Iwao

1966

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, the Government of Guam, the Government of American Samoa, and with other State, county, and Federal agencies

United States Department of the Interior
Geological Survey - Water Resources Division

WATER RESOURCES DATA
FOR
HAWAII AND OTHER PACIFIC AREAS
1966

Part 1: Surface Water Records

Prepared in cooperation with

Hawaii Department of Land and Natural Resources,
Division of Water and Land Development
Government of Guam
Government of American Samoa
City and county of Honolulu
Corps of Engineers, U.S. Army

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
Room 330, First Insurance Bldg.
1100 Ward Avenue
Honolulu, Hawaii 96814

1967

CALENDAR FOR FISCAL YEAR 1966

JULY 1965

S	M	T	W	T	F	S
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AUGUST 1965

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SEPTEMBER 1965

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NOVEMBER 1965

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DECEMBER 1965

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JANUARY 1966

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MARCH 1966

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APRIL 1966

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MAY 1966

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
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29	30	31				

JUNE 1966

S	M	T	W	T	F	S
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5	6	7	8	9	10	11
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WATER RESOURCES DATA FOR HAWAII AND OTHER PACIFIC AREAS, 1966

Part 1. Surface Water Records

INTRODUCTION

The surface-water records for the 1966 fiscal year for gaging stations, partial-record stations, and miscellaneous sites within the State of Hawaii and other Pacific areas 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 Mearle M. Miller, district chief.

Through June 30, 1960, 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." Since 1951 there have been 20 volumes in the series; each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records in Hawaii are contained in the above series as "Surface Water Supply of Hawaii." Records for other Pacific areas are contained in a volume entitled "Surface Water Supply of Mariana, Caroline, and Samoa Islands."

Beginning with the 1961 fiscal year, streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis, except for Hawaii which includes other Pacific areas. Distribution of these basic-data reports is limited and primarily for local needs. Records will be published in Geological Survey water-supply papers at 5-year intervals.

COOPERATION

Cooperative agreements between the U.S. Geological Survey and organizations of the State of Hawaii for the systematic collection of streamflow records began in 1909. Cooperative agreements with the Territory of Guam began in 1953, and with the Territory of American Samoa in 1957. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

State of Hawaii, Department of Land and Natural Resources.
Government of Guam.
Government of American Samoa.
City and county of Honolulu, Division of Engineering.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 26 gaging stations published in this report.

The following organizations aided in collecting records:

Boards of Water Supply of the city and county of Honolulu and Maui County; Lihue Plantation Co., Ltd.; Grove Farm Co., Inc.; McBryde Sugar Co., Ltd.; Waiahole Water Co., Ltd.; East Maui Irrigation Co., Ltd.; B.P. Bishop Estate; Kohala Ditch Co., Ltd.; Hawaiian Irrigation Co., Ltd.; and Pioneer Mill Co., Ltd.

DEFINITION OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

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.

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

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Million gallons per day (mgd) is the rate of discharge of a stream measured in million gallons per day.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.

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, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

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.

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, a long reach of the channel, or an artificial structure.

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

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

DOWNSTREAM ORDER AND STATION NUMBERS

Stations are listed in the same downstream order used in the water-supply papers. Records are listed in a downstream direction along the main stem with all stations on a tributary entering above a main-stem station listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention shows which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. The numbers have been

assigned in the same downstream order used in the annual series of water-supply papers. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations, so that the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the 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 40-0958.00, includes the part number "40" plus a six-digit number. In this report, the nonessential zeros are not shown. For example, the complete number 40-0958.00 would appear as 40-0958, just to the left of the station name. Also, the records are listed in downstream order by islands.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. Records of stage are obtained from a water-stage recorder that gives either a continuous chart of the fluctuations or, for a digital recorder, a tape punched at 15-minute intervals. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge.

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, or computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and yearly mean discharge are computed. 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 in effect the shifting-control method.

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 the daily discharge. 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 station records from the same or nearby basins.

The data in this report generally comprise a description of the station and a table showing the daily discharge and monthly and yearly discharge of the stream. Records are published for the fiscal year which begins on July 1 and ends on June 30. A calendar for the 1966 fiscal year is shown on page II to facilitate finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Records available" are given periods for which there are published records for the present station or for stations generally equivalent to the present one. Under "Gage" are given the type of gage currently in use and the datum of the gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. The references to "datum of 1929" and adjustments of other years are to the datum and adjustments of the U.S. Coast and Geodetic Survey. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height or the maximum daily discharge, the minimum discharge if there is little or no regulation, and the minimum daily discharge if there is extensive regulation. In the first paragraph, the data given are for the complete current fiscal year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record is given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder or crest-stage indicator. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and to conditions which affect the natural flow at the gaging station is given under "Remarks."

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

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month for Guam and Okinawa and million gallons for Hawaii and Samoa. The line headed "Mean" gives the average flow in millions of gallons per day and cubic feet per second during the month. Discharge for the month is expressed in acre-feet (line headed "Ac-ft"). Maximum daily and minimum daily discharges for the month are listed in the last two lines.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights for most stations are listed below the table of daily and monthly discharge. 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 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 FIELD DATA AND COMPUTED RESULTS

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

the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and 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 are within 5 percent; "good," within 10 percent; and "fair," within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Discharge at some stations, as indicated by the monthly mean, may vary widely from natural runoff, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors.

OTHER DATA AVAILABLE

Data collected at partial-record stations and at miscellaneous sites are given at the end of this report. Data for 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 at miscellaneous sites are given in a third table. 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 is on file in the district office, such as discharge measurements and recorder charts or nonrecording-gage readings. Most gaging-station records in the State through fiscal year 1960 have been analyzed with an electronic computer to give: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

At or near some gaging stations, water-quality records also are collected. Data are obtained on the chemical quality of the stream water, on water temperature, on suspended-sediment concentration, and on the particle-size distribution of suspended sediment and bed material. These data are given in Part 2 of this report. Under the "Remarks" paragraph of the gaging-station description, reference is made to water-quality records collected on a regular basis.

ISLAND OF KAUAI

40-0100. Kawaikoi Stream near Waimea

Location.--Lat 22°08'09", long 159°37'22", on left bank at old trail crossing and 12.5 miles north of Waimea.

Drainage area.--4.1 sq mi, approximately.

Records available.--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 June 1966. 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, staff gage at site 300 ft downstream at different datum.

Average discharge.--50 years (1911-12, 1913-15, 1919-66), 22.2 mgd (34.3 cfs).

Extremes.--Maximum discharge during year, 1,180 mgd (1,830 cfs) Dec. 1 (gage height, 7.52 ft), from rating curve extended above 300 mgd as explained below; minimum, 1.4 mgd (2.2 cfs) May 29 to June 2, June 18.
1909-16, 1919-66: Maximum discharge, 6,900 mgd (10,700 cfs) Dec. 18, 1916 (gage height, 15.2 ft), from rating curve extended above 300 mgd on basis of slope-area measurements at gage heights 12.12 and 13.43 ft; minimum, 0.74 mgd (1.15 cfs) Sept. 21, 22, 1953.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.7	4.2	4.2	2.5	169	256	6.7	9.2	13	3.9	2.9	1.4
2	22	4.1	3.9	2.6	43	37	6.3	5.6	11	5.0	2.7	1.5
3	24	4.0	3.6	2.4	21	24	6.5	7.3	9.4	6.1	2.5	1.8
4	8.3	4.1	3.5	2.3	17	38	6.7	17	8.5	4.2	2.4	2.0
5	6.3	4.7	3.3	2.2	14	99	46	7.0	7.8	19	2.3	2.0
6	5.3	4.7	3.1	2.1	11	332	27	102	7.2	5.3	2.3	3.3
7	4.8	15	3.0	2.1	10	44	9.2	38	8.1	3.7	2.5	2.0
8	38	6.3	4.4	26	19	51	7.0	15	7.4	3.3	2.3	1.6
9	82	30	9.0	57	11	73	6.1	11	6.3	3.0	2.2	1.5
10	17	15	7.8	21	9.2	86	5.6	8.3	6.3	2.9	2.1	1.5
11	76	7.2	4.2	12	8.9	34	5.4	7.0	6.3	2.8	2.0	8.3
12	19	6.3	3.5	85	28	22	5.1	6.5	5.8	2.7	2.0	3.6
13	12	20	3.0	11	42	21	5.1	83	5.3	2.5	2.0	2.3
14	8.1	13	2.8	88	90	25	5.0	315	5.0	2.8	2.0	2.0
15	6.7	20	2.7	27	36	17	5.1	162	4.8	3.1	2.2	2.6
16	6.7	26	2.6	9.6	19	26	5.3	34	4.7	2.7	2.0	2.0
17	30	13	2.7	7.2	13	46	5.0	114	4.8	2.6	1.9	1.6
18	13	7.2	4.7	24	11	21	4.7	38	4.4	3.0	1.9	1.5
19	7.8	5.8	2.9	161	24	14	74	54	4.2	23	5.3	1.6
20	8.1	4.8	2.6	24	115	19	26	103	4.2	7.4	3.1	2.0
21	6.7	5.3	14	27	18	25	19	20	4.1	6.5	2.3	2.0
22	43	67	16	16	13	15	9.4	14	4.0	4.4	2.0	2.3
23	18	35	23	12	11	12	6.7	14	3.9	9.0	2.0	2.1
24	8.7	14	6.3	10	10	10	16	20	3.9	7.4	1.9	7.6
25	6.7	9.5	4.1	17	12	9.4	20	37	3.6	7.1	1.7	7.5
26	5.8	7.8	3.3	13	19	8.9	7.6	23	3.6	30	1.6	15
27	5.4	5.9	2.8	54	33	8.3	11	110	3.6	12	1.6	5.9
28	5.1	5.3	2.6	74	27	8.1	16	20	3.9	5.3	1.6	3.0
29	4.8	7.0	2.5	42	12	7.6	8.3	----------	3.5	3.7	1.5	3.6
30	4.5	5.3	2.4	134	9.4	7.4	5.9	----------	4.7	3.3	1.4	6.5
31	4.4	4.5	----------	64	----------	7.2	5.3	----------	5.0	----------	1.4	----------
Total	516.9	382.0	154.5	1032.0	875.5	1403.9	393.0	1394.9	178.3	197.7	67.6	101.6
Mean												
Mgd	16.7	12.3	5.15	33.3	29.2	45.3	12.7	49.8	5.75	6.59	2.18	3.39
Cfs	25.8	19.0	7.97	51.5	45.2	70.1	19.6	77.1	8.90	10.2	3.37	5.25
Ac-ft	1590	1170	474	3170	2690	4310	1210	4280	547	607	207	312
Max	82	67	23	161	169	332	74	315	13	30	5.3	15
Min	4.4	4.0	2.4	2.1	8.9	7.2	4.7	5.6	3.5	2.5	1.4	1.4

Calendar Year 1965:	Max	332	Min	2.1	Mean (mgd)	26.0	Mean (cfs)	40.2	Ac-ft	29,120
Fiscal Year 1965-66:	Max	332	Min	1.4	Mean (mgd)	18.4	Mean (cfs)	28.5	Ac-ft	20,560

Peak discharge (base, 1,300 mgd).--No peak above base.

40-0130. Mohihi Stream at altitude 3,420 ft, near Waimea

Location.--lat 22°07'13", long 159°36'14", on left bank at upper trail crossing, 3.8 miles northeast of confluence with Waiahulu and Poomau Streams, and 12 miles northeast of Waimea.

Drainage area.--1.6 sq mi, approximately.

Records available.--June 1920 to October 1926, October 1936 to June 1966. Published as "at altitude 3,500 ft, near Waimea" prior to July 1947 and July 1952 to June 1960, and as "near Waimea" July 1947 to June 1952.

Gage.--Water-stage recorder. Altitude of gage is 3,420 ft (from topographic map).

Average discharge.--35 years (1920-26, 1937-66), 5.34 mgd (8.26 cfs).

Extremes.--Maximum discharge during year, 441 mgd (682 cfs) Nov. 20 (gage height, 4.97 ft), from rating curve extended above 110 mgd; minimum, 0.14 mgd (0.22 cfs) June 18.

1920-26, 1936-66: Maximum discharge, 1,250 mgd (1,930 cfs) Aug. 15, 1950 (gage height, 7.23 ft), from rating curve extended above 50 mgd; minimum, 0.08 mgd (0.12 cfs) Sept. 21, 1953.

Remarks.--Records fair except those for period of doubtful gage-height record, which are poor. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	1.4	1.3	0.52	35	27	1.2	1.2	4.3	0.85	0.60	0.22
2	1.6	1.4	1.2	.63	13	12	1.2	1.1	3.2	.88	.55	.22
3	4.0	1.4	1.1	.57	5.4	6.8	1.2	1.2	2.8	1.1	.52	.29
4	2.1	1.4	1.1	.49	4.0	7.9	1.1	2.2	2.4	.96	.47	.35
5	1.5	1.6	1.1	.47	3.2	14	1.2	1.6	2.2	1.6	.45	.29
6	1.2	1.6	1.1	.45	2.8	57	5.0	38	2.1	1.4	.43	.23
7	1.1	1.8	1.0	.45	2.6	17	2.5	21	2.5	1.0	.41	.22
8	2.4	2.0	1.2	.52	6.8	11	1.6	6.0	2.3	.81	.39	.18
9	19	2.5	1.7	7.5	3.5	13	1.3	4.3	2.0	.74	.37	.16
10	4.5	4.4	2.7	4.0	2.6	17	1.2	2.9	1.6	.66	.37	.16
11	32	2.8	1.6	1.9	2.6	11	1.1	2.3	1.6	.63	.37	.28
12	6.5	2.4	1.3	21	7.7	5.5	1.1	2.0	1.4	.63	.37	.69
13	3.9	1.8	1.1	4.0	12	4.7	1.1	4.4	1.4	.57	.35	.39
14	2.4	1.5	1.0	21	36	5.9	1.0	39	1.3	.55	.35	.26
15	1.8	1.4	1.0	9.4	13	4.7	1.0	33	1.2	.57	.33	.23
16	1.6	3.5	.96	3.2	6.9	3.8	1.1	9.2	1.2	.55	.33	.37
17	3.1	4.2	.96	2.2	5.0	9.6	1.0	18	1.1	.52	.31	.15
18	3.0	3.5	.96	2.8	4.1	5.4	.92	11	1.1	.52	.35	.14
19	2.0	2.2	.96	24	11	3.3	4.2	7.2	1.0	.74	.81	.15
20	1.6	1.6	.96	6.6	57	2.9	6.8	20	1.0	1.2	.66	.19
21	1.4	1.5	5.2	4.7	7.7	4.9	5.0	5.9	1.0	1.1	.45	.22
22	8.6	9.7	4.2	3.6	4.0	3.8	2.5	3.8	1.0	1.0	.41	.19
23	6.9	9.8	3.5	2.6	2.8	2.8	1.6	3.3	.96	.85	.41	.21
24	3.6	4.7	1.8	2.1	2.5	2.3	1.8	5.9	.92	.81	.37	.60
25	2.6	3.2	1.2	2.1	2.5	2.1	3.6	8.6	.88	.77	.31	.85
26	2.1	2.7	.88	2.3	2.9	2.0	2.0	7.5	.85	2.6	.29	3.0
27	1.9	2.1	.71	5.5	6.2	1.7	1.6	32	.85	2.0	.25	2.0
28	1.8	1.8	.66	14	6.3	1.6	2.9	7.7	.81	1.2	.23	.85
29	1.6	1.6	.57	8.3	3.2	1.5	2.1	----------	.81	.88	.23	1.1
30	1.6	1.6	.55	26	2.5	1.4	1.4	----------	.85	.71	.22	1.6
31	1.6	1.4	----------	14	----------	1.4	1.2	----------	.96	----------	.22	----------
Total	130.4	84.5	43.57	196.90	274.8	265.0	62.52	300.3	47.59	28.40	12.18	15.79
Mean												
Mgd	4.21	2.73	1.45	6.35	9.16	8.55	2.02	10.7	1.54	0.947	0.393	0.526
Cfs	6.51	4.22	2.24	9.82	14.2	13.2	3.13	16.6	2.38	1.47	0.608	0.814
Ac-ft	400	259	134	604	843	813	192	922	146	87	37	48
Max	32	9.8	5.2	26	57	57	6.8	39	4.3	2.6	0.81	3.0
Min	1.1	1.4	0.55	0.45	2.5	1.4	0.92	1.1	0.81	0.52	0.22	0.14

Calendar Year 1965:	Max	91	Min	0.45	Mean (mgd)	6.32	Mean (cfs)	9.78	Ac-ft	7070
Fiscal Year 1965-66:	Max	57	Min	0.14	Mean (mgd)	4.01	Mean (cfs)	6.20	Ac-ft	4490

Note.--Doubtful gage-height record Nov. 21 to Jan. 24.

Peak discharge (base, 240 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1200	4.79	388	600	2-6	1930	4.34	276	427
11-20	0600	4.97	441	682					

40-0140. Kokee ditch near Waimea

Location.--Lat 22°06'25", long 159°40'45", on left bank 1,000 ft west of road and 10.5 miles north of Waimea.

Records available.--September 1926 to June 1966.

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.--39 years (1927-66), 15.8 mgd (24.4 cfs).

Extremes.--1926-66: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

Remarks.--Records good. Kokee ditch diverts water at altitude 3,400 ft from all streams tributary to Waimea River west of Mohihi Stream for irrigation near Kekaha.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	6.9	6.7	0.36	5.4	40	7.6	15	7.2	8.9	6.0	3.1
2	24	6.7	6.4	0	10	41	7.2	10	4.0	9.3	5.7	3.1
3	31	6.5	6.0	2.9	19	30	7.0	11	16	11	5.4	3.3
4	14	6.5	5.9	4.0	23	20	7.0	25	14	8.9	5.2	3.5
5	11	6.9	5.9	3.8	13	21	12	13	19	23	4.9	3.3
6	9.7	6.9	5.7	3.6	4.5	25	20	43	18	11	5.1	4.9
7	8.9	16	5.4	3.6	7.9	21	16	47	20	8.5	5.1	3.6
8	26	9.9	6.5	11	10	20	13	26	18	7.6	4.8	3.2
9	44	23	12	17	5.2	21	12	20	16	7.0	4.6	3.0
10	24	21	12	25	5.6	19	12	16	16	6.9	4.5	3.0
11	31	11	7.4	11	6.4	14	11	14	16	6.7	4.5	8.8
12	26	9.3	6.0	42	7.4	21	11	13	15	6.5	4.3	6.0
13	19	15	5.2	18	6.2	33	11	25	14	6.2	4.3	4.3
14	13	16	4.9	10	6.2	25	10	42	13	6.4	4.3	3.8
15	11	17	4.8	.08	6.4	4.6	10	25	13	6.7	4.5	3.9
16	9.9	27	2.3	1.9	5.6	4.6	11	14	12	6.2	4.3	3.6
17	31	20	0	2.4	3.5	7.2	9.9	16	12	5.9	4.0	3.1
18	18	11	0	10	3.4	16	9.5	16	12	6.2	4.2	2.9
19	12	8.5	0	12	6.9	20	19	16	11	24	7.7	2.9
20	11	7.4	0	.72	9.9	20	32	20	11	14	5.9	3.2
21	9.5	7.4	1.2	.84	8.5	20	26	7.9	11	11	4.6	3.2
22	29	34	0	1.1	13	11	16	2.4	10	8.7	4.2	3.3
23	26	39	.34	0	17	3.6	12	11	9.9	13	4.2	3.3
24	13	20	.35	2.0	16	3.1	14	31	9.7	11	3.9	8.6
25	11	13	0	10	17	3.1	28	42	9.3	10	3.8	8.4
26	9.3	12	0	5.3	23	6.1	13	36	8.9	34	3.5	15
27	8.7	9.7	0	13	34	10	15	37	8.9	17	3.3	9.3
28	8.1	8.1	0	20	34	8.7	23	15	9.3	9.7	3.3	5.1
29	7.7	9.5	0	9.2	18	8.3	14	----------	8.7	7.4	3.2	4.9
30	7.4	7.9	0	2.9	15	8.7	11	----------	11	6.5	3.2	8.5
31	7.0	7.0	----------	1.4	----------	8.1	9.9	----------	11	----------	3.1	----------
Total	523.2	420.1	104.99	245.10	361.0	514.1	430.1	609.3	384.9	319.2	139.6	146.1
Mean												
Mgd	16.9	13.6	3.50	7.91	12.0	16.6	13.9	21.8	12.4	10.6	4.50	4.87
Cfs	26.1	21.0	5.42	12.2	18.6	25.7	21.5	33.7	19.2	16.4	6.96	7.54
Ac-ft	1610	1290	322	752	1110	1580	1320	1870	1180	980	428	448
Max	44	39	12	42	34	41	32	47	20	34	7.7	15
Min	7.0	6.5	0	0	3.4	3.1	7.0	2.4	4.0	5.9	3.1	2.9

Calendar Year 1965:	Max	52	Min	0	Mean (mgd)	16.4	Mean (cfs)	25.4	Ac-ft	18380
Fiscal Year 1965-66:	Max	47	Min	0	Mean (mgd)	11.5	Mean (cfs)	17.8	Ac-ft	12880

40-0160. Waimea River at altitude 840 ft, near Waimea

Location.--Lat 22°04'55", long 159°39'15", on right bank in Waimea Canyon, 0.5 mile upstream from Koaie Stream, and 8.8 miles north of Waimea.

Drainage area.--20.0 sq mi.

Records available.--February to October 1916, October 1917 to June 1918, May 1925 to January 1949, September 1949 to July 1950, February 1951 to June 1966. Published as Waiahulu Stream near Waimea prior to July 1952 and as "at altitude 890 ft, near Waimea" July 1952 to June 1960.

Gage.--Water-stage recorder. Altitude of gage is 840 ft (from topographic map). Prior to May 25, 1925, at datum 1.55 ft lower.

