8	1.5	2.3
5	.36	.11	.18	.07	.12	.49	.14	.31	1.7	1.9	.84	.90
6	.24	.10	.14	.07	.10	.35	.12	.66	1.3	2.3	.72	1.2
7	.30	.10	.12	.06	.10	.27	.10	.49	1.4	1.7	.84	1.9
8	.34	.11	.10	.09	.10	.24	.12	.35	.97	1.3	.72	.90
9	.24	.18	.10	.07	.16	.21	.10	.24	.49	.97	.78	.90
10	.17	.16	.10	.07	.44	.24	.12	.18	.31	.72	.97	.66
11	.14	.14	.09	.09	.44	.66	.39	.16	.21	.60	3.3	.44
12	.13	.18	.09	.06	.27	.90	.39	.21	.24	.44	1.5	1.0
13	.15	.14	.10	.04	.16	.54	.39	.24	.27	.35	.90	.50
14	.15	.10	.09	.06	.14	6.1	.78	.21	.31	.31	.60	.40
15	.18	.10	.07	.07	.12	1.7	3.3	.16	.60	1.1	.44	.30
16	.15	.10	.09	.12	.12	.78	1.2	.14	.44	1.3	.39	.50
17	.13	.09	.06	.18	.12	.49	2.1	.16	.27	.60	.35	.40
18	.13	.09	.07	.12	.12	.90	1.2	.18	.27	.35	.31	.30
19	.12	.14	.07	.12	.10	2.3	.66	.24	.49	.90	.31	.25
20	.11	.14	.07	.10	.44	1.1	.39	1.2	.49	.78	.31	.25
21	.12	.14	.09	.12	1.1	.49	.27	1.5	.35	.44	.24	.20
22	.11	.18	.10	.10	1.7	.35	.21	.66	.27	.31	4.0	.20
23	.13	.18	.09	.14	.60	.24	.24	.31	.21	.27	1.8	.18
24	.15	.16	.16	3.6	.31	.24	.84	.25	.16	.27	1.4	.21
25	.45	.35	.27	2.3	.21	.18	1.5	.24	.14	.24	2.1	.27
26	1.2	.31	.49	.72	.14	.14	.78	.31	.21	.24	1.1	.24
27	2.0	.27	3.9	4.2	.16	.16	.44	3.2	.24	.21	.72	.21
28	.75	.31	1.3	1.5	.72	.12	1.2	4.7	.54	.35	.54	.68
29	.46	.31	.31	.44	.78	.10	1.4	3.6	.49	1.7	.44	.78
30	.43	.27	.16	.24	-----	.09	1.0	1.5	1.5	1.5	.35	1.8
31	.34	-----	.12	.16	-----	.10	-----	1.2	-----	3.4	.97	-----
TOTAL	16.20	5.14	9.32	15.21	9.31	27.80	20.39	25.54	21.64	36.15	37.24	20.81
MEAN	.52	.17	.30	.49	.32	.90	.68	.82	.72	1.17	1.20	.69
MAX	5.4	.35	3.9	4.2	1.7	6.1	3.3	4.7	5.7	3.5	4.1	2.3
MIN	.11	.09	.06	.04	.10	.09	.10	.14	.14	.21	.24	.18
AC-FT	32	10	18	30	18	55	40	51	43	72	74	41

CAL YR 1971 TOTAL 146.43 MEAN .40 MAX 8.6 MIN .04 AC-FT 290  
 WTR YR 1972 TOTAL 244.75 MEAN .67 MAX 6.1 MIN .04 AC-FT 485

PEAK DISCHARGE (BASE, 15 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 4	0130	2.67	31	5-28	0900	2.65	17
1-27	1300	2.50	15	6- 4	0400	3.01	23
3- 1	1200	2.75	19	7- 1	1600	2.91	21
3-14	0130	3.47	31	8-22	1400	3.62	34

16896800 Chun Stream, Dublon Island

LOCATION.--Lat 7°22'36" N., long 151°52'13" E., on right bank at Chun, 0.4 mile upstream from mouth, and 1.8 miles west of Penienuk.

DRAINAGE AREA.--0.09 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Sept. 10, 1971. Altitude of gage is 50 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 34 cfs June 4 (gage height, 3.10 ft), from rating curve extended above 1.1 cfs; minimum, 0.04 cfs Dec. 19-21.

Period of record: Maximum discharge, 39 cfs Feb. 18, 1970 (gage height, 3.00 ft), from rating curve extended above 0.8 cfs; minimum, 0.01 cfs many days February to April, 1969.

REMARKS.--Records good except those for period of no gage-height record, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.75	.65	.14	.17	.33	4.4	.52	1.2	.75	.33	2.7	.30
2	1.1	.59	.17	.33	.29	1.4	.42	1.0	.65	.33	1.7	.30
3	.90	.56	.25	.17	.52	.90	.42	.70	.61	.47	3.2	.30
4	3.9	.47	.14	.14	.29	1.1	.31	.61	6.9	.61	1.4	.35
5	1.4	.42	.11	.14	.25	.75	.25	.80	1.2	.80	1.3	.20
6	1.2	.37	.11	.11	.21	.65	.17	1.8	.90	1.3	.90	.40
7	1.2	.33	.11	.11	.21	.56	.17	.85	.85	1.6	.80	.60
8	1.0	.29	.09	.21	.29	.52	.21	.70	.65	.90	.70	1.5
9	.90	.29	.09	.14	.52	.47	.21	.61	.61	.75	.95	.80
10	.80	.25	.17	.11	.42	.37	.21	.52	.56	.65	.70	.50
11	.70	.21	.11	.11	.29	.42	.61	.56	.56	.61	.70	2.5
12	.65	.21	.09	.09	.25	.37	.29	1.2	.52	.56	.61	5.0
13	.61	.21	.07	.07	.21	.53	.25	.90	.47	.47	.52	1.5
14	.56	.17	.07	.07	.17	2.2	.33	.61	.47	.42	.47	1.0
15	.56	.17	.07	.07	.17	.82	1.7	.52	.42	.52	.42	.70
16	.56	.14	.07	.21	.21	.65	.70	.52	.37	.70	.37	1.2
17	.52	.14	.07	.11	.25	.85	1.5	.47	.37	.47	.33	.70
18	.65	.14	.07	.11	.25	1.4	.80	.54	.37	.36	.37	.60
19	.52	.17	.05	.07	.21	1.4	.61	.52	.70	.47	.37	.50
20	.56	.25	.05	.07	.33	.95	1.7	.52	.42	.52	.33	.40
21	1.4	.21	.05	.09	.42	.80	1.0	.42	.37	.52	.33	.35
22	.65	.17	.11	.05	.42	.70	.70	.37	.37	.33	.70	.30
23	1.4	.17	.09	.05	.24	.65	.65	.33	.33	.29	.60	.25
24	1.1	.17	.25	2.4	.25	.61	.70	.37	.65	.29	.70	.80
25	1.3	.17	.29	.95	.21	.52	.70	.37	.37	.33	.80	.70
26	1.5	.17	.47	.42	.21	.47	.56	.33	.37	.29	.60	.60
27	2.0	.17	.65	2.1	.21	.42	.47	.70	.33	.29	.50	.50
28	1.3	.17	.47	.93	.90	.37	1.0	1.1	.42	.52	.45	.45
29	.95	.14	.37	.61	.85	.37	.95	2.3	.33	1.4	.40	.40
30	.85	.14	.29	.47	-----	.37	.90	1.0	.29	.61	.35	2.0
31	.75	-----	.21	.37	-----	.42	-----	1.0	-----	4.0	.30	-----
TOTAL	32.24	7.71	5.35	11.05	9.38	26.41	19.01	23.44	22.18	21.71	24.57	25.70
MEAN	1.04	.26	.17	.36	.32	.85	.63	.76	.74	.70	.79	.86
MAX	3.9	.65	.65	2.4	.90	4.4	1.7	2.3	6.9	4.0	3.2	5.0
MIN	.52	.14	.05	.05	.17	.37	.17	.33	.29	.29	.30	.20
AC-FT	64	15	11	22	19	52	38	46	44	43	49	51

CAL YR 1971 TOTAL 197.35 MEAN .54 MAX 6.3 MIN .05 AC-FT 391  
 WTR YR 1972 TOTAL 228.75 MEAN .63 MAX 6.9 MIN .05 AC-FT 454

PEAK DISCHARGE (BASE, 16 CFS, REVISED)

NOTE.--No gage-height record Aug. 23 to Sept. 30.

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 4	0230	2.90	18	6- 4	0100	3.10	34
1-24	1600	2.64	17	7-31	1900	3.02	31
4-15	0600	2.90	26	8- 3	0100	2.94	24
4-20	1430	2.76	20	9-12	Unknown	3.01	30

## CAROLINE ISLANDS, TRUK ISLANDS

16897200 Tununu Stream, Dublon Island

LOCATION.--Lat 7°22'42" N., long 151°52'51" E., on left bank at Roro, 0.1 mile upstream from mouth, and 1.1 miles west of Penienuk.

DRAINAGE AREA.--0.26 sq mi.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Concrete control since Aug. 13, 1971. Altitude of gage is 15 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 82 cfs June 4 (gage height, 3.70 ft), from rating curve extended above 2.0 cfs; minimum, 0.03 cfs Dec. 19, 21, 22.

Period of record: Maximum discharge, 168 cfs Feb. 18, 1970 (gage height, 5.08 ft), from rating curve extended above 5.4 cfs; minimum, 0.02 cfs Mar. 1, 2, 1969.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	1.4	.18	.33	.70	6.5	.75	2.8	1.5	.66	5.1	.61
2	3.3	1.2	.23	.61	.56	3.2	.61	2.6	1.4	.61	3.2	.61
3	2.7	1.1	.33	.37	.80	2.1	.56	2.0	1.1	.86	5.4	.60
4	8.0	.92	.18	.28	.56	2.2	.47	1.6	12	1.1	2.7	.70
5	3.7	.80	.14	.28	.47	1.7	.37	1.9	3.8	1.8	2.9	.55
6	2.7	.80	.14	.23	.37	1.3	.33	4.2	3.0	2.4	2.2	.90
7	2.9	.66	.14	.28	.37	1.1	.28	2.4	2.6	3.5	1.8	1.2
8	2.1	.61	.11	.42	.42	.97	.33	1.8	2.0	2.2	1.6	3.0
9	1.8	.56	.11	.18	.86	.86	.23	1.5	1.6	1.8	2.0	1.5
10	1.5	.42	.28	.14	.70	.80	.33	1.2	1.3	1.4	1.5	1.0
11	1.3	.33	.14	.11	.52	.70	.75	1.1	1.2	1.2	1.3	5.0
12	1.1	.28	.11	.14	.42	.61	.42	1.9	1.0	1.1	1.1	10
13	1.1	.28	.11	.14	.37	.66	.33	1.9	.92	.97	1.0	3.0
14	.97	.23	.08	.11	.28	3.3	.42	1.2	.86	.97	.92	2.0
15	.92	.18	.08	.08	.28	1.7	3.3	.97	.86	1.1	.86	1.5
16	.92	.18	.08	.52	.28	1.2	1.4	.92	.66	1.2	.75	2.5
17	.86	.18	.06	.28	.37	1.5	3.4	.86	.61	.97	.66	1.5
18	.97	.20	.06	.28	.37	2.4	2.0	.92	.61	.80	.66	1.2
19	.92	.28	.04	.14	.23	2.7	1.6	.86	1.2	.97	.70	1.0
20	.75	.47	.05	.11	.52	1.9	2.9	.86	.75	.92	.70	.80
21	1.8	.33	.04	.14	.56	1.6	2.7	.75	.66	.97	.61	.70
22	1.1	.28	.20	.11	.75	1.4	2.0	.70	.66	.75	1.8	.60
23	2.3	.23	.18	.11	.47	1.2	1.8	.66	.61	.70	1.3	.50
24	2.3	.18	.64	3.6	.52	1.1	1.7	.66	.97	.70	1.5	1.5
25	2.2	.23	.92	1.6	.37	.97	1.8	.66	.66	.86	1.8	1.3
26	2.7	.23	1.1	.92	.28	.92	1.4	.56	.61	.66	1.2	1.3
27	4.3	.23	1.3	3.6	.33	.75	1.2	1.1	.66	.61	1.1	1.1
28	3.5	.23	.97	1.9	1.3	.66	1.9	1.7	.66	1.0	.97	.90
29	2.7	.18	.75	1.2	1.2	.61	2.3	4.3	.61	2.6	.86	.80
30	2.2	.18	.47	.92	-----	.61	2.3	2.3	.56	1.4	.75	4.0
31	1.8	-----	.37	.80	-----	.61	-----	2.0	-----	5.5	.66	-----
TOTAL	67.91	13.38	9.59	19.93	15.23	47.83	39.88	48.88	45.63	42.28	49.60	51.87
MEAN	2.19	.45	.31	.64	.53	1.54	1.33	1.58	1.52	1.36	1.60	1.73
MAX	8.0	1.4	1.3	3.6	1.3	6.5	3.4	4.3	12	5.5	5.4	10
MIN	.75	.18	.04	.08	.23	.61	.23	.56	.56	.61	.61	.50
AC-FT	135	27	19	40	30	95	79	97	91	84	98	103

CAL YR 1971 TOTAL 403.14 MEAN 1.10 MAX 17 MIN .04 AC-FT 800  
 WTR YR 1972 TOTAL 452.01 MEAN 1.24 MAX 12 MIN .04 AC-FT 897

PEAK DISCHARGE (BASE, 30 CFS).--June 4 (0500) 82 cfs (3.70 ft); Aug. 3 (0100) 32 cfs (2.61 ft).

CAROLINE ISLANDS, ISLAND OF PONAPE

205

16897600 Nanepil River

LOCATION.--Lat 6°55'11" N., long 158°12'36" E., on left bank 1.4 miles northeast of Mount Tamatamansakir and 1.4 miles southeast of Rekisau.

DRAINAGE AREA.--2.93 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 390 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 8,200 cfs May 31 (gage height, 8.04 ft, from floodmark in well), from rating curve extended above 110 cfs; minimum, 4.9 cfs Dec. 22.  
 Period of record: Maximum discharge, 8,200 cfs May 31, 1972 (gage height, 8.04 ft, from floodmark in well), from rating curve extended above 110 cfs; minimum, 3.2 cfs Sept. 14, 15, 1971.

REMARKS.--Records fair except those above 200 cfs, which are poor. No diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	30	38	226	16	127	111	60	60	39	106	336
2	294	23	60	95	20	118	123	47	40	301	34	121
3	46	28	19	54	13	28	106	24	25	37	18	36
4	167	33	13	24	8.8	17	300	664	18	32	14	49
5	43	25	16	48	21	12	49	207	25	23	71	349
6	64	16	14	17	27	7.6	23	58	20	256	27	230
7	41	12	20	12	112	6.4	16	47	15	345	73	300
8	33	9.2	35	8.8	73	39	12	190	10	68	193	117
9	42	7.6	13	56	110	17	9.5	35	8.2	46	42	34
10	28	8.0	73	27	26	8.8	7.2	20	6.4	25	30	312
11	29	7.2	21	18	17	6.6	16	15	6.8	236	20	53
12	17	7.2	13	11	12	5.7	19	12	10	459	167	110
13	46	11	9.2	8.4	32	31	24	10	14	44	40	375
14	16	68	7.6	22	26	63	201	9.0	26	26	20	1,080
15	20	45	6.4	35	12	31	30	150	45	18	15	95
16	58	35	11	20	9.2	79	126	70	215	47	11	28
17	17	42	8.0	25	13	211	104	40	200	64	63	16
18	13	54	7.2	25	27	69	134	300	33	24	22	12
19	61	49	6.0	16	54	26	40	70	37	23	58	8.6
20	24	68	5.7	11	103	17	42	25	122	16	19	13
21	133	26	6.0	14	35	12	93	20	52	33	42	8.2
22	53	86	5.2	14	16	44	28	14	55	122	25	6.4
23	32	31	18	9.6	16	26	34	16	24	30	21	8.2
24	38	16	17	98	133	25	84	35	15	19	16	7.7
25	185	12	94	52	68	148	45	26	14	239	130	128
26	42	9.2	35	24	69	70	29	13	11	38	25	25
27	25	67	13	16	30	55	232	10	9.5	24	27	303
28	48	25	14	19	38	42	110	50	27	928	16	225
29	46	11	68	14	28	26	31	200	16	139	13	382
30	27	9.2	18	317	-----	205	134	500	16	147	52	410
31	79	-----	35	39	-----	62	-----	700	-----	726	80	-----
TOTAL	1,796	870.6	719.3	1,375.8	1,167.0	1,635.3	2,312.7	3,631.0	1,175.9	4,574	1,490	5,178.1
MEAN	57.9	29.0	23.2	44.4	40.2	52.8	77.1	117	39.2	148	48.1	173
MAX	294	86	94	317	133	211	300	700	215	928	193	1,080
MIN	13	7.2	5.2	8.4	8.8	5.7	7.2	9.0	6.4	16	11	6.4
AC-FT	3,560	1,730	1,430	2,730	2,310	3,240	4,590	7,200	2,330	9,070	2,960	10,270

CAL YR 1971 TOTAL 17,463.3 MEAN 47.8 MAX 348 MIN 3.5 AC-FT 34,640  
 WTR YR 1972 TOTAL 25,925.7 MEAN 70.8 MAX 1,080 MIN 5.2 AC-FT 51,420

PEAK DISCHARGE (BASE, 4,000 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-2	1930	7.65	6,400	5-31	1300	8.04	8,200
1-30	0830	7.34	5,160	7-28	1100	7.13	4,490
5-4	2230	7.38	5,320	9-14	0630	7.86	7,300
5-18	12100	7.80	7,000	9-30	1730	7.05	4,250

NOTE.--No gage-height record May 10 to June 7.

/ About  
 # From floodmark in well.

## CAROLINE ISLANDS, ISLAND OF PONAPE

16897900 Lui River

LOCATION:--Lat 6°55'36" N., long 158°12'55" E., on right bank 300 ft upstream from right-bank tributary and 1.3 miles southeast of Rekisau.

DRAINAGE AREA.--0.47 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 270 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 970 cfs May 4 (gage height, 5.64 ft), from rating curve extended above 13 cfs; minimum, 0.47 cfs Jan. 23.  
 Period of record: Maximum discharge, 970 cfs May 4, 1972 (gage height, 5.64 ft), from rating curve extended above 13 cfs; minimum, 0.26 cfs Mar. 30 to Apr. 1, 1970.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	3.1	3.0	19	1.7	12	13	5.8	6.9	4.6	13	18
2	36	2.0	5.2	15	1.3	13	4.2	4.6	8.0	13	5.2	11
3	7.5	2.8	1.9	6.7	.92	3.2	7.5	2.3	4.0	3.8	2.8	3.2
4	5.7	2.3	1.2	3.1	.78	1.9	32	138	2.4	3.4	2.0	3.8
5	7.5	1.9	1.2	3.7	.92	1.2	6.6	20	4.6	2.1	7.9	30
6	11	1.3	1.1	1.5	1.8	1.0	3.0	6.3	2.1	19	3.2	9.5
7	3.8	1.7	2.1	1.0	16	.85	1.9	8.4	1.8	25	9.2	17
8	4.8	1.3	3.0	.78	8.7	4.7	1.3	9.2	1.2	9.8	13	9.8
9	3.2	.85	1.1	10	14	1.7	1.1	4.0	1.0	5.8	4.8	4.0
10	2.6	1.2	4.0	3.8	3.2	.92	.85	2.4	.85	3.0	3.1	30
11	3.2	.85	1.5	1.7	1.7	.85	1.7	1.9	3.2	21	2.4	5.4
12	1.9	.62	1.2	1.0	1.2	.70	1.2	1.8	2.5	45	13	4.6
13	7.6	1.2	.92	.78	1.8	2.8	3.1	2.3	2.1	4.8	5.4	40
14	2.5	7.4	.85	1.8	1.9	8.0	8.4	1.9	1.9	3.0	2.8	77
15	2.4	5.3	1.0	3.2	1.1	2.6	3.4	20	4.0	1.9	1.7	9.0
16	8.7	3.2	1.3	1.5	.85	7.3	5.8	9.9	7.0	3.4	1.4	4.0
17	3.1	2.6	1.0	1.5	.85	24	5.6	5.6	14	5.4	8.8	2.6
18	1.8	4.0	.85	2.4	2.1	8.7	5.3	23	4.0	2.6	3.7	1.9
19	11	4.0	.78	1.4	3.8	3.6	3.7	7.5	13	2.4	2.3	1.4
20	2.8	9.0	.85	.85	13	2.0	4.6	3.0	12	1.4	1.5	2.1
21	8.8	7.0	.78	1.0	5.4	1.5	5.6	2.8	6.0	1.8	4.3	1.3
22	7.2	10	.70	.78	2.0	2.6	3.2	1.8	4.0	11	3.6	1.2
23	4.6	4.0	1.2	.55	1.3	3.0	3.4	3.8	2.3	4.0	2.0	1.3
24	6.0	2.5	1.0	10	22	2.5	6.8	6.8	1.4	2.1	1.2	1.2
25	20	2.0	9.2	4.6	6.9	4.2	4.4	2.5	1.2	13	4.0	11
26	6.6	1.7	4.8	2.1	9.9	3.8	2.6	1.3	.92	4.6	2.0	3.7
27	3.0	8.0	1.7	1.2	4.0	4.8	36	1.2	.85	2.6	2.0	11
28	2.0	4.0	1.4	.92	4.2	3.0	8.7	12	4.4	73	1.2	13
29	1.7	2.0	3.8	1.2	2.5	2.1	3.2	28	1.9	15	.85	27
30	2.4	1.4	1.2	34	-----	11	7.8	49	2.4	15	3.8	30
31	6.6	-----	1.1	4.0	-----	6.3	-----	59	-----	64	6.0	-----
TOTAL	201.4	99.22	60.93	141.06	135.82	145.82	195.95	446.1	121.92	386.5	138.15	385.0
MEAN	6.50	3.31	1.97	4.55	4.68	4.70	6.53	14.4	4.06	12.5	4.46	12.8
MAX	36	10	9.2	34	22	24	36	138	14	73	13	77
MIN	1.7	.62	.70	.55	.78	.70	.85	1.2	.85	1.4	.85	1.2
AC-FT	399	197	121	280	269	289	389	885	242	767	274	764

CAL YR 1971 TOTAL 2,015.91 MEAN 5.52 MAX 67 MIN .51 AC-FT 4,000  
 WTR YR 1972 TOTAL 2,457.87 MEAN 6.72 MAX 138 MIN .55 AC-FT 4,880

## PEAK DISCHARGE (BASE, 500 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 2	2100	4.88	684	7-28	1000	4.46	558
4-27	1530	4.67	621	9-10	0400	4.46	558
5- 4	1700	5.64	970	9-14	0600	4.64	612
5-31	1330	5.20	790				

16898200 Lui River at mouth

LOCATION.--Lat 6°57'07" N., long 158°13'16" E., on right bank 0.4 mile upstream from mouth and 1.3 miles west of Tolenot Peak.

DRAINAGE AREA.--2.06 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 40 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 4,280 cfs May 4 (gage height, 6.34 ft), from rating curve extended above 92 cfs; minimum, 4.1 cfs Dec. 22.

Period of record: Maximum discharge, 7,440 cfs July 17, 1971 (gage height, 7.92 ft), from rating curve extended above 92 cfs; minimum, 3.0 cfs Mar. 6, 1970.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	14	17	94	9.8	64	41	21	40	19	58	98
2	312	12	23	60	8.0	76	16	20	35	43	26	55
3	41	12	12	46	7.0	19	29	12	20	20	17	18
4	31	12	8.8	18	6.2	13	219	528	13	15	12	17
5	35	10	7.6	17	6.0	10	33	149	18	11	38	175
6	55	8.2	7.1	10	8.5	8.0	16	31	11	95	18	40
7	23	9.8	8.0	7.7	45	7.1	11	77	9.6	151	50	88
8	29	8.8	10	6.8	36	14	8.8	33	8.1	58	73	47
9	18	7.1	6.4	48	88	8.0	7.4	20	7.4	33	25	20
10	14	8.0	13	19	18	6.5	6.5	14	6.7	19	18	174
11	16	7.1	7.6	10	11	6.1	7.4	12	12	141	14	25
12	11	6.3	6.4	7.8	8.8	5.5	7.0	12	9.0	340	57	22
13	32	6.6	5.7	6.8	8.8	8.6	9.8	10	8.1	30	24	211
14	14	33	5.4	7.1	8.8	32	47	8.7	8.1	18	15	664
15	12	21	5.4	12	6.6	12	17	112	11	12	11	60
16	40	21	5.8	8.5	6.1	28	24	46	18	15	9.6	23
17	16	15	5.2	7.8	5.7	64	21	26	58	24	44	15
18	12	18	4.9	8.0	7.6	42	15	211	17	14	19	11
19	88	18	4.7	7.0	15	20	13	49	55	14	12	9.4
20	16	43	4.7	5.7	54	13	14	17	73	10	9.8	10
21	31	31	4.6	5.7	23	9.8	20	15	30	11	19	8.3
22	29	46	4.2	5.6	10	10	13	11	19	39	17	7.4
23	19	22	4.8	4.9	7.8	11	11	15	13	18	11	7.4
24	23	13	4.8	32	111	9.0	21	22	9.4	12	8.5	7.3
25	104	11	24	13	33	13	19	11	8.3	54	14	31
26	34	11	15	8.2	48	10	13	8.9	7.5	21	8.5	12
27	26	39	6.8	6.5	19	13	310	8.7	6.8	14	8.1	32
28	16	20	6.4	5.7	18	9.8	48	45	12	586	7.1	42
29	13	12	13	5.7	13	7.7	19	207	8.0	69	6.3	117
30	13	9.8	6.8	122	-----	53	29	466	8.5	63	11	175
31	24	-----	6.8	19	-----	26	-----	474	-----	435	17	-----
TOTAL	1,171	505.7	265.9	635.5	647.7	629.1	1,065.9	2,692.3	560.5	2,404	677.9	2,221.8
MEAN	37.8	16.9	8.58	20.5	22.3	20.3	35.5	86.8	18.7	77.5	21.9	74.1
MAX	312	46	24	122	111	76	310	528	73	586	73	664
MIN	11	6.3	4.2	4.9	5.7	5.5	6.5	8.7	6.7	10	6.3	7.3
AC-FT	2,320	1,000	527	1,260	1,280	1,250	2,110	5,340	1,110	4,770	1,340	4,410

CAL YR 1971 TOTAL 11,216.7 MEAN 30.7 MAX 597 MIN 4.2 AC-FT 22,250  
 WTR YR 1972 TOTAL 13,477.3 MEAN 36.8 MAX 664 MIN 4.2 AC-FT 26,730

PEAK DISCHARGE (BASE, 3,000 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10- 2	2000	5.65	3,180	5-31	1300	5.98	3,670
4-27	1600	6.24	4,080	7-28	1000	5.60	3,100
5- 4	2300	6.34	4,280	9-14	0600	5.76	3,340

## CAROLINE ISLANDS, ISLAND OF PONAPE

16898300 Tawannu River

LOCATION.--Lat 6°56'57" N., long 158°12'50" E., on left bank 1.3 miles northeast of Rekisau and 1.8 miles west of Tolenot Peak.

DRAINAGE AREA.--1.00 sq mi.