Average discharge.--38 years (1925-48, 1951-66), 33.2 mgd (51.4 cfs).

Extremes.--Maximum discharge during year, 1,280 mgd (1,980 cfs) Dec. 1 (gage height, 6.30 ft), from rating curve extended above 130 mgd on basis of slope-area measurement at gage height 11.45 ft; minimum, 11 mgd (17 cfs) on many days.
1916-18, 1925-66: Maximum discharge, 18,100 mgd (28,000 cfs) Aug. 17, 1950 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 320 mgd; minimum, 5.2 mgd (8.0 cfs) Nov. 4, 1927.

Remarks.--Records fair. Kokee ditch (see sta. no. 140) diverts above station for irrigation near Kekaha.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13	12	12	11	221	448	15	12	26	12	11	11
2	13	12	12	11	66	74	14	12	21	12	11	11
3	20	12	12	11	26	28	14	13	18	12	11	12
4	15	12	12	11	21	27	14	16	16	12	11	12
5	13	12	12	11	17	58	33	14	15	13	11	12
6	13	12	12	11	16	559	63	151	15	13	11	12
7	13	13	12	11	15	95	19	135	18	12	11	12
8	16	13	13	13	33	57	15	38	16	12	11	12
9	91	17	14	46	22	77	14	28	15	12	11	12
10	21	17	14	19	17	101	14	20	14	12	11	12
11	111	14	13	15	17	54	13	17	13	12	11	12
12	25	13	13	107	35	27	13	15	13	12	11	12
13	16	14	12	20	69	26	13	57	13	12	11	12
14	14	15	12	210	142	31	13	323	12	12	11	12
15	13	13	12	70	80	26	13	233	12	12	11	11
16	12	21	12	23	34	24	13	43	12	12	11	11
17	14	22	14	16	22	81	13	101	12	12	12	11
18	15	15	18	14	18	41	12	48	12	12	12	11
19	13	14	16	186	36	26	57	30	12	17	12	11
20	13	13	16	49	258	22	36	125	12	14	13	11
21	13	12	45	28	50	40	24	26	12	12	12	11
22	27	50	34	23	28	26	16	25	12	12	12	11
23	27	34	22	18	22	21	13	32	12	12	12	11
24	15	20	16	16	20	18	13	20	12	12	12	11
25	13	14	13	15	17	17	22	27	12	12	12	12
26	13	13	12	16	17	17	14	31	12	13	12	13
27	12	13	11	26	23	16	13	259	12	15	12	15
28	12	12	11	88	27	16	13	51	12	13	12	12
29	12	12	11	43	18	15	14	----------	12	12	12	11
30	12	12	11	158	16	15	13	----------	12	11	12	12
31	12	12	----------	62	----------	15	12	----------	12	----------	12	----------
Total	642	490	449	1358	1403	2098	578	1902	429	373	357	351
Mean												
Mgd	20.7	15.8	15.0	43.8	46.8	67.7	18.6	67.9	13.8	12.4	11.5	11.7
Cfs	32.0	24.4	23.2	67.8	72.4	105	28.8	105	21.4	19.2	17.8	18.1
Ac-ft	1970	1490	1380	4170	4310	6440	1770	5840	1320	1140	1100	1080
Max	111	50	45	210	258	559	63	323	26	17	13	15
Min	12	12	11	11	15	15	12	12	12	11	11	11

Calendar Year 1965:	Max	720	Min	11	Mean (mgd)	43.6	Mean (cfs)	67.5	Ac-ft	48870
Fiscal Year 1965-66:	Max	559	Min	11	Mean (mgd)	28.6	Mean (cfs)	44.3	Ac-ft	32010

Peak discharge (base, 1,400 mgd).--No peak above base.

40-0170. Koaie Stream at altitude 3,770 ft, near Waimea

Location.--Lat 22°06'57", long 159°33'53", on left bank 3 miles upstream from Left Branch, 6.5 miles east of Kokee ranger station, and 12.7 miles northeast of Waimea.

Drainage area.--3.33 sq mi.

Records available.--July 1919 to July 1932, June 1954 to June 1966. Prior to July 1960, published as "at altitude 3,700 ft, near Waimea."

Gage.--Water-stage recorder. Altitude of gage is 3,770 ft (from topographic map).

Average discharge.--25 years, 17.7 mgd (27.4 cfs).

Extremes.--Maximum discharge during year, 2,570 mgd (3,980 cfs) July 11 (gage height, 4.56 ft), from rating curve extended above 700 mgd; minimum, 0.66 mgd (1.0 cfs) May 16, 17.
1919-32, 1954-66: Maximum discharge, 4,210 mgd (6,510 cfs) Oct. 23, 1956 (gage height, 5.88 ft), from rating curve extended above 350 mgd; minimum, 0.6 mgd (0.9 cfs) May 21, 22, 1929.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	1.9	2.1	2.0	90	81	3.2	2.1	5.5	1.0	1.3	0.92
2	9.5	1.8	1.9	2.1	28	22	3.6	1.9	4.0	2.1	1.4	1.1
3	20	1.8	1.9	2.0	8.9	16	4.0	2.3	3.0	1.9	6.1	5.9
4	5.1	2.1	1.9	1.6	8.9	24	4.5	6.8	2.6	1.9	3.7	4.0
5	3.3	2.1	1.8	1.3	7.3	59	3.4	3.7	2.1	4.7	1.9	2.6
6	2.3	2.3	1.6	1.3	6.8	210	7.0	168	1.9	2.8	1.4	2.1
7	2.1	5.9	1.4	1.1	8.4	24	5.0	42	3.0	1.6	1.3	1.6
8	24	5.5	2.6	1.9	32	27	4.0	7.8	2.3	1.3	1.0	1.1
9	78	6.4	19	16	7.3	49	3.5	6.4	1.9	1.0	1.0	1.0
10	8.9	18	8.4	12	4.7	85	3.0	4.0	1.9	.92	.92	1.4
11	211	11	3.7	5.9	4.7	20	2.8	3.0	1.8	.83	.92	36
12	19	6.4	2.6	52	35	8.4	2.6	2.3	1.6	.74	.92	55
13	12	3.7	2.1	9.5	72	7.3	2.5	17	1.4	.74	.83	2.8
14	5.5	2.8	1.8	84	127	21	3.0	153	1.4	.74	.83	2.3
15	4.0	2.8	1.6	21	54	19	5.0	83	1.3	.74	.83	2.1
16	3.3	5.1	1.6	6.4	18	24	5.6	16	1.3	.74	.74	1.8
17	12	5.5	1.8	16	7.8	36	4.0	40	1.3	.74	.74	1.3
18	11	3.3	2.1	16	5.5	11	3.0	24	1.1	.83	1.1	1.0
19	5.5	2.6	1.8	43	53	6.4	20	13	1.1	1.8	1.8	1.9
20	4.0	2.1	1.8	15	366	16	15	43	1.3	1.4	1.3	3.3
21	5.5	2.8	31	12	13	38	16	8.9	2.1	1.8	1.1	4.0
22	131	26	10	7.3	6.8	16	10	5.1	1.8	1.4	1.3	7.3
23	16	28	7.0	5.5	5.1	6.8	7.0	5.9	1.3	1.4	2.8	12
24	7.3	11	5.0	4.0	7.3	5.1	5.0	10	1.0	1.3	2.1	15
25	4.7	5.9	3.5	4.7	16	4.4	7.8	25	.92	1.3	1.3	18
26	3.7	5.1	3.0	4.4	27	4.4	6.4	16	.83	4.0	1.0	49
27	3.0	6.4	2.5	31	31	4.4	3.7	76	.83	4.4	.92	8.9
28	2.6	4.0	2.2	40	19	3.3	6.8	11	.83	2.3	.83	4.7
29	2.3	3.3	2.1	26	6.4	3.0	4.7	---	.83	1.6	.83	16
30	2.1	3.0	1.9	62	4.7	3.0	3.0	---	1.0	1.3	.83	8.9
31	1.9	2.6	---	26	---	3.3	2.3	---	1.3	---	.83	---
Total	623.9	191.2	131.7	533.0	1081.6	857.8	177.4	797.2	54.54	49.32	43.87	273.02
Mean												
Mgd	20.1	6.17	4.39	17.2	36.1	27.7	5.72	28.5	1.76	1.64	1.42	9.10
Cfs	31.1	9.55	6.79	26.6	55.9	42.9	8.85	44.1	2.72	2.54	2.20	14.1
Ac-ft	1910	587	404	1640	3320	2630	544	2450	167	151	135	838
Max	211	28	31	84	366	210	20	168	5.5	4.7	6.1	55
Min	1.9	1.8	1.4	1.1	4.7	3.0	2.3	1.9	0.83	0.74	0.74	0.92

Calendar Year 1965:	Max	388	Min	1.1	Mean (mgd)	20.1	Mean (cfs)	31.1	Ac-ft	22450
Fiscal Year 1965-66:	Max	366	Min	0.74	Mean (mgd)	13.2	Mean (cfs)	20.4	Ac-ft	14.780

Peak discharge (base, 900 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1200	4.56	2,570	3,980	2-6	2030	3.03	1,140	1,760
11-20	0500	4.48	2,480	3,840					

40-0190. 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 and 10.6 miles northeast of Waimea.

Drainage area.--2.5 sq mi, approximately.

Records available.--January 1920 to July 1932, June 1952 to June 1966. 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.--26 years, 13.9 mgd (21.5 cfs).

Extremes.--Maximum discharge during year, 1,810 mgd (2,800 cfs) Nov. 20 (gage height, 6.60 ft), from rating curve extended above 720 mgd as explained below; minimum, 0.64 mgd (0.99 cfs) May 17, 18, May 30 to June 2.

1920-32, 1952-66: Maximum discharge, 2,930 mgd (4,530 cfs) Jan. 16, 1921 (gage height, 8.44 ft), from rating curve extended above 720 mgd on basis of slope-area measurement at gage height 4.60 ft; minimum, that of May 17, 18, May 30 to June 2, 1966.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.7	1.7	1.7	1.5	50	30	2.3	1.3	5.2	1.2	1.5	0.64
2	9.0	1.6	1.5	1.6	13	11	2.4	1.2	4.1	1.5	1.9	.96
3	15	1.6	1.5	1.4	6.5	7.7	2.7	1.8	3.4	1.5	3.2	2.8
4	4.1	1.6	1.5	1.3	5.5	8.5	2.8	4.7	2.8	1.4	2.4	2.3
5	2.7	1.7	1.4	1.2	5.0	19	3.0	2.4	2.7	1.9	1.6	1.5
6	2.2	1.6	1.4	1.2	4.3	119	4.3	113	2.6	1.9	1.3	1.2
7	2.0	2.8	1.3	1.2	6.0	15	2.8	31	4.0	1.5	1.0	1.0
8	19	2.3	2.2	1.3	33	16	2.2	6.5	3.0	1.3	.96	.82
9	59	3.0	2.6	3.8	6.3	36	1.7	5.2	2.6	1.1	.89	.76
10	6.3	7.7	3.2	4.1	4.3	60	1.6	3.8	2.4	1.0	.89	1.0
11	180	5.5	2.0	4.1	4.7	14	1.5	3.0	2.2	1.0	.96	18
12	13	3.6	1.7	31	24	6.0	1.4	2.4	2.0	1.0	.82	3.4
13	7.0	2.3	1.5	7.0	42	5.5	1.3	7.4	1.9	.96	.82	1.9
14	4.3	1.9	1.3	70	80	15	1.3	74	1.8	.96	.76	1.4
15	3.4	1.9	1.2	18	31	11	2.4	57	1.8	.96	.70	1.3
16	3.2	3.9	1.2	5.2	9.4	22	2.8	9.8	1.8	.96	.70	1.1
17	5.7	2.8	1.3	12	6.3	24	1.9	17	1.7	.96	.64	.89
18	5.5	2.0	1.4	7.3	4.7	7.0	1.5	11	1.7	.96	.82	.89
19	3.4	1.7	1.2	16	40	4.7	12	6.3	1.7	1.1	1.3	1.5
20	2.7	1.6	2.8	22	258	12	6.8	11	1.7	1.1	.96	1.6
21	2.7	1.9	58	8.1	8.1	18	7.3	5.7	1.9	1.2	.82	2.4
22	100	16	8.9	5.2	5.2	9.4	4.7	4.1	1.9	1.1	1.5	4.1
23	8.1	16	5.7	4.1	4.1	5.2	2.6	4.5	1.7	1.1	2.4	5.4
24	4.7	6.3	3.6	3.4	4.7	4.1	2.2	5.7	1.6	1.0	1.6	7.6
25	3.4	3.4	2.4	3.2	9.4	3.6	2.8	11	1.5	1.0	1.1	14
26	2.7	4.3	2.0	2.8	14	3.8	2.2	8.6	1.5	1.3	.96	30
27	2.4	5.5	1.8	14	18	3.4	1.8	71	1.3	1.6	.82	5.0
28	2.2	3.0	1.6	16	10	2.9	2.2	8.1	1.2	1.4	.70	2.8
29	1.9	2.4	1.5	13	4.5	2.6	1.9	----------	1.2	1.1	.70	7.7
30	1.8	2.2	1.4	31	3.6	2.4	1.6	----------	1.3	1.0	.64	4.7
31	1.8	1.9	----------	11	----------	2.3	1.4	----------	1.4	----------	.64	----------
Total	481.9	115.7	120.8	323.0	715.6	501.1	89.4	488.5	67.6	36.06	36.00	128.66
Mean												
Mgd	15.5	3.73	4.03	10.4	23.9	16.2	2.88	17.4	2.18	1.20	1.16	4.29
Cfs	24.0	5.77	6.24	16.1	37.0	25.1	4.46	26.9	3.37	1.86	1.79	6.64
Ac-ft	1480	355	371	991	2200	1540	274	1500	207	111	110	395
Max	180	16	58	70	258	119	12	113	5.2	1.9	3.2	30
Min	1.8	1.6	1.2	1.2	3.6	2.3	1.3	1.2	1.2	0.96	0.64	0.64

Calendar Year 1965:	Max	258	Min	1.2	Mean (mgd)	14.5	Mean (cfs)	22.4	Ac-ft	16230
Fiscal Year 1965-66:	Max	258	Min	0.64	Mean (mgd)	8.50	Mean (cfs)	13.2	Ac-ft	9530

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
7-11	1030	6.17	1,580	2,440	11-20	0400	6.60	1,810	2,800

40-0220. Kekaha ditch at Camp 1, near Waimea

Location.--Lat 22°02'35", long 159°38'30", on right bank 0.2 mile downstream from lower intake and 6.2 miles northeast of Waimea.

Records available.--May 1908 to February 1909, April, June, September, November 1909, January 1910 to June 1915, March 1916 to August 1917, October 1917 to June 1966. Prior to January 1910 and August 1932 to June 1933 monthly discharge only, published in WSP 1319; figures of daily discharge for latter period published in WSP 755 are unreliable. Published as "at intake, near Waimea" January 1910 to December 1911 and as "at Flume No. 4, near Waimea" March 1916 to June 1917.

Gage.--Water-stage recorder. Altitude of gage is 520 ft (by barometer). Prior to July 12, 1921, staff gage at several sites within 1 mile of present site at various datums.

Average discharge.--53 years (1910-15, 1916-17, 1918-24, 1925-66), 36.4 mgd (56.3 cfs).

Extremes.--1908-66: Maximum daily discharge, 67 mgd (104 cfs) Jan. 6, Mar. 3, 6, 7, 17, 18, 24-26, 29-31, 1921; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts from Waimea River 1 mile downstream from Waialae Stream for irrigation in vicinity of Kekaha.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	43	36	34	33	30	33	32	35	33	30	30	25
2	43	36	33	35	40	32	32	34	33	32	32	25
3	43	35	32	33	40	32	33	36	33	33	30	27
4	33	35	33	32	50	33	33	45	33	33	38	33
5	34	36	33	30	40	33	38	37	33	35	31	29
6	40	36	33	30	30	33	47	34	34	37	30	27
7	38	36	30	30	30	32	41	39	34	34	28	27
8	39	38	30	30	30	33	33	29	33	32	28	26
9	41	38	48	35	30	33	34	29	33	31	27	25
10	26	50	42	35	33	32	39	33	37	30	28	25
11	34	49	35	45	32	32	37	33	36	30	28	32
12	49	47	34	40	33	32	37	33	33	28	28	41
13	47	38	32	30	32	32	36	33	34	29	27	31
14	49	38	31	30	32	33	35	33	38	29	27	28
15	46	37	30	30	32	33	33	33	37	29	27	27
16	40	42	30	30	32	33	35	33	37	29	27	27
17	33	49	30	30	33	33	39	33	36	29	26	26
18	37	43	30	30	32	33	36	33	36	29	27	25
19	48	38	30	30	32	28	40	33	35	32	29	25
20	44	35	35	30	32	6.6	51	34	35	34	29	27
21	43	34	50	30	32	19	48	33	36	32	28	28
22	50	39	40	31	33	32	42	33	36	31	27	32
23	46	49	30	31	33	32	42	33	35	30	29	37
24	36	49	30	31	32	32	40	33	35	30	30	44
25	39	47	30	31	32	32	49	33	34	30	28	42
26	43	42	30	31	32	32	46	33	33	30	27	47
27	41	43	30	32	33	32	39	32	33	39	26	45
28	40	36	30	30	33	32	41	33	33	33	26	36
29	38	37	30	30	32	32	42	----------	32	31	26	41
30	37	36	31	30	33	32	38	----------	32	29	26	45
31	37	35	---------	30	----------	32	36	----------	33	---------	25	----------
Total	1,257	1,239	996	985	1,000	960.6	1,204	945	1,065	940	875	955
Mean												
Mgd	40.5	40.0	33.2	31.8	33.3	31.0	38.8	33.8	34.4	31.3	28.2	31.8
Cfs	62.7	61.9	51.4	49.2	51.5	48.0	60.0	52.3	53.2	48.4	43.6	49.2
Ac-ft	3,860	3,800	3,060	3,020	3,070	2,950	3,690	2,900	3,270	2,880	2,690	2,930
Max	50	50	50	45	50	33	51	45	38	39	38	47
Min	26	34	30	30	30	6.6	32	29	32	28	25	25

Calendar Year 1965:	Max	51	Min	0.01	Mean (mgd)	33.3	Mean (cfs)	51.5	Ac-ft	37,340
Fiscal Year 1965-66:	Max	51	Min	6.6	Mean (mgd)	34.0	Mean (cfs)	52.6	Ac-ft	38,120

Note.--No gage-height record Sept. 7 to Oct. 21.

40-0291. Waimea ditch below wasteway, near Waimea

Location.--lat 21°59'10", long 159°39'59", on left bank at tunnel No. 4 outlet and below wasteway, 1.3 miles downstream from intake, and 2 miles north of Waimea.

Records available.--February 1960 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 131.2 ft above mean sea level (by stadia survey).

Average discharge.--6 years, 2.93 mgd (4.53 cfs).

Extremes.--1960-66: Maximum daily discharge, 8.9 mgd (14 cfs) Mar. 11, 12, 1965; no flow at times.

Remarks.--Records fair. Ditch diverts from Waimea River for irrigation of sugarcane in vicinity of Waimea.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.9	4.2	3.5	0.53	3.4	5.4	2.9	3.4	3.4	3.2	1.9	1.8
2	3.5	4.1	3.5	2.0	5.0	7.5	2.9	3.2	4.8	3.0	2.1	1.7
3	6.6	4.1	3.3	2.0	4.9	4.9	2.9	3.1	7.4	3.0	2.0	1.7
4	6.7	4.1	3.3	3.2	4.9	.83	3.0	5.1	4.4	3.1	2.5	2.4
5	1.1	4.1	3.4	3.2	4.0	.93	3.1	6.0	1.9	2.9	2.3	2.2
6	2.4	4.1	3.3	3.2	2.4	5.4	5.8	4.2	1.8	3.2	2.0	1.9
7	3.1	4.1	3.3	3.0	5.4	7.2	6.0	1.5	1.9	3.0	1.8	1.8
8	3.7	5.2	3.4	3.2	.24	7.0	5.6	1.5	2.5	2.7	1.8	1.7
9	8.3	4.9	4.6	5.9	5.2	7.0	4.8	.78	5.3	2.5	1.9	1.7
10	6.7	6.5	7.0	6.6	2.4	7.0	4.1	.29	6.6	2.4	1.9	1.6
11	4.3	7.4	3.3	5.2	5.2	4.6	3.7	.73	5.9	2.5	2.0	3.4
12	3.6	5.9	.83	2.7	3.2	1.3	3.6	1.3	4.0	2.8	2.0	5.9
13	7.3	4.3	2.3	.93	.39	1.3	3.4	1.5	2.5	2.8	2.0	2.7
14	8.2	5.5	3.0	.78	.35	1.4	3.6	1.5	3.6	2.5	1.9	2.2
15	6.6	4.3	2.8	.50	.35	1.2	4.5	1.5	4.3	2.5	1.8	2.0
16	5.5	4.8	2.7	.39	.35	1.2	5.5	1.4	4.1	2.4	1.8	2.1
17	6.9	8.1	3.0	.32	.35	1.3	5.4	1.3	3.9	2.4	1.8	1.9
18	7.2	6.2	3.3	.53	.32	1.3	4.6	1.6	3.7	2.3	1.8	1.7
19	6.6	4.3	3.8	.57	.35	1.2	2.0	2.2	3.7	2.3	2.1	1.7
20	5.5	3.7	3.6	.61	.57	1.2	4.9	2.2	3.6	3.5	2.2	1.8
21	5.0	3.6	2.4	.53	.57	1.3	7.7	2.1	3.7	2.4	1.9	1.9
22	6.8	4.9	.83	.46	.39	1.2	5.5	2.7	3.9	2.2	1.9	2.0
23	6.1	8.6	.24	.46	.29	1.1	1.7	3.2	3.6	2.2	2.1	2.3
24	3.4	8.6	.05	1.5	.27	1.0	2.9	5.8	3.4	2.1	2.2	4.1
25	3.7	7.0	.54	5.6	.18	.93	5.7	7.5	3.2	2.2	1.9	3.7
26	6.0	5.1	.53	5.8	1.0	1.0	5.9	4.1	3.1	2.2	1.8	2.8
27	5.1	5.2	.61	5.5	1.5	2.4	4.1	1.4	2.9	2.8	1.7	5.1
28	4.7	2.8	.78	5.1	1.4	3.2	3.7	2.6	2.8	2.5	1.7	3.2
29	4.3	.52	.57	5.0	2.0	3.0	4.6	----------	2.8	2.1	1.8	2.7
30	4.2	2.7	.43	1.7	2.7	3.0	4.0	----------	2.7	2.0	1.8	5.4
31	4.2	3.4	----------	.21	----------	3.0	3.5	----------	2.6	----------	1.7	----------
Total	161.2	152.32	74.21	77.22	59.57	90.29	131.6	73.70	114.0	77.7	60.1	77.1
Mean												
Mgd	5.20	4.91	2.47	2.49	1.99	2.91	4.25	2.63	3.68	2.59	1.94	2.57
Cfs	8.05	7.60	3.82	3.85	3.08	4.50	6.58	4.07	5.69	4.01	3.00	3.98
Ac-ft	495	467	228	237	183	277	404	226	350	238	184	237
Max	8.3	8.6	7.0	6.6	5.4	7.5	7.7	7.5	7.4	3.5	2.5	5.9
Min	1.1	0.52	0.05	0.21	0.18	0.83	1.7	0.29	1.8	2.0	1.7	1.6

Calendar Year 1965:	Max	8.9	Min	0	Mean (mgd)	2.93	Mean (cfs)	4.53	Ac-ft	3,280
Fiscal Year 1965-66:	Max	8.6	Min	0.05	Mean (mgd)	3.15	Mean (cfs)	4.87	Ac-ft	3,530

40-0310. 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.

Records available.--July 1910 to June 1918, July to October 1919, November 1943 to June 1966.

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

Average discharge.--29 years (1911-18, 1944-66), 87.0 mgd (135 cfs).

Extremes.--Maximum discharge during year, 5,820 mgd (9,000 cfs) Nov. 20 (gage height, 10.66 ft); minimum, 0.13 mgd (0.20 cfs) Sept. 13.

1910-19, 1943-66: Maximum discharge, 24,000 mgd (37,100 cfs) Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 3,400 mgd on basis of slope-area measurements at gage heights 10.28 and 18.7 ft; practically no flow occasionally owing to upstream diversions.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.2	1.9	1.0	4.8	361	657	19	2.7	59	1.2	0.80	0.36
2	4.0	1.8	1.1	9.4	144	208	18	2.6	35	1.7	.69	.36
3	44	1.8	1.0	4.8	51	95	17	3.0	21	1.2	.63	.37
4	34	1.7	1.0	1.9	27	81	19	6.7	17	1.2	.64	.85
5	20	1.7	1.0	1.7	19	142	23	9.4	16	.84	.60	.70
6	8.4	1.7	1.1	1.7	27	1.090	75	485	13	1.1	.48	.36
7	3.8	1.7	1.0	1.7	20	274	18	509	23	.97	.48	.39
8	11	2.7	.95	1.2	114	142	13	43	28	1.4	.65	.40
9	223	2.7	2.7	29	59	202	10	73	13	1.8	.47	.39
10	68	5.8	15	34	35	237	5.7	46	6.2	2.0	.46	.40
11	524	12	9.1	8.1	31	157	4.4	34	3.8	1.1	.55	16
12	100	2.8	4.9	175	82	66	3.8	24	6.7	.96	.56	5.6
13	40	1.7	1.5	50	188	64	3.0	31	6.9	1.1	.57	.34
14	20	2.2	.73	614	370	80	3.0	459	3.4	.58	.80	.33
15	10	2.1	.70	215	258	89	4.4	496	1.3	.58	.65	.42
16	4.8	2.9	.90	70	105	58	7.8	122	.95	.85	.65	.45
17	12	20	1.1	51	60	160	5.7	128	1.2	.90	.60	.45
18	30	4.0	1.8	45	44	100	4.0	113	1.8	.95	.58	.42
19	10	1.8	2.4	241	127	62	22	54	1.7	.95	.70	.42
20	4.0	1.4	1.6	125	1.290	64	90	149	1.6	1.4	.80	.45
21	3.0	1.2	185	84	217	129	32	65	1.6	.65	.75	.50
22	198	26	123	54	120	73	27	33	1.6	.60	.75	.58
23	87	68	63	36	89	50	13	43	1.5	.70	.90	.80
24	22	33	36	27	77	38	4.4	32	1.5	.85	.69	3.8
25	8.0	5.3	21	15	78	31	5.0	41	1.4	.85	.51	1.7
26	4.0	1.8	14	16	98	27	4.8	66	1.4	.95	.48	32
27	3.0	1.5	10	27	109	26	3.4	467	1.5	1.4	.45	30
28	2.0	6.2	8.5	168	118	22	2.8	124	1.5	.78	.65	.97
29	2.0	5.3	7.4	86	66	20	3.4	---------	1.5	.54	.60	.42
30	1.8	1.8	6.2	243	48	20	3.0	---------	1.4	.80	.46	2.1
31	1.9	1.1	---------	102	---------	19	2.7	---------	1.2	---------	.38	---------
Total	1.507.9	225.6	524.68	2.542.3	4.432	4.483	467.3	3.661.4	276.65	30.90	18.98	102.33
Mean												
Mgd	48.6	7.28	17.5	82.0	148	145	15.1	131	8.92	1.03	0.612	3.41
Cfs	75.2	11.3	27.1	127	229	224	23.4	203	13.8	1.59	0.947	5.28
Ac-ft	4.630	692	1.610	7.800	13.600	13.760	1.430	11.240	849	95	58	314
Max	524	68	185	614	1.290	1.090	90	509	59	2.0	0.90	32
Min	1.8	1.1	0.70	1.2	19	19	2.7	2.6	0.95	0.54	0.38	0.33

Calendar Year 1965: Max 2.300 Min 0.70 Mean (mgd) 108 Mean (cfs) 167 Ac-ft 120.800
Fiscal Year 1965-66: Max 1.290 Min 0.33 Mean (mgd) 50.1 Mean (cfs) 77.5 Ac-ft 56.080

Peak discharge (base, 5,600 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-20	0700	10.66	5,820	9,000

40-0360. 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.--25 sq mi, approximately.

Records available.--July 1943 to June 1966. 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). July 27, 1943, to June 15, 1959, at datum 1.00 ft higher.

Average discharge.--22 years (1944-66), 55.6 mgd (86.0 cfs).

Extremes.--Maximum discharge during year, 7,200 mgd (11,100 cfs) Nov. 20 (gage height, 10.46 ft), from rating curve extended above 2,100 mgd as explained below; minimum, 8.2 mgd (13 cfs) June 17, 18.
1943-66: Maximum discharge, 10,300 mgd (15,900 cfs) Apr. 15, 1963 (gage height, 12.25 ft), from rating curve extended above 2,100 mgd on basis of slope-area measurement at gage height 10.65 ft; minimum, 2.05 mgd (3.15 cfs) July 19, 1951.

Remarks.--Records good. Olokele ditch diverts all low flow from Olokele River 9 miles above station for irrigation near Makaweli.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	18	16	12	13	83	37	76	11	23	11	10	9.1
2	51	15	12	14	34	40	22	10	18	11	11	19
3	66	14	12	12	18	28	34	11	17	12	18	23
4	24	14	12	12	107	26	19	20	16	11	12	13
5	20	13	12	11	28	33	17	13	15	12	11	11
6	20	14	12	11	20	196	16	226	15	11	10	11
7	25	13	12	11	41	70	15	170	22	11	10	9.8
8	40	15	12	11	91	35	14	64	18	10	10	9.8
9	110	14	17	14	32	72	14	48	15	10	10	9.5
10	46	31	15	12	22	133	13	24	14	10	9.5	14
11	536	23	12	12	25	76	12	20	13	10	10	90
12	81	15	12	52	47	32	12	18	13	10	10	17
13	34	19	12	22	295	28	12	17	13	10	11	12
14	23	20	11	331	487	72	11	92	12	10	10	11
15	20	17	11	92	430	78	29	127	12	11	9.5	9.8
16	18	16	17	35	137	62	16	39	12	11	9.1	9.1
17	32	20	13	46	51	82	13	47	12	11	8.8	8.8
18	31	16	13	30	45	38	12	37	12	11	8.8	8.5
19	18	14	12	47	209	26	38	20	21	11	9.5	11
20	17	13	12	44	1660	54	34	19	21	11	9.5	9.5
21	30	14	235	37	158	173	27	18	18	11	9.1	12
22	577	22	79	27	78	96	29	15	22	10	9.5	12
23	93	38	43	22	55	32	15	17	13	10	11	19
24	32	22	25	20	60	25	13	17	13	11	9.8	35
25	24	15	19	18	69	24	12	16	12	10	9.5	43
26	21	14	17	17	78	32	12	18	12	10	9.5	117
27	18	22	15	42	96	22	12	165	12	10	9.1	29
28	18	14	14	46	77	20	11	39	12	10	9.1	13
29	17	14	13	24	34	19	11	----------	12	11	9.1	23
30	15	12	13	56	28	73	11	----------	11	10	9.1	16
31	15	12	----------	30	----------	22	11	----------	11	----------	8.8	----------
Total	2090	531	726	1171	4595	1756	593	1338	462	318	311.3	634.9
Mean												
Mgd	67.4	17.1	24.2	37.8	153	56.6	19.1	47.8	14.9	10.6	10.0	21.2
Cfs	104	26.5	37.4	58.5	237	87.6	29.6	74.0	23.1	16.4	15.5	32.8
Ac-ft	6410	1630	2230	3590	14100	5390	1820	4110	1420	976	955	1950
Max	577	38	235	331	1660	196	76	226	23	12	18	117
Min	15	12	11	11	18	19	11	10	11	10	8.8	8.5

Calendar Year 1965:	Max	1660	Min	11	Mean (mgd)	80.1	Mean (cfs)	124	Ac-ft	89700
Fiscal Year 1965-66:	Max	1660	Min	8.5	Mean (mgd)	39.8	Mean (cfs)	61.6	Ac-ft	44580

Peak discharge (base, 3,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1200	7.41	3,190	4,940	11-20	0600	10.46	7,200	11,100

40-0490. 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 northeast of Eleele.

Drainage area.--18.8 sq mi.

Records available.--July 1917 to January 1921, December 1926 to June 1966. Prior to July 1952, published as "at Koula, near Eleele." Records for August 1910 to December 1916 at site half a mile upstream not equivalent owing to 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, staff gage and Dec. 16, 1926, to June 30, 1951, water-stage recorder, at same site at datum 1.00 ft higher.

Average discharge.--42 years (1917-20, 1927-66), 54.7 mgd (84.6 cfs).

Extremes.--Maximum discharge during year, 7,300 mgd (11,300 cfs) July 22 (gage height, 9.45 ft), from rating curve extended above 840 mgd as explained below; minimum, 8.2 mgd (13 cfs) June 16.
1917-21, 1926-66: Maximum discharge, 25,200 mgd (39,000 cfs) Apr. 15, 1963 (gage height, 14.87 ft), from rating curve extended above 4,900 mgd on basis of slope-area measurement of peak flow; minimum, 3.3 mgd (5.1 cfs) May 21, 1954.

Remarks.--Records good except those for period of no gage-height record, which are poor. Hanapepe ditch diverts 3 miles above station for irrigation in vicinity of Makaweli.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14	16	12	12	52	25	60	10	13	10	10	9.1
2	55	14	12	14	25	21	20	9.0	12	11	11	14
3	48	14	11	11	16	18	30	11	10	11	12	20
4	18	14	11	11	412	19	17	18	10	11	10	9.7
5	14	14	11	11	67	20	15	11	10	12	9.7	9.7
6	12	13	26	11	72	64	14	150	10	10	9.7	9.4
7	11	18	13	11	71	26	13	59	13	10	9.7	9.1
8	45	13	18	12	159	26	12	18	12	10	9.7	9.1
9	113	28	34	12	44	56	12	16	11	10	10	9.4
10	27	42	18	12	27	107	12	11	11	10	10	13
11	375	31	12	12	31	52	11	10	11	10	9.7	124
12	71	14	13	44	76	26	11	10	11	10	13	13
13	28	14	11	12	321	26	11	10	11	10	10	10
14	20	16	10	188	795	57	10	32	11	10	9.4	10
15	15	14	11	66	649	47	25	65	11	10	9.4	9.4
16	14	44	15	24	269	103	15	20	11	10	9.4	8.5
17	32	44	18	42	91	83	12	16	11	10	9.7	8.5
18	23	15	16	18	74	32	11	13	11	10	9.7	8.5
19	13	11	10	21	419	22	35	12	14	10	9.4	9.4
20	13	13	11	17	1.440	58	30	12	46	10	9.1	8.8
21	18	22	195	20	155	150	25	10	83	10	9.4	9.4
22	1.050	38	63	17	74	90	30	10	28	10	11	10
23	140	50	33	13	56	30	15	11	12	10	12	22
24	52	22	17	12	61	25	12	11	10	10	8.5	32
25	33	14	14	12	59	23	11	10	11	10	8.5	41
26	26	17	13	12	83	30	11	13	10	10	8.8	120
27	22	14	12	84	102	20	11	128	10	10	8.8	28
28	18	12	12	35	56	19	10	21	11	10	8.8	12
29	16	13	12	14	36	18	10	----------	11	12	8.8	14
30	15	11	12	23	28	60	10	----------	11	10	9.1	12
31	21	11	----------	14	----------	20	10	----------	10	----------	9.4	----------
Total	2.372	626	676	817	5.820	1.373	531	727.0	467	307	303.7	623.0
Mean												
Mgd	76.5	20.2	22.5	26.4	194	44.3	17.1	26.0	15.1	10.2	9.80	20.8
Cfs	118	31.3	34.8	40.8	300	68.5	26.5	40.2	23.4	15.8	15.2	32.2
Ac-ft	7.280	1.920	2.070	2.510	17.860	4.210	1.630	2.230	1.430	942	932	1.910
Max	1.050	50	195	188	1.440	150	60	150	83	12	13	124
Min	11	11	10	11	16	18	10	9.0	10	10	8.5	8.5

Calendar Year 1965: Max 1.440 Min 10 Mean (mgd) 66.6 Mean (cfs) 103 Ac-ft 74.650
Fiscal Year 1965-66: Max 1.440 Min 8.5 Mean (mgd) 40.1 Mean (cfs) 62.0 Ac-ft 44.940

Note.--No gage-height record Dec. 21 to Feb. 6.

Peak discharge (base, 2,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1200	6.72	3,080	4,770	11-14	1500	8.25	5,180	8,010
7-22	1130	9.45	7,300	11,300	11-20	0500	8.48	5,550	8,590

40-0525. Lawai Stream near Koloa

Location.--Lat 21°54'03", long 159°30'19", on right bank at private road bridge, 0.9 mile upstream from mouth, and 2.6 miles southwest of Koloa.

Drainage area.--6.60 sq mi.

Records available.--Fiscal years 1962-63 (annual maximums), July 1963 to June 1966.

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.

Extremes.--Maximum discharge during year, 1,340 mgd (2,070 cfs) July 22 (gage height, 7.93 ft), from rating curve extended above 43 mgd as explained below; minimum, 0.20 mgd (0.31 cfs) June 8.
1961-66: Maximum discharge, 2,290 mgd (3,540 cfs) Mar. 14, 1963 (gage height, 9.56 ft), from rating curve extended above 43 mgd on basis of slope-area measurements at gage heights 7.70 and 9.56 ft.
1963-66: Minimum discharge, 0.17 mgd (0.26 cfs) Dec. 25, 1963.

Remarks.--Records fair. Several diversions above station for irrigation of sugarcane in vicinity of Lawai.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.7	2.0	1.4	1.1	1.7	5.4	6.8	2.1	1.8	1.0	0.47	0.43
2	3.2	2.0	1.5	1.2	1.6	4.8	2.7	1.6	1.6	.72	.69	.31
3	2.6	2.0	1.6	1.4	1.4	4.7	2.7	1.2	1.6	.69	1.1	.38
4	2.3	2.5	1.3	1.0	1.4	4.7	2.7	1.1	1.6	.83	.85	.31
5	2.6	2.1	1.3	.99	1.2	4.9	2.0	1.0	1.3	.76	.65	.26
6	2.4	2.0	8.3	1.0	1.5	8.0	2.0	11	1.3	.65	.58	.31
7	2.5	2.2	2.2	1.2	2.0	5.4	2.0	3.9	1.8	.65	.47	.29
8	4.5	1.9	1.7	1.1	19	5.2	1.6	3.6	1.6	.58	.42	.24
9	15	2.0	1.6	.99	2.1	6.0	1.6	1.9	1.3	.54	.47	.24
10	4.1	2.5	1.6	.88	1.8	24	1.9	1.6	1.1	.54	.45	.24
11	14	2.0	1.2	1.5	3.0	13	2.0	1.6	1.0	1.0	.47	.45
12	5.1	1.9	1.2	3.2	6.3	6.9	2.0	1.5	1.0	1.2	.45	.36
13	3.0	2.0	1.4	1.7	15	7.2	1.8	1.5	1.0	1.0	.45	.46
14	3.0	2.2	1.2	3.7	116	6.9	1.9	1.6	1.0	1.5	.42	.50
15	3.0	1.9	1.2	2.2	67	6.1	1.6	2.1	1.2	.69	.40	.80
16	3.0	1.8	1.2	1.6	27	6.9	1.4	2.4	1.3	.54	.38	.66
17	2.8	1.9	1.4	1.6	5.1	9.8	1.6	2.1	1.3	.54	.36	.48
18	2.6	1.7	1.2	1.4	3.8	5.7	1.6	1.9	1.2	.72	.33	.31
19	2.6	2.0	1.2	1.5	80	4.9	1.5	1.5	1.1	.79	.42	.31
20	2.6	1.9	1.4	1.4	94	6.4	2.1	1.5	1.1	.88	.45	.38
21	2.7	2.0	18	1.3	26	15	1.9	1.4	1.2	.65	.36	.33
22	103	2.6	4.9	1.1	9.7	6.7	1.2	1.6	1.3	.54	.33	.41
23	5.6	2.0	2.1	1.1	3.6	6.3	1.2	1.7	1.4	.51	.42	.31
24	2.8	1.7	1.4	1.0	5.2	5.4	1.2	1.9	1.4	.47	.54	.42
25	2.4	1.5	1.4	1.2	9.2	5.2	1.1	1.4	.99	.45	.49	.42
26	2.2	1.9	1.1	1.3	8.8	5.1	1.1	1.5	.93	.45	.58	.54
27	2.2	1.6	1.3	1.7	13	4.6	1.2	9.5	.88	.45	.31	.42
28	2.0	1.5	1.5	1.6	8.6	4.6	1.6	3.6	.88	.47	.29	.38
29	2.0	1.6	1.5	1.2	4.7	4.5	1.1	----------	.88	.69	.29	.54
30	2.0	1.4	1.1	1.1	3.8	6.4	1.1	----------	1.3	.51	.36	.86
31	2.0	1.3	----------	1.1	----------	3.6	1.8	----------	1.1	----------	.33	----------
Total	212.5	59.6	69.4	44.36	543.5	214.3	58.0	69.3	38.46	21.01	14.58	12.35
Mean												
Mgd	6.85	1.92	2.31	1.43	18.1	6.91	1.87	2.48	1.24	0.700	0.470	0.412
Cfs	10.6	2.97	3.57	2.21	28.0	10.7	2.89	3.84	1.92	1.08	0.727	0.637
Ac-ft	652	183	213	136	1,670	658	178	213	118	64	45	38
Max	103	2.6	18	3.7	116	24	6.8	11	1.8	1.5	1.1	0.86
Min	2.0	1.3	1.1	0.88	1.2	3.6	1.1	1.0	0.88	0.45	0.29	0.24

Calendar Year 1965: Max 131 Min 0.88 Mean (mgd) 6.66 Mean (cfs) 10.3 Ac-ft 7,460
Fiscal Year 1965-66: Max 116 Min 0.24 Mean (mgd) 3.72 Mean (cfs) 5.76 Ac-ft 4,170

Peak discharge (base, 730 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	0900	7.93	1,340	2,070	11-19	1300	6.90	850	1,320
11-14	1430	6.98	882	1,360					

40-0534. Upper Haiku ditch near Puhi

Location.--Lat 21°58'48", long 159°27'12", on right bank 20 ft upstream from flume crossing a tributary to Kamooloa Stream, 0.8 mile downstream from intake on Papuaa Stream, and 3.6 miles west of Puhi.

Records available.--October 1963 to June 1966.

Gage.--Digital water-atage recorder. Altitude of gage is 470 ft (from topographic map).

Extremes.--1963-66: Maximum daily discharge, 19 mgd (29 cfa) July 2, 8, 1964; no flow Oct. 23-26, 1965, Jan. 2, 22, 23, 1966.