PERIOD OF RECORD.--March 1970 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 110 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,090 cfs Apr. 27 (gage height, 4.78 ft), from rating curve extended above 76 cfs; minimum, 0.12 cfs Dec. 22-25.

Period of record: Maximum discharge, 1,550 cfs July 17, 1971 (gage height, 5.58 ft), from rating curve extended above 76 cfs; minimum, 0.10 cfs Apr. 1, 1970.

REMARKS.--Records fair. During dry periods, up to 360,000 gal per day is diverted 100 ft above station for domestic use in Kolonia.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.4	5.8	5.8	29	3.0	22	11	6.0	17	8.3	22	36
2	67	5.6	6.4	23	2.3	28	5.1	6.0	11	19	11	24
3	22	5.6	5.1	19	1.8	7.8	18	3.6	7.4	8.4	6.7	8.1
4	17	7.8	4.9	7.4	1.4	5.3	40	11.4	6.0	5.6	4.9	6.0
5	16	6.0	3.8	5.6	1.2	4.5	11	55	7.0	3.8	9.5	64
6	19	5.8	2.8	3.8	1.6	3.2	5.8	12	4.7	26	5.8	13
7	9.5	6.4	3.4	2.7	11	2.6	4.7	32	3.7	38	12	26
8	13	6.0	4.0	2.2	15	3.9	3.2	11	3.0	24	21	23
9	7.8	4.9	2.6	11	36	2.9	2.6	7.4	2.4	15	9.5	8.1
10	6.7	5.6	4.9	5.3	6.7	2.2	2.2	5.3	2.1	8.1	6.4	58
11	7.4	4.5	3.1	3.7	4.7	1.9	2.0	4.7	2.8	48	5.3	8.8
12	5.8	3.0	2.1	3.0	3.4	1.4	2.1	3.5	2.6	119	30	8.1
13	9.5	2.5	1.4	2.5	2.7	1.9	2.0	3.2	2.5	14	11	52
14	6.0	15	1.2	2.3	2.6	8.8	15	2.5	2.6	7.8	6.7	162
15	5.8	8.8	1.0	3.3	1.9	3.7	5.6	44	3.0	5.3	4.9	22
16	13	8.1	1.1	3.0	1.5	12	6.0	25	2.4	5.6	3.7	8.1
17	6.4	7.4	1.2	2.5	1.3	17	5.8	12	8.6	8.4	32	5.3
18	11	6.4	1.1	2.2	1.6	14	4.2	58	3.8	4.9	9.2	3.8
19	30	5.7	.81	1.6	2.3	7.0	3.6	27	6.7	4.5	5.3	3.1
20	6.4	12	.60	1.2	5.2	4.7	4.2	8.4	30	3.5	4.2	3.5
21	8.4	8.8	.44	.81	4.7	3.6	6.7	6.7	11	3.6	3.8	2.8
22	9.2	10	.24	1.2	2.8	3.2	3.4	4.7	6.4	11	3.8	2.3
23	6.7	8.8	.39	.67	2.2	3.3	3.1	4.2	4.5	5.6	3.4	1.9
24	7.0	5.1	.36	4.2	26	2.8	6.0	7.0	3.4	4.0	2.7	1.7
25	33	4.7	2.9	3.1	11	3.8	4.0	4.5	2.5	15	2.7	5.5
26	14	4.7	2.7	2.0	14	2.7	3.3	3.2	2.3	7.0	2.0	3.4
27	10	13	1.3	1.3	6.7	3.0	102	3.0	1.9	4.9	1.7	7.0
28	6.7	7.4	1.0	.88	6.0	2.6	23	14	3.3	161	1.6	11
29	5.8	4.9	3.0	.60	4.9	2.0	7.8	59	2.3	24	1.2	21
30	5.6	4.7	1.5	20	-----	22	7.8	116	2.3	48	12	43
31	7.4	-----	1.4	4.7	-----	10	-----	121	-----	127	7.6	-----
TOTAL	401.5	206.0	72.49	173.76	185.5	213.8	321.2	783.9	169.2	788.3	263.6	642.5
MEAN	13.0	6.87	2.34	5.61	6.40	6.90	10.7	25.3	5.64	25.4	8.50	21.4
MAX	67	15	6.4	29	36	28	102	121	30	161	32	162
MIN	5.6	2.5	.24	.60	1.2	1.4	2.0	2.5	1.9	3.5	1.2	1.7
AC-FT	796	409	144	345	368	424	637	1,550	336	1,560	523	1,270

CAL YR 1971 TOTAL 3,928.35 MEAN 10.8 MAX 233 MIN .24 AC-FT 7,790  
 WTR YR 1972 TOTAL 4,221.75 MEAN 11.5 MAX 162 MIN .24 AC-FT 8,370

## PEAK DISCHARGE (BASE, 600 CFS, REVISED)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
4-27	1600	4.78	1,090	5-31	1300	-	/600
5-4	2300	4.75	1,080	7-28	1030	-	/700
5-18	2100	-	/620				

/ About.

CAROLINE ISLANDS, ISLAND OF KUSAIE

16899500 Mutunte River

LOCATION.--Lat 5°22'25" N., long 163°00'24" E., on left bank at dam, 0.3 mile upstream from mouth, and 1.1 miles northwest of Mount Buache.

DRAINAGE AREA.--0.60 sq mi.

PERIOD OF RECORD.--May 1971 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 46 ft (from stadia survey).

EXTREMES.--Current year: Maximum discharge, 1,290 cfs Sept. 11 (gage height, 2.87 ft), from rating curve extended above 140 cfs; minimum, 1.7 cfs Feb. 8, 9.  
 Period of record: Maximum discharge, 1,290 cfs Sept. 11, 1972 (gage height, 2.87 ft), from rating curve extended above 140 cfs; minimum, 1.7 cfs Feb. 8, 9, 1972.

REMARKS.--Records good. Water is diverted from the gage pool through a 3" pipe for domestic use in Tafunsak.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	9.1	3.7	6.0	2.6	4.9	16	3.2	8.6	3.8	4.7	13
2	16	12	3.5	4.3	2.6	13	23	10	5.4	28	6.9	12
3	20	7.8	3.3	17	2.5	9.4	20	3.8	4.1	8.4	16	5.1
4	8.6	38	3.3	4.9	2.3	4.7	7.5	7.7	3.8	7.2	7.5	11
5	5.8	43	3.2	4.3	2.2	4.3	7.5	4.0	3.5	42	14	10
6	4.9	8.1	3.5	3.7	2.1	13	5.4	8.6	3.3	8.9	5.5	7.1
7	4.3	5.1	3.8	3.3	1.9	5.4	3.7	3.5	3.2	19	24	5.8
8	4.1	4.3	3.3	6.5	1.9	3.8	3.2	3.2	3.2	4.9	5.6	10
9	4.0	4.1	3.2	3.7	18	3.3	4.1	10	3.2	4.0	5.1	15
10	20	3.7	6.0	4.4	5.0	3.2	3.8	3.8	3.0	3.7	4.9	6.9
11	6.7	3.7	3.3	3.8	2.9	35	18	3.5	3.0	3.3	4.5	83
12	4.3	4.3	2.9	22	5.3	6.8	11	3.3	2.9	4.3	3.9	13
13	4.0	16	2.9	5.6	8.5	10	4.0	3.2	3.0	3.7	3.8	13
14	3.7	14	3.0	4.5	4.5	6.0	3.5	5.8	3.0	3.2	3.6	7.6
15	3.7	7.2	3.0	4.0	3.0	20	14	4.1	17	3.0	3.6	4.7
16	3.5	4.3	3.0	4.3	2.5	8.0	8.9	6.3	3.8	2.7	3.6	3.9
17	3.7	4.3	3.0	3.7	2.9	15	13	4.9	3.2	3.2	3.4	3.8
18	4.7	4.0	2.9	6.8	6.2	8.0	7.8	15	2.9	4.7	3.2	3.6
19	3.7	3.7	3.0	3.2	3.2	6.0	4.5	4.3	2.9	14	3.2	3.4
20	3.2	3.8	3.0	3.3	2.7	10	4.0	13	2.7	5.4	3.9	3.2
21	3.3	13	3.0	3.2	3.5	5.0	16	4.5	2.7	4.1	3.0	3.0
22	3.2	5.8	4.4	7.1	8.8	20	15	23	2.6	4.7	3.0	3.2
23	3.2	4.0	3.3	4.5	13	8.0	15	4.7	2.7	3.8	2.8	3.8
24	3.3	3.7	7.8	3.2	9.7	5.0	6.2	3.7	2.7	16	5.3	3.0
25	9.7	3.5	4.1	2.9	5.6	15	4.3	4.0	12	3.8	2.8	2.8
26	4.7	3.5	3.5	2.7	9.5	6.0	3.8	5.8	3.8	7.8	3.4	2.6
27	5.4	8.7	4.1	2.6	33	3.0	3.5	4.3	3.0	3.8	2.8	2.6
28	3.7	16	7.6	2.5	18	3.9	3.3	28	2.9	38	2.8	12
29	4.9	4.5	10	2.6	6.2	21	3.2	21	3.3	8.6	2.8	29
30	15	3.8	29	5.3	-----	20	3.0	8.5	4.0	22	2.8	4.1
31	4.5	-----	33	3.0	-----	13	-----	50	-----	7.5	3.0	-----
TOTAL	196.8	267.0	176.6	158.9	190.1	309.7	256.2	278.7	125.4	297.5	165.4	301.2
MEAN	6.35	8.90	5.70	5.13	6.56	9.99	8.54	8.99	4.18	9.60	5.34	10.0
MAX	20	43	33	22	33	35	23	50	17	42	24	83
MIN	3.2	3.5	2.9	2.5	1.9	3.0	3.0	3.2	2.6	2.7	2.8	2.6
AC-FT	390	530	350	315	377	614	508	553	249	590	328	597

WTR YR 1972 TOTAL 2,723.5 MEAN 7.44 MAX 83 MIN 1.9 AC-FT 5,400

PEAK DISCHARGE (BASE, 600 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
2-27	2200	2.49	607	7-5	1700	2.59	755
3-31	2300	2.60	770	9-11	1730	2.87	1,290
5-31	0530	2.50	620				

## CAROLINE ISLANDS, ISLAND OF KUSAIE

16899600 Okat River

LOCATION.--Lat 5°20'32" N., long 162°59'30" E., on left bank 1.6 miles upstream from mouth and 1.9 miles north-west of Mount Crozer.

DRAINAGE AREA.--1.60 sq mi.

PERIOD OF RECORD.--July 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 10 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,330 cfs May 22 (gage height, 7.70 ft), from rating curve extended above 43 cfs; minimum, 3.6 cfs Dec. 21.

Period of record: Maximum discharge, 1,330 cfs May 22, 1972 (gage height, 7.70 ft), from rating curve extended above 43 cfs; minimum, 3.6 cfs Dec. 21, 1971.

REMARKS.--Records fair except those above 100 cfs, which are poor. No diversion above station.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	13	11	38	6.5	25	60	8.3	64	10	20	89
2	45	49	9.0	25	6.0	44	100	30	44	141	23	52
3	54	21	8.0	51	5.5	55	103	9.1	31	30	45	18
4	32	181	7.0	24	5.5	26	43	22	24	24	32	36
5	18	197	6.5	23	5.0	26	39	11	18	209	66	31
6	18	61	7.5	17	5.0	48	31	75	16	57	23	18
7	13	41	6.5	13	4.5	31	22	13	13	85	92	40
8	12	27	6.0	21	4.5	20	18	9.5	11	38	34	35
9	11	21	6.0	13	7.0	16	22	12	11	27	41	52
10	95	16	6.0	32	19	13	22	9.1	9.1	22	46	49
11	31	13	6.0	18	11	92	65	8.7	8.3	21	23	224
12	18	13	5.5	67	12	31	32	7.4	7.9	25	17	95
13	16	40	5.0	25	19	30	18	9.5	7.4	18	14	50
14	15	38	4.7	20	19	22	15	27	6.6	13	13	35
15	19	21	4.5	15	8.7	87	50	13	45	11	12	30
16	13	13	4.5	13	7.9	33	22	13	10	11	11	22
17	13	30	4.4	20	11	40	60	64	7.4	13	12	18
18	29	20	4.3	13	8.7	23	33	30	6.3	31	9.5	15
19	12	12	4.3	12	7.0	29	20	14	6.6	40	8.7	13
20	10	11	4.3	11	7.4	48	20	36	5.9	22	17	11
21	10	51	4.3	10	8.3	20	56	12	5.0	18	10	10
22	9.1	17	12	15	33	66	47	144	4.6	18	8.7	18
23	8.3	16	8.3	12	42	23	46	28	5.3	12	7.4	15
24	8.7	11	55	10	37	19	26	23	5.6	25	32	8.7
25	45	8.7	14	8.0	30	65	18	33	41	21	7.4	8.3
26	15	13	7.4	7.5	44	20	15	25	12	29	9.9	7.0
27	11	20	19	7.0	115	17	14	22	7.4	34	6.3	6.3
28	18	50	15	6.5	78	29	11	133	5.6	152	5.9	60
29	34	20	38	8.0	34	100	10	121	7.4	38	5.3	142
30	46	12	111	8.0	-----	66	8.7	63	7.9	68	27	20
31	16	-----	124	7.0	-----	45	-----	220	-----	33	24	-----
TOTAL	723.1	1,056.7	529.0	570.0	664.5	1,209	1,046.7	1,245.6	454.3	1,296	703.1	1,228.3
MEAN	23.3	35.2	17.1	18.4	22.9	39.0	34.9	40.2	15.1	41.8	22.7	40.9
MAX	95	197	124	67	115	100	103	220	64	209	92	224
MIN	8.3	8.7	4.3	6.5	4.5	13	8.7	7.4	4.6	10	5.3	6.3
AC-FT	1,430	2,100	1,050	1,130	1,320	2,400	2,080	2,470	901	2,570	1,390	2,440

WTR YR 1972 TOTAL 10,726.3 MEAN 29.3 MAX 224 MIN 4.3 AC-FT 21,280

## PEAK DISCHARGE (BASE, 1,000 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
11-5	1400	6.82	1,070	5-28	2300	6.72	1,040
5-22	0600	7.70	1,330	9-11	1800	6.89	1,090

CAROLINE ISLANDS, ISLAND OF KUSAIE

211

16899700 Palusrik River

LOCATION.--Lat 5°17'38" N., long 163°00'06" E., on right bank 0.4 mile upstream from Finkol River, 0.7 mile northeast of Utwe village, and 2.0 miles south of Mount Crozer.

DRAINAGE AREA.--0.56 sq mi.

PERIOD OF RECORD.--June 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 125 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 1,250 cfs Sept. 11 (gage height, 7.70 ft), from rating curve extended above 12 cfs; minimum, 1.9 cfs Feb. 7, 8.  
 Period of record: Maximum discharge, 1,250 cfs Sept. 11, 1972 (gage height, 7.70 ft), from rating curve extended above 12 cfs; minimum, 1.9 cfs Feb. 7, 8, 1972.

REMARKS.--Records fair until April, poor thereafter. No diversion above station until August 1972, thereafter water is diverted from the gage pool for domestic use in Utwe village. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	6.7	6.5	9.4	2.3	7.3	25	4.5	17	4.4	10	15
2	16	11	4.9	5.8	2.2	7.2	27	14	8.8	28	10	10
3	8.2	9.6	4.5	5.7	2.2	9.1	29	5.6	6.9	9.0	19	6.0
4	6.6	78	4.0	4.3	2.2	6.4	14	16	6.1	6.7	17	20
5	6.1	34	3.5	4.7	2.1	5.0	17	9.6	5.2	74	43	10
6	6.9	12	3.3	3.8	2.0	8.2	15	96	4.7	11	13	6.3
7	5.3	11	3.3	3.4	2.0	6.6	8.8	12	4.5	20	41	14
8	4.8	14	3.2	4.4	2.0	5.2	7.1	9.2	4.4	7.3	16	33
9	5.6	10	2.9	3.5	6.7	4.4	6.6	10	4.1	5.8	12	76
10	21	9.0	3.1	3.4	3.2	3.9	6.1	8.4	3.8	5.2	15	20
11	9.0	8.2	2.9	4.1	2.2	19	13	16	3.6	5.7	9.0	228
12	6.1	7.8	2.8	11	2.2	7.3	13	8.0	3.6	5.3	7.0	41
13	6.1	24	2.7	5.6	3.2	7.3	7.5	6.9	3.5	5.4	6.0	26
14	5.4	17	2.6	4.3	3.8	7.8	6.4	7.6	3.5	4.6	5.5	15
15	5.8	12	2.6	3.4	2.4	36	7.6	7.8	5.2	4.1	5.0	10
16	4.6	9.0	2.5	3.6	2.2	10	6.2	6.1	3.9	3.9	4.5	8.0
17	4.5	27	2.5	5.4	2.9	13	5.9	4.9	3.5	4.1	4.0	7.0
18	7.7	9.0	2.5	4.1	2.4	8.4	10	5.9	3.4	6.0	3.7	6.5
19	4.6	7.5	2.4	3.3	2.2	8.2	6.1	5.2	4.5	10	3.5	6.0
20	3.9	6.4	2.3	3.3	2.2	6.9	6.1	6.6	4.0	6.7	4.5	5.9
21	4.2	24	2.3	3.6	2.2	5.6	27	5.0	3.5	8.7	4.0	5.8
22	3.7	8.4	3.3	3.5	3.3	17	17	60	3.4	12	3.7	16
23	3.7	6.6	2.6	3.2	5.5	8.4	30	6.7	3.3	7.5	3.5	11
24	3.6	6.6	3.2	2.9	5.8	6.2	12	5.4	3.2	15	5.0	5.7
25	4.9	5.8	2.6	2.7	6.5	11	8.4	16	5.9	7.1	3.0	5.8
26	3.8	5.9	2.4	2.6	7.9	7.1	7.5	6.2	3.4	8.4	4.5	5.2
27	3.5	5.7	2.8	2.5	22	5.4	7.5	5.4	3.2	8.2	3.0	4.8
28	14	9.7	5.1	2.4	16	16	5.6	24	3.2	50	2.5	22
29	5.3	5.2	4.1	2.5	8.8	47	5.0	22	5.1	19	2.2	148
30	4.8	4.9	4.1	2.5	-----	16	4.7	13	4.2	28	2.5	8.8
31	4.6	-----	32	2.3	-----	12	-----	67	-----	14	2.5	-----
TOTAL	203.1	406.0	171.4	127.2	130.6	338.9	362.1	491.2	142.6	405.1	285.1	796.8
MEAN	6.55	13.5	5.53	4.10	4.50	10.9	12.1	15.8	4.75	13.1	9.20	26.6
MAX	21	78	41	11	22	47	30	96	17	74	43	228
MIN	3.5	4.9	2.3	2.3	2.0	3.9	4.7	4.5	3.2	3.9	2.2	4.8
AC-FT	403	805	340	252	259	672	718	974	283	804	565	1,580

WTR YR 1972 TOTAL 3,860.1 MEAN 10.5 MAX 228 MIN 2.0 AC-FT 7,660

PEAK DISCHARGE (BASE, 550 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
5-6	0500	6.95	960	9-11	1230	7.70	1,250
5-22	0500	6.65	640	9-29	0300	7.38	1,140
5-31	0530	6.93	559				

## CAROLINE ISLANDS, ISLAND OF KUSAIE

16899750 Malem River

LOCATION.--Lat 5°18'21" N., long 163°01'46" E., on left bank 1.2 miles upstream from mouth and 1.8 miles south-east of Mount Crozer.

DRAINAGE AREA.--0.48 sq mi.

PERIOD OF RECORD.--July 1971 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 95 ft (from stadia survey).

EXTREMES.--Current year: Maximum discharge, 964 cfs Sept. 11 (gage height, 5.58 ft), from rating curve extended above 110 cfs; minimum, 1.6 cfs Feb. 19.  
Period of record: Maximum discharge, 980 cfs July 6, 1971 (gage height, 5.60 ft), from rating curve extended above 110 cfs; minimum, 1.6 cfs Feb. 19, 1972.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	4.5	5.4	11	2.1	7.1	17	4.1	20	8.2	8.7	18
2	11	6.7	3.8	7.3	2.0	9.3	27	10	12	32	9.4	15
3	7.1	11	3.3	8.7	2.0	9.7	32	6.2	8.9	10	20	7.4
4	7.1	55	3.2	5.8	2.1	6.4	16	13	7.5	8.9	14	18
5	5.8	25	3.0	5.4	1.9	5.1	20	8.4	6.6	60	27	8.4
6	6.2	9.7	2.9	4.1	1.7	8.7	13	21	5.8	14	10	6.2
7	4.5	6.6	2.7	3.8	1.7	6.4	8.9	7.1	5.6	27	37	6.6
8	4.1	9.1	2.6	4.0	1.7	4.5	7.5	5.8	4.9	9.4	13	12
9	5.0	5.5	2.5	3.7	11	3.8	9.2	7.3	4.3	7.1	10	11
10	28	5.0	2.9	3.5	4.0	3.3	10	5.6	4.1	6.2	12	6.4
11	9.7	4.5	2.6	4.2	2.5	21	19	14	4.1	8.1	8.2	90
12	6.0	4.3	2.5	26	2.7	7.1	15	5.8	4.0	9.5	7.7	19
13	6.2	20	2.3	8.4	7.5	7.7	8.4	5.1	3.7	8.2	6.4	17
14	4.9	15	2.2	7.5	4.7	7.3	7.3	12	3.5	6.2	5.6	12
15	8.5	11	2.3	5.1	2.5	26	9.3	6.4	8.0	5.2	5.1	8.2
16	4.9	6.6	2.2	6.1	2.1	8.9	7.7	9.5	4.0	4.9	4.5	6.6
17	6.7	7.3	2.1	7.5	2.5	13	13	6.4	3.3	4.7	4.1	5.8
18	7.6	5.8	2.1	4.1	2.0	7.5	15	6.2	3.0	9.4	3.8	5.2
19	4.7	4.9	2.1	4.0	1.7	7.7	7.3	5.8	3.7	20	3.5	4.7
20	4.0	4.5	2.0	4.0	1.9	6.6	6.2	7.1	3.3	8.9	6.4	4.3
21	4.0	12	1.9	4.0	2.2	4.9	29	5.7	2.7	9.8	3.8	4.0
22	3.5	7.3	5.5	5.2	7.7	20	12	28	2.6	9.4	3.3	11
23	3.5	4.9	4.7	3.8	8.2	7.5	23	7.3	2.7	13	3.2	6.9
24	3.3	5.2	12	3.0	9.1	5.6	11	5.8	3.0	17	7.2	4.1
25	6.9	4.0	4.3	2.9	9.2	13	7.7	13	12	8.0	3.3	4.1
26	5.3	4.1	2.9	2.6	11	7.3	6.6	9.4	5.2	12	8.5	3.5
27	4.7	5.2	3.2	2.5	26	5.4	6.2	7.7	3.5	7.5	3.8	3.2
28	6.5	14	8.3	2.3	19	23	5.4	43	3.0	29	3.2	11
29	5.4	4.9	20	2.6	7.3	38	4.9	32	4.5	18	2.9	41
30	9.3	4.0	51	2.6	-----	20	4.5	21	5.1	30	3.3	6.6
31	4.9	-----	37	2.3	-----	17	-----	75	-----	12	3.5	-----
TOTAL	206.6	287.6	205.5	168.0	160.0	338.8	379.1	414.7	164.6	433.6	262.4	377.2
MEAN	6.66	9.59	6.63	5.42	5.52	10.9	12.6	13.4	5.49	14.0	8.46	12.6
MAX	28	55	51	26	26	38	32	75	20	60	37	90
MIN	3.3	4.0	1.9	2.3	1.7	3.3	4.5	4.1	2.6	4.7	2.9	3.2
AC-FT	410	570	408	333	317	672	752	823	326	860	520	748

WTR YR 1972 TOTAL 3,398.1 MEAN 9.28 MAX 90 MIN 1.7 AC-FT 6,740

## PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
5-28	2300	5.24	708	9-11	1730	5.58	964
5-31	0500	4.98	548				

16899800 Tofol River

LOCATION.--Lat 5°19'53" N., long 163°01'25" E., on left bank 25 ft downstream from right-bank tributary, 0.7 mile upstream from mouth, and 1.2 miles northeast of Mount Crozer.

DRAINAGE AREA.--0.44 sq mi.

PERIOD OF RECORD.--June 1971 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 98 ft (from stadia survey).

EXTREMES.--Current year: Maximum discharge, 745 cfs Sept. 11 (gage height, 4.73 ft), from rating curve extended above 79 cfs; minimum, 1.2 cfs Dec. 21.

Period of record: Maximum discharge, 1,050 cfs July 6, 1971 (gage height, 5.24 ft), from rating curve extended above 79 cfs; minimum, 1.2 cfs Dec. 21, 1971.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	8.7	3.1	8.0	1.9	5.8	18	3.8	15	4.6	8.2	14
2	9.3	8.0	2.8	5.4	1.9	9.2	21	7.4	10	21	8.2	11
3	5.9	8.9	2.5	7.0	1.8	8.4	23	4.5	7.0	7.7	18	5.2
4	7.7	33	2.2	4.5	1.9	5.8	14	7.6	5.5	5.6	9.1	10
5	5.8	24	2.1	4.2	1.7	4.8	12	5.4	4.5	46	17	5.4
6	5.6	9.9	2.3	3.6	1.6	9.1	9.2	13	4.0	14	8.0	5.2
7	4.6	7.0	2.1	3.2	1.5	6.5	7.0	4.8	3.5	22	25	4.6
8	4.4	6.5	1.9	3.3	1.5	5.0	5.8	4.2	3.5	8.7	11	7.8
9	4.2	4.8	1.9	2.9	1.4	4.2	5.9	4.4	3.3	6.7	9.9	9.0
10	37	4.2	2.0	3.6	4.1	3.8	9.3	3.6	3.1	5.8	12	7.2
11	8.4	3.8	1.9	4.0	2.2	15	12	4.6	3.2	5.2	7.2	58
12	5.0	3.6	1.7	20	2.1	7.1	9.2	4.2	2.9	6.3	5.9	18
13	4.4	11	1.5	7.0	6.2	6.3	5.8	3.2	2.7	5.4	5.4	14
14	8.0	9.7	1.5	5.0	3.4	5.8	5.0	12	2.3	4.4	4.6	8.0
15	6.1	6.7	1.5	4.0	2.2	12	7.0	4.8	5.8	3.8	4.2	6.0
16	4.0	4.4	1.5	5.0	2.0	6.7	6.0	6.6	3.9	3.4	4.0	5.5
17	6.2	5.0	1.5	6.0	2.0	12	9.0	4.4	3.1	3.7	3.8	5.0
18	6.5	3.8	1.4	4.6	1.9	6.3	10	4.5	2.6	5.0	3.3	4.5
19	3.8	3.3	1.4	3.9	1.8	6.7	6.0	3.8	2.7	15	3.1	4.0
20	3.2	3.2	1.3	3.9	1.8	6.8	4.0	5.7	2.2	7.0	3.6	3.8
21	3.2	13	1.3	4.0	2.0	5.4	20	3.6	2.0	6.0	2.9	3.6
22	2.8	5.4	3.4	4.6	7.0	18	8.0	28	1.9	5.6	2.7	6.6
23	2.6	3.8	3.3	3.8	8.0	6.7	15	5.8	2.0	6.3	2.5	5.9
24	2.5	3.3	13	3.1	7.7	5.9	10	4.6	1.9	10	3.9	3.4
25	5.7	2.8	3.1	2.8	7.6	12	7.0	5.9	9.1	5.2	2.2	3.2
26	4.6	3.2	2.0	2.6	10	5.8	5.9	7.1	3.2	12	3.3	3.1
27	4.0	4.6	2.7	2.5	21	5.0	5.9	5.4	2.3	5.9	2.2	2.8
28	3.6	11	4.9	2.3	13	11	4.8	37	2.1	27	2.0	11
29	8.7	3.6	11	2.6	6.9	25	4.2	25	4.0	12	1.9	30
30	11	3.1	24	2.6	-----	18	3.9	15	3.3	22	2.1	5.6
31	4.8	-----	24	2.2	-----	13	-----	50	-----	12	3.6	-----
TOTAL	199.9	223.3	130.8	142.2	140.7	273.1	283.9	299.9	122.6	325.3	200.8	281.4
MEAN	6.45	7.44	4.22	4.59	4.85	8.81	9.46	9.67	4.09	10.5	6.48	9.38
MAX	37	33	24	20	21	25	23	50	15	46	25	58
MIN	2.5	2.8	1.3	2.2	1.5	3.8	3.9	3.2	1.9	3.4	1.9	2.8
AC-FT	397	443	259	282	279	542	563	595	243	645	398	558

WTR YR 1972 TOTAL 2,623.9 MEAN 7.17 MAX 58 MIN 1.3 AC-FT 5,200

PEAK DISCHARGE (BASE, 450 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
10-10	1930	4.54	650	9-11	1800	4.73	745
5-28	2200	4.68	720				

SAMOA ISLANDS, ISLAND OF TUTUILA

16912000 Pago Stream at Afono

LOCATION.--Lat 14°16'03" S., long 170°39'02" W., on left bank 0.2 mile south of Afono and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.60 sq mi.