Remarks.--Records good except those for period of no gage-height record, which are poor. Ditch diverts from Papuaa Stream at Papuaa Reservoir and from Kamooloa Stream at intake 300 ft above Puuana Road crossing for irrigation of sugarcane in vicinity of Puhi.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11	0.70	10	5.9	1.3	0.07	0.03	11	0.03	9.8	0.78	6.7
2	7.6	5.0	9.0	.63	1.2	.08	0	11	.03	.78	5.8	3.7
3	.17	8.0	10	1.1	.78	.08	3.2	9.5	.03	.74	5.4	4.6
4	.20	9.0	.50	6.8	3.4	.08	6.0	8.4	.03	7.5	2.3	4.9
5	4.0	11	.50	10	1.0	.09	3.4	3.7	.03	11	2.4	8.4
6	7.0	10	5.0	14	3.0	.04	.48	1.6	.03	10	.71	7.4
7	9.0	.60	6.0	12	.71	.04	.34	6.3	.04	7.4	.71	7.2
8	7.0	.50	6.0	6.2	1.0	.08	.29	7.9	.04	.74	.67	3.9
9	2.0	3.0	5.5	.52	.06	.37	2.6	5.7	.04	.74	8.7	7.9
10	.30	5.0	5.6	.10	.05	1.6	8.1	2.5	.03	.74	9.2	5.9
11	.30	7.0	1.4	5.0	.08	.63	10	1.9	.02	9.0	9.3	.97
12	1.0	10	1.7	1.5	.26	.17	10	1.9	.02	7.6	7.8	5.6
13	3.0	9.0	13	.14	1.6	.07	12	1.9	.05	9.6	12	10
14	4.0	.40	13	2.4	3.5	.04	9.3	.97	12	7.5	15	13
15	6.0	.30	8.8	1.2	.83	.05	5.2	.02	11	5.7	7.9	8.5
16	7.0	3.0	7.8	.71	.14	.05	4.2	.02	12	.74	6.4	7.4
17	.50	4.0	6.7	.74	.07	.05	11	.03	12	.74	6.8	9.8
18	.50	8.0	1.2	.19	.05	.05	12	.02	9.2	6.8	7.1	8.5
19	8.0	9.0	1.1	.14	10	.04	10	.02	1.4	6.7	6.7	4.7
20	10	7.0	9.8	.05	1.0	.06	6.7	.02	1.4	6.7	5.7	5.0
21	7.0	.40	3.7	.07	.06	.05	6.4	.02	11	6.8	.63	7.2
22	1.0	.40	.63	.05	.05	.04	0	.02	12	6.4	.67	7.4
23	.70	1.0	.37	0	.05	.04	0	.02	15	.74	5.2	6.4
24	.30	1.5	.15	0	.05	.04	10	.02	13	.71	3.9	10
25	.20	2.0	.10	0	.05	.04	12	.02	8.7	6.3	3.4	4.3
26	7.1	1.5	.06	0	.06	.04	9.8	.03	1.2	5.3	7.2	3.5
27	6.4	2.0	.06	2.3	.06	.03	13	.31	2.8	5.9	8.8	7.1
28	7.1	.40	1.4	1.6	.05	.04	9.8	.03	13	5.6	8.7	6.8
29	6.0	.30	6.8	.56	.06	.04	1.1	----------	15	5.6	3.9	5.7
30	3.0	6.0	7.8	1.2	.06	.03	1.7	----------	14	.74	5.9	4.5
31	.80	7.0	----------	.60	----------	.48	12	----------	14	----------	6.6	----------
Total	128.17	133.00	143.67	75.70	30.58	4.61	190.64	74.87	179.12	154.61	176.27	196.97
Mean												
Mgd	4.13	4.29	4.79	2.44	1.02	0.149	6.15	2.67	5.78	5.15	5.69	6.57
Cfs	6.39	6.64	7.41	3.78	1.58	0.231	9.52	4.13	8.94	7.97	8.80	10.2
Ac-ft	393	408	441	232	94	14	585	230	550	474	541	604
Max	11	11	13	14	10	1.6	13	11	15	11	15	13
Min	0.17	0.30	0.06	0	0.05	0.03	0	0.02	0.02	0.71	0.63	0.97

Calendar Year 1965: Max 14 Min 0 Mean (mgd) 2.74 Mean (cfs) 4.24 Ac-ft 3,070
Fiscal Year 1965-66: Max 15 Min 0 Mean (mgd) 4.08 Mean (cfs) 6.31 Ac-ft 4,570

Note.--No gage-height record July 29 to Sept. 9.

40-0536. Lower Haiku ditch near Puhi

Location.--Lat 21°58'19", long 159°27'12", on right bank 300 ft upstream from flume crossing a tributary to Kamooloa Stream, 0.5 mile downstream from intake on Kamooloa Stream, and 3.2 miles west of Puhi.

Records available.--October 1963 to June 1966.

Gage.--Graphic water-stage recorder. Altitude of gage is 400 ft (from topographic map). Prior to Mar. 18, 1964, digital water-stage recorder at same site and datum.

Extremes.--1963-66: Maximum daily discharge, 33 mgd (51 cfs) May 27, 1964, May 5, Nov. 19, 1965; minimum daily, 0.66 mgd (1.0 cfs) May 26, 30, June 8, 9, 1966.

Remarks.--Records good. Ditch diverts from Kamooloa Stream 0.4 mile below Papuaa Stream for irrigation of sugarcane in vicinity of Puhi.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.5	7.4	3.0	9.0	13	14	18	2.8	12	1.9	1.7	0.80
2	5.4	6.6	3.9	8.6	12	12	13	2.9	12	1.6	1.9	.86
3	6.2	4.4	3.2	6.4	11	12	12	2.5	12	1.5	1.4	1.2
4	5.1	3.9	4.8	3.5	18	11	12	2.5	7.0	1.5	1.3	1.0
5	5.8	3.6	7.5	3.2	9.9	11	11	3.0	4.6	1.6	1.1	.94
6	5.4	3.3	10	2.9	25	12	12	6.0	4.4	1.6	1.1	.94
7	3.8	4.9	3.9	2.9	20	11	12	7.9	6.3	1.5	1.1	.80
8	8.0	4.3	5.7	2.8	26	10	12	8.4	9.1	1.4	1.1	.66
9	17	4.2	4.9	5.2	17	11	9.5	5.8	7.9	1.4	1.2	.66
10	13	5.7	3.5	4.6	15	17	5.9	4.3	7.6	1.4	1.2	.86
11	14	3.4	3.2	3.3	17	12	5.6	3.6	5.2	1.4	1.2	2.7
12	12	3.1	4.5	12	23	9.9	4.8	3.3	3.3	1.5	1.1	1.6
13	6.4	3.2	3.8	7.9	27	9.6	3.6	3.1	3.1	1.4	1.2	1.3
14	7.5	3.3	2.7	22	29	9.4	3.2	4.9	3.2	1.3	1.3	1.3
15	6.4	3.6	2.4	17	30	9.0	5.3	9.0	2.9	1.3	1.3	1.3
16	4.6	3.2	2.3	13	24	9.1	3.7	5.8	3.7	1.3	1.0	1.2
17	7.6	12	2.3	13	17	10	3.2	7.3	5.1	1.3	.94	1.0
18	7.9	3.7	2.4	12	16	8.9	3.0	5.7	3.5	1.3	1.0	1.0
19	4.9	3.1	2.1	15	33	8.7	10	5.5	2.7	1.3	1.0	1.1
20	3.7	2.9	2.4	12	24	8.9	14	5.1	2.7	1.3	.94	.94
21	4.2	4.5	19	11	18	14	14	4.9	3.1	1.2	.86	.80
22	26	12	16	11	16	16	10	9.6	2.9	1.2	.86	.86
23	21	12	14	10	15	15	9.0	12	2.7	1.2	.86	1.0
24	15	8.2	12	10	14	14	5.1	12	2.6	1.2	.80	1.1
25	13	5.1	12	9.7	14	14	3.5	12	2.4	1.2	.73	1.1
26	7.8	9.7	11	9.0	14	14	3.2	12	2.0	1.2	.66	1.6
27	5.0	6.9	10	12	15	13	3.1	22	1.9	1.2	.73	1.6
28	4.6	6.9	8.5	12	14	13	3.0	13	2.2	1.1	.73	1.4
29	4.3	8.2	4.9	11	15	13	2.5	----------	2.2	3.4	.73	1.3
30	4.0	5.0	4.0	14	15	15	2.5	----------	2.3	1.8	.66	1.1
31	4.2	3.4	----------	11	----------	16	3.7	----------	1.9	----------	.80	----------
Total	257.3	171.7	189.9	297.0	556.9	373.5	233.4	196.9	144.5	43.5	32.50	34.02
Mean												
Mgd	8.30	5.54	6.33	9.58	18.6	12.0	7.53	7.03	4.66	1.45	1.05	1.13
Cfs	12.8	8.57	9.79	14.8	28.8	18.6	11.7	10.9	7.21	2.24	1.62	1.75
Ac-ft	790	527	583	911	1,710	1,150	716	604	443	133	100	104
Max	26	12	19	22	33	17	18	22	12	3.4	1.9	2.7
Min	3.5	2.9	2.1	2.8	9.9	8.7	2.5	2.5	1.9	1.1	0.66	0.66

Calendar Year 1965:	Max	33	Min	1.5	Mean (mgd)	9.63	Mean (cfs)	14.9	Ac-ft	10,790
Fiscal Year 1965-66:	Max	33	Min	0.66	Mean (mgd)	6.93	Mean (cfs)	10.7	Ac-ft	7,770

40-0538. Kamooloa Stream near Puhi

Location.--lat 21°58'13", long 159°27'08", on right bank at head of falls, 0.4 mile upstream from confluence with Kuia Stream, and 3.5 miles west of Puhi.

Drainage area.--5.94 sq mi.

Records available.--November 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 390 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,740 mgd (2,690 cfs) Nov. 19 (gage height, 5.46 ft), from rating curve extended above 390 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) June 20.

1963-66: Maximum discharge, 2,750 mgd (4,250 cfs) Dec. 16, 1964 (gage height, 6.66 ft), from rating curve extended above 390 mgd on basis of slope-area measurements at gage heights 4.86 and 6.66 ft; minimum, that of June 20, 1966.

Remarks.--Records good. Kamooloa ditch diverts 4.3 miles above station into Kuia Stream. Upper Haiku ditch (see sta. no. 534) and Lower Haiku ditch (see sta. no. 536) divert 1.3 miles and 0.4 mile, respectively, above station for irrigation of sugarcane near Puhi.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.71	1.2	0.71	0.94	19	6.6	24	0.36	6.0	0.33	0.36	0.03
2	1.0	.94	.82	.90	14	5.8	4.9	.39	5.0	.46	.33	.04
3	1.2	.86	.56	.86	6.3	5.5	3.5	.39	2.2	.36	.14	.04
4	1.1	.82	.71	.67	137	5.4	1.1	.46	.90	.33	.10	.04
5	1.0	.79	.99	.63	14	5.7	1.6	.39	.94	.39	.09	.03
6	.75	.71	4.2	.63	106	22	2.0	22	.94	.36	.09	.03
7	.90	.79	.86	.60	58	8.0	1.6	2.8	1.5	.31	.16	.03
8	2.1	.63	7.4	.52	89	8.8	1.2	1.0	.94	.36	.21	.03
9	35	.49	.67	.79	33	20	.86	.94	.94	.36	.14	.03
10	7.7	.82	.75	.79	27	60	.46	.94	.90	.36	.09	.03
11	31	.56	.82	.60	33	40	.42	.63	.99	.18	.10	.37
12	6.0	.49	.82	7.5	73	23	.42	.39	1.0	.16	.09	.07
13	1.4	.52	.52	1.1	199	21	.46	.23	.99	.23	.10	.04
14	1.4	.75	.56	59	286	27	.28	.82	.86	.23	.18	.03
15	1.3	.86	.46	23	180	20	.42	1.5	.90	.18	.23	.03
16	1.1	.67	.60	6.3	104	30	.49	.71	.90	.21	.16	.03
17	1.3	3.3	.52	7.1	50	32	.39	.71	1.9	.26	.09	.03
18	1.3	.33	.63	3.8	36	16	.33	.67	1.1	.16	.12	.03
19	1.1	.33	.49	15	411	12	5.8	.75	1.0	.10	.12	.03
20	.94	.39	.28	4.6	177	19	10	.67	.99	.14	.09	.03
21	.99	.56	42	3.7	59	42	3.6	.56	.86	.10	.14	.03
22	199	2.6	21	2.8	33	12	.99	2.8	.63	.18	.16	.03
23	42	2.6	6	1.4	22	8.2	.82	4.1	.63	.23	.14	.03
24	8.5	1.6	2.2	1.0	14	4.7	.67	4.1	.63	.28	.07	.03
25	3.4	.75	1.3	.71	14	4.6	.60	4.0	.71	.23	.05	.03
26	1.6	2.3	.94	.56	16	5.5	.49	5.2	.82	.12	.04	.33
27	1.5	.99	.75	22	27	3.9	.52	53	.79	.10	.03	1.4
28	1.4	.94	.75	8.2	19	3.1	.39	8.5	.71	.10	.03	1.4
29	1.1	1.0	.63	4.1	8.0	10	.56	----------	.46	.56	.03	.94
30	1.1	.82	.71	16	6.6	21	.60	----------	.39	.42	.03	.09
31	1.1	.75	----------	5.4	----------	35	.56	----------	.42	----------	.03	----------
Total	359.99	31.16	99.65	201.20	2270.9	537.8	70.03	119.01	37.94	7.79	3.74	5.33
Mean												
Mgd	11.6	1.01	3.32	6.49	75.7	17.3	2.26	4.25	1.22	0.260	0.121	0.178
Cfs	17.9	1.56	5.14	10.0	117	26.8	3.50	6.58	1.89	0.402	0.187	0.275
Ac-ft	1,100	96	306	617	6,970	1,650	215	365	116	24	11	16
Max	199	3.3	42	59	411	60	24	53	6.0	0.56	0.36	1.4
Min	0.71	0.33	0.28	0.52	6.3	3.1	0.28	0.23	0.39	0.10	0.03	0.03

Calendar Year 1965:	Max	411	Min	0.09	Mean (mgd)	16.0	Mean (cfs)	24.8	Ac-ft	17,930
Fiscal Year 1965-66:	Max	411	Min	0.03	Mean (mgd)	10.3	Mean (cfs)	15.9	Ac-ft	11,490

Peak discharge (base, 900 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	1300	4.20	910	1,410	11-13	2000	5.01	1,430	2,210
11- 4	0800	5.04	1,450	2,240	11-19	1230	5.46	1,740	2,690

40-0542. Koloa ditch near Koloa

Location.--Lat 21°57'07", long 159°28'11", on right bank at old county road bridge between Highways 50 and 52 at Knudsen Gap, 250 ft downstream from wasteway, and 3.0 miles north of Koloa.

Records available.--July 1964 to June 1966.

Gage.--Digital water-stage recorder. Altitude of gage is 620 ft (from topographic map).

Extremes.--1964-66: Maximum daily discharge, 86 mgd (133 cfs) Apr. 13, 1965; minimum daily, 1.5 mgd (2.3 cfs) Nov. 6, 1964.

Remarks.--Records fair. Ditch diverts from Kuia Stream just below the Waiahi-Kuia aqueduct for power generation and irrigation of sugarcane near Koloa.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19	17	11	16	62	6.5	22	6.4	9.9	4.9	3.0	2.7
2	26	19	20	8.1	59	6.4	8.6	6.3	8.5	4.9	3.0	3.4
3	27	17	5.8	6.2	44	6.3	8.5	6.5	7.5	4.8	3.0	4.9
4	16	18	5.6	5.7	70	6.3	7.8	6.6	7.3	4.7	2.9	3.1
5	14	17	12	5.6	19	6.3	7.1	6.2	7.0	4.8	3.0	3.1
6	14	16	33	5.3	54	6.8	6.5	34	6.8	4.2	3.1	2.9
7	14	24	17	5.2	50	6.7	6.0	22	13	3.5	3.1	2.8
8	19	16	22	5.2	45	7.3	5.6	20	16	3.5	3.0	2.8
9	22	22	20	7.7	14	7.7	5.4	17	6.6	3.4	3.1	2.8
10	20	28	17	5.6	11	11	5.3	18	6.4	3.4	3.0	3.4
11	25	19	16	8.0	9.2	9.2	5.1	17	6.2	3.3	3.0	36
12	28	16	18	51	9.0	8.3	5.5	16	6.0	3.3	3.1	11
13	23	16	14	35	9.9	8.1	6.8	16	5.9	3.2	3.1	4.6
14	21	16	13	71	9.4	8.3	7.3	22	5.8	3.2	3.0	4.3
15	20	20	8.3	66	5.3	8.0	14	33	5.9	3.1	3.0	3.8
16	20	14	5.8	49	4.7	8.3	16	25	7.3	3.2	2.9	3.2
17	22	18	5.6	49	6.5	8.8	21	29	24	3.1	3.0	3.0
18	20	6.4	5.8	41	7.7	7.8	20	25	9.2	3.1	2.9	3.0
19	19	5.9	5.0	48	11	7.5	34	24	8.5	3.1	2.9	3.0
20	19	5.9	8.1	33	9.9	7.8	45	21	11	3.0	2.8	2.8
21	20	11	59	20	7.4	9.4	51	17	9.5	3.0	2.8	2.9
22	55	27	56	34	6.8	8.3	41	7.4	7.8	2.9	2.9	3.1
23	30	19	46	29	6.7	8.0	34	6.3	7.3	2.8	2.8	4.2
24	29	30	34	26	6.6	7.5	28	5.7	6.7	2.8	2.8	8.5
25	26	26	31	18	6.5	7.4	18	5.5	7.0	2.8	2.7	9.0
26	24	38	27	7.3	6.5	7.5	13	7.8	10	2.9	2.8	6.5
27	23	20	24	38	6.8	7.3	7.3	61	9.9	2.8	2.8	2.6
28	22	7.1	22	52	6.5	6.8	6.8	16	8.5	2.8	2.8	5.8
29	19	7.7	18	38	6.6	7.0	6.7	----------	5.4	3.8	2.7	12
30	18	6.3	14	56	6.7	11	6.6	----------	5.2	3.0	2.8	12
31	18	5.8	----------	41	----------	16	6.5	----------	5.0	----------	2.9	----------
Total	692	529.1	594.0	880.9	577.7	249.6	476.4	497.7	261.1	103.3	90.7	173.2
Mean												
Mgd	22.3	17.1	19.8	28.4	19.3	8.05	15.4	17.8	8.42	3.44	2.93	5.77
Cfs	34.5	26.5	30.6	43.9	29.9	12.5	23.8	27.5	13.0	5.32	4.53	8.93
Ac-ft	2120	1620	1820	2700	1770	766	1460	1530	801	317	278	532
Max	55	38	59	71	70	16	51	61	24	4.9	3.1	36
Min	14	5.8	5.0	5.2	4.7	6.3	5.1	5.5	5.0	2.8	2.7	2.6

Calendar Year 1965:	Max	86	Min	2.9	Mean (mgd)	20.0	Mean (cfs)	30.9	Ac-ft	22360
Fiscal Year 1965-66:	Max	71	Min	2.6	Mean (mgd)	14.0	Mean (cfs)	21.7	Ac-ft	15730

40-0544. Koloa tunnel near Koloa

Location.--Lat 21°56'05", long 159°27'39", on left bank 80 ft upstream from Wilcox ditch crossing, 0.7 mile upstream from Waita Reservoir, and 2.0 miles north of Koloa.

Records available.--February to June 1966.

Gage.--Water-stage recorder. Datum of gage is 385.78 ft above mean sea level (Grove Farm Co. bench mark).

Extremes.--1966: Maximum daily discharge during period, 6.5 mgd (10 cfs) Feb. 27; minimum daily, 0.90 mgd (1.4 cfs) June 21-25.

Remarks.--Records excellent. Tunnel diverts from Kuia Stream to Waita Reservoir for irrigation of sugarcane in vicinity of Koloa.

Discharge, in million gallons a day, February to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1								1.4	2.3	1.2	1.2	1.0
2								1.4	1.8	1.2	1.2	1.1
3								1.4	1.4	1.2	1.2	1.1
4								1.4	1.3	1.1	1.2	1.1
5								1.4	1.3	1.1	1.2	1.1
6								2.9	1.3	1.1	1.2	1.1
7								3.9	1.3	1.2	1.2	1.1
8								4.6	1.3	1.2	1.2	1.1
9								4.1	1.4	1.2	1.2	1.0
10								3.2	1.3	1.2	1.2	1.0
11								2.3	1.2	1.2	1.2	1.1
12								1.4	1.1	1.2	1.2	1.1
13								1.4	1.1	1.2	1.2	1.1
14								1.4	1.1	1.2	1.2	1.1
15								1.8	1.1	1.3	1.2	1.1
16								1.8	1.0	1.3	1.2	1.1
17								1.8	1.3	1.3	1.1	1.0
18								1.6	1.2	1.3	1.1	1.0
19								1.4	1.1	1.3	1.1	1.0
20								1.4	1.1	1.3	1.1	1.0
21								1.6	1.1	1.3	1.1	.90
22								1.6	1.2	1.3	1.1	.90
23								1.6	1.3	1.3	1.1	.90
24								1.6	1.3	1.4	1.1	.90
25								1.6	1.4	1.4	1.1	.90
26								1.8	1.4	1.4	1.1	2.8
27								6.5	1.6	1.4	1.1	4.9
28								3.9	1.6	1.2	1.1	4.0
29								----------	1.4	1.2	1.1	2.1
30								----------	1.4	1.2	1.1	1.2
31			----------		----------			----------	1.3	----------	1.1	----------
Total								62.2	41.0	37.4	35.7	40.80
Mean												
Mgd								2.22	1.32	1.25	1.15	1.36
Cfs								3.43	2.04	1.93	1.78	2.10
Ac-ft								191	126	115	110	125
Max								6.5	2.3	1.4	1.2	4.9
Min								1.4	1.0	1.1	1.1	0.90

Calendar Year	Max		Min		Mean (mgd)		Mean (cfs)		Ac-ft	
Fiscal Year 1965-66:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-

40-0545. Kuia Stream near Puhi

Location.--Lat 21°58'07", long 159°27'15", on right bank 0.2 mile downstream from Weoweopilau Stream and 3.6 miles west of Puhi.

Drainage area.--5.04 sq mi.

Records available.--November 1963 to June 1966.

Gage.--Water-stage recorder. Datum of gage is 393.27 ft above mean sea level (Grove Farm Co. bench mark).

Extremes.--Maximum discharge during year, 1,310 mgd (2,030 cfs) Nov. 19 (gage height, 8.14 ft), from rating curve extended above 420 mgd as explained below; no flow for part of June 3.
1963-66: Maximum discharge, 2,770 mgd (4,290 cfs) Jan. 5, 1964 (gage height, 11.30 ft), from rating curve extended above 420 mgd on basis of slope-area measurement of peak flow; no flow for part of June 3, 1966.

Remarks.--Records fair. Two miles above station, Kamooloa ditch and Waiehi-Kuia aqueduct divert water into Kuia Stream from Kamooloa and Waiahi Streams. Koloa ditch diverts from Kuia Stream just below this inflow, for power generation and irrigation of sugarcane near Koloa. Additional water is diverted 0.2 mile above station for use at a rock quarry, with excess emptying into Kamooloa Stream below Lower Haiku ditch. Since Feb. 6, 1966, Koloa tunnel (see sta. no. 544) has diverted 950 ft above station for irrigation of sugarcane in vicinity of Koloa.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	0.93	0.17	1.1	11	8.0	9.9	1.4	2.0	0.12	0.08	0.07
2	2.8	1.0	.61	.33	9.0	6.6	5.7	1.3	1.9	.12	.09	.03
3	3.2	.85	.15	.22	6.4	6.1	5.5	1.0	1.7	.12	.10	.01
4	2.0	.85	.17	.13	29	5.7	5.2	1.2	1.6	.12	.10	.02
5	2.0	.85	.17	.12	3.9	5.9	4.7	1.4	1.5	.12	.10	.04
6	2.0	.77	10	.10	29	10	4.2	17	1.4	.12	.10	.05
7	2.0	.93	1.3	.10	13	6.4	3.5	2.6	1.4	.10	.10	.08
8	4.9	.77	.93	.10	72	5.7	3.6	1.5	1.1	.10	.10	.09
9	12	.85	.93	.38	15	7.0	3.6	.77	.85	.13	.10	.09
10	4.5	1.0	.77	.17	11	44	3.5	.69	.54	.13	.10	.09
11	9.4	.61	.46	.17	18	26	3.1	1.3	.33	.15	.10	.09
12	5.0	.54	.46	4.7	48	13	2.8	2.7	.25	.17	.10	.09
13	3.6	.61	.46	3.5	121	11	2.5	2.4	.22	.17	.10	.09
14	2.9	.61	.46	29	246	13	2.1	1.5	.17	.17	.12	.10
15	2.5	.69	.38	12	146	12	2.4	2.4	.09	.17	.12	.09
16	2.5	.46	.38	5.4	65	11	2.2	2.2	.10	.17	.10	.09
17	2.9	.54	.38	4.9	26	18	2.2	2.4	.13	.13	.10	.09
18	2.5	.38	.38	3.8	16	10	2.2	2.2	.12	.12	.10	.09
19	2.7	.17	.38	6.4	321	8.0	2.7	2.0	.12	.09	.10	.09
20	3.1	.12	.46	3.8	192	9.0	4.7	1.8	.15	.13	.10	.09
21	3.2	.15	31	4.9	42	24	3.1	1.6	.17	.08	.09	.09
22	116	1.2	28	5.7	25	14	2.5	1.5	.12	.05	.09	.09
23	12	.38	4.8	5.2	20	11	2.2	1.5	.10	.05	.10	.10
24	4.9	.28	2.0	4.5	16	8.0	2.2	1.4	.10	.05	.09	.10
25	3.3	.17	1.4	4.1	14	6.8	2.1	1.3	.12	.05	.09	.10
26	2.5	4.9	.93	3.3	14	6.6	1.9	1.6	.12	.05	.09	.10
27	2.4	.93	.69	8.5	19	6.1	1.8	12	.12	.06	.07	.10
28	1.9	.33	.46	7.1	15	5.2	1.7	2.2	.12	.06	.06	.10
29	1.5	.25	.33	3.8	10	5.8	1.6	---------	.12	.10	.06	.10
30	1.2	.15	.25	7.2	9.0	12	1.5	---------	.12	.08	.06	.10
31	1.1	.15	---------	4.7	---------	11	1.5	---------	.13	---------	.08	---------
Total	224.5	22.42	89.26	135.42	1582.3	346.9	98.4	72.86	17.01	3.28	2.89	2.46
Mean												
Mgd	7.24	0.723	2.98	4.37	52.7	11.2	3.17	2.60	0.549	0.109	0.093	0.082
Cfs	11.2	1.12	4.61	6.76	81.5	17.3	4.90	4.02	0.849	0.169	0.144	0.127
Ac-ft	689	69	274	416	4,860	1,060	302	224	52	10	8.9	7.5
Max	116	4.9	31	29	321	44	9.9	17	2.0	0.17	0.12	0.10
Min	1.1	0.12	0.15	0.10	3.9	5.2	1.5	0.69	0.09	0.05	0.06	0.01

Calendar Year 1965: Max 321 Min 0.10 Mean (mgd) 11.6 Mean (cfs) 17.9 Ac-ft 13,000
Fiscal Year 1965-66: Max 321 Min 0.01 Mean (mgd) 7.12 Mean (cfs) 11.0 Ac-ft 7,970

Peak discharge (base, 1,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-14	1400	8.14	1,150	1,780	11-19	1500	8.14	1,310	2,030

40-0568. Waiahi-Kuia aqueduct near Puhi

Location.--Lat 21°58'36", long 159°28'28", on left bank 0.2 mile upstream from Kuia Stream, 4.8 miles west of Puhi, and 4.8 miles north of Koloa.

Records available.--July 1964 to June 1966.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 730 ft (from topographic map).

Extremes.--1964-66: Maximum daily discharge, 48 mgd (74 cfs) Apr. 13, 1965; no flow at times.

Remarks.--Records good. Ditch diverts from Waiahi Stream into Kuia Stream, from which Koloa ditch (see sta. no. 542) diverts a short distance downstream for power generation and irrigation of sugarcane near Koloa.

Cooperation.--Gage-height record furnished by Lihue Plantation Co.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	6.7	3.0	0.70	27	0.40	0.10	0	0	0.40	0.40	0
2	7.4	7.0	7.9	.70	21	.40	.05	0	0	.30	.25	.06
3	6.0	7.0	.54	.30	20	.40	.08	0	0	.30	.10	.40
4	5.7	7.0	.54	.07	22	.30	.05	0	0	.16	0	.16
5	5.4	6.7	.40	0	1.6	.30	.05	0	0	.10	0	.16
6	5.4	6.7	1.4	0	5.3	.22	.05	.95	0	.10	0	.10
7	5.4	7.0	3.7	0	2.1	.10	.05	.19	0	.10	0	.04
8	6.8	6.9	4.9	.05	3.6	.10	.05	5.3	0	.05	0	0
9	7.8	7.3	4.7	.40	1.0	.16	.05	8.8	0	0	0	.02
10	7.0	7.8	5.4	.03	.70	2.4	.10	7.4	0	0	0	.25
11	8.2	7.4	6.0	.12	.86	.86	.05	7.0	0	0	0	15
12	9.1	7.0	6.0	18	4.1	.54	.05	6.7	0	0	0	4.6
13	7.4	6.7	6.4	14	6.3	.70	.05	7.0	0	0	0	.40
14	7.4	6.7	6.0	40	11	.80	.05	11	0	0	0	.58
15	7.0	7.0	2.2	34	9.5	.70	.07	14	.07	0	0	.30
16	7.0	6.5	.40	24	5.1	.80	2.1	12	.03	0	0	.14
17	7.4	4.1	.22	25	2.7	.90	7.4	15	.39	0	0	.02
18	7.0	.86	.11	18	1.9	.60	7.0	11	.06	0	0	.16
19	6.4	.70	0	22	1.6	.40	11	11	.21	0	0	.16
20	6.4	.70	0	6.9	1.6	.16	13	9.6	.22	0	0	.07
21	6.7	.54	.16	10	1.6	1.2	16	6.0	.07	0	0	.04
22	22	.54	2.6	12	1.4	.54	13	.60	0	0	0	.04
23	11	3.3	26	10	1.0	.40	9.6	0	0	0	0	3.8
24	11	13	15	8.8	.86	.22	6.7	0	0	0	0	2.1
25	7.2	8.8	11	2.5	.70	.16	3.7	0	1.9	0	0	3.9
26	6.7	15	9.0	.40	.54	.16	1.4	0	5.4	0	0	9.9
27	6.7	6.0	8.6	14	.54	.16	0	1.2	5.4	0	0	6.5
28	7.0	.86	7.8	17	.54	.10	0	0	3.1	0	0	8.3
29	6.7	.70	6.4	14	.40	.10	0	----------	.40	.46	0	11
30	6.7	.31	4.2	27	.40	.10	0	----------	.40	.40	0	8.5
31	6.7	.22	----------	15	----------	.10	0	----------	.40	----------	0	----------
Total	236.0	167.03	150.57	334.97	156.94	14.48	91.77	134.74	18.05	2.37	0.75	76.70
Mean												
Mgd	7.61	5.39	5.02	10.8	5.23	0.467	2.96	4.81	0.582	0.079	0.024	2.56
Cfs	11.8	8.34	7.77	16.7	8.09	0.723	4.58	7.44	0.900	0.122	0.037	3.96
Ac-ft	724	513	462	1030	482	44	282	414	55	7.3	2.3	235
Max	22	15	26	40	27	2.4	16	15	5.4	0.46	0.40	15
Min	5.4	0.22	0	0	0.40	0.10	0	0	0	0	0	0

Calendar Year 1965:	Max	48	Min	0	Mean (mgd)	8.04	Mean (cfs)	12.4	Ac-ft	9010
Fiscal Year 1965-66:	Max	40	Min	0	Mean (mgd)	3.79	Mean (cfs)	5.86	Ac-ft	4250

40-0600. 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.

Records available.--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 June 1966. 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.--50 years (1912-18, 1919-20, 1921-24, 1925-57, 1958-66), 76.2 mgd (118 cfs).

Extremes.--Maximum discharge during year, 7,120 mgd (11,000 cfs) Nov. 14 (gage height, 16.20 ft); minimum, 2.0 mgd (3.1 cfs) June 17, 20-23, 30.

1911-66: Maximum discharge, 56,400 mgd (87,300 cfs) Apr. 15, 1963 (gage height, 22.90 ft), from rating curve extended above 8,400 mgd on basis of slope-area measurement of peak flow; minimum, 1.09 mgd (1.69 cfs) Sept. 21, 1953.

Remarks.--Records good. Lihue and Hanamaulu ditches divert upstream for irrigation of sugarcane in vicinity of Lihue.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.8	13	4.4	4.8	92	90	384	5.8	30.0	3.9	6.2	2.2
2	22	9.3	12	27	85	72	127	5.6	9.8	3.9	3.9	2.4
3	16	6.2	5.8	4.6	51	64	129	5.6	8.8	3.9	3.8	5.4
4	14	5.4	7.4	4.4	865	65	70	5.6	8.4	3.9	3.6	4.4
5	22	5.1	20	3.9	241	66	78	5.0	7.9	3.9	3.1	2.9
6	13	4.8	41	3.9	565	147	74	116	7.9	3.8	2.9	2.6
7	5.8	5.1	12	3.8	411	110	52	151	33	3.6	2.8	2.4
8	19	5.0	6.5	3.9	408	78	55	14	43	3.5	2.8	2.2
9	106	14	61	5.1	176	98	47	8.8	15	3.5	3.3	2.2
10	32	29	25	5.1	98	213	11	7.0	12	3.5	3.2	2.3
11	263	12	20	4.0	107	153	8.4	11	6.8	3.5	2.8	76
12	165	6.4	20	78	274	91	7.6	22	6.4	3.5	2.8	5.4
13	60	5.0	9.1	48	950	81	6.4	17	6.2	3.5	4.8	3.2
14	11	5.1	5.4	526	1.800	163	6.2	59	6.0	3.3	3.3	2.9
15	8.8	6.8	5.1	182	1.130	143	14	114	6.2	3.2	4.6	2.6
16	7.4	5.2	13	69	609	146	11	39	12	3.2	5.8	2.3
17	7.6	37	20	59	273	194	8.8	28	19	3.3	3.9	2.1
18	18	6.4	61	28	212	123	6.0	25	11	3.5	3.5	2.1
19	11	4.6	36	16	1.880	91	123	21	25	3.2	3.8	2.2
20	7.0	4.6	10	15	970	91	141	15	90	3.1	3.5	2.1
21	6.4	5.0	195	13	315	405	143	7.4	140	2.9	3.2	2.1
22	1.210	20	83	14	217	231	75	6.0	47	2.9	2.9	2.0
23	310	68	24	16	184	132	45	6.6	7.4	2.9	14	2.4
24	110	33	16	18	186	91	9.3	5.4	6.4	2.9	3.2	8.8
25	55	5.4	9.8	10	144	92	7.0	6.0	6.0	2.8	2.5	2.9
26	20	5.4	18	6.4	156	156	7.2	51	5.6	3.1	2.5	52
27	12	5.1	7.6	76	184	93	6.4	373	5.6	3.1	2.4	19
28	11	4.6	5.4	85	142	74	6.2	82	5.1	2.8	2.4	3.2
29	7.0	7.9	4.8	72	80	112	6.0	----------	5.0	8.8	2.3	2.2
30	6.2	5.4	4.5	175	77	270	5.8	----------	4.5	5.8	2.3	2.0
31	8.6	4.0	----------	80	----------	223	5.6	----------	4.0	----------	2.3	----------
Total	2.570.6	353.8	762.8	1.656.9	12.882	4.158	1.675.9	1.212.8	601.0	108.7	114.4	226.5
Mean												
Mgd	82.9	11.4	25.4	53.4	429	134	54.1	43.3	19.4	3.62	3.69	7.55
Cfs	128	17.6	39.3	82.6	664	207	83.7	67.0	30.0	5.60	5.71	11.7
Ac-ft	7.890	1.090	2.340	5.080	39.530	12.760	5.140	3.720	1.840	334	351	695
Max	1.210	68	195	526	1.880	405	384	373	140	8.8	14	76
Min	5.8	4.0	4.4	3.8	51	64	5.6	5.0	4.0	2.8	2.3	2.0

Calendar Year 1965:	Max	1.880	Min	3.4	Mean (mgd)	114	Mean (cfs)	176	Ac-ft	127.300
Fiscal Year 1965-66:	Max	1.880	Min	2.0	Mean (mgd)	72.1	Mean (cfs)	112	Ac-ft	80.780

Peak discharge (base, 3,700 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	1230	15.50	5,460	8,450	11-14	1500	16.20	7,120	11,000
11-4	0730	14.56	3,760	5,820	11-19	1200	16.06	6,760	10,500

40-0610. North Wailua ditch near Lihue

Location.--Lat 22°03'55", long 159°28'12", on left bank 300 ft downstream from intake, 8.3 miles west of Wailua, and 8.8 miles northwest of Lihue.

Records available.--July 1932 to June 1966.

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.--34 years, 12.1 mgd (18.7 cfs).

Extremes.--1932-66: Maximum daily discharge, 38 mgd (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.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14	14	14	15	14	14	14	12	13	11	12	12
2	16	14	14	14	13	13	13	12	13	12	12	16
3	14	14	12	13	13	13	13	13	14	11	13	19
4	13	14	13	12	15	13	13	13	14	12	12	14
5	13	14	12	13	10	14	13	12	14	12	12	15
6	13	14	12	12	13	15	12	17	13	11	12	13
7	13	14	12	12	13	13	12	15	13	11	11	12
8	14	14	14	13	13	13	13	14	13	11	13	12
9	16	15	15	15	11	14	13	13	12	11	14	12
10	14	16	14	13	11	15	13	13	12	11	12	18
11	17	15	15	13	13	14	14	13	12	11	12	25
12	15	14	15	15	12	13	14	13	12	11	12	15
13	13	15	14	14	14	14	14	15	12	11	14	17
14	14	15	14	14	6.5	14	13	18	12	11	14	16
15	14	14	14	10	11	12	15	14	13	10	14	14
16	14	15	17	9.1	4.0	14	14	13	13	11	12	13
17	14	16	16	9.4	3.7	13	13	15	12	11	12	12
18	14	14	15	9.1	9.8	12	13	14	12	11	13	11
19	13	14	14	10	16	12	16	14	16	11	14	14
20	14	14	14	11	14	14	16	14	20	11	13	12
21	15	14	16	12	4.6	15	16	13	16	11	12	15
22	13	15	15	13	6.2	13	14	13	13	10	15	18
23	5.0	16	15	13	14	14	14	13	13	11	13	20
24	10	14	14	13	13	13	14	13	12	10	12	17
25	9.7	14	14	13	14	14	13	14	12	11	12	18
26	12	14	13	12	14	16	13	16	12	12	12	23
27	14	14	13	17	14	13	13	16	12	12	11	15
28	13	13	13	14	13	13	13	14	12	12	13	14
29	13	14	12	12	13	16	13	----------	12	14	11	14
30	14	13	12	14	13	17	13	----------	12	12	13	13
31	16	12	----------	12	----------	14	12	----------	11	----------	14	----------
Total	416.7	442	417	391.6	348.8	427	419	389	402	337	391	459
Mean												
Mgd	13.4	14.3	13.9	12.6	11.6	13.8	13.5	13.9	13.0	11.2	12.6	15.3
Cfs	20.7	22.1	21.5	19.5	17.9	21.4	20.9	21.5	20.1	17.3	19.5	23.7
Ac-ft	1,280	1,360	1,280	1,200	1,070	1,310	1,290	1,190	1,230	1,030	1,200	1,410
Max	17	16	17	17	16	17	16	18	20	14	15	25
Min	5.0	12	12	9.1	3.7	12	12	12	11	10	11	11

Calendar Year 1965:	Max	19	Min	0	Mean (mgd)	12.5	Mean (cfs)	19.3	Ac-ft	14,020
Fiscal Year 1965-66:	Max	25	Min	3.7	Mean (mgd)	13.3	Mean (cfs)	20.6	Ac-ft	14,850

40-0612. North Wailua ditch below Waikoko Stream, near Lihue

Location.--Lat 22°03'31", long 159°27'55", on left bank 380 ft downstream from Waikoko Stream, 8.1 miles west of Wailua, and 8.1 miles northwest of Lihue.

Records available.--January 1965 to June 1966.

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

Extremes.--1965-66: Maximum daily discharge, 30 mgd (46 cfs) Apr. 10, Nov. 15, 19, 1965; no flow Jan. 1-18, 1965.

Remarks.--Records poor prior to Oct. 1, good thereafter. Ditch diverts from North Fork Wailua River and Waikoko Stream for power and irrigation in vicinity of Lihue.

Discharge, in million gallons a day, January to June 1965

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1							0	19	16	13	18	17
2							0	18	19	12	20	18
3							0	20	20	18	19	17
4							0	22	16	17	20	17
5							0	27	16	25	20	18
6							0	20	16	26	16	17
7							0	20	16	23	15	16
8							0	19	16	18	19	16
9							0	20	15	21	15	16
10							0	19	17	30	12	15
11							0	18	17	26	15	15
12							0	18	16	21	15	18
13							0	18	15	20	16	18
14							0	16	15	12	22	20
15							0	16	14	16	19	21
16							0	17	14	16	18	21
17							0	16	14	16	17	19
18							0	16	15	16	17	18
19							10	16	16	15	18	19
20							16	16	16	15	17	20
21							16	16	15	15	18	17
22							15	16	15	15	19	17
23							19	17	16	14	18	16
24							28	18	15	14	17	16
25							21	16	15	15	16	17
26							21	16	15	16	18	16
27							21	16	14	17	17	17
28							21	15	14	15	18	19
29							20	----------	14	19	18	15
30							20	----------	20	18	19	15
31			----------		----------		20	----------	23	----------	18	----------
Total							248	501	495	534	544	521
Mean												
Mgd							8.0	17.9	16.0	17.8	17.5	17.4
Cfs							12	27.7	24.8	27.5	27.1	26.9
Ac-ft							761	1.540	1.520	1.640	1.670	1.600
Max							28	27	23	30	22	21
Min							0	15	14	12	12	15

Calendar Year	Max		Min		Mean (mgd)		Mean (cfs)		Ac-ft		
Fiscal Year 1964-65:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-	

40-0612. North Wailua ditch below Waikoko Stream, near Lihue--Continued

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13	16	17	19	21	20	24	15	18	14	14	12
2	18	16	19	19	20	18	20	15	17	15	15	16
3	17	15	15	17	18	18	19	15	18	14	17	18
4	17	15	15	16	27	18	19	15	18	14	15	15
5	17	15	15	17	21	18	18	15	17	14	14	16
6	17	16	13	16	25	22	18	22	17	13	14	14
7	17	16	14	16	23	19	17	20	17	13	13	13
8	18	16	16	16	25	18	17	18	17	13	14	12
9	18	18	18	19	20	20	17	18	16	13	15	12
10	17	19	16	18	18	22	17	17	16	13	14	16
11	22	19	18	17	19	21	17	17	15	13	14	21
12	17	17	17	21	21	19	17	16	15	12	17	16
13	15	17	16	19	28	19	17	18	15	12	16	17
14	17	18	15	26	28	22	17	22	15	12	17	16
15	17	16	17	22	30	20	18	21	17	12	16	15
16	18	17	19	19	25	21	18	19	16	12	15	14
17	19	16	18	19	18	20	17	20	15	12	14	14
18	18	14	17	18	21	19	16	19	14	12	15	12
19	17	14	16	20	30	18	20	20	19	12	16	14
20	16	14	15	18	29	22	21	19	23	12	15	13
21	17	14	18	18	18	28	21	17	22	12	14	16
22	28	15	15	18	16	22	19	17	18	12	17	17
23	20	17	16	18	20	21	18	17	17	12	16	18
24	18	15	15	17	20	19	17	16	16	12	14	17
25	16	14	17	17	20	20	17	17	16	12	14	18
26	16	17	15	16	21	24	16	23	16	13	13	20
27	16	17	14	22	22	19	16	25	15	13	13	17
28	15	17	13	20	20	18	16	19	15	13	13	16
29	14	16	13	18	19	23	16	----------	15	18	12	16
30	16	17	14	22	18	25	15	----------	14	15	14	15
31	16	16	----------	19	----------	25	15	----------	14	----------	15	----------
Total	537	499	476	577	661	638	550	512	513	389	455	466
Mean												
Mgd	17.3	16.1	15.9	18.6	22.0	20.6	17.7	18.3	16.5	13.0	14.7	15.5
Cfs	26.8	24.9	24.6	28.8	34.0	31.9	27.4	28.3	25.5	20.1	22.7	24.0
Ac-ft	1,650	1,530	1,460	1,770	2,030	1,960	1,690	1,570	1,570	1,190	1,400	1,430
Max	28	19	19	26	30	28	24	25	23	18	17	21
Min	13	14	13	16	16	18	15	15	14	12	12	12

Calendar Year 1965:	Max	30	Min	0	Mean (mgd)	17.1	Mean (cfs)	26.5	Ac-ft	19,120
Fiscal Year 1965-66:	Max	30	Min	12	Mean (mgd)	17.2	Mean (cfs)	26.6	Ac-ft	19,250

Note.--No gage-height record Sept. 2 to Oct. 1.