PERIOD OF RECORD.--October 1958 to current year. Prior to July 1960, published as Afono Stream at Afono.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 30 ft (from topographic map).

AVERAGE DISCHARGE.--13 years (1959-72), 3.33 cfs (2,410 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 670 cfs Sept. 8 (gage height, 4.50 ft), from rating curve extended above 12 cfs; minimum, 0.25 cfs Oct. 11 and during period of no gage-height record Oct. 28 to Dec. 27.  
 Period of record: Maximum discharge, 1,350 cfs July 5, 1969 (gage height, 5.49 ft), from rating curve extended above 22 cfs; minimum, 0.25 cfs at times in 1961, 1968 and 1972.

REMARKS.--Records fair except those for period of no gage-height record, which are poor. About 0.06 cfs is diverted above station for domestic use in Afono.

REVISIONS.--WSP 1937: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.37	.40	.90	1.1	5.1	1.2	1.2	.52	.64	.78	.52	2.2
2	.33	.35	1.5	.78	4.0	1.2	1.0	.52	.58	.64	.42	.85
3	.33	.30	3.0	.64	2.6	1.5	.93	.47	.58	.52	.37	.64
4	.42	.30	2.0	3.6	2.5	1.0	.93	.47	.58	.47	.37	.71
5	.58	.30	1.0	5.4	2.5	1.0	.93	.42	.52	.47	.37	.58
6	.78	.30	.80	3.4	1.9	.93	.85	.47	.71	12	.71	5.1
7	.42	.30	.60	1.6	1.6	.85	1.0	.52	.78	11	5.4	62
8	.37	.30	.60	1.2	1.4	.85	.93	.58	.58	3.0	4.4	104
9	.33	.50	.50	1.1	1.4	.85	1.0	3.4	.58	1.6	55	9.8
10	.29	.80	.40	8.2	2.6	.78	1.3	4.4	.52	1.4	22	5.7
11	.37	.40	.40	2.8	1.9	1.2	1.2	1.6	.47	1.0	9.4	4.0
12	.37	.60	.30	2.8	4.0	2.6	1.6	11	.47	.93	3.6	3.8
13	.33	15	.50	5.2	14	4.7	1.3	6.0	.47	.85	2.6	3.0
14	.29	3.0	.40	3.6	24	3.2	.85	2.5	.42	.78	1.9	2.3
15	.29	.80	.30	2.2	19	2.2	.78	1.6	.71	1.0	1.6	20
16	.29	.60	1.0	1.9	6.6	1.4	1.3	1.3	.64	.78	1.4	5.4
17	.47	.50	.70	7.4	4.2	4.4	1.3	1.2	.58	.71	1.2	3.6
18	.37	.40	5.0	12	3.4	2.6	1.9	1.6	.93	.64	1.2	3.0
19	6.6	.40	1.0	23	3.6	2.2	1.1	1.2	.71	.98	1.0	2.5
20	1.6	.30	3.0	16	3.2	1.6	.85	1.0	.71	.58	.93	2.2
21	.93	.30	5.0	14	3.0	1.3	.78	.93	.58	.58	.85	2.2
22	.58	.40	3.0	45	2.5	1.1	.71	.85	.78	.52	.78	1.8
23	.47	6.0	2.0	72	2.0	1.1	.78	.85	.78	.47	.78	5.6
24	.42	1.0	1.3	17	1.9	2.5	.71	.78	.64	.74	.78	5.0
25	.37	.60	1.1	7.9	1.6	12	.71	.78	.47	.71	.93	3.0
26	.33	.60	.90	6.0	1.5	3.6	.58	.71	.58	.58	.78	2.0
27	.33	.80	.85	4.0	1.4	2.0	.58	.71	2.6	.52	.64	2.0
28	.33	1.2	.85	3.4	1.4	1.6	.58	.71	1.1	.64	.64	1.8
29	.40	1.4	.78	2.6	1.3	1.6	.78	.71	.78	.78	.58	1.5
30	.80	.90	.71	2.6	-----	1.5	.58	.64	1.0	.64	.58	5.0
31	.40	-----	.71	2.5	-----	1.3	-----	.64	-----	.58	.85	-----
TOTAL	20.56	39.05	41.10	280.92	126.1	65.86	29.04	49.08	21.49	46.49	122.58	271.28
MEAN	.66	1.30	1.33	9.06	4.35	2.12	.97	1.58	.72	1.50	3.95	9.04
MAX	6.6	15	5.0	72	24	12	1.9	11	2.6	12	55	104
MIN	.29	.30	.30	.64	1.3	.78	.58	.42	.42	.47	.37	.58
AC-FT	41	77	82	557	250	131	58	97	43	92	243	538

CAL YR 1971 TOTAL 696.33 MEAN 1.91 MAX 30 MIN .29 AC-FT 1,380  
 WTR YR 1972 TOTAL 1,113.55 MEAN 3.04 MAX 104 MIN .29 AC-FT 2,210

PEAK DISCHARGE (BASE, 210 CFS)

NOTE.--No gage-height record Oct. 28 to Dec. 27.

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
1-22	1630	4.37	605	9- 8	0200	4.50	670
1-23	0200	4.47	655				

16917500 Leele Stream at mouth, at Fagasa

LOCATION.--Lat 14°17'28" S., long 170°43'09" W., on left bank at Fagasa and 200 ft upstream from mouth.

DRAINAGE AREA.--0.23 sq mi.

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 10 ft (from topographic map).

AVERAGE DISCHARGE.--6 years, 1.63 cfs (1,180 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 224 cfs Sept. 8 (gage height, 3.46 ft), from rating curve extended as explained below; minimum, 0.09 cfs Oct. 13-17.

Period of record: Maximum discharge, 390 cfs Aug. 30, 1970 (gage height, 3.82 ft), from rating curve extended above 13 cfs on basis of slope-area measurement at gage height 3.61 ft; minimum, 0.09 cfs Oct. 13-17, 1971.

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

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.17	.68	.68	1.7	.39	.61	.26	.20	.44	.20	4.5
2	.12	.14	.99	.34	.91	.69	.55	.26	.20	.30	.17	.68
3	.20	.12	2.3	.26	.61	1.5	.49	.23	.20	.23	.17	.49
4	.23	.11	1.4	.55	1.6	.61	.39	.23	.20	.20	.17	.39
5	.34	.12	.75	3.2	.99	.49	.39	.20	.20	.20	.23	.44
6	.61	.14	.49	1.6	.61	.44	.49	.26	.39	2.2	.23	22
7	.23	.12	.30	.91	.83	.39	.55	.26	.55	6.5	2.0	30
8	.14	.11	.30	.61	.55	.39	.49	.23	.20	1.2	4.8	38
9	.11	.20	.26	.49	.44	.39	.84	2.4	.17	.61	16	4.4
10	.14	.39	.23	2.3	4.2	.39	.75	3.1	.17	.55	11	2.9
11	.12	.14	.23	.99	2.0	.44	.49	1.2	.17	.39	4.4	1.6
12	.14	.26	.20	.75	2.0	2.7	.44	2.7	.17	.30	1.4	.75
13	.10	8.3	.34	.91	3.2	4.6	.44	1.8	.20	.26	.99	.75
14	.10	2.1	.26	.61	4.0	2.0	.34	.83	.17	.26	.83	.55
15	.10	.83	.20	.44	5.6	.83	.30	.68	.75	1.2	.68	9.9
16	.11	.49	.87	.39	1.7	3.0	.79	.49	.83	.68	.61	2.1
17	.11	.39	.44	3.0	.99	3.3	.49	.68	1.5	.39	.55	1.6
18	.14	.26	2.2	7.7	.91	1.7	.34	1.8	3.1	.34	.55	2.0
19	5.2	.23	.61	6.4	1.2	1.2	.30	.75	.99	.26	.49	1.5
20	.68	.20	1.7	6.1	2.2	2.2	.49	.49	.75	.26	.44	.99
21	.34	.20	2.1	4.7	2.0	1.5	.34	.44	.49	.26	.39	.94
22	.23	.30	1.4	10	1.2	.91	.26	.44	.99	.20	.34	.68
23	.17	2.5	1.1	15	.91	.75	.44	.44	.91	.20	.30	5.5
24	.14	.61	.68	9.3	.91	1.1	.39	.39	.55	.34	.30	3.3
25	.14	.30	.49	3.1	.83	4.0	.49	.34	.39	.68	.68	1.2
26	.12	.34	.39	1.6	.68	2.1	.34	.39	.49	.26	.49	.91
27	.14	.55	.34	1.1	.55	1.9	.30	.30	.34	.23	.34	.91
28	.12	.75	.30	.91	.49	1.1	.26	.30	.34	.26	.30	.68
29	.17	.91	.39	.68	.44	.99	.70	.23	.30	.39	.30	.61
30	.34	.61	.30	.91	-----	.83	.34	.23	.34	.30	.30	3.3
31	.17	-----	.30	.68	-----	.83	-----	.23	-----	.20	.94	-----
TOTAL	11.12	21.89	22.54	86.21	44.25	43.66	13.83	22.58	16.25	20.09	50.59	143.57
MEAN	.36	.73	.73	2.78	1.53	1.41	.46	.73	.54	.65	1.63	4.79
MAX	5.2	8.3	2.3	15	5.6	4.6	.84	3.1	3.1	6.5	16	38
MIN	.10	.11	.20	.26	.44	.39	.26	.20	.17	.20	.17	.39
AC-FT	22	43	45	171	88	87	27	45	32	40	100	285

CAL YR 1971 TOTAL 286.46 MEAN .78 MAX 12 MIN .10 AC-FT 568

WTR YR 1972 TOTAL 496.58 MEAN 1.36 MAX 38 MIN .10 AC-FT 985

PEAK DISCHARGE (BASE, 78 CFS).--Sept. 6 (0330) 91 cfs (3.00 ft); Sept. 8 (0130) 224 cfs (3.46 ft).

## SAMOA ISLANDS, ISLAND OF TUTUILA

16920500 Aasu Stream at Aasu

LOCATION.--Lat 14°17'51" S., long 170°45'30" W., on right bank at Aasu and 200 ft upstream from mouth.

DRAINAGE AREA.--1.03 sq mi.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 5 ft (by hand levels from high-tide mark).

AVERAGE DISCHARGE.--13 years (1959-72), 6.36 cfs (4,610 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 498 cfs Sept. 7 (gage height, 5.16 ft), from rating curve extended as explained below; minimum, 0.45 cfs Oct. 1, 2, 11-15, 18.

Period of record: Maximum discharge, 498 cfs Sept. 7, 1972 (gage height, 5.16 ft), from rating curve extended above 20 cfs on basis of slope-area measurement at gage height 4.57 ft; minimum, 0.45 cfs Oct. 1, 2, 11-15, 18, 1971.

REMARKS.--Records fair. Small diversion above station for domestic use. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area. (FISCAL YEARS)--WSP 2137: 1959-60(P), (WATER YEARS) 1960(P), 1961(M), 1962-65(P).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.49	1.0	3.0	1.2	6.6	3.6	3.2	1.6	1.6	1.8	1.6	12
2	.49	1.0	3.0	1.1	4.9	3.6	3.0	1.4	1.4	1.7	1.3	3.8
3	.70	.85	5.4	1.1	4.2	3.6	2.8	1.3	1.3	1.6	1.3	2.7
4	.70	.85	4.2	1.9	4.4	3.0	2.5	1.2	1.3	1.6	1.2	2.2
5	.78	1.0	2.8	5.8	3.8	2.7	2.4	1.2	1.2	1.4	1.2	2.5
6	1.4	.94	2.2	3.8	3.2	2.5	2.8	1.1	1.3	3.8	1.4	43
7	.70	.85	2.1	2.7	4.5	2.4	2.7	1.1	1.6	11	8.1	104
8	.58	.77	2.1	2.4	3.8	2.4	2.8	1.6	1.1	4.4	9.2	157
9	.49	1.4	1.9	2.1	2.8	2.2	3.9	2.8	1.1	3.2	37	42
10	.53	1.8	1.8	5.2	13	2.4	3.6	3.2	1.0	3.4	21	27
11	.49	1.0	1.7	4.4	8.5	2.4	3.0	2.9	1.3	2.7	16	18
12	.53	1.2	1.7	3.0	6.1	7.9	2.5	7.5	1.1	2.4	11	14
13	.53	11	2.2	4.1	7.9	9.0	3.8	6.1	1.1	2.4	9.3	12
14	.45	5.2	1.7	3.0	12	6.6	2.8	3.4	.94	2.2	7.6	9.7
15	.53	2.4	1.6	2.5	12	4.2	2.4	3.0	3.2	3.2	6.4	29
16	.58	1.8	2.7	3.2	8.4	3.8	2.8	2.4	2.2	8.0	5.9	16
17	.53	1.6	1.9	7.5	6.9	7.9	2.4	3.0	4.0	4.0	5.2	13
18	.49	1.4	1.7	15	7.3	8.3	2.1	4.2	6.1	3.4	4.7	12
19	13	1.4	1.4	14	6.9	6.9	2.1	3.2	3.4	2.8	4.0	10
20	3.2	1.3	3.9	15	8.7	5.9	2.2	2.8	2.8	3.2	3.6	9.0
21	1.7	1.3	4.6	12	9.0	5.4	1.9	2.5	2.2	2.7	3.0	8.3
22	1.4	1.7	2.8	16	6.6	4.4	1.9	2.5	3.0	2.4	2.8	6.9
23	1.2	7.6	2.1	33	5.6	4.4	2.8	2.4	2.7	2.2	2.5	11
24	1.1	2.5	1.9	24	5.7	5.6	2.4	2.2	2.1	2.2	2.4	11
25	1.1	2.2	1.6	16	5.2	8.8	2.1	2.1	1.7	2.2	3.0	8.0
26	1.0	2.0	1.6	13	5.2	5.9	1.8	1.9	1.8	1.9	2.2	6.6
27	1.1	2.2	1.3	10	4.4	5.2	1.7	1.8	3.2	1.8	1.9	6.4
28	1.1	2.8	1.3	8.3	4.0	4.4	1.7	1.8	2.4	1.8	1.8	5.9
29	1.1	2.4	1.8	6.9	4.2	4.2	2.4	1.7	1.9	1.8	1.6	5.4
30	1.6	1.9	1.7	6.1	-----	4.0	1.7	1.7	1.9	1.7	1.4	12
31	1.0	-----	1.3	5.6	-----	3.6	-----	1.7	-----	1.7	2.8	-----
TOTAL	40.59	65.36	71.0	249.9	185.8	147.2	76.2	77.3	61.94	90.6	182.4	620.4
MEAN	1.31	2.18	2.29	8.06	6.41	4.75	2.54	2.49	2.06	2.92	5.88	20.7
MAX	13	11	5.4	33	13	9.0	3.9	7.5	6.1	11	37	157
MIN	.45	.77	1.3	1.1	2.8	2.2	1.7	1.1	.94	1.4	1.2	2.2
AC-FT	81	130	141	496	369	292	151	153	123	180	362	1,230

CAL YR 1971 TOTAL 1,185.63 MEAN 3.25 MAX 28 MIN .45 AC-FT 2,350

WTR YR 1972 TOTAL 1,868.69 MEAN 5.11 MAX 157 MIN .45 AC-FT 3,710

PEAK DISCHARGE (BASE, 180 CFS)--Sept. 7 (2100) 498 cfs (5.16 ft).

## 16931000 Atauloma Stream at Afao

LOCATION.--Lat 14°20'10" S., long 170°48'02" W., on left bank at Afao, 100 ft upstream from highway bridge, and 300 ft upstream from mouth.

DRAINAGE AREA.--0.24 sq mi.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (by hand levels from high-tide mark).

AVERAGE DISCHARGE.--13 years (1959-72), 1.49 cfs (1,080 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 308 cfs Sept. 7 (gage height, 3.17 ft), from rating curve extended above 26 cfs; minimum, 0.07 cfs Oct. 14.  
Period of record: Maximum discharge, 605 cfs Aug. 10, 1967 (gage height, 3.99 ft), from rating curve extended above 26 cfs; minimum, 0.06 cfs Oct. 21, 1963.

REMARKS.--Records good. About 10,000 gal per day diverted above station for use at Atauloma School. Recording rain gage located at station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.14	.53	.14	1.2	.58	.53	.34	.26	.30	.48	3.9
2	.10	.14	.55	.12	.86	.48	.48	.30	.26	.26	.53	.74
3	.10	.12	1.7	.12	.68	.43	.43	.43	.26	.26	.58	.43
4	.17	.12	.80	1.0	.68	.38	.38	.30	.20	.26	.63	.43
5	.26	.12	.43	3.7	.58	.38	.38	.26	.20	.26	.43	3.0
6	.56	.14	.30	2.4	.53	.38	.43	.26	.20	.70	.58	16
7	.17	.14	.23	.68	.53	.38	.43	.26	.26	2.5	.93	47
8	.14	.10	.38	.68	.53	.38	.48	.43	.20	.74	2.2	43
9	.14	1.0	.20	.63	.53	.30	1.2	3.0	.20	.48	15	5.6
10	.12	.86	.20	1.8	2.0	.34	.68	1.7	.17	.53	3.8	4.4
11	.12	.38	.20	1.5	1.2	.38	1.9	.92	.17	.30	2.2	2.9
12	.10	.43	.17	.86	.80	2.0	.74	3.9	.17	.26	1.1	2.2
13	.10	4.2	.26	.68	2.9	2.6	.63	2.3	.14	.26	.99	1.6
14	.08	1.2	.17	.74	4.1	1.2	.43	.99	.14	.17	.68	1.4
15	.12	.48	.14	.48	2.9	.80	.53	.86	.20	1.2	.53	15
16	.14	.30	.14	.80	1.8	3.1	.58	.63	.40	2.1	.48	3.2
17	.12	.20	.10	3.4	1.3	7.5	.43	.74	1.1	.68	.48	2.3
18	.20	.17	.10	3.5	1.1	3.4	.43	2.5	1.2	.48	.48	1.5
19	3.6	.14	.10	4.9	1.1	2.2	.61	1.1	.48	.58	.43	1.4
20	.58	.14	.45	3.8	1.4	1.3	.80	.80	.48	.99	.38	1.1
21	.30	.12	.58	2.3	3.2	.99	.68	.58	.30	.53	.34	1.1
22	.20	.62	.23	5.5	1.8	.86	.58	.53	.43	.43	.30	.92
23	.17	5.0	.23	10	1.1	.80	.74	.48	.30	.43	.30	2.7
24	.17	.74	.14	4.6	.99	1.1	.58	.43	.20	.63	.26	2.2
25	.17	.43	.12	2.4	1.1	1.9	.43	.53	.20	.53	.48	1.1
26	.14	.34	.12	1.6	.99	1.2	.38	.38	.34	.43	.26	.99
27	.14	.43	.12	1.4	.68	.99	.38	.38	1.7	.38	.26	1.4
28	.14	.30	.12	1.2	.58	.80	.58	.34	.63	.48	.20	.99
29	.17	.26	.26	.99	.92	.80	.73	.34	.34	.68	.20	.92
30	.20	.30	.14	.92	-----	.86	.38	.30	.30	.63	.17	6.9
31	.14	-----	.12	.86	-----	.68	-----	.30	-----	.53	.59	-----
TOTAL	8.96	19.06	9.33	63.70	38.08	39.49	17.96	26.61	11.43	18.99	36.27	176.32
MEAN	.29	.64	.30	2.05	1.31	1.27	.60	.86	.38	.61	1.17	5.88
MAX	3.6	5.0	1.7	10	4.1	7.5	1.9	3.9	1.7	2.5	15	47
MIN	.08	.10	.10	.12	.53	.30	.38	.26	.14	.17	.17	.43
AC-FT	18	38	19	126	76	78	36	53	23	38	72	350

CAL YR 1971 TOTAL 245.93 MEAN .67 MAX 9.1 MIN .08 AC-FT 488  
WTR YR 1972 TOTAL 466.20 MEAN 1.27 MAX 47 MIN .08 AC-FT 925

PEAK DISCHARGE (BASE, 160 CFS).--Aug. 9 (0730) 170 cfs (2.59 ft); Sept. 7 (2100) 308 cfs (3.17 ft).

16944200 Papa Stream at Nuuuili

LOCATION.--Lat 14°18'48" S., long 170°42'33" W., on right bank 500 ft downstream from Tauese Stream and 0.8 mile northwest of Nuuuili.

DRAINAGE AREA.--0.78 sq mi.

PERIOD OF RECORD.--July 1966 to September 1967, November 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 30 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 925 cfs Sept. 8 (gage height, 4.25 ft), from rating curve extended as explained below; no flow for many days.

Period of record: Maximum discharge, 1,110 cfs Aug. 30, 1970 (gage height, 4.59 ft, from floodmark in well), from rating curve extended above 66 cfs on basis of flow-over-road measurement at gage height 3.32 ft; no flow for many days each year.

Flood of Oct. 9, 1967, reached a stage of 3.32 ft, from floodmarks (discharge, 470 cfs, from rating curve extended as explained above).

REMARKS.--Records poor. Diversion by frequent pumping from gage pool for domestic use in the Nuuuili area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.12	.25	.60	2.6	.69	2.6	0	0	0	0	8.4
2	0	0	.97	0	1.8	1.0	2.0	0	0	0	0	1.5
3	0	0	4.2	0	.92	1.7	1.6	0	0	0	0	.42
4	0	0	1.2	.58	1.7	.59	1.3	0	0	0	0	.06
5	0	0	.17	5.2	1.0	.29	1.2	0	0	0	0	1.2
6	.33	0	0	2.1	.50	.16	1.2	1.0	.05	9.2	.74	72
7	0	0	0	.50	2.3	0	1.3	.03	.42	19	5.8	163
8	0	0	0	.14	.92	0	1.7	.04	0	3.5	11	175
9	0	.04	0	.07	.69	0	2.8	12	0	1.5	54	16
10	0	.12	0	7.2	24	.12	2.6	8.8	0	1.0	42	10
11	0	0	0	2.2	6.6	.08	2.7	6.5	0	.28	16	7.4
12	0	.58	0	.69	8.5	15	2.0	11	0	0	5.8	8.5
13	0	2.8	.09	2.7	7.7	16	1.5	6.6	0	.04	3.9	5.0
14	0	4.7	0	.80	13	6.6	1.0	2.8	0	0	2.8	3.5
15	0	.80	0	.17	23	3.0	.69	1.5	1.4	2.7	2.2	56
16	0	0	.42	.02	6.3	7.2	2.1	1.0	.80	.92	1.6	7.0
17	0	0	0	8.7	4.4	9.2	1.5	2.6	3.1	.06	1.2	6.1
18	0	0	7.9	24	3.5	6.0	1.0	5.2	3.3	0	1.2	5.4
19	17	0	1.1	23	3.7	4.7	.69	2.4	.92	0	.80	4.2
20	2.2	0	2.5	18	4.4	7.2	2.4	1.3	.80	0	.59	3.1
21	.50	0	3.1	12	5.4	4.4	1.3	.80	0	0	.21	3.1
22	0	0	2.7	35	3.9	2.8	.80	.59	.43	0	0	2.2
23	0	3.4	2.0	75	2.8	3.4	1.0	.42	.10	0	0	23
24	0	0	.59	34	2.4	3.7	.30	.11	0	.87	0	12
25	0	0	.09	11	2.0	14	0	.04	0	5.1	1.4	4.2
26	0	0	.10	5.8	1.6	6.3	0	.03	.52	.73	.37	3.0
27	0	0	0	4.2	1.3	5.0	0	0	.18	0	0	2.8
28	0	.17	0	3.5	1.0	3.7	0	0	0	0	0	2.0
29	.60	.14	.15	2.6	.92	3.3	1.4	0	0	1.8	0	1.8
30	1.0	0	.05	2.2	-----	2.8	.20	0	0	.59	0	9.2
31	0	-----	0	1.6	-----	3.6	-----	0	-----	0	1.9	-----
TOTAL	21.63	12.87	27.58	283.57	138.85	132.53	38.88	64.76	12.02	47.29	153.51	617.08
MEAN	.70	.43	.89	9.15	4.79	4.28	1.30	2.09	.40	1.53	4.95	20.6
MAX	17	4.7	7.9	75	24	16	2.8	12	3.3	19	54	175
MIN	0	0	0	0	.50	0	0	0	0	0	0	.06
AC-FT	43	26	55	562	275	263	77	128	24	94	304	1,220

CAL YR 1971 TOTAL 779.99 MEAN 2.14 MAX 43 MIN 0 AC-FT 1,550  
 WTR YR 1972 TOTAL 1,550.57 MEAN 4.24 MAX 175 MIN 0 AC-FT 3,080

PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
12-18	0900	2.95	318	9-8	0130	4.25	925
1-23	0200	2.99	332				

## 16948000 Afuelo Stream at Matuu

LOCATION.--Lat 14°18'07" S., long 170°41'D7" W., on left bank 0.2 mile northwest of Matuu and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.25 sq mi.

PERIOD OF RECORD.--March 1958 to current year. Prior to July 1960, published as Matuu Stream at Matuu.

GAGE.--Water-stage recorder. Altitude of gage is 80 ft (from topographic map).

AVERAGE DISCHARGE.--14 years, 1.49 cfs (1,080 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 240 cfs Sept. 7 (gage height, 3.56 ft), from rating curve extended as explained below; minimum, 0.06 cfs Oct. 25, 26.