40-0620. 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 8.2 miles west of Kapaa.

Records available.--December 1936 to June 1966.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 710 ft (by barometer).

Average discharge.--29 years (1937-66), 7.00 mgd (10.8 cfs).

Extremes.--1936-66: Maximum daily discharge, 46 mgd (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 million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.52	0	19	21	0.52	0	0.12	8.7	0.12	7.1	25	18
2	6.4	.07	21	20	.52	0	.12	8.4	.12	8.2	25	21
3	1.5	.19	16	15	.52	0	.07	8.7	.12	7.1	25	23
4	1.4	.12	21	14	.62	0	.07	8.9	.12	7.1	23	19
5	1.4	4.1	17	15	.43	0	.07	7.9	.12	13	20	21
6	6.5	12	15	13	.34	0	.01	19	2.2	10	21	18
7	14	12	13	13	.26	0	0	21	9.9	14	18	18
8	19	12	17	15	.26	0	0	5.5	4.6	13	20	18
9	11	9.8	26	24	.26	0	0	.26	.19	13	23	17
10	.98	.98	15	18	.26	0	0	.26	5.0	14	20	21
11	.86	.52	.73	16	.26	0	0	.19	8.9	14	20	23
12	.62	.12	.62	10	.26	.01	0	.19	8.7	14	23	22
13	.43	.12	15	.12	.47	.02	0	.26	8.2	13	22	23
14	.34	.07	18	.36	.84	0	4.3	.34	7.9	14	23	22
15	.26	.07	18	.12	.26	0	16	.26	12	13	23	20
16	.26	5.9	28	.12	.26	0	13	.19	10	13	21	19
17	.26	15	24	.12	.26	0	11	.26	8.7	13	20	18
18	.26	17	24	.19	.26	0	10	.26	8.2	14	22	18
19	.26	20	19	.19	.50	0	17	.26	19	15	24	21
20	.19	19	20	.12	.26	0	5.5	.26	27	13	23	19
21	.12	19	7.2	.12	.19	.05	.34	.19	4.7	13	20	22
22	.77	22	.62	.12	.19	.07	.34	.19	.34	12	23	23
23	.02	18	.62	.12	.12	.07	.34	.19	.34	12	25	24
24	0	.62	.34	.07	.12	.07	.34	.19	.43	12	23	22
25	0	.62	.19	.07	.05	.02	.34	.19	.43	14	22	23
26	0	.52	.19	.07	0	.02	6.8	.26	.43	19	21	26
27	0	.43	.19	6.8	0	.01	10	.26	.43	18	20	24
28	0	2.0	.12	.62	0	0	10	.19	6.1	16	18	23
29	0	1.5	9.2	.52	0	.03	9.6	---------	7.7	27	17	24
30	0	.37	13	.62	0	.07	9.1	---------	7.9	22	18	22
31	0	9.8	---------	.52	---------	.12	8.9	---------	7.3	---------	18	---------
Total	67.35	203.92	379.02	204.99	8.29	0.56	133.36	92.75	177.19	407.5	666	632
Mean												
Mgd	2.17	6.58	12.6	6.61	0.276	0.018	4.30	3.31	5.72	13.6	21.5	21.1
Cfs	3.36	10.2	19.5	10.2	0.427	0.028	6.65	5.12	8.85	21.0	33.3	32.6
Ac-ft	207	626	1,160	629	25	1.7	409	285	544	1,250	2,040	1,940
Max	19	22	28	24	0.84	0.12	17	21	27	27	25	26
Min	0	0	0.12	0.07	0	0	0	0.19	0.12	7.1	17	17

Calendar Year 1965:	Max	29	Min	0	Mean (mgd)	4.13	Mean (cfs)	6.39	Ac-ft	4,630
Fiscal Year 1965-66:	Max	28	Min	0	Mean (mgd)	8.14	Mean (cfs)	12.6	Ac-ft	9,120

40-0630. 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 storm ditch and 7.8 miles northwest of Lihue.

Drainage area.--6.6 sq mi, approximately.

Records available.--September 1914 to March 1915, May 1915 to October 1918, December 1918, March 1919, June 1919 to June 1966. 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.--50 years (1915-18, 1919-66), 46.7 mgd (72.3 cfs).

Extremes.--Maximum discharge during year, 2,900 mgd (4,490 cfs) July 22 (gage height, 8.58 ft); minimum, 0.28 mgd (0.43 cfs) Mar. 29, Apr. 26, 27, 28.

1914-66: Maximum discharge, 8,550 mgd (13,200 cfs) Nov. 12, 1955 (gage height, 13.53 ft), from rating curve extended above 470 mgd on basis of slope-area measurement at gage height 10.65 ft; minimum, 0.22 mgd (0.34 cfs) Oct. 27, 1953.

Remarks.--Records fair. Since 1925 Hanalei tunnel (see sta. no. 1000) has diverted from Hanalei River basin into North Fork Wailua River above station; North Wailua and Stable storm ditches (see sta. nos. 610, 620) divert water above station for power development and irrigation in vicinity of Lihue.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21	25	5.9	29	83	91	102	0.92	26	0.33	3.3	0.70
2	39	21	8.5	2.4	51	34	49	1.0	21	.33	5.0	4.0
3	33	20	4.0	.52	34	26	38	.92	17	.37	10	9.2
4	23	20	7.6	.44	273	27	34	.86	15	.37	.70	1.4
5	21	16	4.0	.52	118	44	44	.86	14	.47	.48	3.2
6	15	11	3.0	.48	199	107	27	67	11	.31	.48	1.1
7	8.0	12	3.0	.48	86	34	21	9.9	4.0	.33	.48	.81
8	13	11	5.7	.59	105	29	17	15	8.3	.33	1.3	.70
9	55	17	99	4.3	52	40	16	14	12	.37	2.2	.76
10	36	33	7.1	.70	40	90	15	11	58	.40	1.3	6.5
11	154	33	17	.80	36	39	13	10	2.0	.40	.66	57
12	74	19	21	27	87	26	12	9.7	1.9	.44	12	4.2
13	40	31	6.2	14	357	22	12	25	2.0	.44	.91	5.3
14	39	23	5.0	335	428	62	6.8	81	2.2	.44	3.7	5.3
15	29	17	5.0	78	381	36	4.5	61	4.7	.44	4.9	2.2
16	28	23	14	44	310	43	1.3	24	2.4	.44	.63	1.8
17	37	17	15	48	81	37	1.0	52	1.7	.44	.44	1.4
18	34	7.1	10	45	106	22	1.0	31	1.4	.44	9.4	1.3
19	26	4.8	6.0	61	421	18	17	37	15	.44	4.2	3.1
20	27	5.4	8.0	37	318	51	38	43	42	.44	2.1	1.7
21	50	4.5	23	29	79	217	27	23	47	.44	.44	3.9
22	528	7.4	16	23	53	64	14	18	11	.44	19	6.2
23	112	25	15	21	44	36	12	19	6.6	.44	5.4	14
24	58	21	11	19	39	23	11	16	6.0	.44	1.2	6.3
25	43	17	12	21	40	31	10	19	5.0	.44	.66	9.1
26	34	20	9.7	18	44	85	4.2	117	4.5	.53	.59	42
27	34	16	10	53	54	26	1.0	174	4.2	.37	.59	7.1
28	27	13	9.1	39	36	20	1.0	36	1.8	1.6	.63	5.5
29	24	15	3.2	33	24	94	1.0	----------	.28	16	.70	10
30	34	14	.48	102	21	124	1.0	----------	.31	14	.70	3.6
31	33	7.8	----------	42	----------	107	1.0	----------	.33	----------	.98	----------
Total	1,729.0	527.0	364.48	1,129.23	4,000	1,705	552.8	917.16	296.42	42.67	95.07	219.37
Mean												
Mgd	55.8	17.0	12.1	36.4	133	55.0	178	32.8	9.56	1.42	3.07	7.31
Cfs	86.3	26.3	18.7	56.3	206	85.1	27.5	50.7	14.8	2.20	4.75	11.3
Ac-ft	5,310	1,620	1,120	3,470	12,280	5,230	1,700	2810	910	131	292	673
Max	528	33	99	335	428	217	102	174	47	16	19	57
Min	8.0	4.5	0.48	0.44	21	18	1.0	0.86	0.28	0.31	0.44	0.70

Calendar Year 1965:	Max	528	Min	0.44	Mean (mgd)	52.6	Mean (cfs)	81.4	Ac-ft	58890
Fiscal Year 1965-66:	Max	528	Min	0.28	Mean (mgd)	31.7	Mean (cfs)	49.0	Ac-ft	35,530

Peak discharge (base, 1,600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	1200	8.58	2,900	4,490	11-13	2100	8.39	2,730	4,220
10-14	0930	7.38	1,860	2,880	11-19	1200	7.28	1,780	2,750

40-0680. 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 7.5 miles northwest of Lihue.

Drainage area.--6.2 sq mi, approximately.

Records available.--July 1912 to September 1914, December 1914 to March 1915, May 1915 to March 1919, June 1919 to June 1966. 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, staff 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.--51 years (1913-14, 1915-18, 1919-66), 31.1 mgd (48.1 cfs).

Extremes.--Maximum discharge during year, 2,350 mgd (3,640 cfs) Nov. 4, 19 (gage height, 7.32 ft); minimum, 6.3 mgd (9.8 cfs) June 8, 9. 1912-66: Maximum gage height, 14.7 ft, from floodmarks, Nov. 12, 1955 (discharge not determined); minimum discharge, 4.4 mgd (6.8 cfs) July 3, 13, 1926.

Remarks.--Records fair. No diversion above station. Continuous records of rainfall are obtained at station.

Revisions.--Revised figures of discharge for some peak discharges in the fiscal year 1965, superseding those published in Water Resources Data for Hawaii and other Pacific Areas, Part 1, for 1965, and WSP 1936, are given herewith: Apr. 5 (1830) 1,580 mgd (2,440 cfs), 6.24 ft; Apr. 11 (0300) 1,490 mgd (2,310 cfs), 6.09 ft; Apr. 13 (0430) 1,990 mgd (3,080 cfs), 6.86 ft; May 2 (1800) 1,670 mgd (2,580 cfs), 6.38 ft; May 5 (0200) 1,410 mgd (2,180 cfs), 5.95 ft; May 15 (1530) 1,700 mgd (2,630 cfs), 6.43 ft.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16	20	20	17	94	147	62	12	24	10	17	7.0
2	27	19	47	16	54	38	29	12	20	10	11	7.7
3	24	18	16	11	65	29	27	12	18	10	9.4	12
4	16	18	29	11	364	29	26	11	16	10	7.7	7.7
5	14	17	18	12	70	45	26	11	15	12	7.0	9.0
6	13	16	14	11	219	146	26	69	15	9.8	7.0	7.4
7	13	17	13	10	76	45	20	32	14	9.4	6.6	6.6
8	26	15	14	11	93	36	18	17	13	9.4	6.6	6.3
9	45	23	79	24	51	45	17	16	13	9.4	8.6	6.6
10	21	28	25	16	42	96	15	14	12	9.4	7.4	7.7
11	76	35	20	12	41	47	15	13	11	10	6.6	36
12	52	17	19	48	97	32	14	13	11	9.4	8.1	9.8
13	26	16	16	25	181	30	14	27	10	9.0	7.7	12
14	22	19	15	278	398	30	14	84	9.8	9.0	18	10
15	19	17	15	48	288	26	18	70	18	9.0	16	8.6
16	17	14	17	26	162	32	14	29	28	9.0	10	7.4
17	24	15	16	24	80	34	12	60	15	9.0	7.7	7.0
18	25	13	16	30	89	24	12	37	13	9.0	14	6.6
19	19	13	14	49	544	21	26	44	16	9.8	13	8.1
20	19	16	14	27	187	27	61	64	18	9.4	11	7.0
21	24	16	24	28	76	89	40	29	24	9.0	7.7	7.7
22	317	24	17	19	56	36	25	24	16	8.6	25	7.7
23	92	41	17	16	46	28	20	25	13	8.6	16	14
24	50	22	14	15	39	23	19	22	12	8.6	9.8	12
25	37	17	13	15	37	23	17	23	12	8.6	8.1	11
26	31	40	13	13	41	29	16	70	11	13	7.7	35
27	32	17	13	40	46	22	15	158	11	11	7.4	14
28	25	15	12	39	39	20	15	32	11	11	7.0	10
29	23	20	11	44	30	30	14	----------	10	26	7.0	10
30	21	14	11	93	29	46	13	----------	11	25	7.0	9.8
31	20	13	----------	40	----------	61	12	----------	10	----------	7.0	----------
Total	1186	605	582	1068	3634	1366	672	1030	450.8	321.4	310.1	321.7
Mean												
Mgd	38.3	19.5	19.4	34.5	121	44.1	21.7	36.8	14.5	10.7	10.0	10.7
Cfs	59.3	30.2	30.0	53.4	187	68.2	33.6	56.9	22.4	16.6	15.5	16.6
Ac-ft	3640	1860	1790	3280	11150	4190	2060	3160	1380	986	952	987
Max	317	41	79	278	544	147	62	158	28	26	25	36
Min	13	13	11	10	29	20	12	11	9.8	8.6	6.6	6.3

Calendar Year 1965:	Max	544	Min	10	Mean (mgd)	47.6	Mean (cfs)	73.6	Ac-ft	53270
Fiscal Year 1965-66:	Max	544	Min	6.3	Mean (mgd)	31.6	Mean (cfs)	48.9	Ac-ft	35440

Peak discharge (base, 1,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	1230	5.50	1,150	1,780	11-14	1730	6.78	1,940	3,000
10-14	0830	6.74	1,910	2,960	11-19	1200	7.32	2,350	3,640
11- 4	0300	7.32	2,350	3,640	2-27	0130	5.25	1,020	1,580
11- 6	1800	5.63	1,220	1,890					

40-0690. 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.

Records available.--November 1936 to June 1966.

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

Average discharge.--29 years (1937-66), 9.79 mgd (15.1 cfs).

Extremes.--1936-66: Maximum daily discharge, 41 mgd (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 near Kapaa.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.9	2.2	13	7.3	2.1	0.32	0.28	5.4	0.78	8.3	9.3	16
2	4.3	8.4	16	5.3	2.1	.32	.24	5.4	.68	6.5	9.4	18
3	1.5	14	14	5.4	2.1	.28	.24	5.4	.68	6.4	9.0	16
4	1.4	18	6.8	5.4	2.0	.28	.24	5.4	.68	7.4	8.7	12
5	1.4	19	.06	5.4	1.8	.28	.20	5.4	.68	11	11	12
6	6.4	19	.04	5.6	1.5	.24	.20	4.0	.68	13	11	16
7	9.4	18	10	5.7	1.3	.24	.20	.88	.60	9.3	9.3	17
8	9.6	18	18	5.7	1.3	.20	.13	1.1	.60	6.2	9.2	17
9	9.6	18	16	5.7	1.1	.20	.13	.32	.60	6.2	13	16
10	9.7	19	9.4	5.7	.98	.20	.13	.32	.60	6.3	17	13
11	9.7	19	9.0	5.7	.78	.20	.16	.28	.60	10	18	10
12	8.3	19	8.9	3.7	.68	.20	7.5	.24	.60	12	19	11
13	8.2	19	13	2.5	.88	.20	11	.24	.60	12	16	14
14	8.6	19	18	2.4	.98	.20	5.8	2.0	.68	12	11	16
15	12	19	19	2.1	1.2	.20	2.3	1.1	.88	8.7	12	16
16	15	16	19	1.6	1.2	.20	2.4	1.4	.88	5.8	16	16
17	15	12	19	1.3	1.2	.24	2.4	.98	.88	5.8	19	14
18	16	12	19	.88	.88	.24	2.5	.68	.88	11	15	11
19	16	12	19	.88	.78	.24	2.5	.60	.88	12	4.7	11
20	16	12	19	1.1	.98	.24	2.5	.68	.88	12	4.2	14
21	15	12	12	1.1	.98	.28	2.5	.68	9.0	12	5.0	16
22	16	12	3.3	1.4	.88	.28	2.5	.68	14	8.1	5.1	16
23	9.5	12	3.3	1.6	.78	.32	2.5	.78	14	5.2	11	16
24	14	12	3.2	1.7	.54	.32	2.5	.78	14	5.2	13	12
25	2.9	12	3.2	1.8	.42	.32	2.5	.88	9.5	7.7	13	8.2
26	6.6	12	3.0	1.8	.32	.32	2.5	.98	4.3	8.9	13	8.5
27	9.0	12	5.6	1.8	.32	.32	2.5	.98	4.4	9.2	11	15
28	9.4	13	9.0	1.8	.32	.32	2.5	.88	8.2	9.2	9.7	17
29	9.4	13	9.2	1.9	.32	.32	2.6	----------	9.9	9.3	9.7	17
30	6.4	13	9.2	2.0	.32	.28	2.6	----------	10	9.2	12	17
31	2.2	13	----------	2.1	----------	.28	4.4	----------	10	----------	12	----------
Total	284.4	448.6	327.20	98.36	31.04	8.08	70.65	48.46	121.64	265.9	356.3	428.7
Mean												
Mgd	9.17	14.5	10.9	3.17	1.03	0.261	2.28	1.73	3.92	8.86	11.5	14.3
Cfs	14.2	22.4	16.9	4.90	1.59	0.404	3.53	2.68	6.07	13.7	17.8	22.1
Ac-ft	873	1,380	1,000	302	95	25	217	149	373	816	1,090	1,320
Max	16	19	19	7.3	2.1	0.32	11	5.4	14	13	19	18
Min	1.4	2.2	0.04	0.88	0.32	0.20	0.13	0.24	0.60	5.2	4.2	8.2

Calendar Year 1965:	Max	20	Min	0.04	Mean (mgd)	4.83	Mean (cfs)	7.47	Ac-ft	5,410
Fiscal Year 1965-66:	Max	19	Min	0.04	Mean (mgd)	6.82	Mean (cfs)	10.6	Ac-ft	7,640

40-0710. 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, 3.5 miles southwest of Kapaa, and 5.0 miles north of Lihue.

Drainage area.--18.7 sq mi.

Records available.--July 1952 to June 1966.

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

Average discharge.--14 years, 81.6 mgd (126 cfs).

Extremes.--Maximum discharge during year, 3,600 mgd (5,570 cfs) Nov. 19 (gage height, 7.90 ft); minimum, 4.8 mgd (7.4 cfs) June 17, 18, 28, 29.

1952-66: Maximum discharge, 34,400 mgd (53,200 cfs) Nov. 12, 1955 (gage height, 19.88 ft in gage well, 20.8 ft from flood-marks), from rating curve extended above 2,400 mgd on basis of slope-area measurement of peak flow; minimum, 1.37 mgd (2.12 cfs) Oct. 28, 1953.

Remarks.--Records good except those for period of no gage-height record, which are poor. Wailua ditch (see sta. no. 690) and Aahoaka ditch divert above station for irrigation of sugarcane in the vicinity of Kapaa and Wailua, respectively.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	33	56	15	50	198	262	254	19	74	13	27	5.5
2	55	39	46	20	141	116	110	17	65	19	20	5.8
3	66	28	20	15	103	92	104	18	56	19	18	11
4	46	29	23	10	752	90	92	17	50	10	9.2	6.3
5	42	27	18	12	255	100	84	17	46	8.9	7.1	5.8
6	35	16	20	10	549	291	84	125	44	8.2	6.8	5.5
7	17	17	21	11	247	123	66	82	34	7.6	15	5.5
8	47	16	10	15	275	100	61	41	36	7.3	7.1	5.3
9	86	21	137	40	159	112	57	47	40	7.6	6.6	5.5
10	84	44	49	20	126	217	47	39	31	7.3	6.3	5.8
11	236	53	49	25	121	126	35	38	22	7.3	5.5	61
12	170	26	52	30	207	93	32	36	21	7.3	8.6	8.7
13	72	31	26	100	603	86	32	52	21	6.8	7.1	5.5
14	40	32	7.9	60	973	121	25	153	20	6.3	7.0	5.8
15	25	27	7.3	700	834	99	19	172	21	6.3	12	5.5
16	37	29	19	200	467	103	13	93	51	5.8	7.1	5.0
17	47	31	13	110	246	114	17	126	29	6.0	5.0	4.8
18	51	17	18	120	256	80	28	82	27	6.6	5.8	5.0
19	36	13	7.6	110	1,060	70	55	92	43	6.0	16	5.3
20	37	13	7.9	130	640	94	114	119	67	5.5	5.3	5.5
21	43	8.6	35	73	249	344	97	63	76	5.5	9.2	5.8
22	843	10	25	56	187	161	60	47	42	6.0	23	5.8
23	254	44	20	49	151	103	47	43	23	5.5	22	6.4
24	130	47	15	46	141	80	42	44	20	5.3	6.6	17
25	95	34	14	47	126	82	38	47	19	5.3	6.0	7.6
26	57	52	17	44	128	146	33	114	27	5.5	5.8	49
27	42	32	15	99	148	82	27	461	25	5.5	5.8	14
28	45	17	14	103	123	70	28	100	22	6.0	5.5	5.0
29	45	23	13	105	92	127	27	----------	14	54	5.3	5.0
30	55	24	12	229	88	214	25	----------	9.8	21	5.5	5.3
31	62	22	----------	110	----------	195	22	----------	10	----------	5.5	----------
Total	2,933	878.6	746.7	2,749	9,645	4,093	1,775	2,304	1,085.8	291.4	302.7	295.0
Mean												
Mgd	94.6	28.3	24.9	88.7	322	132	57.3	82.3	35.0	9.71	9.76	9.83
Cfs	146	43.8	38.5	137	498	204	88.7	127	54.2	15.0	15.1	15.2
Ac-ft	9,000	2,700	2,290	8,440	29,600	12,560	5,450	7,070	3,330	894	929	905
Max	843	56	137	700	1,060	344	254	461	76	54	27	61
Min	17	8.6	7.3	10	88	70	13	17	9.8	5.3	5.0	4.8

Calendar Year 1965:	Max	1,060	Min	7.3	Mean (mgd)	119	Mean (cfs)	184	Ac-ft	132,800
Fiscal Year 1965-66:	Max	1,060	Min	4.8	Mean (mgd)	74.2	Mean (cfs)	115	Ac-ft	83,160

Note.--No gage-height record Sept. 21 to Oct. 20.

Peak discharge (base, 2,600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	1300	7.49	3,190	4,940	11-14	1730	7.72	3,420	5,290
probably 10-14	-	7.25	2,950	4,560	11-19	1330	7.90	3,600	5,570
11-4	0330	7.30	3,000	4,640					

40-0715. 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.--0.7 sq mi, approximately.

Records available.--May 1960 to June 1966. 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.--6 years, 2.10 mgd (3.25 cfs).

Extremes.--Maximum discharge during year, 176 mgd (272 cfs) Nov. 19 (gage height, 5.08 ft), from rating curve extended above 20 mgd; minimum, 0.23 mgd (0.36 cfs) June 2.
1960-66: Maximum discharge, 236 mgd (365 cfs) Apr. 15, 1963 (gage height, 5.21 ft), from rating curve extended above 7.9 mgd; minimum, 0.20 mgd (0.31 cfs) Jan. 14, 15, 1963.

Remarks.--Records fair. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.3	1.6	0.94	0.79	3.9	7.1	2.1	1.2	1.5	0.84	0.68	0.27
2	1.5	1.5	2.3	.79	4.6	4.1	1.8	1.2	1.4	.84	.56	.27
3	1.3	1.5	1.2	.73	3.4	3.6	1.8	1.1	1.3	.79	.56	.31
4	1.3	1.5	1.3	.73	19	3.3	1.8	1.1	1.3	.79	.52	.31
5	1.3	1.4	1.2	.89	4.6	3.2	1.7	1.1	1.3	.79	.48	.31
6	1.2	1.3	.94	.73	15	3.3	1.7	4.5	1.2	.79	.39	.31
7	1.2	1.3	.94	.73	6.7	2.8	1.6	2.3	1.2	.79	.39	.31
8	1.3	1.3	.94	.79	7.1	2.7	1.5	1.4	1.2	.79	.39	.27
9	1.6	1.3	1.6	1.0	4.8	2.8	1.5	1.2	1.1	.73	.39	.27
10	1.3	1.4	1.3	.89	4.3	3.9	1.5	1.1	1.1	.73	.39	.27
11	3.0	1.6	1.1	.84	4.5	3.0	1.4	1.1	1.1	.73	.35	.52
12	3.9	1.3	1.0	1.3	8.0	2.7	1.4	1.1	1.1	.73	.35	.35
13	2.0	1.2	.94	1.2	13	2.6	1.3	1.1	1.1	.68	.39	.31
14	1.7	1.3	.89	11	20	2.5	1.3	1.2	1.1	.68	.39	.31
15	1.6	1.3	.94	2.4	19	2.4	1.7	1.7	1.1	.68	.39	.27
16	1.5	1.1	.94	1.7	13	2.3	1.3	1.4	1.4	.64	.35	.27
17	1.5	1.1	.94	1.5	8.8	2.5	1.3	1.3	1.1	.64	.31	.31
18	1.4	1.0	.94	1.5	8.8	2.2	1.3	1.2	1.1	.68	.52	.27
19	1.3	1.0	.89	1.6	41	2.1	1.7	1.2	1.1	.64	.60	.27
20	1.4	1.0	.94	1.5	16	2.2	2.5	1.5	1.1	.64	.39	.27
21	1.3	1.0	1.5	1.5	9.7	2.5	2.0	1.2	1.0	.56	.31	.27
22	7.1	1.1	1.2	1.3	7.5	2.3	1.7	1.1	1.0	.56	.39	.27
23	3.6	1.3	1.0	1.2	6.2	2.1	1.5	1.2	.94	.60	.52	.31
24	2.3	1.2	.94	1.2	5.3	2.0	1.5	1.1	1.0	.60	.35	.35
25	2.1	1.1	.94	1.2	4.7	1.9	1.4	1.0	.94	.60	.35	.35
26	1.9	1.2	.89	1.2	4.4	1.9	1.3	1.5	.89	.60	.31	.52
27	1.9	1.0	.89	1.8	4.2	1.8	1.3	6.6	.89	.60	.31	.43
28	1.8	.94	.84	2.0	3.9	1.8	1.3	2.0	.94	.52	.31	.35
29	1.7	.94	.79	3.6	3.4	1.8	1.2	----------	.89	.94	.27	.35
30	1.7	.89	.79	4.7	3.5	2.0	1.2	----------	.89	.64	.27	.31
31	1.6	.89	----------	2.7	----------	2.0	1.2	----------	.84	----------	.27	----------
Total	59.6	37.56	31.96	55.01	278.3	83.4	47.8	44.7	34.12	20.84	12.45	9.56
Mean												
Mgd	1.92	1.21	1.07	1.77	9.28	2.69	1.54	1.60	1.10	0.695	0.402	0.319
Cfs	2.97	1.87	1.66	2.74	14.4	4.16	2.38	2.48	1.70	1.08	0.622	0.494
Ac-ft	183	115	98	169	854	256	147	137	105	64	38	29
Max	7.1	1.6	2.3	11	41	7.1	2.5	6.6	1.5	0.94	0.68	0.52
Min	1.2	0.89	0.79	0.73	3.4	1.8	1.2	1.0	0.84	0.52	0.27	0.27

Calendar Year 1965: Max 41 Min 0.60 Mean (mgd) 3.14 Mean (cfs) 4.86 Ac-ft 3,510
Fiscal Year 1965-66: Max 41 Min 0.27 Mean (mgd) 1.96 Mean (cfs) 3.03 Ac-ft 2,200

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-4	0300	4.30	112	173	11-19	1200	5.08	176	272

40-0770. Makaleha ditch near Kealia

Location.--Lat 22°07'00", 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 4.1 miles northwest of Kapaa.

Records available.--December 1936 to June 1966.

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

Average discharge.--29 years (1937-66), 4.39 mgd (6.79 cfs).

Extremes.--1936-66: Maximum daily discharge, 20 mgd (31 cfs) Aug. 1, 1961; no flow at times.

Remarks.--Records good. Ditch diverts from Makaleha Stream for irrigation of sugarcane near Kealia.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.3	5.8	10	6.5	1.0	0.13	0.01	6.2	0.49	0.01	7.4	4.7
2	8.1	5.6	13	6.9	1.3	.07	.01	6.0	.29	.01	7.2	5.4
3	8.5	4.3	8.3	6.3	1.0	.05	.01	6.0	.23	.01	7.4	4.4
4	8.0	4.3	14	6.0	3.0	.04	4.1	6.0	.18	.01	7.1	.23
5	7.4	7.1	9.5	6.4	1.3	.04	8.0	6.0	.15	.01	6.5	1.3
6	7.8	7.3	7.8	6.2	6.3	.04	7.8	7.0	.13	.01	7.5	5.2
7	7.2	8.0	7.2	6.1	2.5	.04	2.9	.45	.09	.01	6.7	3.4
8	8.1	7.6	7.1	6.9	1.6	.04	.07	.21	.09	.01	6.7	5.0
9	8.5	9.8	6.4	13	.93	.04	.05	.15	.07	.01	8.0	5.0
10	8.3	12	7.5	10	.56	.04	.04	3.9	.05	.01	7.2	5.4
11	7.6	11	9.6	7.0	.49	.04	.02	6.4	.04	.01	6.8	5.8
12	4.6	8.9	8.8	5.8	1.1	.04	3.4	6.4	.02	.01	7.1	5.4
13	4.4	8.5	7.5	.34	3.2	.05	6.2	7.4	.02	.01	2.8	5.5
14	5.9	8.6	7.2	3.4	5.3	.05	5.9	3.4	.02	.01	.04	5.3
15	5.2	8.5	7.4	1.2	.43	.04	7.6	.56	.02	.01	.05	4.6
16	4.8	7.5	7.7	.60	1.1	.04	8.0	.34	.09	.01	.04	4.7
17	6.4	7.3	7.8	.41	.11	.01	7.2	.31	.04	.01	.01	4.8
18	6.6	7.2	7.5	.29	.18	.01	6.6	.29	.02	.02	.05	4.8
19	5.4	6.9	6.7	.31	1.6	.01	7.7	.34	.02	.02	.13	4.9
20	5.4	8.0	7.0	.29	.11	.01	8.9	1.1	.02	.02	.05	5.0
21	6.2	7.6	8.0	.26	.05	.02	3.5	.60	.07	.02	.04	5.0
22	8.5	11	.41	.21	.05	.02	.18	.31	.04	.02	.04	5.1
23	8.6	12	3.3	.18	.04	.02	.11	.29	.02	.02	.13	5.3
24	8.0	10	7.6	.18	.04	.02	.09	.23	.02	.02	.05	5.2
25	7.4	9.1	7.1	3.1	.02	.02	.07	.18	.02	3.9	.04	5.1
26	6.4	11	6.7	7.4	.01	.02	.05	.66	.01	10	.02	4.7
27	6.8	8.3	6.5	2.5	.01	.02	3.7	2.5	.01	6.6	.02	4.9
28	6.0	7.6	6.3	.34	.01	.02	6.5	.97	.01	5.5	.02	5.7
29	5.0	10	6.4	.84	.01	.02	6.4	----------	.01	7.3	.02	5.4
30	5.6	7.7	6.4	1.4	.01	.02	6.3	----------	.01	7.4	.02	5.4
31	5.8	7.6	----------	.93	----------	.02	6.1	----------	.01	----------	2.6	----------
Total	209.8	256.1	226.71	111.28	33.36	1.05	117.51	74.19	2.31	41.01	91.77	142.6
Mean												
Mgd	6.77	8.26	7.56	3.59	1.11	0.034	3.79	2.65	0.075	1.37	2.96	4.75
Cfs	10.5	12.8	11.7	5.55	1.72	0.053	5.86	4.10	0.12	2.12	4.58	7.35
Ac-ft	644	786	696	342	102	3.2	361	228	7.1	126	282	438
Max	8.6	12	14	13	6.3	0.13	8.9	7.4	0.49	10	8.0	5.8
Min	4.4	4.3	0.41	0.18	0.01	0.01	0.01	0.15	0.01	0.01	0.01	0.23

Calendar Year 1965:	Max	14	Min	0.01	Mean (mgd)	3.48	Mean (cfs)	5.38	Ac-ft	3,900
Fiscal Year 1965-66:	Max	14	Min	0.01	Mean (mgd)	3.58	Mean (cfs)	5.54	Ac-ft	4,010

40-0790. 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.

Records available.--April 1909 to February 1911, May 1911, July 1911 to May 1914, July 1915 to April 1917, June 1917 to June 1966. 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.--48 years (1917-20, 1921-66), 4.49 mgd (6.95 cfs).

Extremes.--1909-66: Maximum daily discharge, 89.2 mgd (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 million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.19	0.39	6.5	2.9	0.23	0.50	0.07	3.8	0.31	5.6	0.10	3.6
2	.23	3.9	5.5	3.5	.16	.13	0.07	3.8	.31	.16	.81	5.0
3	.16	6.7	3.8	2.9	.26	.13	.56	3.7	.31	.16	2.8	5.7
4	.16	6.7	5.2	2.7	.60	.13	6.0	3.6	.31	.16	2.2	.50
5	.35	4.4	.23	3.0	.13	.13	9.0	3.4	.31	.16	2.9	.45
6	.23	3.8	.19	2.9	1.0	.13	4.1	2.7	.31	.13	2.2	2.6
7	2.0	4.2	2.9	2.7	.16	.25	.19	.16	4.1	.13	.19	4.7
8	6.8	3.8	3.7	2.9	.19	.27	.19	.27	.31	.16	.16	2.7
9	6.6	7.0	2.1	6.8	.16	.19	.19	.31	7.0	.13	4.2	2.6
10	5.5	8.3	2.3	5.0	.13	.19	.16	.64	10	.13	3.4	5.8
11	3.6	5.4	.19	3.4	.16	.16	2.3	.27	6.4	.13	3.3	13
12	.13	4.4	.19	1.7	.43	.16	3.6	.23	.35	.13	4.0	5.7
13	1.8	4.0	3.2	.23	.71	.16	4.8	.23	.31	6.1	8.5	8.8
14	5.3	4.0	3.8	.44	1.1	.16	1.9	.68	.31	8.5	9.1	7.1
15	5.4	4.3	3.8	.13	.86	.16	.27	.23	.62	8.4	6.1	5.4
16	5.9	3.6	3.8	.10	.27	.16	.23	.13	5.1	8.2	8.5	3.8
17	3.1	3.4	3.8	.10	.16	.16	2.3	.16	11	8.5	9.8	3.4
18	2.8	3.4	3.7	.10	.19	.16	3.8	.16	6.9	8.8	6.1	3.1
19	2.6	3.2	3.4	.10	1.5	.16	2.9	.19	.23	11	8.1	4.6
20	4.6	3.4	2.0	.07	.16	.19	.35	.31	.23	9.1	6.7	3.5
21	7.6	3.4	.31	.07	.13	.19	.23	.16	.23	3.0	.19	4.4
22	4.0	5.0	.27	.16	.10	.13	.19	.16	.19	.19	.16	5.4
23	.16	2.2	.23	.23	.10	.13	.19	.16	.23	.16	.07	16
24	.13	.31	.31	.16	.13	.13	.19	.16	.31	.13	.07	8.8
25	.13	1.9	.31	.13	.10	.13	1.0	.13	.31	.13	.07	8.6
26	3.3	1.9	.31	.13	.10	.16	2.2	.46	.31	.10	.67	8.5
27	7.9	.31	.31	.16	.10	.13	2.0	.59	.27	.54	1.3	5.7
28	6.6	.27	1.4	.13	.10	.16	3.0	.60	.23	.95	.19	4.5
29	6.9	.23	2.9	.33	.07	.19	3.9	----------	.23	.13	.23	5.9
30	3.6	1.7	2.9	.39	.10	.10	3.6	----------	.19	.10	4.0	4.6
31	.23	3.5	----------	.13	----------	.10	3.8	----------	6.3	----------	5.6	----------
Total	98.00	109.01	69.55	43.69	9.59	5.23	63.28	27.39	63.52	81.21	101.71	164.45
Mean												
Mgd	3.16	3.52	2.32	1.41	0.320	0.169	2.04	0.978	2.05	2.71	3.28	5.48
Cfs	4.89	5.45	3.59	2.18	0.495	0.261	3.16	1.51	3.17	4.19	5.07	8.48
Ac-ft	301	335	213	134	29	16	194	84	195	249	312	505
Max	7.9	8.3	6.5	6.8	1.5	0.50	9.0	3.8	11	11	9.8	16
Min	0.13	0.23	0.19	0.07	0.07	0.10	0.07	0.13	0.19	0.10	0.07	0.45

Calendar Year 1965:	Max	9.4	Min	0.07	Mean (mgd)	1.26	Mean (cfs)	1.95	Ac-ft	1410
Fiscal Year 1965-66:	Max	16	Min	0.07	Mean (mgd)	2.29	Mean (cfs)	3.54	Ac-ft	2570

40-0800. Kapaa Stream at Kapahi ditch intake, near Kapaa

Location.--Lat 22°06'15", long 159°22'29", on right bank at Kapahi ditch intake, 4 miles northwest of Kapaa, and 4.5 miles northwest of Wailua.

Drainage area.--3.3 sq mi, approximately.

Records available.--July 1936 to June 1966. 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.--30 years, 13.6 mgd (21.0 cfs).

Extremes.--Maximum discharge during year, 2,700 mgd (4,180 cfs) Nov. 19 (gage height, 4.17 ft); no flow for many days.
1936-66: Maximum discharge, 4,960 mgd (7,670 cfs) Jan. 25, 1956 (gage height, 5.41 ft, present datum), from rating curve extended above 1,800 mgd by logarithmic plotting; 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. no. 790).

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	6.3	0.89	0	74	122	24	0	16	3.9	16	0
2	11	2.5	21	0	40	27	18	0	14	11	5.4	.14
3	8.9	.12	1.3	0	49	20	17	0	14	11	1.8	4.2
4	5.1	.37	7.6	0	149	20	10	0	13	11	.86	8.4
5	3.8	.01	5.6	0	28	33	3.0	0	13	16	0	12
6	5.1	0	4.7	0	156	55	6.4	53	12	11	1.3	1.6
7	2.7	0	1.3	0	32	22	11	23	7.9	10	2.4	0
8	3.6	0	0	0	42	20	13	16	13	10	2.4	0
9	10	1.5	42	4.4	22	28	12	14	3.6	10	1.6	0
10	2.4	.53	9.3	.39	19	49	12	8.2	0	10	0	.74
11	38	2.3	6.1	0	23	26	9.3	5.1	4.2	10	0	16
12	39	.01	5.1	28	72	19	3.9	5.1	11	10	.24	0
13	13	0	1.0	24	130	19	0	15	11	2.6	0	.09
14	5.6	0	0	142	197	19	3.0	94	11	0	13	0
15	3.8	0	0	28	178	19	13	49	60	0	12	0
16	1.9	0	0	17	67	19	5.1	21	22	0	3.7	0
17	7.5	0	0	17	26	19	2.1	41	1.9	0	0	0
18	8.9	0	0	22	39	15	0	28	4.3	0	17	0
19	5.6	0	0	38	269	14	7.7	39	16	1.8	6.6	0
20	3.2	0	1.2	17	63	22	38	56	16	0	4.3	0
21	1.7	0	5.1	17	28	46	30	19	25	5.7	9.6	0
22	89	0	7.0	13	22	24	18	16	14	8.0	21	0
23	34	13	6.7	12	20	18	15	18	12	8.4	14	.22
24	13	6.1	2.9	11	20	15	15	16	14	8.4	9.6	0
25	10	2.7	2.9	9.6	19	16	14	17	13	4.9	8.9	.15
26	4.9	13	2.6	4.7	27	28	10	60	12	7.7	8.0	16
27	1.0	5.1	2.6	38	29	16	6.1	92	11	4.4	7.0	2.5
28	.36	3.8	1.6	31	24	15	1.6	22	12	9.8	8.0	0
29	.06	7.7	0	55	17	27	.41	----------	11	3.3	8.0	0
30	3.0	2.0	0	77	18	34	.77	----------	13	19	3.8	0
31	6.6	0	----------	29	----------	23	.30	----------	3.6	----------	.16	----------
Total	347.42	67.04	138.49	635.09	1,899	849	319.68	727.4	404.5	207.9	186.66	62.04
Mean												
Mgd	11.2	2.16	4.62	20.5	63.3	27.4	10.3	26.0	13.0	6.93	6.02	2.07
Cfs	17.3	3.34	7.15	31.7	97.9	42.4	15.9	40.2	20.1	10.7	9.31	3.20
Ac-ft	1,070	206	425	1,950	5,830	2,610	981	2,230	1,240	638	573	190
Max	89	13	42	142	269	122	38	94	60	19	21	16
Min	0.06	0	0	0	17	14	0	0	0	0	0	0

Calendar Year 1965: Max 269 Min 0 Mean (mgd) 24.0 Mean (cfs) 37.1 Ac-ft 26,870
Fiscal Year 1965-66: Max 269 Min 0 Mean (mgd) 16.0 Mean (cfs) 24.8 Ac-ft 17,940

Peak discharge (base, 1,200 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-4	0300	3.08	1,270	1,960	11-14	1800	3.39	1,620	2,510
11-6	0630	3.09	1,280	1,980	11-19	1130	4.17	2,700	4,180

40-0870. 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.

Records available.--July 1936 to June 1966.

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

Average discharge.--30 years, 3.33 mgd (5.15 cfs).

Extremes.--1936-66: Maximum daily discharge, 54 mgd (84 cfs) Nov. 12, 1955; no flow at times.