Period of record: Maximum discharge, 490 cfs Oct. 9, 1967 (gage height, 4.55 ft), from rating curve extended above 8.4 cfs on basis of slope-area measurement of peak flow; minimum, 0.06 cfs Oct. 25, 26, 1971.

REMARKS.--Records fair. Small diversion above station for domestic use since September 1972. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area. (FISCAL YEARS).--WSP 2137: 1958-60, (WATER YEARS) 1960-65.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.18	.61	2.1	1.8	.32	.70	.29	.20	.23	.32	2.1
2	.09	.10	1.1	.46	1.3	.46	.65	.26	.20	.18	.20	.23
3	.09	.09	2.3	.35	.81	.42	.42	.23	.20	.16	.14	.12
4	.09	.08	.93	1.2	1.0	.29	.42	.23	.20	.16	.12	.12
5	.18	.08	.42	2.9	.81	.26	.35	.23	.20	.14	.12	.38
6	.67	.08	.26	1.6	.55	.23	.46	.29	.49	4.3	.50	12
7	.14	.08	.20	.93	.87	.23	.55	.32	.56	5.4	1.3	38
8	.10	.08	.29	.55	.65	.23	.46	.32	.23	1.1	2.3	34
9	.10	.12	.18	.38	.50	.23	.83	4.6	.20	.50	13	2.9
10	.10	.26	.14	2.9	11	.26	1.1	3.4	.20	.38	12	2.0
11	.09	.10	.12	.93	2.6	.32	.75	4.4	.18	.26	3.3	1.5
12	.09	.20	.12	.60	4.5	5.1	.60	3.6	.18	.23	1.3	2.5
13	.08	8.7	.26	1.4	3.2	7.0	.60	2.2	.18	.23	.75	1.3
14	.07	1.4	.16	.65	7.1	2.4	.38	.93	.18	.20	.55	.87
15	.07	.46	.12	.38	7.1	.93	.32	.65	.42	.65	.42	11
16	.08	.29	.29	.38	1.9	1.7	1.0	.46	.60	.26	.32	2.4
17	.22	.23	.20	4.4	1.2	3.7	.60	.97	1.4	.18	.29	1.8
18	.10	.18	3.1	6.9	1.0	1.6	.55	2.4	1.4	.16	.32	1.4
19	3.1	.16	.55	8.4	1.1	1.1	.38	.93	.50	.16	.29	1.2
20	.14	.16	1.3	5.7	2.2	2.1	.93	.60	.55	.14	.26	.93
21	.23	.14	2.2	4.8	3.0	1.4	.60	.42	.32	.14	.20	1.0
22	.14	.16	1.2	10	1.5	.75	.35	.38	.38	.14	.18	.70
23	.09	1.9	.75	19	.93	.75	.38	.35	.35	.14	.18	6.5
24	.07	.32	.38	7.4	.75	1.4	.32	.32	.26	.56	.18	3.4
25	.06	.20	.26	3.6	.56	4.1	.26	.35	.23	1.5	.49	1.3
26	.09	.18	.20	2.7	.46	1.6	.26	.26	.46	.29	.29	.93
27	.08	.29	.18	1.4	.38	1.4	.29	.26	.26	.20	.18	.87
28	.08	.46	.16	1.2	.46	1.2	.23	.23	.23	.38	.16	.75
29	.09	.50	.18	.93	.38	.93	.74	.23	.20	.75	.14	.87
30	.38	.42	.14	1.1	-----	.70	.38	.23	.26	.26	.12	3.8
31	.12	-----	.18	1.0	-----	1.1	-----	.23	-----	.23	.26	-----
TOTAL	7.12	17.60	18.68	96.24	59.61	44.21	15.86	30.57	11.22	19.61	40.18	136.87
MEAN	.23	.59	.60	3.10	2.06	1.43	.53	.99	.37	.63	1.30	4.56
MAX	3.1	8.7	3.1	19	11	7.0	1.1	4.6	1.4	5.4	13	38
MIN	.06	.08	.12	.35	.38	.23	.23	.23	.18	.14	.12	.12
AC-FT	14	35	37	191	118	88	31	61	22	39	80	271

CAL YR 1971 TOTAL 282.29 MEAN .77 MAX 13 MIN .06 AC-FT 560  
WTR YR 1972 TOTAL 497.77 MEAN 1.36 MAX 38 MIN .06 AC-FT 987

PEAK DISCHARGE (BASE, 95 CFS).--Feb. 10 (0300) 111 cfs (2.76 ft); Sept. 7 (2000) 240 cfs (3.56 ft).

## SAMOA ISLANDS, ISLAND OF TUTUILA

## 16960000 Alega Stream at Alega

LOCATION.--Lat 14°16'58" S., long 170°38'19" W., on left bank 300 ft upstream from left-bank tributary, 0.2 mile northwest of Alega, and 0.3 mile upstream from mouth.

DRAINAGE AREA.--0.19 sq mi.

PERIOD OF RECORD.--March 1958 to current year. Prior to July 1960, published as West Branch Alega Stream at Alega.

GAGE.--Water-stage recorder. Altitude of gage is 180 ft (from topographic map).

AVERAGE DISCHARGE.--14 years, 1.29 cfs (935 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 122 cfs Jan. 23 (gage height, 3.55 ft), from rating curve extended above 8.3 cfs; minimum, 0.27 cfs Oct. 21-31, Nov. 8, 11, 12.  
Period of record: Maximum discharge, 232 cfs Apr. 8, 1970 (gage height, 4.48 ft, from recorded range in stage), from rating curve extended above 8.3 cfs; minimum, 0.27 cfs Oct. 21-31, Nov. 8, 11, 12, 1971.

REMARKS.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Records of chemical analyses for the water year 1972 are published in Part 2 of this report.

REVISIONS.--WSP 1937: Drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.39	.30	.36	.50	2.1	.80	.80	.50	.46	.55	.39	.65
2	.39	.30	.55	.36	1.5	.80	.75	.50	.46	.45	.39	.46
3	.39	.30	.98	.36	1.2	.86	.75	.50	.40	.40	.39	.42
4	.42	.30	.70	.88	1.4	.65	.70	.50	.40	.35	.39	.42
5	.50	.30	.50	.86	.98	.65	.70	.50	.40	.35	.42	.42
6	.55	.33	.39	.70	.92	.60	.70	.75	.50	4.0	.46	.80
7	.46	.30	.39	.50	.86	.55	.86	.70	.55	3.0	.70	12
8	.46	.33	.36	.39	.80	.55	.80	.60	.40	1.5	.60	17
9	.50	.46	.36	.42	.80	.55	.80	3.1	.40	.85	5.1	3.7
10	.55	.50	.39	2.1	1.1	.55	.80	1.6	.40	.75	5.8	2.7
11	.55	.30	.36	.75	1.0	.65	.75	.80	.35	.50	2.6	1.7
12	.36	.33	.39	.60	2.0	1.1	.86	3.5	.35	.50	1.2	1.5
13	.33	6.2	.42	.65	2.4	1.5	.70	1.9	.35	.50	.92	1.0
14	.33	.92	.36	.55	5.7	.98	.65	1.0	.35	.50	.80	.86
15	.33	.50	.36	.50	6.2	.98	.60	.90	.50	.55	.70	5.4
16	.33	.42	.36	.60	2.7	.75	.86	.75	.45	.50	.60	2.1
17	.33	.39	.36	2.9	2.0	1.8	.75	.70	.40	.50	.60	1.4
18	.33	.39	6.0	3.4	1.6	.98	.70	1.0	.65	.46	.60	1.1
19	1.3	.39	1.5	8.0	1.8	.80	.70	.75	.50	.42	.60	.98
20	.42	.36	1.8	6.6	1.5	.65	.65	.60	.50	.42	.55	.92
21	.27	.36	2.5	5.0	1.4	.60	.55	.55	.40	.42	.55	.92
22	.30	.36	1.0	12	1.2	.55	.55	.55	.55	.42	.50	.80
23	.30	.80	.46	21	1.0	.65	.55	.55	.55	.39	.50	1.9
24	.30	.36	.42	7.2	.98	1.6	.50	.50	.45	.46	.50	1.4
25	.30	.33	.42	4.5	.92	5.0	.50	.55	.35	.39	.65	.92
26	.30	.36	.39	3.1	.86	1.4	.50	.50	.40	.39	.50	.80
27	.30	.39	.39	2.2	.86	1.1	.50	.50	.80	.39	.46	.80
28	.30	.60	.39	1.9	.80	.92	.55	.46	.75	.46	.42	.70
29	.30	.42	.39	1.6	.80	.92	.55	.46	.55	.46	.42	1.0
30	.30	.36	.39	1.5	-----	.86	.50	.46	.70	.42	.42	1.6
31	.30	-----	.39	1.3	-----	.80	-----	.46	-----	.39	.50	-----
TOTAL	12.49	17.96	24.03	92.92	47.38	31.15	20.13	26.69	14.27	21.64	29.23	66.37
MEAN	.40	.60	.78	3.00	1.63	1.00	.67	.86	.48	.70	.94	2.21
MAX	1.3	6.2	6.0	21	6.2	5.0	.86	3.5	.80	4.0	5.8	17
MIN	.27	.30	.36	.36	.80	.55	.50	.46	.35	.35	.39	.42
AC-FT	25	36	48	184	94	62	40	53	28	43	58	132

CAL YR 1971 TOTAL 332.96 MEAN .91 MAX 8.9 MIN .27 AC-FT 660  
WTR YR 1972 TOTAL 404.26 MEAN 1.10 MAX 21 MIN .27 AC-FT 802

PEAK DISCHARGE (BASE, 52 CFS).--Jan. 23 (0230) 122 cfs (3.55 ft); Sept. 7 (2030) 53 cfs (2.68 ft).

NOTE.--No gage-height record June 3 to July 10.

16963900 Leafu Stream near Auasi

LOCATION.--Lat 14°16'27" S., long 170°34'26" E., on right bank 35 ft upstream from upper village intake, 0.1 mile north of Auasi and 0.2 mile upstream from mouth.

DRAINAGE AREA.--0.11 sq mi.

PERIOD OF RECORD.--Current year.

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (from topographic map).

EXTREMES.--Maximum discharge during period, 182 cfs May 12 (gage height, 2.47 ft), from rating curve extended above 3.7 cfs; minimum, 0.04 cfs June 14-16, July 5, 15-19.

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

DISCHARGE, IN CUBIC FEET PER SECOND, FEBRUARY TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					.80	.10	.13	.05	.05	.07	.05	.10
2					.66	.08	.13	.05	.05	.08	.05	.07
3					.46	.15	.13	.05	.05	.10	.05	.06
4					.34	.08	.11	.05	.05	.07	.05	.06
5					.28	.08	.11	.05	.05	.04	.05	.06
6					.25	.08	.10	.06	.08	3.4	.07	.08
7					.25	.08	.10	.12	.06	1.4	.16	4.2
8					.23	.10	.10	.13	.05	.23	.08	9.3
9					.20	.06	.10	1.3	.05	.13	1.3	.66
10					.25	.06	.10	.62	.05	.10	2.0	.42
11					.58	.11	.08	.15	.05	.07	.73	.28
12					.46	.38	.08	6.2	.05	.06	.25	.31
13					.42	2.1	.10	2.3	.05	.06	.15	.23
14					1.4	1.0	.08	.31	.04	.05	.13	.18
15					2.3	.66	.07	.18	.04	.04	.10	2.5
16					.60	.28	.10	.15	.05	.04	.08	.60
17					.38	.73	.15	.13	.05	.04	.07	.28
18					.28	.42	.13	.18	.08	.04	.07	.20
19					.46	.25	.11	.13	.06	.04	.07	.16
20					.34	.20	.11	.11	.06	.05	.07	.13
21					.23	.15	.10	.10	.06	.08	.07	.15
22					.20	.13	.07	.08	.05	.08	.06	.11
23					.20	.13	.07	.08	.05	.08	.06	.35
24					.23	.20	.06	.07	.05	.10	.06	.42
25					.18	3.3	.06	.06	.05	.10	.10	.20
26					.16	.66	.06	.07	.05	.10	.07	.15
27					.13	.34	.05	.07	.05	.05	.07	.21
28					.11	.23	.05	.07	.05	.10	.07	.23
29					.10	.18	.07	.06	.06	.08	.06	.15
30					-----	.16	.06	.06	.07	.06	.06	1.4
31		-----			-----	.15	-----	.06	-----	.05	.07	-----
TOTAL					12.48	12.63	2.77	13.10	1.61	6.99	6.33	23.25
MEAN					.43	.41	.092	.42	.054	.23	.20	.78
MAX					2.3	3.3	.15	6.2	.08	3.4	2.0	9.3
MIN					.10	.06	.05	.05	.04	.04	.05	.06
AC-FT					25	25	5.5	26	3.2	14	13	46

PEAK DISCHARGE (BASE, 47 CFS)

DATE	TIME	G. H.	DISCHARGE	DATE	TIME	G. H.	DISCHARGE
3-25	0730	2.12	66	7-6	1500	2.06	57
5-12	1700	2.47	182	9-7	2400	2.25	100

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 floodflow 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 drought 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 1972

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Hawaii, Island of Kauai						
16011000	Waiakeali Stream near Waimea	Lat 22°07'42", long 159°37'27" (revised), 0.3 mile upstream from mouth and 12 miles north-east of Waimea.	al.58	1909-13 <sup>f</sup> , 1914-17, 1919-25 <sup>f</sup> , 1951-62, 1964, 1966-70, 1972	1-14-72 6- 6-72 7- 7-72 9-19-72	1.3 2.1 1.1 1.2
16012000	Kawaikinana Stream near Waimea	Lat 22°08'12", long 159°37'58" (revised), 0.6 mile upstream from mouth and 12 miles north-east of Waimea.	al.28	1911-13, 1915-17, 1919-25 <sup>f</sup> , 1951-62, 1964, 1966-72	1-19-72 6- 6-72 7- 7-72 9-19-72	.45 .87 .78 .55
16029500	Mokihana Stream near Waimea	Lat 21°59'38", long 159°40'07" (revised), 500 ft upstream from mouth and 2.5 miles north of Waimea.	4.83	1962, 1964-72	4- 3-72 7-13-72 8-17-72	5.6 1.1 .52
Hawaii, Island of Oahu						
16201000	Right Branch of North Fork Kauhakua Stream near Wahiawa	Lat 21°31'10", long 157°56'52", 200 ft upstream from mouth and 4.5 miles east of Lilehua High School in Wahiawa.	1.17	1913-53 <sup>f</sup> , 1960-62, 1966, 1968-72	1-13-72 4-11-72 7- 3-72	4.7 3.5 4.2
16214000	Pearl Harbor Springs at Waiaua, near Pearl City	Lat 21°23'36", long 157°59'11" (revised), 0.7 mile west of Pearl City and 1.5 miles east of Waipahu Post Office.	-	1931-34 <sup>f</sup> , 1937-64 <sup>f</sup> , 1967-68, 1970-72	6- 1-72 7-11-72 9-25-72	10 9.4 9.6
16224000	Pearl Harbor Springs at Kalauso, near Aiea	Lat 21°23'05" (revised), long 157°56'46", 300 ft downstream from Highway 90 and 0.8 mile west of Aiea Post Office.	-	1931-62 <sup>f</sup> , 1964-65 <sup>f</sup> , 1966-68, 1970-72	6- 1-72 7-11-72 9-25-72	16 16 15
16264200	Kahanaiki Stream at Highway 61, near Kailua	Lat 21°22'49", long 157°46'06", at bridge on Highway 61 and 1.9 miles southwest of Kailua Post Office.	1.45	1960-63, 1965-66, 1971-72	5-30-72 9-22-72	1.7 .82
*16274499	Kaahala Stream at Kanehaleha Highway, at Kaneohe	Lat 21°25'13", long 157°48'16" (revised), 36 ft upstream from bridge at Kanehaleha Highway in Kaneohe.	.62	1961-63, 1965-66, 1971-72	1-23-72 5-30-72 9-22-72	26 3.9 3.3
16283400	Kahaluu Stream near Kahaluu	Lat 21°27'14", long 157°50'17", 600 ft above Alunimau Stream and 0.6 mile south of Kahaluu	1.29	1962-63, 1966, 1972	5-30-72 9-22-72	2.2 1.9

\* Also a crest-stage partial-record station.

<sup>f</sup> Operated as a continuous-record gaging station.

a Revised.

Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Hawaii, Island of Oahu--Continued						
*16283480	Ahuizanu Stream near Kahaluu	Lat 21°27'04", long 157°50'13", at bridge on Ahuizanu Road and 0.8 mile south of Kahaluu.	2.31	1962-63, 1965-66, 1968, 1972	5-30-72 9-22-72	2.7 4.3
16295995	Kahana Stream at Mauka trail crossing, near Kahana	Lat 21°32'17", long 157°53'29", 1.8 miles upstream from main bridge on Kamehameha Highway and 2.8 miles southwest of Kasava School.	3.18	1960-62, 1966, 1971-72	5-31-72 9-21-72	17 12
16297000	Kava Stream near Kahana	Lat 21°32'33", long 157°53'00", 0.1 mile upstream from mouth and 1.0 mile south of Kahana.	2.09	1914-17 <sup>†</sup> , 1958 <sup>b</sup> , 1961-62, 1966, 1971-72	5-31-72 9-21-72	2.6 1.3
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 Kawaiilena Stream, 2.2 miles south of former village of Pelekunu, and 5.4 miles north of Kazalo.	.51	1968-72	10- 6-71 12- 3-71 1-20-72 3- 8-72 5- 3-72 6-21-72 8-22-72 9-27-72	.51 .86 .77 5.7 1.4 .70 .92 .98
16403500	Kawaiilena Stream near Pelekunu	Lat 20°07'52", long 156°53'05", 800 ft upstream from mouth, 2.2 miles south of former village of Pelekunu, and 5.5 miles north of Kazalo.	.65	1968-72	10- 6-71 12- 3-71 1-20-72 3- 8-72 5- 3-72 6-21-72 8-22-72 9-27-72	1.2 1.2 1.2 6.1 1.6 1.3 1.3 1.4
16403700	Kawaiinui Stream at altitude 1,000 ft, near Pelekunu	Lat 20°07'46", long 156°52'31", 400 ft upstream from Kawaiipoko Stream, 2.4 miles south of former village of Pelekunu, and 5.4 miles north of Kazalo.	.79	1968-72	10- 5-71 12- 2-71 1-19-72 5- 2-72 6-20-72 8-21-72 9-26-72	.99 2.8 2.2 3.0 1.7 4.2 1.3
16403800	Kawaiipoko Stream near Pelekunu	Lat 21°07'48", long 156°52'30", 300 ft upstream from mouth, 2.4 miles south of former village of Pelekunu, and 5.4 miles north of Kazalo.	.26	1968-72	10- 5-71 12- 2-71 1-19-72 5- 2-72 6-20-72 8-21-72 9-26-72	.14 .91 .39 .67 .56 2.1 .17
Hawaii, Island of Maui						
*16502000	Hahalave Gulch near Kipahulu	Lat 20°40'54", long 156°02'50", at old ditch intake, 0.7 mile upstream from mouth, and 1.8 miles northeast of Kipahulu Church.	.43	1927-69 <sup>†</sup> , 1970-72	10-28-71 1-27-72 6- 1-72 8- 4-72	1.4 2.7 2.9 2.0
Mariana Islands, Island of Saipan						
16800500	Hasngot Stream	Lat 15°12'44"N., long 145°46'23"E., 750 ft upstream from right-bank tributary, 0.5 mile upstream from mouth, and 3.4 miles east of Garapan.	.43	1968-72	10- 8-71 11- 2-71 12-10-71 3-10-72 3-24-72 5- 8-72 6- 8-72 8-21-72 9-11-72 9-28-72	4.3 .26 .14 .07 .17 .04 .04 .10 .29 .14

\* Also a crest-stage partial-record station.

† Operated as a continuous-record gaging station.

b Previously published with discharge measurements at miscellaneous sites.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Mariana Islands, Island of Saipan--Continued						
16802000	Talofofo Stream	Lat 15°13'04"N., long 145°46'44"E., 200 ft downstream from confluence of South, Middle and North Forks, 2.4 miles southeast of Tanapag, and 3.8 miles east of Garapan.	1.56	1968-72	10- 8-71 12-20-71 2-25-72 3-10-72 3-24-72 5- 8-72 6- 8-72 9-28-72	24 .33 .04 .06 .07 .03 .04 .11
16802500	East Achugau Spring	Lat 15°14'06"N., long 145°46'43"E., at spring 0.4 mile east of Mount Dogas and 2.0 miles east of Tanapag.	-	1965, 1969-72	10- 8-71 6- 9-72 8-22-72 9-11-72 9-29-72	.31 0 .31 .17 0
16804000	West Achugau Spring	Lat 15°14'10"N., long 145°46'10"E., at spring 0.9 mile upstream from mouth of Achugau Stream and 1.3 miles east of Tanapag.	-	1968-72	10-12-71	.34
Mariana Islands, Island of Rota						
16806100	Asonan Springs	Lat 14°07'14"N., long 145°12'00"E., at base of cliff out of which the three springs emerge, 2.2 miles west of Maaniya Cape, and 3.6 miles east of Rota School.	-	1971-72	9- 8-71 9-17-71 10- 1-71 10-15-71 10-29-71 11-12-71 11-26-71 12-10-71 12-27-71 2- 1-72 7-26-72	a.20 a.26 .33 .30 .20 .20 .20 .19 .20 .31 .17
Mariana Islands, Island of Guam						
16807300	Fonte River at dam, near Ninitz Hill	Lat 13°27'26"N., long 144°43'37"E., at old diversion dam, 0.4 mile south of Navy Headquarters building on Ninitz Hill, and 1.3 miles south of Coontz Junction at Adelup.	.69	1961-72	4-20-72 6- 9-72	.25 .10
16808200	Feata Springs at Agat	Lat 13°22'35"N., long 144°39'47"E., 0.7 mile south of Agat Junior High School and 0.8 mile southwest of Santa Rita Catholic Church.	-	1963-72	4-20-72 6- 9-72	.12 .08
16808500	Taleyfac River near Agat	Lat 13°21'35"N., long 144°38'57"E., 800 ft upstream from bridge on Highway 2 at Biyae and 1.7 miles south of Mount Carmel School in Agat.	1.94	1959-70, 1972	4-20-72 6- 9-72	.90 .48
16809200	Cetti River above tributary, near Uzatac	Lat 13°18'59"N., long 144°39'24"E., 20 ft upstream from left-bank tributary, 0.2 mile upstream from mouth, and 1.3 miles north of Sanchez School in Uzatac.	.37	1961-62, 1964-66, 1969-70, 1972	4-21-72 6- 8-72	.20 .20
16809400	Cetti River near Uzatac	Lat 13°18'58"N., long 144°39'23"E., 30 ft downstream from left-bank tributary, 0.2 mile upstream from mouth, and 1.3 miles north of Sanchez School in Uzatac.	.74	1950-67, 1968-70, 1972	4-21-72 6- 8-72	.38 .31
16809600	La Sa Fua River near Uzatac	Lat 13°18'23"N., long 144°39'45"E., 0.6 mile north of Sanchez School in Uzatac and 0.8 mile upstream from mouth.	1.06	1953-60, 1961-63, 1966, 1969-70, 1972	4-21-72 6- 8-72	.57 .70
16812000	Madog River near Uzatac	Lat 13°17'24"N., long 144°40'30"E., 50 ft downstream from right-bank tributary and 1.1 miles southeast of Sanchez School in Uzatac.	.36	1960-72	4-18-72 6- 2-72	.12 .14

† Operated as a continuous-record gaging station.  
a Revised.

## Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Mariana Islands, Island of Guam--Continued						
16813000	Piga Stream near Uzatac	Lat 13°17'56"N., long 144°40'49"E., on left bank of Astaban River right-bank tributary, 0.3 mile west of Mount Bolanos, and 1.3 miles east of Sanchez School in Uzatac.	-	1955, 1961-65, 1967-72	4- 5-72 5- 1-72 6- 2-72	0.17 .16 .17
16814000	Astaban River at Uzatac	Lat 13°17'41"N., long 144°40'15"E., 200 ft upstream from mouth and 0.7 mile southeast of Sanchez School in Uzatac.	.38	1960-72	4-18-72 6- 2-72	.09 .10
16815800	Laalae River at Uzatac	Lat 13°17'50"N., long 144°39'51"E., 100 ft upstream from mouth and 0.2 mile east of Sanchez School in Uzatac.	.96	1960-72	4-14-72 6- 2-72	.42 .42
16817000	Toguan River near Uzatac	Lat 13°17'03"N., long 144°39'36"E., at Highway 4 bridge, 100 ft upstream from mouth, and 0.9 mile south of Uzatac.	.48	1952, 1960-72	4-18-72 6- 2-72	.21 .10
16820000	Geus River above Siligin Spring tributary, near Merizo	Lat 13°16'38"N., long 144°40'56"E., 100 ft upstream from Siligin Spring tributary, 0.1 mile upstream from dam, and 1.5 miles northeast of Merizo School.	.51	1960-72	4-18-72 6- 2-72	.17 .22
16820500	Siligin Spring near Merizo	Lat 13°16'38"N., long 144°40'55"E., 120 ft upstream from mouth of Siligin Spring tributary, 0.1 mile upstream from diversion dam, and 1.5 miles northeast of Merizo School.	-	1954, 1961-72	4- 5-72 4-18-72 5- 1-72 6- 2-72	.06 .03 .03 .03
16820700	Geus River below Siligin Spring tributary, near Merizo	Lat 13°16'35"N., long 144°40'53"E., 100 ft upstream from diversion dam, 300 ft downstream from Siligin Spring tributary, and 1.4 miles northeast of Merizo School.	.68	1962-72	4-18-72 6- 2-72	.30 .30
16825000	Ajayan River near Inarajan	Lat 13°15'16"N., long 144°42'56"E., 0.4 mile upstream from mouth and 2.4 miles southwest of Inarajan Catholic Church.	1.16	1962-72	4-19-72	.14
16828000	Agfayan River near Inarajan	Lat 13°16'05"N., long 144°43'42"E., 0.6 mile upstream from mouth and 1.2 miles west of Inarajan Catholic Church.	1.66	1962-65, 1967-72	10-19-71 11-12-71 12-28-71 1-18-72 2-15-72 3-29-72 4-13-72 4-19-72 5-16-72 6- 7-72 6-13-72	1.4 .82 1.3 1.0 .46 .34 .30 .27 .34 .15 .35
16830000	Pasaranan River near Inarajan	Lat 13°16'59"N., long 144°43'26"E., 25 ft upstream from confluence with Yledigao River and 1.7 miles northwest of Inarajan Catholic Church.	1.42	1960-72	4-19-72 6- 7-72	.84 .67
16831000	Yledigao River near Inarajan	Lat 13°17'00"N., long 144°43'26"E., 75 ft upstream from confluence with Pasaranan River and 1.7 miles northwest of Inarajan Catholic Church.	1.08	1960-72	4-19-72 6- 7-72	.80 .76
16833000	Fintasa River near Inarajan	Lat 13°17'18"N., long 144°43'54"E., 100 ft upstream from falls, 0.4 mile upstream from confluence with Fensol River, and 1.5 miles northwest of Inarajan Catholic Church.	.80	1960-72	4-19-72 6- 7-72	.65 .48
16834000	Fensol River near Inarajan	Lat 13°17'09"N., long 144°44'08"E., 300 ft upstream from confluence with Fintasa River and 1.1 miles northwest of Inarajan Catholic Church.	.40	1960-72	4-19-72 6- 7-72	.11 .13
16842000	Asalonso River near Talofoto	Lat 13°19'43"N., long 144°45'34"E., 10 ft downstream from left-bank tributary, 500 ft downstream from bridge on Highway 4, and 1.6 miles south of Talofoto.	1.85	1952, 1961-72	4-19-72	.26

Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Caroline Islands, Palau Islands						
16891320	Kumekumeyel River, Babelthuap	Lat 7°23'01"N., long 134°33'34"E., 100 ft up-stream from confluence with Gaden River, 1.1 miles west of Mount Kabekobekushi, and 1.9 miles north of Airai.	1.55	1970-72	12-11-71 4- 5-72 4-27-72 5-22-72 6-19-72 7-21-72 9-25-72	4.0 9.3 5.2 8.0 5.7 6.0 4.5
16891500	Geligal Marsh outlet, Babelthuap	Lat 7°36'07"N., long 134°38'08"E., 0.7 mile northeast of Mount Gulitel and 1.6 miles southwest of Ulikan village.	.34	1971-72	11- 8-71 5- 4-72	3.4 1.5
16891700	Unnamed west coast stream, Arakabesan	Lat 7°21'14"N., long 134°27'10"E., 0.1 mile up-stream from mouth and 0.15 mile north of village of Arakabesan.	.03	1970-72	10-18-71 10-27-71 11-18-71 1-31-72 3-17-72 4- 6-72 5- 3-72 5-30-72 6-29-72 8- 1-72 8-24-72	.22 .17 .12 .08 .22 .13 .09 .11 .29 .08 .17
16891750	Unnamed south coast stream, Arakabesan	Lat 7°20'41"N., long 134°27'29"E., 0.1 mile up-stream from mouth and 0.6 mile southeast of village of Arakabesan.	.03	1970-72	10-18-71 10-27-71 11-18-71 1-31-72 3-17-72 4- 6-72 5- 3-72 5-30-72 6-24-72 8- 1-72 8-29-72	.19 .17 .14 .08 .18 .11 .07 .11 .29 .06 .09
16891770	Unnamed west coast stream, Malakal	Lat 7°19'44"N., long 134°27'25"E., 200 ft up-stream from mouth and 1.5 miles southwest of Madalai.	.01	1971-72	10-15-71 10-28-71 11-19-71 1-31-72 4- 7-72 5-16-72 6-29-72 8- 2-72 8-30-72	.01 .03 .02 .01 .01 .06 .03 .01 .06
16891780	Unnamed north coast stream, Malakal	Lat 7°19'51"N., long 134°27'33"E., 0.2 mile up-stream from mouth and 1.3 miles southwest of Madalai.	.02	1971-72	10-15-71 10-28-71 11-19-71 1-31-72 3-16-72 4- 7-72 5-31-72 6-29-72 8- 2-72 8-30-72	.05 .05 .02 .01 .06 .02 .01 .06 .01 .09
Caroline Islands, Yap Islands						
16892450	Fara Swamp outlets, Yap	Lat 9°29'06"N., long 138°04'06"E. and lat 9°29'12"N., long 138°04'03"E., 0.9 mile northwest of Lazer and 4.1 miles southwest of Colonia.	.29	1968-72	10-20-71 2-24-72 3-23-72 4-20-72 7-16-72 8-10-72 9-20-72	.08 .76 .12 .04 .04 .16 .30
16892460	Galgun Swamp outlet, Yap	Lat 9°29'02"N., long 138°04'23"E., 0.5 mile northwest of Lazer and 3.9 miles southwest of Colonia.	.16	1968-72	10-20-71 1-13-72 2-24-72 3-23-72 4-20-72 5-18-72 7-15-72 8-10-72 9-19-72	.16 .26 .25 .29 .17 .16 .20 .21 .50

## Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Caroline Islands, Yap Islands--Continued						
16892500	Tamancy Stream, Yap	Lat 9°29'45"N., long 138°05'34"E., at abandoned German dam, 0.5 mile northwest of Inuf, and 2.3 miles southwest of Colonia.	0.21	1968-72	10-20-71 1-13-72 2-24-72 3-23-72 4-20-72 7-15-72 8-10-72 9-20-72	0.74 .06 11 .04 .08 .06 .08 .09
16892600	Ripu Stream, Yap	Lat 9°30'05"N., long 138°06'02"E., 1,000 ft upstream from mouth and 1.6 miles southwest of Colonia.	.24	1968-72	6-30-71 10-20-71 12- 3-71 1-13-72 3-23-72 4-20-72 5-18-72 7-15-72 8-10-72 9-20-72	a.09 .57 .04 .11 .34 .09 .01 .08 .22 .16
16892700	Thalocar Stream, Yap	Lat 9°30'27"N., long 138°06'05"E., 5 ft upstream from confluence with Dinay Stream and 1.4 miles southwest of Colonia.	.14	1965, 1968-72	10-21-71 1-13-72 4-20-72 5-18-72 7-15-72 8-11-72 9-20-72	.27 .11 .09 .01 .06 .21 .14
16893050	Mabu Stream, Yap	Lat 9°31'07"N., long 138°06'52"E., 500 ft upstream from mouth and 0.4 mile northwest of Colonia.	.30	1968-72	10-21-71 1-14-72 3-25-72 4-21-72 6-16-72 8-11-72 9-20-72	.11 .08 .17 .01 .51 .16 .13
16893200	Mukong Stream, Gagil-Tomil	Lat 9°32'06"N., long 138°09'59"E., 0.2 mile upstream from mouth and 1.6 miles southwest of Gatjapar.	.36	1972	12- 4-71 1-14-72 2-24-72 3-23-72 4-21-72 5-18-72 6-16-72 7-15-72 8-10-72	.55 .93 6.9 3.3 1.7 .28 1.2 1.2 3.6
16893310	Bileiy Stream, Gagil-Tomil	Lat 9°32'15"N., long 138°11'11"E., 0.3 mile downstream from Bileiy Spring, 0.4 mile upstream from mouth, and 0.4 mile south of Gatjapar.	.15	1968-72	10-19-71 1-14-72 2-24-72 3-23-72 4-21-72 5-18-72 6-16-72 7-15-72 8-10-72 9-18-72	.17 .24 .17 .42 .10 .06 .08 .13 .48 2.0
16893350	Yanbilang Stream, Gagil-Tomil	Lat 9°32'45"N., long 138°11'26"E., 500 ft upstream from mouth and 0.3 mile northeast of Gatjapar.	.03	1968-72	10-19-71 2-25-72	.38 .71
Caroline Islands, Truk Islands						
16893900	Pou Stream, Moen	Lat 7°26'53"N., long 151°51'21"E., 0.6 mile north of Mount Teroken and 0.4 mile upstream from mouth.	.17	1968-70, 1972	1-30-72	.19
16897000	Fansinifo Stream, Dublin Island	Lat 7°22'39"N., long 151°52'44"E., 700 ft upstream from mouth and 0.5 mile northeast of Mount Toloxen.	.06	1955-57 <sup>a</sup> , 1969-71	11-16-70 12-30-70	1.1 .18

<sup>a</sup> Revised.

<sup>†</sup> Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during water year 1972--Continued

Station No:	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Caroline Islands, Island of Ponape						
16897550	Meitik River	Lat 6°56'24"N., long 158°13'58"E., 0.3 mile upstream from mouth and 1.4 miles south of Tolenot Peak.	5.27	1971	5-19-71	46
16898000	Lui River tributary No. 2	Lat 6°55'20"N., long 158°12'55"E., 0.3 mile upstream from mouth and 1.5 miles southeast of Rekisau.	.04	1970-72	11- 3-71 12- 1-71 1-25-72 2-23-72 3-31-72 6- 7-72 8-30-72	.85 .55 1.6 .82 .76 .34 .25
16898100	Lui River tributary	Lat 6°57'04"N., long 158°13'15"E., at mouth and 1.4 miles southwest of Tolenot Peak.	.36	1970-72	11- 2-71 11-30-71 1-26-72 2-22-72 3-20-72 6--6-72 8-28-72	.84 1.3 .65 1.0 2.2 1.0 .65
16898500	Pilenkiel River	Lat 6°56'23"N., long 158°11'26"E., 100 ft downstream from right-bank tributary, 0.6 mile west of Rekisau, and 0.9 mile upstream from mouth.	1.93	1971-72	6- 8-72 6-20-72 7- 5-72 7-13-72 8-27-72 9-18-72 9-29-72	9.0 15 11 22 7.3 12 36
16898550	Kirictilang River	Lat 6°55'25"N., long 158°10'15"E., at small right-bank tributary, 0.1 mile downstream from road bridge and 0.1 mile southeast of Tolen Palikir Mountain.	.96	1972	5-24-72 6- 8-72 6-20-72 7- 5-72 7-13-72 8-29-72 9-18-72 9-27-72	12 5.3 6.3 6.4 13 3.6 7.5 41
Caroline Islands, Island of Kusaie						
16899830	Innen River	Lat 5°20'25"N., long 163°01'43"E., at concrete road bridge 0.3 mile upstream from mouth and 1.9 miles northeast of Mount Crozer.	2.51	1971-72	9-30-71 11-10-71 8-15-72 9-20-72	21 12 12 9.9
16899900	Yekula River	Lat 5°22'34"N., long 163°01'16"E., 0.2 mile upstream from mouth and 1.3 miles northeast of Mount Buache.	.37	1971-72	9-30-71 11- 4-71 11- 4-71 11- 4-71 11- 4-71 3- 1-72 8-15-72 9-15-72	1.2 18 16 15 13 .63 .39 .83
Samoa Islands, Island of Tutuila						
16902500	Vaisa Stream at Onenoa	Lat 14°15'27"S., long 170°34'44"W., 30 ft downstream from unnamed tributary, 0.1 mile southeast of Onenoa, and 0.1 mile upstream from mouth.	.12	1964-65, 1968, 1972	11-16-71	.11
16932500	Asili Stream at Asili	Lat 14°20'04"S., long 170°47'40"W., 100 ft above highway bridge at Asili and 0.1 mile above mouth.	.66	1958-59 <sup>c</sup> , 1960-61, 1963-65, 1967-68, 1972	11-17-71	1.3
16934000	Leafu Stream near Leone	Lat 14°19'47"S., long 170°46'55"W., 30 ft upstream from reservoir, 0.9 mile upstream from mouth, and 1.0 mile north of Leone.	.69	1959-64, 1968, 1971-72	10-12-71	.90
16950500	Utumoa Stream at Pago Pago	Lat 14°17'21"S., long 170°42'21"W., 150 ft downstream from pipeline diversion, 0.3 mile upstream from mouth, and 0.8 mile south of Pago Pago.	.17	1957-58 <sup>c</sup> , 1960-65, 1967-68, 1972	5- 5-72	.14

<sup>c</sup> Operated as a continuous-record gaging station.  
<sup>c</sup> Corrected.

## Crest-stage partial-record station

Crest-stage partial-record station records for the State of Hawaii are published in an annual progress report entitled "An Investigation of Floods in Hawaii." The following table contains annual maximum discharge for crest-stage stations not included in that report. 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 of 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 obtained, and discharge measurements 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 station during water year 1972

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Mariana Islands, Island of Guam							
16808100	Namo River at Santa Rita	Lat 13°23'28" N., long 144°40'00" E., at upstream side of road bridge at Santa Rosa and 0.5 mile northwest of Santa Rita.	1.18	1972	9-17-72	-	/300

/ Discharge estimated.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

## Discharge measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations are given in the following table.

## Discharge measurements made at miscellaneous sites during water year 1972

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Hawaii, Island of Molokai						
Left-bank tributary	Pilipililau Stream	Lat 21°08'11", long 156°53'07", 200 ft upstream from mouth, 1.9 miles south of former village of Pelekunu, and 5.8 miles north of Kanalo.		1969-71	10- 6-71 12- 3-71 1-20-72 3- 8-72 5- 3-72 6-21-72 8-22-72 9-27-72	0.09 .09 .08 .51 .16 .08 .08 .08
Kapuhi Stream	Pelekunu Stream	Lat 21°08'03", long 156°52'47", 800 ft upstream from new Pelekunu gaging station (4040), 1.8 miles west of Olokui trig station (4602), and 2.1 miles upstream from mouth.			10- 7-71 1-21-72 6-22-72	1.5 2.0 2.1
Pelekunu Stream	Pacific Ocean	Lat 21°08'05", long 156°52'45", 600 ft upstream from new Pelekunu gaging station (4040), 1.7 miles west of Olokui trig station (4602), and 2.0 miles upstream from mouth.			10- 7-71 1-21-72 6-22-72	2.8 4.2 4.1
Waikolu Stream	Pacific Ocean	Lat 21°08'54", long 156°55'25", at altitude 780 ft, 0.4 mile northwest of Molokai tunnel east portal, and 5.4 miles southeast of lighthouse near Kalaupapa.		1960-61, 1969-71	12- 1-71 1-22-72 5- 5-72 6-23-72 9-29-72	1.9 .52 1.6 1.3 1.4
Waikolu Stream	Pacific Ocean	Lat 21°09'10", long 156°55'33", at altitude 600 ft, 0.7 mile northwest of Molokai tunnel east portal, and 5.1 miles southeast of lighthouse near Kalaupapa.		1969-71	12- 1-71 1-22-72 5- 5-72 6-23-72 9-29-72	2.9 1.6 2.6 2.4 2.4
Hawaii, Island of Maui						
Iao Stream at State Park	Pacific Ocean	Lat 20°53'01", long 156°32'53", at Iao State Park 200 ft downstream from Kinihapai Stream tributary, 2,500 ft downstream from The Needle and 0.7 mile upstream from Kopaniwai Park.			1-18-72	11
Hawaii, Island of Hawaii						
West Branch Honokane Iki Stream	Honokane Iki Stream	Lat 20°09'47", long 155°43'25", 30 ft downstream from trail crossing, 1.8 miles upstream from confluence with East Branch, and 4.5 miles south of Niulii.		1961-71	12- 2-71 2-16-72	5.2 .33
East Branch Honokane Nui Stream	Honokane Nui Stream	Lat 20°08'58", long 155°43'59", at trail crossing, 0.2 mile upstream from confluence with West Branch, and 5.3 miles south of Niulii.		1964-71	12- 2-71 2-16-72	20 2.6
Samoa Islands, Island of Tutuila						
Right Fork Vaisa Stream at Onenoa	Vaisa Stream	Lat 14°15'27" S., long 170°34'42" W., 100 ft upstream from mouth and 0.1 mile southeast of Onenoa.		1959-61/ 1963	11-16-71	.38
Lausaa Stream at Vatia	Faatafe Stream	Lat 14°15'30" S., long 170°40'25" W., 1,000 ft upstream from Faatafe Stream and 0.15 mile south of Vatia.			10- 1-71	.05
Gaoa Stream at Vatia	Leafu Stream	Lat 14°15'33" S., long 170°40'36" W., 0.3 mile southwest of Vatia and 0.4 mile upstream from mouth.		1959-60/ 1962-64/	10- 1-71	.02
Leafu Stream at Vatia	Pacific Ocean	Lat 14°15'24" S., long 170°40'36" W., 0.3 mile west of Vatia and 0.3 mile upstream from mouth.		1959-60/ 1962-64/	10- 1-71	.06
Vaipuna Stream at Amaluia	Pacific Ocean	Lat 14°19'48" S., long 170°47'20" W., 300 ft upstream from unnamed tributary, 0.6 mile north of Amaluia, and 0.7 mile upstream from mouth.		1959-61/ 1963-65/	10- 1-71	.56

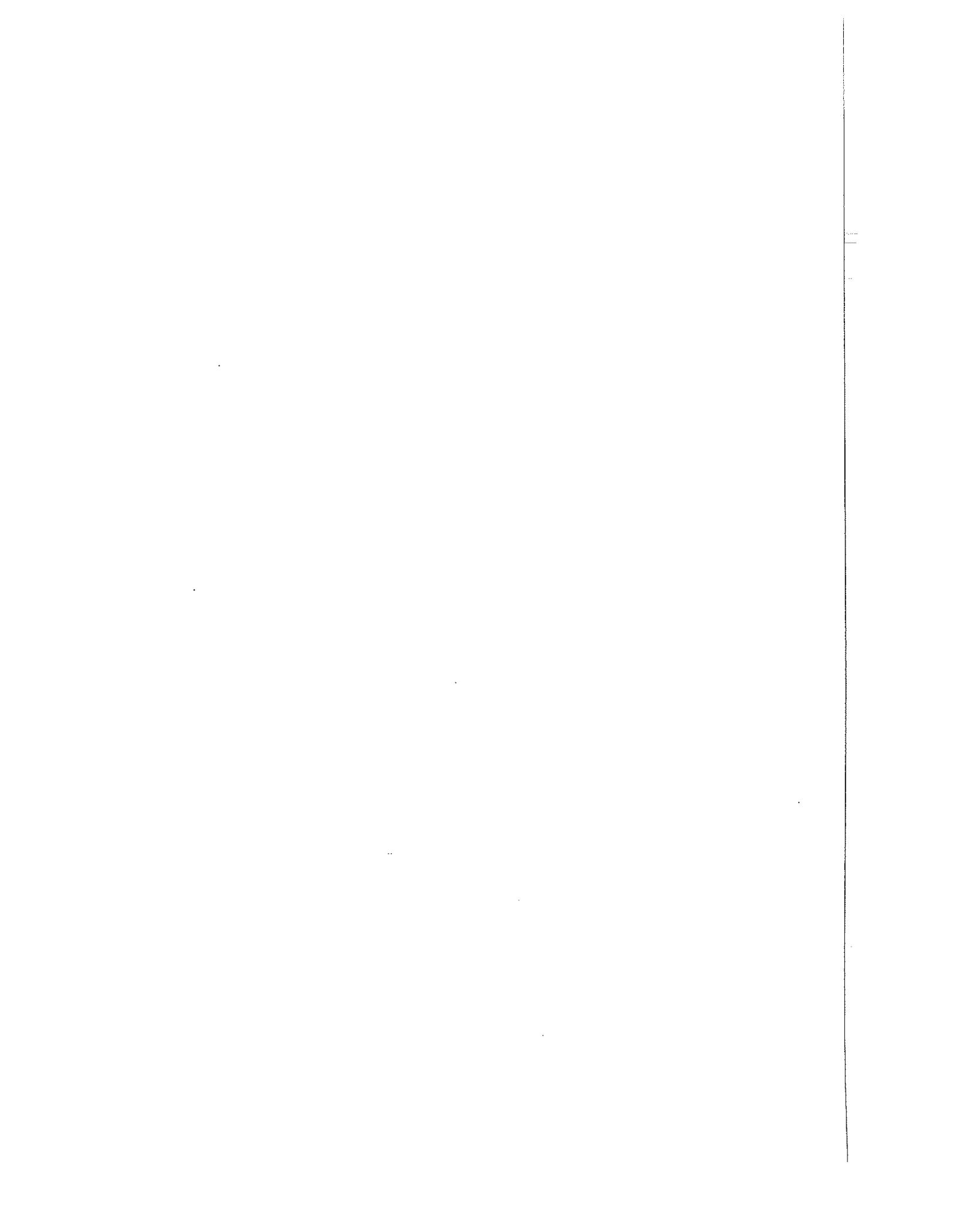
/ Formerly published as a low-flow station.

## Discharge measurements made at miscellaneous sites during water year 1972--Continued

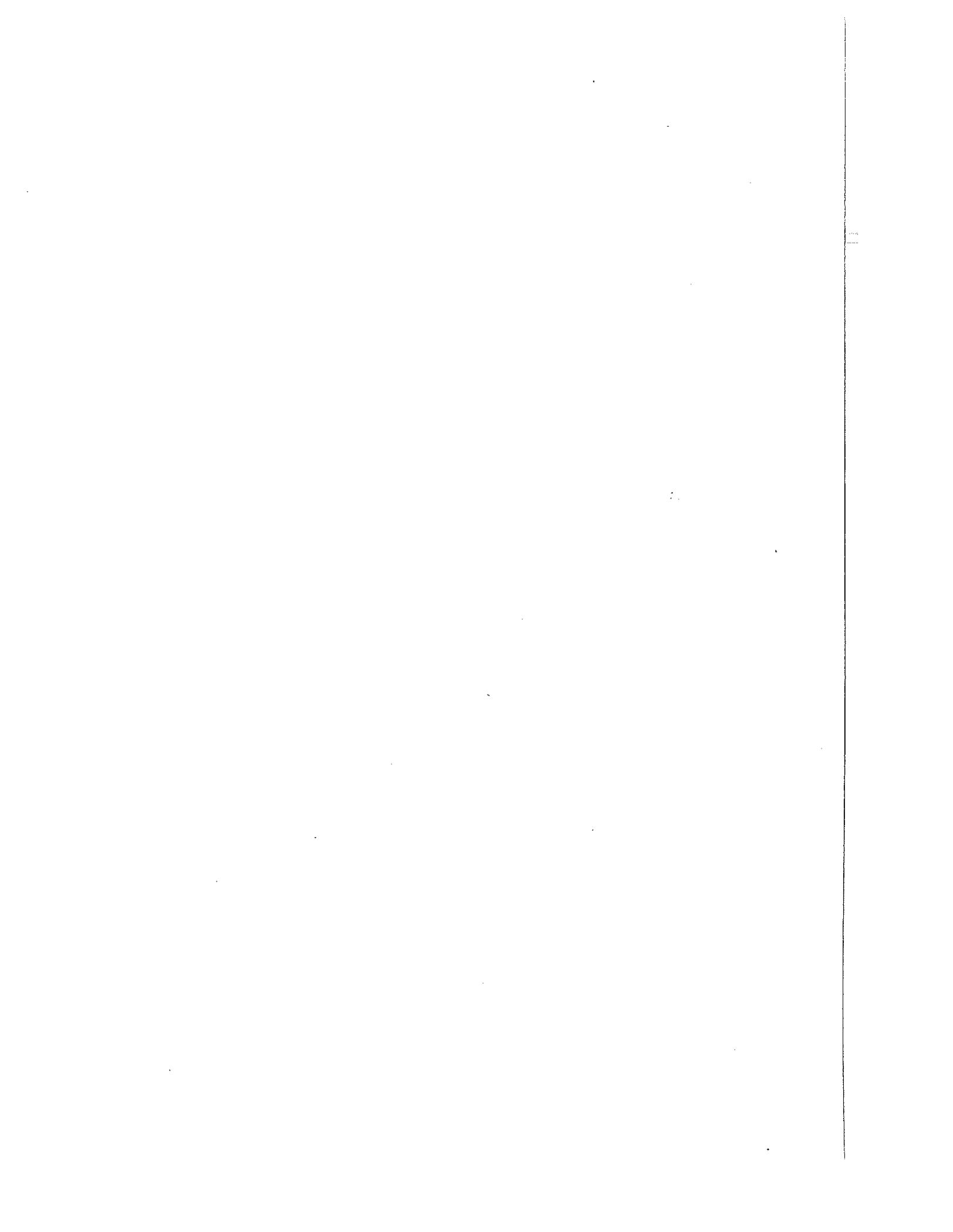
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Samoa Islands, Island of Tau						
Lafuti Stream near Fitiuta	Pacific Ocean	Lat 14°15'16" S., long 169°26'40" W., 50 ft downstream from spring and 200 ft upstream from mouth.			10- 4-71	0.44
					10- 4-71	.42
					10- 7-71	.46
					10- 7-71	.47
					4- 4-72	.89
					4- 4-72	.86
				4- 6-72	.87	



PART 2. WATER QUALITY RECORDS







## 16227500 MOANALUA STREAM NEAR KANEHOE

LOCATION.--Lat 21°23'29", long 157°51'05", on left bank 3.3 miles northeast of Tripler Hospital and 3.6 miles southwest of Kaneohe Post Office.

DRAINAGE AREA.--0.94 sq mi.

PERIOD OF RECORD.--Chemical analyses: Water years 1970-71 (partial-record station).

Sediment records: Water years 1970-71 (partial-record station), October 1971 to September 1972.

## EXTREMES.--

Sediment concentrations: Maximum daily, 256 ng/l Apr. 14; minimum daily, no flow on many days during October to September.

Sediment discharge: Maximum daily, 76 tons Jan. 22; minimum daily, 0 tons on many days during October to September.

## SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	OCTOBER			NOVEMBER			DECEMBER		
	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1				0	0	0	.15	0	0
2				0	0	0	0	0	0
3				0	0	0	0	0	0
4				0	0	0	0	0	0
5				0	0	0	0	0	0
6				0	0	0	0	0	0
7				0	0	0	1.4	3	.01
8				0	0	0	.36	1	0
9				0	0	0	.02	0	0
10				0	0	0	0	0	0
11				0	0	0	0	0	0
12				0	0	0	0	0	0
13				0	0	0	0	0	0
14				0	0	0	0	0	0
15				.35	2	0	.33	2	0
16				.76	2	0	.99	1	0
17				0	0	0	1.9	3	.02
18				0	0	0	1.9	2	.01
19				0	0	0	6.9	9	.24
20				0	0	0	1.7	3	.01
21				0	0	0	.70	1	0
22				0	0	0	.41	0	0
23				0	0	0	.22	0	0
24				0	0	0	.07	0	0
25				2.1	6	.03	0	0	0
26				2.0	3	.02	0	0	0
27				.44	1	0	0	0	0
28				.17	0	0	0	0	0
29				0	0	0	0	0	0
30				.48	1	0	0	0	0
31				--	--	--	0	0	0
TOTAL	0	--	0	6.30	--	.05	17.05	--	.29

## HAWAII, ISLAND OF OAHU

16227500 MOANALUA STREAM NEAR KANEOHE--Continued

## SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	JANUARY			FEBRUARY			MARCH		
	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)
1	0	0	0	.30	0	0	.46	1	0
2	0	0	0	.23	0	0	1.5	5	.02
3	0	0	0	.16	0	0	30	28	3.6
4	0	0	0	.76	2	0	4.0	6	.06
5	0	0	0	1.6	3	.01	1.8	3	.01
6	0	0	0	1.0	2	.01	1.1	2	.01
7	0	0	0	.53	2	0	.84	1	0
8	0	0	0	.39	2	0	.66	1	0
9	0	0	0	.74	2	0	.57	0	0
10	0	0	0	.91	3	.01	.48	0	0
11	0	0	0	.53	1	0	.41	0	0
12	0	0	0	.37	1	0	.36	0	0
13	0	0	0	.26	0	0	.31	0	0
14	0	0	0	.18	0	0	.28	0	0
15	0	0	0	.10	0	0	.24	0	0
16	0	0	0	.01	0	0	.19	0	0
17	0	0	0	0	0	0	.14	0	0
18	0	0	0	18	16	1.3	.10	0	0
19	0	0	0	3.3	3	.03	.04	0	0
20	0	0	0	1.4	2	.01	0	0	0
21	0	0	0	.91	1	0	0	0	0
22	77	136	76	1.2	3	.01	0	0	0
23	50	64	13	9.2	7	.17	0	0	0
24	22	20	1.2	2.4	3	.02	0	0	0
25	3.5	6	.06	2.9	3	.02	0	0	0
26	1.5	3	.01	1.3	2	.01	0	0	0
27	1.1	2	.01	.82	1	0	0	0	0
28	.85	1	0	.65	1	0	0	0	0
29	.61	1	0	.54	1	0	0	0	0
30	.50	0	0	--	--	--	0	0	0
31	.38	0	0	--	--	--	0	0	0
TOTAL	157.44	--	90.28	50.69	--	1.60	43.48	--	3.70

DAY	APRIL			MAY			JUNE		
	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)
1	0	0	0	.14	0	0	0	0	0
2	0	0	0	.10	0	0	0	0	0
3	.80	2	0	.05	0	0	0	0	0
4	7.9	8	.17	0	0	0	0	0	0
5	1.2	3	.01	0	0	0	0	0	0
6	9.7	134	19	0	0	0	0	0	0
7	3.1	25	.21	0	0	0	0	0	0
8	.89	10	.02	0	0	0	0	0	0
9	2.4	30	.19	.02	0	0	0	0	0
10	1.2	10	.03	0	0	0	0	0	0
11	.64	4	.01	0	0	0	0	0	0
12	.50	2	0	0	0	0	0	0	0
13	.71	2	0	.68	3	.01	0	0	0
14	8.6	256	53	.40	1	0	0	0	0
15	12	45	5.5	.12	0	0	0	0	0
16	5.6	58	5.0	.01	0	0	0	0	0
17	10	108	4.3	0	0	0	0	0	0
18	3.5	15	.14	0	0	0	0	0	0
19	1.4	8	.03	0	0	0	0	0	0
20	.93	3	.01	0	0	0	0	0	0
21	.67	2	0	0	0	0	0	0	0
22	.55	2	0	0	0	0	0	0	0
23	.46	2	0	0	0	0	0	0	0
24	.39	1	0	0	0	0	0	0	0
25	.36	1	0	0	0	0	0	0	0
26	.31	1	0	0	0	0	0	0	0
27	.28	0	0	0	0	0	0	0	0
28	.24	0	0	0	0	0	0	0	0
29	.21	0	0	0	0	0	0	0	0
30	.18	0	0	0	0	0	0	0	0
31	--	--	--	0	0	0	0	0	0
TOTAL	74.72	--	87.62	1.52	--	.01	0	--	0

16227500 MOANALUA STREAM NEAR KANEHOHE--Continued

## SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DAY	JULY			AUGUST			SEPTEMBER		
	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1				6.0	52	6.4	0	0	0
2				1.2	6	.02	0	0	0
3				0	0	0	0	0	0
4				0	0	0	.54	3	0
5				0	0	0	0	0	0
6				0	0	0	0	0	0
7				0	0	0	0	0	0
8				0	0	0	0	0	0
9				0	0	0	0	0	0
10				0	0	0	0	0	0
11				0	0	0	0	0	0
12				0	0	0	0	0	0
13				0	0	0	0	0	0
14				0	0	0	0	0	0
15				0	0	0	0	0	0
16				0	0	0	0	0	0
17				0	0	0	0	0	0
18				0	0	0	0	0	0
19				0	0	0	0	0	0
20				0	0	0	0	0	0
21				0	0	0	0	0	0
22				0	0	0	0	0	0
23				0	0	0	0	0	0
24				0	0	0	0	0	0
25				0	0	0	0	0	0
26				0	0	0	0	0	0
27				0	0	0	0	0	0
28				0	0	0	0	0	0
29				0	0	0	0	0	0
30				0	0	0	0	0	0
31				0	0	0	--	--	--
TOTAL	0	--	0	7.2	--	6.42	.54	--	0

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)  
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)

358.94  
189.97

## HAWAII, ISLAND OF OAHU

16270500 KAMOOLII STREAM BELOW KUOD STREAM, NEAR KANEHOE

LOCATION.--Lat 21°23'42", long 157°48'26", on right bank 100 ft downstream from Kuou Stream, 1.1 miles southwest of Castle High School, and 1.9 miles south of Kaneohe Post Office.

DRAINAGE AREA.--3.21 sq mi.

PERIOD OF RECORD.--Chemical analyses: Water years 1969-71 (partial-record station).  
Sediment records: Water years 1967-71 (partial-record station), January to September 1972.

EXTREMES.--January to September 1972:--Sediment concentrations: Maximum daily, 271 mg/l Jan. 22; minimum daily, 1 mg/l on several days during February, April to June, August and September.  
Sediment discharge: Maximum daily, 205 tons Jan. 22; minimum 0.01 ton Aug. 28 and several days during September.

## SUSPENDED-SEDIMENT DISCHARGE, JANUARY TO SEPTEMBER 1972

DAY	JANUARY			FEBRUARY			MARCH		
	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	6.2	2	.03	10	1	.03	10	3	.08
2	5.9	2	.03	9.8	1	.03	24	35	2.3
3	5.5	2	.03	9.8	1	.03	89	60	14
4	5.3	3	.04	21	90	5.1	21	8	.45
5	5.7	4	.06	15	15	.61	17	11	.50
6	5.5	3	.04	12	5	.16	16	6	.26
7	5.7	2	.03	11	3	.09	15	5	.20
8	5.7	2	.03	11	2	.06	14	4	.15
9	5.7	2	.03	10	2	.05	14	5	.19
10	5.5	2	.03	9.8	3	.08	13	5	.18
11	5.3	2	.03	9.8	3	.08	13	4	.14
12	5.3	3	.04	9.2	3	.07	12	3	.10
13	5.3	2	.03	9.2	3	.07	12	3	.10
14	5.9	3	.05	9.0	3	.07	12	4	.13
15	5.7	3	.05	9.0	3	.07	12	5	.16
16	5.9	3	.05	8.5	4	.09	11	5	.15
17	5.7	3	.05	8.5	4	.09	11	5	.15
18	5.7	3	.05	12	15	.49	11	4	.12
19	5.7	3	.05	9.2	4	.10	12	6	.19
20	5.5	2	.03	8.5	4	.09	11	4	.12
21	5.3	4	.06	8.5	4	.09	11	4	.12
22	145	271	205	11	12	.36	11	5	.15
23	130	130	58	32	120	10	12	15	.49
24	58	34	5.3	15	15	.61	11	3	.09
25	20	15	.81	13	10	.35	11	3	.09
26	15	10	.41	12	4	.13	11	4	.12
27	15	10	.41	11	3	.09	11	5	.15
28	13	5	.18	11	3	.09	11	4	.12
29	12	5	.16	11	3	.09	10	3	.08
30	11	3	.09	--	--	--	10	3	.08
31	11	2	.06	--	--	--	9.2	3	.07
TOTAL	548.0	--	271.26	336.8	--	19.27	468.2	--	21.23

## 16270500 KAMOOLII STREAM BELOW KUOU STREAM, NEAR KANEOHE--Continued

## SUSPENDED-SEDIMENT DISCHARGE, JANUARY TO SEPTEMBER 1972

DAY	APRIL			MAY			JUNE		
	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	11	7	.21	13	1	.04	9.2	1	.02
2	12	9	.29	12	2	.06	8.5	1	.02
3	13	9	.32	12	3	.10	9.8	3	.08
4	14	7	.26	12	4	.13	9.0	3	.07
5	11	5	.15	12	3	.10	9.0	3	.07
6	26	12	.84	11	3	.09	8.5	3	.07
7	13	7	.25	11	5	.15	8.5	2	.05
8	11	4	.12	11	5	.15	8.5	2	.05
9	13	6	.21	11	4	.12	9.8	2	.05
10	12	4	.13	11	3	.09	9.8	3	.08
11	11	3	.09	11	3	.09	11	5	.15
12	11	3	.09	11	3	.09	8.5	4	.09
13	11	3	.09	12	5	.16	8.5	4	.09
14	52	120	17	11	5	.15	8.5	4	.09
15	44	25	3.0	11	4	.12	7.6	3	.06
16	22	60	3.6	11	3	.09	7.6	3	.06
17	66	120	21	10	3	.08	7.6	3	.06
18	22	8	.48	10	3	.08	8.5	3	.06
19	18	5	.24	9.2	3	.07	7.6	3	.07
20	16	5	.22	9.2	2	.05	7.6	3	.06
21	15	5	.20	10	1	.03	7.6	2	.04
22	15	7	.28	9.2	1	.02	7.6	2	.04
23	15	6	.24	11	4	.12	7.6	2	.04
24	14	5	.19	10	2	.05	7.1	2	.04
25	14	3	.11	10	2	.05	7.6	2	.04
26	14	2	.08	9.2	2	.05	7.1	2	.04
27	14	2	.08	9.2	1	.02	7.1	1	.02
28	13	2	.07	9.2	1	.02	7.1	1	.02
29	13	1	.04	10	1	.03	7.1	1	.02
30	13	1	.04	9.2	1	.02	6.8	1	.02
31	--	--	--	9.2	1	.02	--	--	--
TOTAL	549	--	49.92	327.6	--	2.44	246.3	--	1.67

DAY	JULY			AUGUST			SEPTEMBER		
	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7.1	2	.04	6.0	3	.05	5.9	3	.05
2	6.8	2	.04	6.0	3	.05	5.9	3	.05
3	6.8	2	.04	5.7	3	.05	6.5	4	.07
4	6.8	2	.04	6.3	3	.05	6.2	6	.10
5	6.5	3	.05	6.8	3	.05	5.9	3	.05
6	6.5	3	.05	6.2	2	.03	5.7	2	.03
7	7.1	3	.06	6.2	3	.05	5.7	2	.03
8	6.8	3	.06	5.9	3	.05	5.7	2	.03
9	7.1	3	.06	5.9	2	.03	5.5	2	.03
10	6.8	2	.04	7.6	7	.14	5.5	2	.03
11	6.5	2	.04	6.2	5	.08	5.5	2	.03
12	6.5	2	.04	6.8	5	.09	5.5	1	.01
13	6.5	2	.04	6.5	4	.07	5.5	1	.01
14	6.8	2	.04	6.2	3	.05	5.3	1	.01
15	7.6	6	.12	5.9	2	.03	5.1	1	.01
16	13	12	.42	5.9	2	.03	5.1	1	.01
17	7.1	3	.06	6.2	2	.03	5.1	1	.01
18	6.8	2	.04	6.5	2	.04	5.3	1	.01
19	6.8	5	.09	5.9	3	.05	5.1	1	.01
20	7.1	3	.06	6.3	4	.07	4.7	1	.01
21	7.1	2	.04	6.2	3	.05	4.9	1	.01
22	6.8	2	.04	5.7	3	.05	5.3	5	.07
23	6.5	2	.04	5.5	3	.04	4.9	3	.04
24	6.5	2	.04	5.5	2	.03	5.1	2	.03
25	6.2	2	.03	5.5	2	.03	4.9	2	.03
26	6.2	3	.05	6.0	2	.03	4.7	1	.01
27	5.9	2	.03	5.7	2	.03	4.7	1	.01
28	6.2	3	.05	5.5	1	.01	4.9	1	.01
29	6.5	3	.05	6.3	6	.10	4.9	2	.03
30	6.2	3	.05	6.5	5	.09	4.9	2	.03
31	6.2	3	.05	5.9	4	.06	--	--	--
TOTAL	213.3	--	1.90	189.3	--	1.61	159.9	--	.86

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)

TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)

3038.4

370.16

## HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIIKOU  
(Hydrologic bench-mark station)

LOCATION.--Lat 19°46'00", long 155°09'16", at gaging station 0.7 mile downstream from Pohakupaa Stream, 4.1 miles west of Papaikou, and 4.8 miles northwest of Hilo Post Office.

DRAINAGE AREA.--11.6 sq mi.

PERIOD OF RECORD.--Chemical analyses: September 1969 to September 1972.  
Sediment records: Water years 1969-72 (partial-record station).

REMARKS.--Sediment data for this station on page 273.

## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SIG2) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
OCT., 1971												
26...	1030	34	19.0	--	--	--	--	--	--	--	--	--
26...	1115	34	19.0	7.0	2.5	1.4	2.1	.6	16	0	.4	3.0
DEC.												
28...	1049	58	16.0	5.8	1.9	1.4	2.1	.2	12	0	.0	3.0
JAN., 1972												
28...	1200	33	17.0	9.8	3.2	1.9	2.3	<.1	20	0	.4	3.0
FEB.												
28...	1030	41	17.0	--	--	--	--	--	--	--	--	--
28...	1655	41	17.0	7.2	2.9	1.8	3.7	.2	18	0	1.6	4.5
MAR.												
30...	1112	11	19.0	--	--	--	--	--	--	--	--	--
30...	1130	11	19.0	21	6.5	4.2	3.7	.3	48	0	1.4	4.0
APR.												
10...	0930	2635	16.5	--	--	--	--	--	--	--	--	--
MAY												
31...	1350	21	20.0	--	--	--	--	--	--	--	--	--
31...	1400	21	--	15	4.7	2.6	3.1	.2	30	0	2.0	3.0
JUNE												
30...	1000	40	--	7.1	2.5	1.4	2.2	.2	15	0	1.0	2.5
30...	1010	40	23.0	--	--	--	--	--	--	--	--	--
AUG.												
09...	1020	22	19.5	--	--	--	--	--	--	--	--	--
09...	1030	22	--	15	4.9	2.7	3.0	.2	32	0	.0	3.0
SEP.												
21...	1110	25	19.5	--	--	--	--	--	--	--	--	--
21...	1130	25	--	13	4.0	2.4	2.8	.3	27	0	1.0	3.5

DATE	DIS- SOLVED FLUO- RIDE (F) (MG/L)	DIS- SOLVED SOLIDS (SUM OF CONSTIT- TUENTS) (MG/L)	DIS- SOLVED SOLIDS (TONS PER AC-FT)	HARD- NESS (CA+MG) (MG/L)	NON- CAR- BONATE HARD- NESS (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	ALKA- LINIT- Y AS CACO3 (MG/L)	TUR- BID- ITY (JTU)	TOTAL IRON (FE) (UG/L)
OCT., 1971												
26...	--	--	--	--	--	--	--	--	--	--	--	--
26...	.1	25	.04	12	0	26	.3	33	6.8	13	1	430
DEC.												
28...	.1	20	.03	11	1	30	.3	29	6.4	10	1	290
JAN., 1972												
28...	.1	31	.07	16	0	24	.3	42	6.6	16	1	290
FEB.												
28...	--	--	--	--	--	--	--	--	--	--	--	--
28...	.1	31	.04	15	0	35	.4	39	7.1	15	2	510
MAR.												
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	.1	66	.10	34	0	19	.3	84	7.6	39	0	70
APR.												
10...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
31...	--	--	--	--	--	--	--	--	--	--	--	--
31...	.0	47	.06	22	0	23	.3	62	7.1	25	--	130
JUNE												
30...	.0	24	.04	12	0	28	.3	36	6.4	12	--	320
30...	--	--	--	--	--	--	--	--	--	--	--	--
AUG.												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	.1	45	.07	23	0	22	.3	63	7.0	26	1	60
SEP.												
21...	--	--	--	--	--	--	--	--	--	--	--	--
21...	.1	40	.05	20	0	23	.3	55	6.9	22	--	--

16717000 HONOLII STREAM NEAR PAPAIIKOU--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TOTAL MANGANESE (MN) (UG/L)	TOTAL ALUMINUM (AL) (UG/L)	TOTAL COPPER (CU) (UG/L)	ALDRIN (UG/L)	ALDRIN IN BOTTOM DE- POSITIS (UG/KG)	DDD (UG/L)	DDD IN BOTTOM DE- POSITIS (UG/KG)	DDE (UG/L)	DDE IN BOTTOM DE- POSITIS (UG/KG)	DDT (UG/L)	DDT IN BOTTOM DE- POSITIS (UG/KG)
OCT., 1971	--	--	--	--	--	--	--	--	--	--	--
26...	3	270	0	.00	<.2	.00	<.2	.00	<.2	.00	<.2
DEC.											
28...	0	220	--	--	--	--	--	--	--	--	--
JAN., 1972											
28...	0	240	--	--	--	--	--	--	--	--	--
FEB.											
28...	0	290	--	--	--	--	--	--	--	--	--
MAR.											
30...	--	--	--	--	--	--	--	--	--	--	--
30...	0	10	--	--	--	--	--	--	--	--	--
APR.											
10...	--	--	--	--	--	--	--	--	--	--	--
MAY											
31...	--	--	--	--	--	--	--	--	--	--	--
31...	0	80	0	--	--	--	--	--	--	--	--
JUNE											
30...	0	240	0	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--
AUG.											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	0	50	10	--	--	--	--	--	--	--	--
SEP.											
21...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	DI- ELDRIN (UG/L)	DI- ELDRIN IN BOTTOM DE- POSITIS (UG/KG)	ENDRIN (UG/L)	ENDRIN IN BOTTOM DE- POSITIS (UG/KG)	HEPTA- CHLOR (UG/L)	HEPTA- CHLOR IN BOTTOM DE- POSITIS (UG/KG)	LINDANE (UG/L)	LINDANE IN BOTTOM DE- POSITIS (UG/KG)	2,4-D (UG/L)	2,4,5-T (UG/L)	SILVEX (UG/L)
OCT., 1971	--	--	--	--	--	--	--	--	--	--	--
26...	.00	<.2	.00	<.2	.00	<.2	.00	<.2	.00	.00	.00

DATE	DIS- SOLVED RA-226 (RADON METHOD) (PC/L)	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L)	DIS- SOLVED GROSS ALPHA AS U-NAT. (PC/L)	DIS- SOLVED GROSS BETA AS SR90 (PC/L)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L)	TOTAL FILT- RABLE RESIDUE (MG/L)	SUS- PENDE GROSS ALPHA AS U-NAT. (UG/L)	SUS- PENDE GROSS ALPHA AS U-NAT. (PC/L)	SUS- PENDE GROSS BETA AS SR90 (PC/L)	SUS- PENDE GROSS BETA AS CS-137 (PC/L)	TOTAL NON- FILT- RABLE RESIDUE (MG/L)
OCT., 1970											
13...	.02	.6	.2	2.0	2.5	43	<.4	<.1	.5	.6	1
OCT., 1971											
26...	.04	<.4	<.1	2.4	2.9	30	<.4	<.1	.8	.9	1

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL, PER 100 ML)
OCT. 26...	19.0	34	6.4	8.4	20
DEC. 28...	16.0	28	--	9.2	150
JAN. 28...	17.0	40	6.2	8.9	97
FEB. 28...	17.0	32	6.3	8.8	43
MAR. 30...	19.0	--	8.3	9.9	210
MAY 31...	20.0	50	7.4	9.1	190
JUNE 30...	23.0	--	--	--	220
AUG. 09...	19.5	54	6.5	9.4	57
SEPT. 21...	19.5	50	7.7	8.6	50

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
HAWAII, ISLAND OF KAUAI												
16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA (LAT 22°05'20" LONG 159°34'18")												
AUG., 1972												
15...	1545	1.8	20.6	5.4	.9	.8	3.3	.4	7	0	.0	6.0
16031000 WAIMEA RIVER NEAR WAIMEA (LAT 21°59'02" LONG 159°39'46")												
OCT., 1971												
01...	1515	4.2	26.0	26	7.7	11	9.4	.9	78	0	1.4	12
DEC., 1971												
06...	1445	11	23.0	22	8.0	11	8.8	1.0	82	0	.4	14
JAN., 1972												
24...	1330	296	18.5	12	2.6	3.3	5.2	.6	24	0	.4	7.0
16049000 HANAPEPE RIVER BELOW MANUJHI STREAM, NEAR ELEELE (LAT 21°57'29" LONG 159°33'13")												
OCT., 1971												
04...	1200	23	21.5	22	6.1	7.3	8.7	.5	54	0	1.4	12
DEC., 1971												
06...	1315	39	20.0	15	4.4	4.9	6.3	.4	37	0	1.0	11
JAN., 1972												
24...	1945	207	18.5	1.5	3.9	4.7	7.4	.6	37	0	2.0	9.5
16052500 LAWAI STREAM NEAR KOLOA (LAT 21°54'11" LONG 159°30'21")												
DEC., 1971												
06...	0915	4.0	23.0	20	7.2	10	28	1.7	76	0	11	37
JAN., 1972												
23...	1015	--	19.0	3.4	2.6	1.9	6.2	1.9	16	0	5.9	8.0
16055000 HULEIA STREAM NEAR LIHUE (LAT 21°57'20" LONG 159°25'23")												
DEC., 1971												
07...	1220	--	22.0	16	6.8	8.9	12	1.0	56	0	7.9	18
JAN., 1972												
23...	1445	1200	20.0	6.1	3.4	2.6	6.1	1.8	14	0	6.9	11

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)
------	-----------------------------	--	---------------	------------------------------------	--

## 16031000 WAIMEA RIVER NEAR WAIMEA--Continued

DEC., 1971					
06...	23.0	170	7.1	8.2	--

## 16049000 HANAPEPE RIVER BELOW MANUJHI STREAM, NEAR ELEELE--Continued

DEC., 1971					
06...	20.0	90	7.7	9.2	--

## 16052500 LAWAI STREAM NEAR KOLOA--Continued

DEC., 1971					
06...	23.0	260	7.4	7.8	--

## 16055000 HULEIA STREAM NEAR LIHUE--Continued

DEC., 1971					
07...	22.0	170	7.5	9.2	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

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CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA+MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPF-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF KAUAI--Continued												
16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA--Continued												
AUG., 1972 15...	.1	.00	.21	.03	6	0	54	.6	31	6.2	0	6
16031000 WAIMEA RIVER NEAR WAIMEA--Continued												
OCT., 1971 01...	.1	.00	107	.15	64	0	24	.5	163	6.6	2	64
DEC. 06...	.1	.00	105	.14	65	0	27	.5	169	7.2	1	67
JAN., 1972 24...	.0	.30	45	.06	20	0	35	.5	66	6.1	--	20
16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEBLE--Continued												
OCT., 1971 04...	.1	.00	84	.11	45	2	29	.6	122	6.4	0	43
DEC. 06...	.1	.00	61	.08	31	1	30	.5	91	7.0	1	30
JAN., 1972 24...	.0	.10	48	.07	29	0	35	.6	99	6.2	5	30
16052500 LAWAI STREAM NEAR KOLOA--Continued												
DEC., 1971 06...	.2	.00	152	.21	60	0	49	1.6	262	7.2	3	62
JAN., 1972 23...	.1	.30	40	.05	15	2	45	.7	63	6.3	140	13
16055000 HULEIA STREAM NEAR LIHOE--Continued												
DEC., 1971 07...	.1	.10	100	.14	54	6	32	.7	166	7.1	1	48
JAN., 1972 23...	.1	.50	47	.06	19	8	34	.6	78	6.4	50	11

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS  
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCU3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
HAWAII, ISLAND OF KAUAI--Continued												
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE (LAT 22°02'24" LONG 159°22'S8")												
DEC., 1971												
06...	0845	48	20.5	13	4.0	5.0	6.6	.4	35	0	2.0	12
JAN., 1972												
24...	0910	429	18.5	8.6	3.4	3.2	6.0	.7	24	0	2.6	10
16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE (LAT 22°04'19" LONG 159°25'05")												
DEC., 1971												
06...	1015	34	20.5	15	3.8	4.7	7.2	.5	36	0	2.0	12
JAN., 1972												
24...	1210	72	18.5	8.9	2.9	3.1	6.6	.7	22	0	1.6	11
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA (LAT 22°03'08" LONG 159°22'22")												
DEC., 1971												
07...	1325	379	20.0	9.7	2.6	3.4	5.5	.7	24	0	2.0	9.0
JAN., 1972												
24...	1030	387	18.0	11	3.4	4.2	7.0	.9	28	0	3.0	12
16093200 ANAHOLA STREAM AT ANAHOLA (LAT 22°08'42" LONG 159°18'59")												
DEC., 1971												
07...	1050	34	22.0	7.1	2.4	3.1	7.2	.6	20	0	3.0	12
JAN., 1972												
23...	1335	246	19.0	6.8	2.5	2.5	6.8	.7	16	0	5.0	11
16103000 HANAIEI RIVER NEAR HANAIEI (LAT 22°11'31" LONG 159°27'57")												
DEC., 1971												
07...	0915	114	19.5	14	4.4	4.8	5.7	.5	41	0	1.0	8.0
JAN., 1972												
23...	1000	1460	18.0	5.7	1.9	1.6	3.5	.2	12	0	.0	4.5

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE--Continued					
DEC., 1971					
06...	20.5	90	7.3	8.4	--
16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE--Continued					
DEC., 1971					
06...	20.5	100	6.9	8.6	--
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA--Continued					
DEC., 1971					
07...	20.0	70	7.7	8.4	--
16093200 ANAHOLA STREAM AT ANAHOLA--Continued					
DEC., 1971					
07...	22.0	82	6.6	8.2	--
16103000 HANAIEI RIVER NEAR HANAIEI--Continued					
DEC., 1971					
07...	19.5	92	7.2	8.8	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS  
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972,

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DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA+MG) (MG/L)	HUR-CAH-BORATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TUR-BID-ITY (JTU)	ALKA-LINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF KAUAI--Continued												
16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE--Continued												
DEC., 1971 06...	.1	.00	60	.08	31	2	32	.5	92	6.8	1	29
JAN., 1972 24...	.0	.10	48	.07	21	1	38	.6	75	6.2	6	20
16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE--Continued												
DEC., 1971 06...	.1	.00	63	.09	29	0	35	.6	95	6.7	1	30
JAN., 1972 24...	.0	.30	46	.06	19	1	42	.7	75	6.1	--	18
16071000 NORTH FORK WAILUA RIVER NEAR KAPAA--Continued												
DEC., 1971 07...	.1	<.10	45	.06	21	1	36	.5	70	6.7	60	20
JAN., 1972 24...	.0	.10	56	.08	26	3	36	.6	86	6.6	2	23
16093200 ANAHOLA STREAM AT ANAHOLA--Continued												
DEC., 1971 07...	.1	.00	45	.06	19	3	45	.7	76	6.7	6	16
JAN., 1972 23...	.1	.20	44	.06	17	4	46	.7	72	6.5	45	13
16103000 HANAIEI RIVER NEAR HANAIEI--Continued												
DEC., 1971 07...	.1	.00	59	.08	31	0	28	.4	89	7.1	2	34
JAN., 1972 23...	.1	.10	23	.03	11	1	40	.5	38	6.5	20	10

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	TEMPERATURE (DEG C)	DIS- SOLVED SILICA (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NESIUM (MG)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED POT- ASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
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HAWAII, ISLAND OF KAUAI--Continued

16108000 WAINIHA RIVER NEAR HANAIEI (LAT 22°08'20" LONG 159°33'38")

MAR., 1972	31...	1245	42	--	26	4.5	2.9	4.3	.6	33	0	.0	6.0
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HAWAII, ISLAND OF OAHU

16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA (LAT 21°31'09" LONG 157°56'53")

JULY, 1972	03...	1315	9.9	--	2.4	.5	.7	4.0	.3	4	0	1.0	7.0
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16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA (LAT 21°29'32" LONG 157°59'55")

JUNE, 1972	02...	0415	3.2	--	4.4	1.7	2.0	6.6	.4	14	0	2.6	11
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16211600 MAKAHA STREAM NEAR MAKAHA (LAT 21°30'16" LONG 158°10'59")

JUNE, 1972	06...	1145	.35	--	32	6.6	6.0	11	.7	55	0	3.0	13
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16211800 KAUPUNI STREAM AT ALTITUDE 374 FT, NEAR WAIANAIE (LAT 21°28'20" LONG 158°09'26")

JUNE, 1972	06...	1000	.16	--	49	25	15	27	2.7	146	0	21	30
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16212800 KIPAPA STREAM NEAR WAHIAWA (LAT 21°28'15" LONG 157°57'50")

JUNE, 1972	07...	1000	.25	--	6.5	1.8	2.0	7.2	.9	14	0	2.0	14
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FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM PER 100 ML
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16108000 WAINIHA RIVER NEAR HANAIEI--Continued

MAR., 1972	31...	17.0	70	6.6	9.2	--
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HAWAII, ISLAND OF OAHU--Continued

16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA--Continued

JULY, 1972	03...	23.0	32	6.8	8.4	--
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16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA--Continued

JUNE, 1972	02...	22.0	70	6.9	8.0	--
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16211600 MAKAHA STREAM NEAR MAKAHA--Continued

JUNE, 1972	06...	19.5	140	7.8	8.8	--
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162118 KAUPUNI STREAM AT ALTITUDE 374 FT, NEAR WAIANAIE--Continued

JUNE, 1972	06...	22.0	360	7.2	7.2	--
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16212800 KIPAPA STREAM NEAR WAHIAWA--Continued

JUNE, 1972	07...	23.0	70	7.6	8.8	--
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ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF TISSUES) (MG/L)	DIS-SOLVED SOLIDS (TDS PER AC-FT) (MG/L)	HARDNESS (CAL/100) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
16108000 WAINIHA RIVER NEAR HANAIEI--Continued												
MAR., 1972 31...	.0	<.10	55	.07	23	0	28	.4	70	7.2	0	27
HAWAII, ISLAND OF OAHU--Continued												
16200000 NORTH FORK KAUOKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA--Continued												
JULY, 1972 03...	.1	<.10	14	.02	4	1	66	.9	33	6.2	8	3
16208000 SOUTH FORK KAUOKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA--Continued												
JUNE, 1972 02...	.0	.00	36	.05	12	1	53	.8	62	7.1	2	11
16211600 MAKAHA STREAM NEAR MAKAHA--Continued												
JUNE, 1972 06...	.1	.00	99	.13	41	0	36	.7	141	7.7	1	45
16211800 KAUPUNI STREAM AT ALTITUDE 374 FT, NEAR WAIANAIE--Continued												
JUNE, 1972 06...	.2	.00	242	.33	124	5	32	1.1	359	8.1	0	120
16212800 KIPAPA STREAM NEAR WAHIAWA--Continued												
JUNE, 1972 07...	.2	.00	42	.06	13	1	53	.9	70	6.5	0	11

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS  
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS)	TEMPERATURE (DEG C)	DIS-SOLVED SILICA (SiO2) (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
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HAWAII, ISLAND OF OAHU--Continued

16213000 WAIKELE STREAM AT WAIPAHU (LAT 21°23'11" LONG 158°00'49")

DEC., 1971												
09...	1700	25	20.5	45	11	9.8	56	3.2	67	0	19	82
JAN., 1972												
19...	1335	21	22.0	44	12	11	68	3.2	77	0	23	98
23...	1100	1080	19.0	5.4	3.1	1.7	6.6	2.6	14	0	6.3	9.5
APR.												
12...	0945	22	21.0	47	9.9	8.1	52	2.6	64	0	19	72
JUNE												
02...	1500	14	--	56	12	11	69	3.2	81	0	24	96

16216000 WAIANA STREAM NEAR PEARL CITY (LAT 21°23'55" LONG 157°58'50")

DEC., 1971												
17...	1100	55	20.0	--	--	--	--	--	--	--	--	--
17...	1110	65	20.0	--	--	--	--	--	--	--	--	--
17...	1140	698	21.0	--	--	--	--	--	--	--	--	--
17...	1200	1480	21.0	--	--	--	--	--	--	--	--	--
17...	1300	1700	21.0	--	--	--	--	--	--	--	--	--
17...	1420	1350	21.0	--	--	--	--	--	--	--	--	--
17...	1705	561	21.0	--	--	--	--	--	--	--	--	--
JAN., 1972												
23...	0915	2420	19.0	7.3	2.3	1.6	6.5	1.1	14	0	4.0	9.5
FEB.												
22...	1230	150	20.5	--	--	--	--	--	--	--	--	--
23...	0955	150	--	--	--	--	--	--	--	--	--	--
23...	1240	362	20.0	--	--	--	--	--	--	--	--	--
23...	1425	216	20.0	--	--	--	--	--	--	--	--	--
MAR.												
03...	1015	258	20.5	--	--	--	--	--	--	--	--	--
03...	1405	116	21.0	--	--	--	--	--	--	--	--	--
JUNE												
02...	1550	3.2	--	49	38	36	175	5.7	94	0	54	350

16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA (LAT 21°23'07" LONG 157°56'22")

JUNE, 1972												
05...	1545	E.15	--	45	20	17	78	3.4	142	0	28	104

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
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16213000 WAIKELE STREAM AT WAIPAHU--Continued

JUNE, 1972					
02...	25.0	520	7.3	8.0	--

16216000 WAIANA STREAM NEAR PEARL CITY--Continued

JUNE, 1972					
02...	25.0	1400	7.5	6.4	--

16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA--Continued

JUNE, 1972					
05...	25.0	650	6.9	8.4	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TORS PER AC-FI) (MG/L)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16213000 WAIKELE STREAM AT WAIPAHU--Continued												
DEC., 1971												
09...	.2	1.0	264	.36	68	13	83	3.0	433	6.8	4	55
JAN., 1972												
19...	.2	.80	301	.41	75	12	85	3.4	497	6.8	0	63
23...	.1	.70	45	.06	15	4	44	.7	74	6.5	120	11
APR.												
12...	.1	1.1	248	.34	58	5	85	3.0	390	6.9	15	52
JUNE												
02...	.2	1.3	317	.43	75	9	65	3.5	504	7.7	1	66
16216000 WAIAWA STREAM NEAR PEARL CITY--Continued												
DEC., 1971												
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--	--	--
JAN., 1972												
23...	.1	.10	33	.04	12	1	51	.8	62	6.3	120	11
FEB.												
22...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR.												
03...	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--
JUNE												
02...	.1	2.2	764	1.04	243	166	60	4.9	1380	7.3	1	77
16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA--Continued												
JUNE, 1972												
05...	.1	1.4	372	.51	120	4	58	3.1	612	7.8	2	116

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DISE- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SiO <sub>2</sub> ) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO <sub>3</sub> ) (MG/L)	CAR- BONATE (CO <sub>3</sub> ) (MG/L)	DIS- SOLVED SULFATE (SO <sub>4</sub> ) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16227700 MOANALUA STREAM TRIBUTARY NEAR KANEHOE (LAT 21°23'27" LONG 157°50'59")												
APR., 1972	17...	1.1	20.0	--	--	--	--	--	--	--	--	--
16228000 MOANALUA STREAM NEAR HONOLULU (LAT 21°22'53" LONG 157°52'22")												
APR., 1972	17...	10	22.0	--	--	--	--	--	--	--	--	--
16229000 KALIHI STREAM NEAR HONOLULU (LAT 21°21'59" LONG 157°50'49")												
JUNE, 1972	07...	1320	.91	--	11	5.4	4.7	14	.6	36	0	5.3 21
16229300 KALIHI STREAM AT KALIHI (LAT 21°20'29" LONG 157°52'36")												
JAN., 1972	23...	0950	134	--	9.3	8.0	3.9	11	1.6	38	0	7.9 17
JUNE	07...	1420	1.3	--	8.1	15	8.2	26	1.3	88	0	9.3 35
16232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU (LAT 21°20'55" LONG 157°49'40")												
JUNE, 1972	01...	1130	1.9	--	10	4.1	5.3	10	.4	38	0	6.5 12
16238500 WAIHI STREAM AT HONOLULU (LAT 21°19'55", long 157°48'13")												
FER., 1972	23...	0935	43	--	6.0	2.2	1.8	4.5	.8	16	0	2.0 8.5
JUNE	01...	0915	.76	--	16	8.1	7.3	12	.9	60	0	5.3 17

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)
16229000 KALIHI STREAM NEAR HONOLULU--Continued					
JUNE, 1972	07...	22.0	130	7.3	8.2 --
16229300 KALIHI STREAM AT KALIHI--Continued					
JUNE, 1972	07...	27.0	280	7.8	8.6 --
16232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU--Continued					
JUNE, 1972	01...	21.0	120	7.6	8.6 --
16238500 WAIHI STREAM AT HONOLULU--Continued					
JUNE, 1972	01...	20.0	160	7.4	8.0 --

## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS PER AC-FT (TONS) (MG/L)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROHMS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16227700 MOANALUA STREAM TRIBUTARY NEAR KANEHOHE--Continued												
APR., 1972 17...	--	--	--	--	--	--	--	--	--	--	--	--
16228000 MOANALUA STREAM NEAR HONOLULU--Continued												
APR., 1972 17...	--	--	--	--	--	--	--	--	--	--	--	--
16229000 KALIHI STREAM NEAR HONOLULU--Continued												
JUNE, 1972 07...	.0	.00	.00	.11	33	3	48	1.1	137	7.5	1	30
16229300 KALIHI STREAM AT KALIHI--Continued												
JAN., 1972 23...	.3	.20	.79	.11	36	5	39	.8	136	6.1	35	31
JUNE 07...	.1	.10	1.7	.20	71	0	44	1.3	267	7.7	1	72
16232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU--Continued												
JUNE, 1972 01...	.0	.00	.65	.04	32	4	40	.8	116	7.2	1	28
16238500 WAIHI STREAM AT HONOLULU--Continued												
FEB., 1972 23...	.1	.00	.34	.05	13	0	41	.5	55	6.8	40	13
JUNE 01...	.1	<.10	.97	.13	50	0	34	.7	159	7.5	1	49

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS)	TEMPERATURE (DEG C)	DIS-SOLVED SILICA (SI02) (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16240500 WAIAKEAKUA STREAM AT HONOLULU (LAT 21°19'52" LONG 157°48'08")												
NOV., 1971												
23...	0900	1.9	20.0	19	7.1	5.2	10	.9	50	0	3.0	13
FEB., 1972												
23...	0845	52	--	6.6	2.7	1.9	4.7	.7	17	0	3.6	7.5
JUNE												
01...	0845	2.4	--	19	7.0	5.3	10	.5	52	0	3.4	13
16247000 PALOLO STREAM NEAR HONOLULU (LAT 21°17'35" LONG 157°48'25")												
JUNE, 1972												
01...	1900	12	--	14	13	9.5	26	.8	10	28	13	42
16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILILI (LAT 21°17'24" LONG 157°49'17")												
JUNE, 1972												
01...	1045	11.5	--	9.7	15	11	20	1.4	97	0	9.5	26
16249000 WAIMANALO STREAM AT WAIMANALO (LAT 21°21'12" LONG 157°43'52")												
JUNE, 1972												
01...	1230	8.50	--	36	19	14	28	1.3	134	0	12	32
16254000 MAKAWAO STREAM NEAR KAILUA (LAT 21°21'49" LONG 157°46'02")												
JAN., 1972												
23...	1830	55	--	17	6.0	4.8	13	1.4	38	0	5.9	20

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
16240500 WAIAKEAKUA STREAM AT HONOLULU--Continued					
NOV., 1971					
23...	20.0	130	7.5	8.4	--
JUNE, 1972					
01...	19.5	130	7.6	8.4	--
16247000 PALOLO STREAM NEAR HONOLULU--Continued					
JUNE, 1972					
01...	26.0	310	10.2	14.0	--
16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILILI--Continued					
JUNE, 1972					
01...	25.0	260	9.1	11.8	--
16249000 WAIMANALO STREAM AT WAIMANALO--Continued					
JUNE, 1972					
01...	27.0	350	7.3	6.6	--

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

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## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUO- WIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (MG/L)	HARD- NESS (CA+MG) (MG/L)	NON- CAL- MONATE HARD- NESS (MG/L)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TUR- BID- ITY (JTU)	ALKA- LITY AS CACO3 (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16240500 WAIAKEAKUA STREAM AT HONOLULU--Continued												
NOV., 1971 23...	.0	<.10	83	.11	39	0	35	.7	126	7.1	0	41
FEB., 1972 23...	.1	.00	35	.05	15	1	40	.5	60	6.8	35	14
JUNE 01...	.0	.00	84	.11	40	0	35	.7	126	7.6	1	43
16247000 PALOLO STREAM NEAR HONOLULU--Continued												
JUNE, 1972 01...	.2	<.10	152	.21	72	17	44	1.3	271	9.8	1	55
16247100 MANOA-PALOLO DRAINAGE CANAL AT MOILIILI--Continued												
JUNE, 1972 01...	.0	.00	141	.19	83	3	34	1.0	253	82.0	2	80
16249000 WAIMANALO STREAM AT WAIMANALO--Continued												
JUNE, 1972 01...	.2	.20	211	.29	105	0	36	1.2	336	7.7	<1	110
16254000 MAKAWAO STREAM NEAR KAILUA--Continued												
JAN., 1972 23...	.1	.10	84	.12	35	4	44	1.0	128	6.9	45	31

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DIS-CHARGE (CFS)	TEMPERATURE (DEG C)	DIS-SOLVED SILICA (SiO2) (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SULFUR (S) (MG/L)	DIS-SOLVED PHOSPHORUS (P) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
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HAWAII, ISLAND OF OAHU--Continued

16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA (LAT 21°22'51" LONG 157°45'48")

NOV., 1971													
19...	1440	2.8	22.5	28	14	9.2	19	1.6	86	0	9.4	23	
DEC.													
27...	1445	6.6	--	27	11	9.5	17	1.3	77	0	7.9	23	
JAN., 1972													
23...	0745	148	--	--	--	--	--	--	--	--	--	--	--
23...	1555	150	--	--	--	--	--	--	--	--	--	--	--
23...	1615	184	--	--	--	--	--	--	--	--	--	--	--
JUNE													
01...	1315	5.2	--	29	11	6.8	18	1.8	82	0	6.9	23	

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEHOE (LAT 21°23'42" LONG 157°48'47")

FER., 1972													
23...	1050	3.2	--	21	7.1	4.6	11	1.2	46	0	5.0	15	

16273900 KAMOOALII STREAM AT KANEHOE (LAT 21°24'51" LONG 157°48'12")

OCT., 1971													
08...	1330	7.7	27.0	23	8.6	7.6	15	1.0	62	0	5.0	20	
NOV.													
22...	1325	7.6	23.5	22	9.8	6.8	15	1.2	66	0	5.4	20	
JAN., 1972													
09...	0800	9.3	--	--	--	--	--	--	--	--	--	--	--
10...	0750	8.9	--	--	--	--	--	--	--	--	--	--	--
22...	1010	150	--	12	6.4	3.7	8.9	1.5	30	0	7.9	14	
22...	1030	185	--	--	--	--	--	--	--	--	--	--	--
22...	1120	108	--	--	--	--	--	--	--	--	--	--	--
22...	1610	66	--	--	--	--	--	--	--	--	--	--	--
23...	0700	173	--	--	--	--	--	--	--	--	--	--	--
23...	0915	353	--	--	--	--	--	--	--	--	--	--	--
23...	1605	140	--	--	--	--	--	--	--	--	--	--	--
FER.													
23...	1125	48	--	--	--	--	--	--	--	--	--	--	--
MAR.													
27...	0930	14	22.0	--	--	--	--	--	--	--	--	--	--
31...	1355	12	--	--	--	--	--	--	--	--	--	--	--
APR.													
15...	0900	42	--	--	--	--	--	--	--	--	--	--	--
16...	0930	21	--	--	--	--	--	--	--	--	--	--	--
26...	1613	18	--	--	--	--	--	--	--	--	--	--	--
27...	1740	18	--	--	--	--	--	--	--	--	--	--	--
MAY													
20...	0855		--	--	--	--	--	--	--	--	--	--	--
21...	1240	12	--	--	--	--	--	--	--	--	--	--	--
JUNE													
01...	1350	12	--	18	8.8	6.3	15	1.9	60	1	5.9	19	
21...	1330	10	--	--	--	--	--	--	--	--	--	--	--
22...	1025	11	--	--	--	--	--	--	--	--	--	--	--
JULY													
13...	0940	9.3	--	--	--	--	--	--	--	--	--	--	--
AUG.													
02...	1340	7.9	--	--	--	--	--	--	--	--	--	--	--
03...	1520	7.6	--	--	--	--	--	--	--	--	--	--	--
23...	2020	7.6	--	--	--	--	--	--	--	--	--	--	--
24...	1505	7.9	--	--	--	--	--	--	--	--	--	--	--
SEP.													
19...	1015	7.3	--	--	--	--	--	--	--	--	--	--	--
20...	1620	6.7	--	--	--	--	--	--	--	--	--	--	--

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
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16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA--Continued

JUNE, 1972					
01...	23.0	240	7.4	8.0	--

16273900 KAMOOALII STREAM AT KANEHOE--Continued

JUNE, 1972					
01...	28.5	180	9.4	9.2	--



## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SiO <sub>2</sub> ) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	HICAR- BONATE (HCO <sub>3</sub> ) (MG/L)	CAR- BONATE (CO <sub>3</sub> ) (MG/L)	DIS- SOLVED SULFATE (SO <sub>4</sub> ) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
------	------	---	-----------------------------	---	--	---	--	--	---	--	---	---

## HAWAII, ISLAND OF OAHU--Continued

## 16275000 HAIKU STREAM NEAR HEEIA (LAT 21°24'45" LONG 157°49'35")

FEB., 1972												
23...	1145	3.7	--	24	7.2	4.9	11	1.0	48	0	3.6	16
JUNE												
01...	1430	1.4	--	27	8.4	5.3	11	.8	52	0	3.0	17

## 16283500 KAHALUU STREAM AT KAHALUU (LAT 21°27'23" LONG 157°50'15")

JUNE, 1972												
01...	1520	--	--	17	16	6.6	18	1.1	28	30	11	24

## 16284500 WAIHEE STREAM AT KAHALUU (LAT 21°27'32" LONG 157°50'26")

OCT., 1971												
08...	1315	14	23.0	28	9.0	6.0	13	1.6	55	0	3.6	18
NOV.												
15...	1100	16	--	--	--	--	--	--	--	--	--	--
19...	1345	48	22.5	27	9.7	5.8	13	1.6	60	0	3.6	19
JAN., 1972												
22...	0955	104	--	--	--	--	11	--	30	0	--	18
22...	1205	61	20.5	--	--	--	--	--	--	--	--	--
23...	1100	155	--	15	6.1	3.5	11	2.9	26	0	8.3	18
JUNE												
01...	1500	64	--	25	8.2	5.7	14	1.0	58	0	3.6	19

## 16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE (LAT 21°30'00" LONG 157°51'54")

JUNE, 1972												
05...	0845	3.2	--	31	7.7	6.3	15	.7	60	0	5.0	19

## 16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA (LAT 21°32'38", LONG 157°53'07")

JUNE, 1972												
05...	1000	17	--	22	7.1	4.9	11	.4	48	0	2.0	16

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)
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## 16275000 HAIKU STREAM NEAR HEEIA--Continued

JUNE, 1972					
01...	20.5	160	8.0	8.8	--

## 16283500 KAHALUU STREAM AT KAHALUU--Continued

JUNE, 1972					
01...	27.5	240	7.5	6.4	--

## 16284500 WAIHEE STREAM AT KAHALUU--Continued

JUNE, 1972					
01...	24.5	160	7.4	6.6	--

## 16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE--Continued

JUNE, 1972					
05...	22.0	180	7.5	8.6	--

## 16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA--Continued

JUNE, 1972					
05...	21.0	130	7.2	6.2	--

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

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## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS $\text{CaCO}_3$ (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16275000 HAIKU STREAM NEAR HEIHA--Continued												
FEB., 1972												
23...	.1	.00	92	.13	38	0	38	.8	134	7.6	1	39
JUNE 01...	.1	.00	100	.14	43	0	35	.7	145	7.6	<1	43
16283500 KAHALUU STREAM AT KAHALUU--Continued												
JUNE, 1972												
01...	.1	.00	140	.19	76	3	34	.9	235	9.7	--	73
16284500 WAIHEE STREAM AT KAHALUU--Continued												
OCT., 1971												
08...	.1	.20	187	.15	47	2	37	.8	154	6.7	2	45
NOV. 15...	--	--	--	--	--	--	--	--	--	--	--	--
19...	.0	.30	111	.15	48	0	36	.8	160	7.0	1	49
JAN., 1972												
22...	--	--	--	--	--	--	--	--	125	6.4	--	25
22...	--	--	--	--	--	--	--	--	--	--	--	--
23...	.1	.90	78	.11	30	9	42	.9	121	6.4	90	21
JUNE 01...	.2	.00	106	.14	44	0	40	.9	155	7.6	8	48
16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE--Continued												
JUNE, 1972												
05...	.0	.00	115	.16	45	0	41	1.0	166	7.7	1	49
16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA--Continued												
JUNE, 1972												
05...	.0	.00	87	.12	38	0	38	.8	129	7.7	1	39

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	DIS-SOLVED SILICA (SI02) (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	
HAWAII, ISLAND OF OAHU--Continued													
16303000 PUNALUU STREAM NEAR PUNALUU (LAT 21°33'33" LONG 157°54'06")													
JUNE, 1972	05...	1230	121	--	29	6.0	4.7	11	.6	46	0	3.0	14
16304200 KALUANUI STREAM NEAR PUNALUU (LAT 21°35'22" LONG 157°54'38")													
JUNE, 1972	05...	1345	.23	--	6.2	1.4	1.7	7.3	.4	16	0	5.6	14
16330000 KAMANANUI STREAM AT MAUNAWAI (LAT 21°38'20" LONG 158°03'27")													
JUNE, 1972	02...	1245	.66	--	9.4	2.9	3.2	12	.8	24	0	3.6	18
16343000 HELEMANO STREAM AT HALEIWA (LAT 21°34'40" LONG 158°06'12")													
JUNE, 1972	02...	1355	.88	--	33	20	17	92	8.2	76	0	32	164
16345000 OPAEULA STREAM NEAR WAHIAWA (LAT 21°33'55" LONG 158°00'10")													
JUNE, 1972	02...	1010	1.1	--	3.0	.6	1.2	6.2	.4	5	0	2.6	11
16350000 OPAEULA STREAM NEAR HALEIWA (LAT 21°35'09" LONG 158°06'01")													
JUNE, 1972	02...	1110	1.01	--	13	13	13	69	1.4	106	0	28	85

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	DIS-SOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	
16303000 PUNALUU STREAM NEAR PUNALUU--Continued						
JUNE, 1972	05...	21.0	120	8.0	9.2	--
16304200 KALUANUI STREAM NEAR PUNALUU--Continued						
JUNE, 1972	05...	22.0	63	6.3	9.0	--
16330000 KAMANANUI STREAM AT MAUNAWAI--Continued						
JUNE, 1972	02...	25.0	100	7.9	8.8	--
16343000 HELEMANO STREAM AT HALEIWA--Continued						
JUNE, 1972	02...	23.0	750	7.4	7.0	--
16345000 OPAEULA STREAM NEAR WAHIAWA--Continued						
JUNE, 1972	02...	22.5	50	6.2	8.2	--
16350000 OPAEULA STREAM NEAR HALEIWA--Continued						
JUNE, 1972	02...	22.0	460	6.3	3.6	--

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

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## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF OAHU--Continued												
16303000 PUNALUU STREAM NEAR PUNALUU--Continued												
JUNE, 1972 05...	.0	.00	92	.13	35	0	40	.8	119	7.4	0	38
16304200 KALUANUI STREAM NEAR PUNALUU--Continued												
JUNE, 1972 05...	.0	<.10	0	.00	11	3	59	1.0	64	7.0	0	8
16330000 KAMANANUI STREAM AT MAUNAWAI--Continued												
JUNE, 1972 02...	.1	.00	62	.08	20	1	55	1.2	100	7.3	1	20
16343000 HELEMANO STREAM AT HALEIWA--Continued												
JUNE, 1972 02...	.2	1.8	412	.56	120	58	61	3.7	739	7.5	110	62
16345000 OPAEULA STREAM NEAR WAHIAWA--Continued												
JUNE, 1972 02...	.0	.00	28	.04	7	3	66	1.1	50	6.5	1	4
16350000 OPAEULA STREAM NEAR HALEIWA--Continued												
JUNE, 1972 02...	.0	.80	280	.38	86	0	63	3.2	504	7.7	1	89

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
HAWAII, ISLAND OF MOLOKAI												
16400000 HALAWA STREAM NEAR HALAWA (LAT 21°09'31" LONG 156°45'53")												
DEC., 1971												
05...	1000	7.0	19.5	6.5	1.4	1.6	6.8	.6	0	0	2.0	12
JAN., 1972												
25...	1200	22	--	4.9	.8	.9	5.6	.5	5	0	1.4	10
MAR.												
14...	1120	5.8	19.0	8.1	1.2	1.2	7.4	.6	8	0	2.0	13
16404000 PELEKUNU STREAM NEAR PELEKUNU (LAT 21°08'11" LONG 156°52'43")												
DEC., 1971												
04...	0845	4.6	19.0	21	11	4.0	8.4	.7	39	0	15	12
JAN., 1972												
21...	0945	4.9	15.5	21	12	3.8	9.2	.5	42	0	14	13
MAR.												
09...	0850	21	16.0	14	4.5	1.8	7.5	.6	16	0	7.9	12
16405500 WAIKOLU STREAM AT ALTITUDE 900 FT, NEAR KALAUPAPA (LAT 21°08'43" LONG 156°55'18")												
DEC., 1971												
01...	1315	2.0	19.5	30	6.0	4.0	9.0	1.7	42	0	1.4	12
JAN., 1972												
22...	1350	.71	18.5	26	5.8	3.0	9.2	1.5	39	0	1.0	12
MAR.												
10...	1330	2.6	19.5	23	3.7	2.2	7.2	1.2	27	0	.0	9.5
16414000 KAUNAKAKAI GULCH AT KAUNAKAKAI (LAT 21°06'21" LONG 157°00'34")												
JAN., 1972												
25...	0745	.25	18.0	7.2	1.9	1.6	6.3	1.1	8	0	.4	11
16415000 EAST FORK KAWELA GULCH NEAR KAMALO (LAT 21°06'47" LONG 156°54'23")												
NOV., 1971												
30...	1405	.57	15.0	3.3	.8	1.3	6.1	.3	2	0	.4	14
JAN., 1972												
18...	--	E.30	13.0	7.9	.7	.8	6.0	.1	4	0	.0	11

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)
HAWAII, ISLAND OF MOLOKAI--Continued					
16400000 HALAWA STREAM NEAR HALAWA--Continued					
DEC., 1971					
05...	19.5	56	6.6	8.8	260
16404000 PELEKUNU STREAM NEAR PELEKUNU--Continued					
DEC., 1971					
04...	19.0	138	7.1	9.0	200
16405500 WAIKOLU STREAM AT ALTITUDE 900 FT, NEAR KALAUPAPA--Continued					
DEC., 1971					
01...	19.5	108	6.9	9.0	170
16415000 EAST FORK KAWELA GULCH NEAR KAMALO--Continued					
NOV., 1971					
30...	15.0	54	4.8	8.2	170

## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF MOLOKAI--Continued												
16400000 HALAWA STREAM NEAR HALAWA--Continued												
DEC., 1971												
05...	.1	.00	35	.05	10	3	58	.9	57	6.0	1	7
JAN., 1972												
25...	.0	.10	27	.04	6	2	66	1.0	45	5.5	2	4
MAR.												
14...	.1	.00	34	.05	8	2	65	1.1	60	6.2	0	7
16404000 PELEKUNU STREAM NEAR PELEKUNU--Continued												
DEC., 1971												
04...	.1	.00	91	.12	44	12	29	.6	131	6.6	0	32
JAN., 1972												
21...	.1	<.10	95	.13	46	12	30	.6	134	6.7	0	34
MAR.												
09...	.1	--	56	.08	19	5	46	.8	84	6.6	0	13
16405500 WAIKOLU STREAM AT ALTITUDE 900 FT, NEAR KALAUPAPA--Continued												
DEC., 1971												
01...	.1	.00	85	.12	32	0	37	.7	105	6.4	0	34
JAN., 1972												
22...	.1	.10	78	.11	27	0	41	.8	99	6.6	0	32
MAR.												
10...	.1	<.10	60	.08	18	0	44	.7	78	6.9	1	22
16414000 KAUNAKAKAI GULCH AT KAUNAKAKAI--Continued												
JAN., 1972												
25...	.1	.50	36	.05	11	4	52	.8	59	6.2	4	7
16415000 EAST FORK KAWELA GULCH NEAR KAMALO--Continued												
NOV., 1971												
30...	.1	<.10	28	.04	8	6	63	1.0	53	5.2	1	2
JAN., 1972												
18...	.1	.10	29	.04	5	2	72	1.2	42	6.4	0	3

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	DIS-SOLVED SILICA (SI02) (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)
HAWAII, ISLAND OF MOLOKAI--Continued												
16419500 PAPIO GULCH AT HALAWA (LAT 21°08'56" LONG 156°44'16")												
JAN., 1972												
25...	1345	.24	19.0	3.2	1.4	2.2	11	1.7	4	0	4.0	24
25...	1420	.24	19.0	9.5	2.4	3.8	18	1.8	12	0	12	29
MAR.												
14...	1300	.06	20.0	10	4.1	6.1	24	1.6	24	0	10	44
HAWAII, ISLAND OF MAUI												
16501000 PALIKEA STREAM BELOW DIVERSION DAM, NEAR KIPAHULU (LAT 20°41'05" LONG 156°04'10")												
JAN., 1972												
27...	1200	2.9	16.0	7.9	1.6	1.1	4.0	.3	12	0	.0	6.0
APR.												
20...	0900	275	--	2.7	.7	.5	2.5	.2	4	0	.0	5.5
16508000 HANAWI STREAM NEAR NAHIKU (LAT 20°48'35" LONG 156°07'00")												
JAN., 1972												
17...	1100	4.9	17.0	8.9	1.7	1.0	5.0	.8	16	0	.4	5.5
JUNE												
27...	1345	.66	--	6.0	1.3	.6	3.6	.6	10	0	.0	6.0
16518000 WEST WAILUAIKI STREAM NEAR KEANAE (LAT 20°49'15" LONG 156°08'37")												
JAN., 1972												
17...	1300	4.8	16.5	12	1.8	1.3	4.0	.4	16	0	.4	5.0
JUNE												
27...	1200	164	--	5.2	1.5	.9	3.0	.5	10	0	.4	5.0
16570000 NAILIILIHAELE STREAM NEAR HUELO (LAT 20°52'28" LONG 156°13'06")												
JAN., 1972												
17...	1500	6.9	18.0	10	2.0	1.5	5.0	.4	16	0	.4	7.0
APR.												
10...	0930	150	17.0	2.2	.5	.5	2.4	.4	5	0	.0	5.0

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPERATURE (DEG C)	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH	DIS-SOLVED OXYGEN (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)
HAWAII, ISLAND OF MAUI--Continued					
16501000 PALIKEA STREAM BELOW DIVERSION DAM, NEAR KIPAHULU--Continued					
JAN., 1972					
27...	16.0	39	6.4	9.6	180
APR.					
20...	16.0	--	6.1	10.0	--
16508000 HANAWI STREAM NEAR NAHIKU--Continued					
JAN., 1972					
17...	17.0	43	7.6	9.2	80
JUNE					
27...	18.0	34	--	9.6	--
16518000 WEST WAILUAIKI STREAM NEAR KEANAE--Continued					
JAN., 1972					
17...	16.5	41	6.6	9.6	66
JUNE					
27...	18.0	32	--	10.2	--
16570000 NAILIILIHAELE STREAM NEAR HUELO--Continued					
JAN., 1972					
17...	18.0	46	6.6	9.4	180
APR.					
10...	17.0	--	6.3	10.0	--

## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
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HAWAII, ISLAND OF MOLOKAI--Continued  
16419500 PAPIO GULCH AT HALAWA--Continued

JAN., 1972												
25...	.0	.20	49	.07	11	8	62	1.4	92	5.5	70	3
25...	.0	.20	83	.11	22	12	62	1.7	138	6.4	7	10
MAR.												
14...	.1	--	112	.15	35	16	58	1.8	205	6.7	1	20

HAWAII, ISLAND OF MAUI--Continued  
16501000 PALIKEA STREAM BELOW DIVERSION DAM, NEAR KIPAHULU--Continued

JAN., 1972												
27...	.0	.10	27	.04	9	0	49	.6	38	6.6	0	10
APR.												
20...	.0	.00	14	.02	4	0	57	.6	23	6.7	--	3

16508000 HANAWI STREAM NEAR NAHIKU--Continued

JAN., 1972												
17...	.0	.10	32	.04	8	0	54	.8	43	6.4	0	13
JUNE												
27...	.1	.00	23	.03	6	0	55	.7	34	6.5	2	8

16518000 WEST WAILUAIKI STREAM NEAR KEANAE--Continued

JAN., 1972												
17...	.0	<.10	33	.04	10	0	46	.6	42	6.3	1	13
JUNE												
27...	.1	.00	22	.03	7	0	45	.5	33	6.8	7	8

16570000 NAILIILIHAELE STREAM NEAR HUELO--Continued

JAN., 1972												
17...	.0	.10	34	.05	11	0	48	.7	47	6.3	0	13
APR.												
10...	.1	.00	14	.02	3	0	58	.6	23	6.4	2	4

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS  
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SI02) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HC03) (MG/L)	CAR- BONATE (C03) (MG/L)	DIS- SOLVED SULFATE (S04) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
HAWAII, ISLAND OF MAUI--Continued												
16588000 WAILOA DITCH AT HONOPOU, NEAR HUELO (LAT 20°53'20" LONG 156°15'19")												
JAN., 1972												
18...	0945	91	16.5	10	2.0	1.3	4.9	.5	16	0	.4	6.0
APR.												
25...	1000	222	--	6.4	1.4	1.0	4.4	.5	10	0	1.6	7.0
16599500 OPANA TUNNEL AT KAILIILI (LAT 20°51'04" LONG 156°16'17")												
JAN., 1972												
18...	1130	42	15.5	12	2.8	1.8	4.5	.6	22	0	.6	6.5
APR.												
10...	1330	13	15.0	2.6	.8	.5	2.3	.4	4	0	.4	4.5
16607000 IAO STREAM AT WAILUKU (LAT 20°53'38" LONG 156°30'27")												
JAN., 1972												
18...	1400	11	18.5	17	7.4	3.1	5.8	.6	36	0	7.9	7.0
24...	1000	780	18.0	11	3.6	1.7	4.2	.6	13	0	4.0	9.0
16620000 HONOKOHAU STREAM NEAR HONOKOHAU (LAT 20°57'48" LONG 156°35'22")												
JAN., 1972												
20...	1215	4.1	17.0	22	4.2	2.2	4.7	.6	24	0	.0	6.5
16646200 OLOWALU STREAM AT OLOWALU (LAT 20°49'23" LONG 156°37'15")												
JAN., 1972												
24...	1615	82	19.0	22	8.6	4.1	7.9	1.2	32	0	7.9	17

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)
16588000 WAILOA DITCH AT HONOPOU, NEAR HUELO--Continued					
JAN., 1972					
18...	16.5	47	6.9	9.2	120
APR.					
25...	17.0	40	5.9	9.7	--
16599500 OPANA TUNNEL AT KAILIILII--Continued					
JAN., 1972					
18...	15.5	54	6.1	9.4	120
APR.					
10...	15.0	--	5.5	10.0	--
16607000 IAO STREAM AT WAILUKU--Continued					
JAN., 1972					
18...	18.5	90	7.1	9.4	82
24...	18.0	56	6.2	8.8	160
16620000 HONOKOHAU STREAM NEAR HONOKOHAU--Continued					
JAN., 1972					
20...	17.0	65	7.0	9.2	150
16646200 OLOWALU STREAM AT OLOWALU--Continued					
JAN., 1972					
24...	19.0	130	6.9	9.2	180

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

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CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF MAUI--Continued												
16588000 WAILOA DITCH AT HONOPOU, NEAR HUELO--Continued												
JAN.. 1972												
18...	.0	<.10	33	.04	11	0	49	.7	46	6.4	0	13
APR.												
25...	.0	.00	28	.04	8	0	54	.7	40	6.5	--	8
16599500 OPANA TUNNEL AT KAILIILI--Continued												
JAN.. 1972												
18...	.0	.10	40	.05	15	0	39	.5	53	6.6	0	18
APR.												
10...	.1	.20	15	.02	4	1	52	.5	24	6.1	1	3
16607000 IAO STREAM AT WAILUKU--Continued												
JAN.. 1972												
18...	.0	<.10	67	.09	33	3	28	.5	93	6.8	0	30
24...	1.0	.10	41	.06	16	5	35	.5	57	6.7	25	11
16620000 HONOKOHAU STREAM NEAR HONOKOHAU--Continued												
JAN.. 1972												
20...	.1	<.10	54	.07	20	0	33	.5	64	7.4	0	23
16646200 OLOWALU STREAM AT OLOWALU--Continued												
JAN.. 1972												
24...	.1	.50	87	.12	39	13	30	.6	120	6.9	35	26

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SiO2) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
HAWAII, ISLAND OF HAWAII												
16700000 WAIAKEA STREAM NEAR MOUNTAIN VIEW (LAT 19°38'30" LONG 155°10'28")												
OCT., 1971												
26...	1400	3.5	18.0	17	3.1	.9	3.8	1.1	19	0	.4	4.0
FEB., 1972												
10...	0925	20	16.5	9.1	1.7	.8	2.1	.7	10	0	.4	3.0
APR., 1972												
10...	0930	28	19.0	11	2.0	.8	2.4	.5	12	0	1.0	4.0
JUNE												
02...	1930	4.9	18.0	--	--	--	--	--	--	--	--	--
16704000 WAILUKU RIVER AT PIIHONUA (LAT 19°42'58" LONG 155°09'13)												
OCT., 1971												
26...	1530	36	20.0	13	2.9	1.3	2.8	.9	18	0	.0	2.0
APR., 1972												
10...	1115	4100	19.0	3.7	1.1	.6	1.8	.4	7	0	2.0	3.0
16717800 POHAKUPUKA STREAM NEAR PAPAALO (LAT 19°57'20" LONG 155°11'20")												
OCT., 1971												
27...	0840	1.3	20.5	19	9.0	4.6	6.1	1.0	54	0	2.4	8.0
APR., 1972												
10...	1040	48	14.0	1.5	.5	.4	1.0	.3	2	0	1.4	4.0
JUNE												
09...	--	--	22.0	--	--	--	--	--	--	--	--	--
16756000 KOHAKOHU STREAM NEAR KAMUELA (LAT 20°02'38" LONG 155°41'10")												
OCT., 1971												
27...	1115	3.1	19.0	5.3	1.6	1.4	4.3	.7	11	0	.0	7.5
APR., 1972												
11...	1235	21	14.0	2.2	.4	.5	2.4	.3	2	0	.0	5.0
JUNE												
27...	1315	20	16.0	0.7	1.2	1.2	4.3	.6	10	0	.0	7.0

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH - (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE COLI- FORM (COL. PER 100 ML)
16700000 WAIAKEA STREAM NEAR MOUNTAIN VIEW--Continued					
OCT., 1971					
26...	18.0	42	7.2	8.8	20
16704000 WAILUKU RIVER AT PIIHONUA--Continued					
OCT., 1971					
26...	20.0	38	7.7	9.0	27
16717800 POHAKUPUKA STREAM NEAR PAPAALO--Continued					
OCT., 1971					
27...	20.5	110	7.4	8.6	620
16756000 KOHAKOHU STREAM NEAR KAMUELA--Continued					
OCT., 1971					
27...	19.0	40	5.2	7.0	720
JUNE, 1972					
27...	16.0	--	6.1	--	--

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

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## CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SULFIDES (SUM OF CUNSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF HAWAII--Continued												
16700000 WAIAKEA STREAM NEAR MOUNTAIN VIEW--Continued												
OCT., 1971												
20...	.2	.20	41	.06	11	0	39	.5	42	6.7	0	16
FEB., 1972												
10...	.0	.10	23	.03	8	0	35	.3	28	6.1	1	8
APR., 1972												
10...	.1	.00	28	.04	9	0	37	.4	33	6.8	1	10
JUNE 02...	--	--	--	--	--	--	--	--	--	--	--	--
16704000 WAILUKU RIVER AT PIIHONUA--Continued												
OCT., 1971												
26...	.0	<.10	32	.04	13	0	31	.3	38	6.7	1	15
APR., 1972												
10...	.1	.00	17	.02	5	0	41	.3	22	6.4	3	6
16717800 POHAKUPUA STREAM NEAR PAPAALO--Continued												
OCT., 1971												
27...	.1	<.10	77	.10	42	0	24	.4	109	7.0	1	44
APR., 1972												
10...	.1	.00	12	.02	3	1	54	.5	18	5.8	10	2
JUNE 09...	--	--	--	--	--	--	--	--	--	--	--	--
16756000 KOHAKOHAU STREAM NEAR KAMUELA--Continued												
OCT., 1971												
27...	.1	<.10	26	.04	10	1	47	.6	40	6.4	1	9
APR., 1972												
11...	.1	.00	12	.02	3	1	60	.6	23	5.6	1	2
JUNE 27...	.1	.00	26	.04	8	0	52	.7	40	6.5	1	8

## ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTANTANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SI02) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO3) (MG/L)	CAR- BONATE (CO3) (MG/L)	DIS- SOLVED SULFATE (SO4) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)
HAWAII, ISLAND OF HAWAII--Continued												
16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA (LAT 20°02'48" LONG 155°39'58")												
OCT., 1971 27...	1030	3.6	17.0	9.7	1.8	2.4	4.7	.7	20	0	.4	6.0
APR., 1972 11...	1145	11	14.0	3.0	.3	.6	2.4	.2	3	0	.0	5.5
JUNE 27...	1110	5.8	16.0	11	1.9	2.5	4.5	.4	22	0	.0	6.0
16759200 RIGHT BRANCH WAIHAH STREAM NEAR HOLUALOA (LAT 19°38'41" LONG 155°54'55")												
OCT., 1971 28...	0900	<.01	17.0	4.6	3.9	2.9	3.1	1.2	21	0	3.6	6.0
JUNE, 1972 12...	1530	.45	19.0	4.0	1.7	1.3	2.0	.5	7	0	4.0	4.5
16764000 HILEA GULCH TRIBUTARY NEAR HONUAPU (LAT 19°10'27" LONG 155°35'58")												
OCT., 1971 28...	1330	.44	16.5	10	2.8	1.7	2.6	.8	10	0	7.4	4.0
JAN., 1972 25...	1210	25	16.5	8.4	1.9	1.3	1.8	.3	10	0	4.6	2.0
JUNE 07...	1010	.04	19.0	13	3.6	2.1	3.0	.4	16	0	6.3	3.5

## FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	IMME- DIATE CDLI- FORM (COL. PER 100 ML)
16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued					
OCT., 1971 27...	17.0	49	7.4	7.6	69
JUNE, 1972 27...	16.0	--	6.6	8.0	--
16759200 RIGHT BRANCH WAIHAH STREAM NEAR HOLUALOA--Continued					
OCT., 1971 28...	17.0	58	7.2	8.0	120
JUNE, 1972 12...	19.0	32	6.4	7.4	--
16764000 HILEA GULCH TRIBUTARY NEAR HONUAPU--Continued					
OCT., 1971 28...	16.5	45	6.8	--	570
JUNE, 1972 07...	19.0	54	6.9	5.4	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS  
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SOLUBLE) (MG/L)	DIS-SOLVED SOLIDS (TOTAL) (MG/L)	HARDNESS (CA, MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORPTION RATIO	SPECIFIC CONDUCTANCE (MICROHMS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
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HAWAII, ISLAND OF HAWAII--Continued  
 16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

OCT., 1971												
27...	.0	.20	36	.05	15	0	40	.5	49	6.8	2	16
APR., 1972												
11...	.1	.00	14	.02	3	1	60	.6	23	5.9	1	2
JUNE												
27...	.1	.00	37	.05	15	0	39	.5	54	6.7	2	18

16759200 RIGHT BRANCH WAIHAHA STREAM NEAR HOLUALOA--Continued

OCT., 1971												
28...	.0	<.10	35	.05	22	5	23	.3	60	6.9	1	17
JUNE, 1972												
12...	.1	.00	22	.03	10	4	30	.3	33	6.5	--	6

16764000 HILEA GULCH TRIBUTARY NEAR HONUAPO--Continued

OCT., 1971												
28...	.1	<.10	34	.05	14	6	27	.3	44	6.2	1	8
JAN., 1972												
25...	.0	.10	25	.04	10	2	27	.2	33	6.0	1	8
JUNE												
07...	.1	.00	42	.06	18	5	26	.3	55	7.0	--	13

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS  
 SUSPENDED-SEDIMENT DISCHARGE FOR SELECTED DAYS,  
 WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (T/DAY)
HAWAII, ISLAND OF OAHU			
16228200 MOANALUA STREAM NEAR AIEA (LAT 21°22'37" LONG 157°52'58")			
DEC., 1971			
20...	6.0	6	.10
JAN., 1972			
22...	157	264	426
23...	146	234	177
24...	79	64	26
27...	3.0	1	.01
FEB,			
22...	2.0	7	.04
23...	26	20	3.0
MAR,			
03...	72	103	67
APR,			
14...	3.8	21	4.0
15...	54	159	57

16229300 KALIHI STREAM AT KALIHI (LAT 21°20'29" LONG 157°52'36")			
JAN., 1972			
23...	191	131	101
27...	11	10	.30
FEB,			
22...	15	18	.73
23...	105	70	60
24...	24	15	.97
25...	19	10	.51
26...	13	3	.11
27...	10	3	.08
28...	9.1	2	.05
APR,			
06...	21	63	8.4
MAY			
09...	6.3	15	.26
JULY			
15...	36	181	36

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS  
 WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMP- ERATURE (DEG C)	SUS- PENDEO SEDI- MENT (MG/L)	SUS- PENDEO SEDI- MENT DIS- CHARGE (T/DAY)
HAWAII, ISLAND OF OAHU					
16227700 MOANALUA STREAM TRIBUTARY NEAR KANEOHE (LAT 21°23'27" LONG 157°50'59")					
APR., 1972					
17...	1500	1.1	20.0	2	.01
16228000 MOANALUA STREAM NEAR HONOLDLU (LAT 21°22'53" LONG 157°52'22")					
APR., 1972					
17...	1530	10	22.0	97	2.6

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS  
WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	SUS- PENDE D SEDI- MENT (MG/L)	SUS- PENDE D SEDI- MENT DIS- CHARGE (T/DAY)
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## HAWAII, ISLAND OF OAHU--Continued

16273900 KAMOOALII STREAM AT KANEOHE (LAT 21°24'51" LONG 157°48'12")

JAN., 1972.					
09...	0800	9.3	--	4	0.10
10...	0750	8.9	--	3	0.07
22...	1030	185	--	171	85
22...	1120	108	--	66	19
22...	1610	66	--	27	4.8
23...	0700	173	--	206	96
23...	0915	353	--	257	245
23...	1605	140	--	36	14
FEB.					
23...	1125	48	--	71	9.2
MAR.					
27...	0930	14	22.0	6	0.23
31...	1355	12	--	7	0.23
APR.					
15...	0900	42	--	31	3.5
16...	0930	21	--	3	0.17
26...	1613	18	--	2	0.10
27...	1740	18	--	3	0.15
MAY					
20...	0855	12	--	6	0.19
21...	1240	12	--	6	0.19
JUNE					
21...	1330	10	--	6	0.16
22...	1025	11	--	5	0.15
JULY					
13...	0940	9.3	--	7	0.18
AUG.					
02...	1340	7.9	--	7	0.15
03...	1520	7.6	--	6	0.12
23...	2020	7.6	--	4	0.08
24...	1505	7.9	--	6	0.13
SEPT.					
19...	1015	7.3	--	2	0.04
20...	1620	6.7	--	3	0.05

## HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIIKOU (LAT 19°46'00" LONG 155°09'16")

OCT., 1971					
26...	1030	34	19.0	3	0.28
DEC.					
28...	1049	58	16.0	2	0.31
JAN., 1972					
28...	1200	33	17.0	0	0
FEB.					
28...	1030	41	17.0	3	0.33
MAR.					
30...	1112	11	19.0	0	0
APR.					
10...	0930	2635	16.5	33	235
MAY					
31...	1350	21	20.0	1	0.06
JUNE					
10...	1010	40	23.0	2	0.22
AUG.					
09...	1020	22	19.5	1	0.06
SEPT.					
21...	1110	25	19.5	0	0

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES  
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	DIS- SOLVED SILICA (SIO <sub>2</sub> ) (MG/L)	DIS- SOLVED CAL- CIUM (CA) (MG/L)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L)	DIS- SOLVED SODIUM (NA) (MG/L)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L)	BICAR- BONATE (HCO <sub>3</sub> ) (MG/L)	CAR- BONATE (CO <sub>3</sub> ) (MG/L)	DIS- SOLVED SULFATE (SO <sub>4</sub> ) (MG/L)	DIS- SOLVED CHLO- RIDE (CL) (MG/L)	
HAWAII, ISLAND OF MAUI													
16645000 OLOWALU DITCH NEAR OLOWALU (LAT 20°49'33" LONG 156°36'50")													
JAN., 1972	19...	1100	3.2	--	38	20	11	17	1.2	92	0	29	20
CAROLINE ISLANDS, ISLAND OF KUSAIE													
16899700 PALUSRIK RIVER (LAT 5°17'38" N LONG 163°00'06" E)													
OCT., 1971	19...	1030	6.5	--	20	4.7	3.9	3.7	.4	36	0	2.0	5.0
SAMOA ISLANDS, ISLAND OF TUTUILLA													
16920500 AASU STREAM AT AASU (LAT 14°17'51"S LONG 170°45'30" W)													
OCT., 1971	06...	1100	1.3	--	23	6.0	5.0	7.0	1.2	45	0	.0	9.5
16931000 ATAULOMA STREAM AT AFAO (LAT 14°20'10" S LONG 170°48'02" W)													
OCT., 1971	12..	--	.02	28.0	24	6.6	5.0	8.5	1.1	53	0	0.4	9.0
16948000 AFUELO STREAM AT MATUU (LAT 14°18'07" S LONG 170°41'07" W)													
OCT., 1971	12...	1600	.09	26.0	33	7.2	5.0	13	1.5	51	0	1.6	16
16960000 ALEGA STREAM AT ALEGA (LAT 14°16'58" S LONG 170°38'19" E)													
OCT., 1971	12...	1030	.36	24.0	38	7.4	4.2	12	2.2	52	0	2.0	14

FIELD DETERMINATIONS, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TEMPER- ATURE (DEG C)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	DIS- SOLVED OXYGEN (MG/L)	TIME- DIATE COLI- FORM (COL. PER 100 ML)
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16645000 OLOWALU DITCH NEAR OLOWALU--Continued					
JAN., 1972	19...	--	250	7.6	9.2

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES  
 CHEMICAL ANALYSES, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

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DATE	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (N) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA, MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORPTION RATIO	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH (UNITS)	TURBIDITY (JTU)	ALKALINITY AS CaCO3 (MG/L)
HAWAII, ISLAND OF MAUI--Continued												
16645000 OLOWALU DITCH NEAR OLOWALU--Continued												
JAN., 1972 19...	.1	.10	182	.25	95	20	28	.8	263	7.3	0	75
CAROLINE ISLANDS, ISLAND OF KUSAIE--Continued												
16899700 PALUSRIK RIVER--Continued												
OCT., 1971 19...	.1	<.10	58	.08	28	0	22	.3	73	6.5	2	30
SAMOA ISLANDS, ISLAND OF TUTUILA--Continued												
16920500 AASU STREAM AT AASU--Continued												
OCT., 1971 06...	.1	.00	74	.10	36	0	29	.5	104	6.5	0	37
16931000 ATAULOMA STREAM AT AFAO--Continued												
OCT., 1971 12...	.1	0	81	.11	36	0	32	.6	107	7.0	1	43
16948000 AFUELO STREAM AT MATUU--Continued												
OCT., 1971 12...	.1	0	103	.14	39	0	41	.9	135	6.6	0	42
16960000 ALEGA STREAM AT ALEGA--Continued												
OCT., 1971 12...	.1	0	106	.14	37	0	40	.9	129	6.6	1	43

## ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS  
WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972

DATE	TIME	INSTAN- TANEOUS DIS- CHARGE (CFS)	TEMPER- ATURE (DEG C)	SUS- PENDED SEDI- MENT (MG/L)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY)
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## HAWAII, ISLAND OF OAHU

16216000 WAIKAHA STREAM NEAR PEARL CITY (LAT 21°23'55" LONG 157°58'50")

DEC., 1971					
17...	1100	55	20.0	890	132
17...	1110	65	20.0	1270	223
17...	1140	698	21.0	1110	2090
17...	1200	1480	21.0	943	3770
17...	1300	1700	21.0	582	2670
17...	1420	1350	21.0	656	2390
17...	1705	561	21.0	223	338
FEB., 1972					
22...	1230	150	20.5	726	294
23...	0955	150	--	974	394
23...	1240	362	20.0	266	260
23...	1425	216	20.0	146	85
MAR.					
03...	1015	258	20.5	102	71
03...	1405	116	21.0	40	13

16254000 MAKAWAO STREAM NEAR KAILUA (LAT 21°21'49" LONG 157°46'02")

JAN., 1972					
23...	1530	55	--	83	12

16260500 MAUNAWILI STREAM AT HIGHWAY 61, NEAR KAILUA (LAT 21°22'51" LONG 157°45'48")

JAN., 1972					
23...	0745	148	--	447	179
23...	1555	150	--	121	49
23...	1615	184	--	135	67

16284500 WAIHEE STREAM AT KAHALUU (LAT 21°27'32" LONG 157°50'26")

NOV., 1971					
15...	1100	16	--	42	1.8
JAN., 1972					
22...	1205	61	20.5	67	11

## HAWAII, ISLAND OF HAWAII

16700000 WAIAKEA STREAM NEAR MOUNTAIN VIEW (LAT 19°38'30" LONG 155°10'28")

JUNE, 1972					
02...	1030	4.9	18.0	1	.01

16717800 POHAKUPUKA STREAM NEAR PAPAALOHA (LAT 19°57'20" LONG 155°11'20")

JUNE, 1972					
09...	1420	3.8	22.0	3	.03

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