Remarks.--Records good. Water that passes station flows into Kaupaku Stream and thence into Anahola Stream 2 miles below gaging station 890 on Anahola Stream.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	1.3	0.10	0.36	19	19	8.0	0.34	4.6	0.12	0.06	0.12
2	1.7	1.3	.06	.72	17	9.0	4.8	.26	3.6	.12	.02	.12
3	1.7	1.3	.12	.72	12	6.5	5.0	.26	3.3	.12	.02	.12
4	1.6	1.4	.18	.84	19	6.3	6.5	.26	3.2	.12	.02	.12
5	1.7	1.4	.12	.84	14	8.5	6.8	.26	2.8	.12	.02	.18
6	1.7	1.3	.18	.84	20	16	5.8	1.9	2.7	.06	.12	.18
7	1.4	1.4	.18	.84	13	6.9	3.6	1.6	3.0	.02	.12	.18
8	1.6	1.3	.18	.84	12	7.8	3.3	1.3	2.5	.02	.12	.18
9	1.8	1.7	.26	.72	7.2	11	3.2	1.3	2.3	.02	.18	.18
10	1.8	1.8	.12	.72	7.7	16	2.3	1.1	2.5	.06	.12	.18
11	2.2	1.3	.18	.84	7.6	9.2	1.1	1.1	2.2	.06	.06	.34
12	1.8	1.3	.18	.96	15	6.3	1.1	1.1	1.8	.06	.06	.18
13	1.6	1.4	.12	.84	20	6.9	.96	1.4	1.8	.02	.06	.26
14	1.6	1.3	.12	13	24	7.5	.84	14	1.8	.06	.06	.34
15	1.4	1.3	.12	12	21	6.7	1.1	14	2.3	.06	.06	.26
16	1.3	1.2	.06	6.3	18	5.0	.84	5.9	3.2	.06	.06	.26
17	1.6	1.3	.06	7.4	13	6.3	.72	13	3.5	.06	.06	.26
18	1.7	1.2	.06	13	13	4.4	.26	9.7	2.8	.06	.18	.26
19	1.4	1.2	.12	17	21	3.8	3.7	12	5.7	.12	.12	.34
20	1.4	1.2	.06	8.3	18	7.1	9.9	17	7.7	.06	.12	.34
21	1.7	1.2	.12	10	11	16	5.9	7.2	5.9	.06	.12	1.1
22	2.0	1.3	.12	5.6	8.0	11	4.0	5.0	3.5	.06	.12	1.6
23	2.0	1.8	.18	4.4	7.2	5.4	3.2	8.5	2.8	.12	.12	1.2
24	1.8	1.2	.18	3.8	7.4	4.4	4.2	5.9	4.0	.06	.12	.06
25	1.7	1.2	.18	6.5	6.1	6.2	3.5	5.0	2.7	.06	.12	.06
26	1.4	.84	.18	4.2	9.4	12	2.5	14	2.5	.12	.12	.12
27	1.6	.52	.18	13	13	5.4	2.8	16	2.3	.12	.02	.02
28	1.4	.06	.18	15	10	4.6	2.3	6.1	1.6	.06	.06	.02
29	1.3	.12	.18	15	5.9	7.4	2.0	----------	.84	.12	.06	.02
30	1.3	.06	.18	17	5.9	12	1.4	----------	.96	.12	.06	.02
31	1.3	.18	----------	10	----------	7.1	.43	----------	.40	----------	.12	----------
Total	49.9	35.38	4.26	191.58	395.4	261.7	102.05	165.48	90.80	2.30	2.68	8.62
Mean												
Mgd	1.61	1.14	0.142	6.18	13.2	8.44	3.29	5.91	2.93	0.077	0.086	0.287
Cfs	2.49	1.76	0.220	9.56	20.4	13.1	5.09	9.14	4.53	0.119	0.133	0.444
Ac-ft	153	109	13	588	1,210	803	313	508	279	7.1	8.2	26
Max	2.2	1.8	0.26	17	24	19	9.9	17	7.7	0.12	0.18	1.6
Min	1.3	0.06	0.06	0.36	5.9	3.8	0.26	0.26	0.40	0.02	0.02	0.02

Calendar Year 1965:	Max	24	Min	0.06	Mean (mgd)	5.10	Mean (cfs)	7.89	Ac-ft	5,720
Fiscal Year 1965-66:	Max	24	Min	0.02	Mean (mgd)	3.59	Mean (cfs)	5.55	Ac-ft	4,020

40-0880. 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 5 miles northwest of Kealia.

Records available.--December 1921 to June 1966. Records for May 1915 to December 1921 at site 520 ft upstream not equivalent owing to 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.--42 years (1922-25, 1927-66), 2.92 mgd (4.52 cfs).

Extremes.--1921-66: Maximum daily discharge, 40 mgd (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. no. 870).

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.2	1.4	4.5	1.0	0.20	0.33	0.12	1.6	0.06	1.4	10	1.3
2	4.4	1.5	5.6	1.1	.22	.12	.04	1.4	.04	1.4	4.3	1.7
3	4.0	1.2	2.2	.97	.20	.09	.04	1.4	.04	1.3	2.8	3.0
4	2.2	2.6	5.9	.83	.20	.09	.06	1.3	.04	1.3	2.2	1.6
5	3.0	2.8	3.5	.90	.16	.12	.06	1.3	.04	3.2	1.8	5.3
6	2.8	1.2	2.4	.83	.33	.24	.06	11	.04	1.5	2.3	1.7
7	1.7	2.4	3.4	.83	.24	.09	.02	4.5	.04	1.3	1.9	1.3
8	4.0	1.2	2.1	5.2	.24	.12	.02	2.9	.04	1.2	2.4	1.2
9	6.0	5.7	6.8	8.3	.16	.16	.02	2.6	.04	1.2	6.1	1.1
10	4.8	6.8	3.1	3.7	.16	.24	.60	1.4	.02	1.2	3.0	1.6
11	7.7	1.7	2.9	2.4	.16	.12	1.5	1.2	.02	1.2	2.6	9.8
12	7.2	1.3	2.6	11	.28	.09	1.4	1.0	.02	1.2	2.3	2.1
13	3.8	1.6	1.9	4.9	.38	.16	1.6	4.3	.02	1.1	2.4	3.0
14	3.1	2.2	1.8	7.5	.43	.12	1.5	3.5	.02	1.0	9.2	2.9
15	2.4	2.0	1.7	.16	.33	.09	7.3	.20	6.0	1.0	6.1	1.8
16	2.0	1.3	3.0	.04	.24	.04	2.8	.12	5.4	.97	3.3	1.3
17	3.5	1.6	2.0	.06	.16	.09	2.0	.20	.04	1.0	2.3	1.2
18	3.8	1.0	1.6	.16	.16	.04	2.0	.16	.02	1.0	5.9	1.2
19	1.9	.90	1.6	.20	.33	.04	2.4	.20	.09	5.5	7.1	1.3
20	1.8	.83	1.6	.09	.20	.09	.20	.28	.12	1.7	3.8	1.2
21	3.4	2.4	2.9	.09	.12	.28	.06	.12	.06	1.1	3.5	.45
22	7.9	3.0	4.1	.01	.09	.20	.04	.09	.02	.97	7.4	.04
23	7.4	9.5	4.5	.01	.06	.04	.04	.16	.02	1.0	6.0	3.5
24	4.9	2.9	1.6	.01	.06	.02	.04	.12	.02	.97	3.0	4.6
25	3.0	4.5	1.3	.04	.06	.09	.04	.09	.01	1.0	2.4	1.6
26	2.4	7.0	1.3	.01	.12	.20	.04	.28	.01	5.2	2.1	8.0
27	3.6	2.8	1.3	.16	.16	.06	.04	.38	.01	5.4	1.8	3.0
28	2.1	2.4	1.2	.16	.09	.04	.04	.16	.38	1.5	1.6	1.7
29	1.7	4.2	1.2	.16	.04	.09	.02	----------	.90	7.4	1.6	1.9
30	1.6	2.4	1.1	.16	.03	.24	.43	----------	1.6	9.0	1.5	1.8
31	1.6	2.4	----------	.09	----------	.09	1.4	----------	1.3	----------	1.4	----------
Total	111.9	84.73	80.7	51.07	5.61	3.83	25.93	41.96	16.48	64.21	114.1	72.19
Mean												
Mgd	3.61	2.73	2.69	1.65	0.187	0.124	0.836	1.50	0.532	2.14	3.68	2.41
Cfs	5.59	4.22	4.16	2.55	0.289	0.192	1.29	2.32	0.823	3.31	5.69	3.73
Ac-ft	343	260	248	157	17	12	80	129	51	197	350	222
Max	7.9	9.5	6.8	11	0.43	0.33	7.3	11	6.0	9.0	10	9.8
Min	1.6	0.83	1.1	0.01	0.03	0.02	0.02	0.09	0.01	0.97	1.4	0.04

Calendar Year 1965:	Max	11	Min	0	Mean (mgd)	1.51	Mean (cfs)	2.34	Ac-ft	1,690
Fiscal Year 1965-66:	Max	11	Min	0.01	Mean (mgd)	1.84	Mean (cfs)	2.85	Ac-ft	2,060

40-0890. Anahola Stream near Kealia

Location.--Lat 22°09'05", long 159°21'17", on right bank at intake of Lower Anahola ditch and 4.5 miles northwest of Kealia.

Drainage area.--5.5 sq mi, approximately.

Records available.--August to December 1910, January 1913 to November 1918, January 1919, March 1919 to June 1966. 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 concrete dam-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.--52 years (1913-18, 1919-66), 14.4 mgd (22.3 cfs).

Extremes.--Maximum discharge during year, 1,590 mgd (2,460 cfs) Nov. 14 (gage height, 5.88 ft), from rating curve extended above 42 mgd on basis of slope-area measurement at gage height 10.6 ft; minimum, 2.2 mgd (3.4 cfs) Oct. 6, 7.
1910, 1913-66: Maximum discharge, 12,700 mgd (19,600 cfs) Jan. 25, 1956 (gage height, 14.6 ft, from floodmarks), from rating curve extended above 380 mgd; minimum, 1.28 mgd (1.98 cfs) Oct. 27, 1953.

Remarks.--Records poor. Records include flow in Lower Anahola ditch (see sta. no. 910). Anahola ditch (see sta. no. 880) diverts 3 miles above station for irrigation in vicinity of Kealia.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	3.6	4.4	2.8	99	197	11	4.8	9.9	3.9	41	3.6
2	13	3.6	8.9	2.6	62	26	6.7	3.9	9.1	3.9	13	4.4
3	8.0	3.7	3.9	2.5	77	19	7.0	3.4	8.0	3.7	9.2	4.4
4	5.1	4.8	8.0	2.4	155	17	7.3	3.4	7.7	3.7	7.7	3.7
5	4.8	4.6	6.5	2.8	32	30	7.4	3.4	7.0	4.4	7.0	6.7
6	4.6	3.2	3.9	2.4	150	28	7.0	65	6.7	3.7	7.4	4.4
7	4.4	3.0	9.7	2.2	30	15	5.3	14	8.4	3.6	5.5	3.6
8	5.8	2.6	3.9	4.9	28	14	4.6	9.3	6.7	3.6	6.0	3.4
9	19	13	28	12	19	16	4.4	7.0	6.0	3.4	9.1	3.2
10	6.3	13	7.9	4.2	24	47	4.2	5.3	5.5	3.4	7.3	3.4
11	62	4.8	5.3	19	20	17	4.2	4.8	5.3	3.4	7.0	11
12	17	4.4	4.8	69	68	12	3.9	4.6	5.3	3.4	5.2	3.7
13	6.3	4.4	4.2	14	162	15	4.2	6.2	5.1	3.2	5.3	4.4
14	5.3	5.1	3.9	192	290	12	3.7	110	4.8	3.2	17	4.2
15	4.8	5.5	3.7	17	198	12	17	32	57	3.1	13	3.7
16	4.6	4.6	4.4	7.4	85	9.9	6.0	9.9	32	3.1	8.4	3.4
17	5.5	4.6	3.7	7.0	34	9.9	4.8	20	5.8	3.2	6.0	3.2
18	9.0	4.2	3.4	15	29	8.4	4.4	10	5.3	3.2	13	3.2
19	4.6	3.7	3.2	50	137	7.7	5.3	15	5.3	8.0	13	3.2
20	4.6	3.1	3.6	7.7	96	11	16	81	5.5	3.2	8.4	3.2
21	7.4	3.0	4.4	12	28	25	8.4	13	5.8	2.8	7.0	3.2
22	67	3.2	5.2	5.3	22	11	6.7	9.4	5.1	2.6	34	3.1
23	24	14	7.2	3.4	19	8.4	5.3	17	4.6	2.6	11	3.4
24	6.3	3.9	3.7	2.8	17	7.4	5.8	10	9.2	2.6	5.5	4.2
25	4.8	6.7	3.2	6.9	15	7.7	5.1	8.4	4.8	2.6	5.1	3.1
26	4.4	39	3.1	3.2	16	20	4.6	52	4.6	3.6	4.6	14
27	5.3	8.4	3.1	23	25	9.4	5.1	91	4.2	4.6	4.4	3.7
28	4.4	4.4	3.0	22	17	7.4	4.8	14	4.4	4.2	4.2	3.1
29	3.9	7.6	2.8	26	13	16	5.1	----------	4.2	29	3.9	3.0
30	3.7	3.9	3.0	41	13	14	4.4	----------	5.1	83	3.7	3.1
31	3.6	4.2	----------	12	----------	9.0	3.9	----------	4.3	----------	3.7	----------
Total	333.9	197.8	164.0	594.5	1980	659.2	193.6	627.8	262.7	211.9	296.6	127.9
Mean												
Mgd	10.8	6.38	5.47	19.2	66.0	21.3	6.25	22.4	8.47	7.06	9.57	4.26
Cfs	16.7	9.87	8.46	29.7	102	33.0	9.67	34.7	13.1	10.9	14.8	6.59
Ac-ft	1020	607	503	1820	6080	2020	594	1930	806	650	910	393
Max	67	39	28	192	290	197	17	110	57	83	41	14
Min	3.6	2.6	2.8	2.2	13	7.4	3.7	3.4	4.2	2.6	3.7	3.0

Calendar Year 1965:	Max	525	Min	2.2	Mean (mgd)	26.6	Mean (cfs)	41.2	Ac-ft	29,790
Fiscal Year 1965-66:	Max	290	Min	2.2	Mean (mgd)	15.5	Mean (cfs)	24.0	Ac-ft	17,340

Peak discharge (base, 1,100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11- 3	2300	5.61	1,430	2,210	11-14	1800	5.88	1,590	2,460
11- 6	0700	5.23	1,200	1,860					

40-0910. Lower Anahola ditch near Kealia

Location.--Lat 22°08'13", long 159°19'31", on left bank 100 ft downstream from last wasteway, 1.3 miles southwest of mouth of Anahola Stream, and 2.5 miles northwest of Kealia.

Records available.--December 1936 to June 1966.

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

Average discharge.--29 years (1937-66), 2.08 mgd (3.22 cfs).

Extremes.--1936-66: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times each year.

Remarks.--Records good. Ditch diverts from Anahola Stream for irrigation of sugarcane near Anahola.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	2.7	2.9	2.8	0	0.01	0	3.4	0	2.1	5.7	0
2	2.8	2.7	3.1	2.7	.03	0	0	3.3	0	0	4.4	0
3	1.2	2.7	3.0	2.7	0	0	0	3.4	0	0	3.5	0
4	0	2.8	3.4	2.9	0	0	0	3.5	0	0	1.3	0
5	0	3.0	3.8	3.0	0	0	0	3.3	0	0	.06	0
6	0	2.9	3.3	2.9	.04	0	0	1.5	0	0	.06	0
7	0	2.9	3.5	2.9	.04	0	0	.03	0	0	.06	.89
8	0	2.8	3.2	2.9	.04	0	0	0	0	0	.04	3.9
9	0	2.9	4.4	3.8	.04	0	0	0	0	0	.04	3.3
10	0	3.8	4.7	3.8	.01	0	0	0	0	0	1.6	3.0
11	0	3.9	3.9	3.4	0	0	1.4	0	0	0	4.5	3.7
12	0	4.0	3.5	1.9	0	0	2.5	0	0	0	4.4	3.4
13	0	3.6	3.3	.04	0	0	2.5	0	0	2.0	3.2	3.3
14	0	3.8	3.3	0	.03	0	2.5	.02	0	2.9	4.1	1.2
15	0	4.0	3.1	0	0	0	2.7	0	0	2.7	4.7	0
16	.72	3.8	3.1	0	0	0	2.5	0	0	2.7	1.8	0
17	2.1	3.8	3.0	0	0	0	2.6	0	0	2.7	0	0
18	2.2	3.5	2.7	0	0	0	2.7	0	0	2.9	.02	0
19	2.1	3.4	2.7	0	.01	0	2.4	0	0	3.9	0	0
20	2.3	3.3	2.8	0	0	0	.03	0	0	3.2	0	.01
21	2.3	3.2	3.5	0	0	0	0	0	0	2.7	0	.03
22	2.7	3.6	3.3	0	0	0	0	0	0	2.6	0	0
23	3.0	4.4	3.5	0	0	0	0	0	0	2.5	0	.01
24	2.6	4.3	3.3	0	0	0	0	0	0	2.4	0	.01
25	1.7	4.1	3.0	0	0	0	2.6	0	1.7	2.5	0	0
26	0	4.5	2.2	0	0	0	3.2	0	5.0	2.7	0	0
27	0	4.0	.74	0	0	0	0	.01	5.0	2.9	0	0
28	0	3.3	2.7	0	0	0	0	0	5.1	3.5	0	0
29	1.8	3.0	2.6	0	0	0	0	----------	4.5	3.8	0	0
30	2.3	3.0	2.7	0	0	0	0	----------	4.7	5.1	0	1.5
31	2.8	3.0	----------	0	----------	0	1.1	----------	4.5	----------	.02	----------
Total	35.12	106.7	94.24	35.74	0.24	0.01	28.73	18.46	30.5	55.8	39.50	24.25
Mean												
Mgd	1.13	3.44	3.14	1.15	0.008	0.0003	0.927	0.659	0.98	1.86	1.27	0.808
Cfs	1.75	5.32	4.86	1.78	0.012	0.0005	1.43	1.02	1.52	2.88	1.96	1.25
Ac-ft	108	327	289	110	0.7	0.03	88	57	94	171	121	74
Max	3.0	4.5	4.7	3.8	0.04	0.01	3.2	3.5	5.1	5.1	5.7	3.9
Min	0	2.7	0.74	0	0	0	0	0	0	0	0	0

Calendar Year 1965:	Max	4.7	Min	0	Mean (mgd)	0.867	Mean (cfs)	1.34	Ac-ft	971	
Fiscal Year 1965-66:	Max	5.7	Min	0	Mean (mgd)	1.29	Mean (cfs)	2.00	Ac-ft	1,440	

Note.--No gage-height record Dec. 2 to Jan. 10.

40-0932. 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.--9.89 sq mi.

Records available.--Fiscal years 1962-65 (annual maximums), November 1964 to June 1966.

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

Extremes.--Maximum discharge during year, 1,450 mgd (2,240 cfs) Nov. 14 (gage height, 10.50 ft); minimum, 3.0 mgd (4.6 cfs) Oct. 11.
1961-66: Maximum discharge, 6,980 mgd (10,800 cfs) May 15, 1965 (gage height, 17.4 ft), from rating curve extended above 1,400 mgd on basis of contracted-opening measurement of peak flow.
1964-66: Minimum discharge, that of Oct. 11, 1965.

Remarks.--Records good. Anahola ditch (see sta. no. 880) and Lower Anahola ditch (see sta. no. 910) divert above station for irrigation of sugarcane in vicinities of Kealia and Anahola, respectively.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.2	5.4	5.2	3.5	110	212	27	7.1	26	6.6	39	8.4
2	16	5.4	8.9	3.5	96	51	17	5.8	22	8.6	13	8.8
3	14	5.4	4.7	3.3	72	37	17	5.6	20	8.4	7.8	8.6
4	10	6.3	6.6	3.3	192	32	18	5.6	18	8.4	8.6	7.6
5	10	6.6	6.3	3.3	55	35	18	5.6	17	10	9.1	9.4
6	10	5.6	4.6	3.5	165	56	20	75	16	8.8	11	9.4
7	9.5	5.6	7.4	3.9	57	28	14	38	18	8.4	8.8	7.4
8	12	5.4	4.6	5.4	53	26	14	17	16	7.8	8.8	4.9
9	26	13	24	9.2	33	31	13	16	15	7.8	12	4.7
10	12	12	9.2	4.0	45	69	13	13	14	7.8	9.1	4.7
11	53	5.4	4.7	3.3	39	34	9.7	12	13	8.4	8.1	9.1
12	24	4.7	4.4	70	91	26	8.4	11	13	8.6	6.2	5.1
13	12	4.6	4.0	12	196	32	7.6	12	12	6.0	5.8	5.1
14	10	4.9	4.0	160	307	27	7.4	110	12	4.9	15	6.6
15	8.9	5.6	4.0	34	237	28	24	68	42	5.1	11	6.6
16	7.5	4.9	4.2	18	128	22	9.7	27	49	5.1	12	6.2
17	7.7	4.9	4.2	16	67	22	8.1	37	16	5.1	9.4	6.0
18	12	4.4	4.2	26	50	20	7.8	29	14	5.1	15	5.8
19	7.2	4.6	4.0	66	170	18	11	30	15	8.9	16	5.8
20	6.8	4.6	4.2	22	123	19	30	102	18	6.0	10	5.6
21	9.2	4.9	4.6	25	50	45	20	28	18	4.9	8.8	6.0
22	51	4.9	5.4	16	39	30	16	22	14	4.7	27	6.4
23	29	12	7.2	12	34	22	13	28	12	4.7	20	6.6
24	12	6.3	3.9	11	32	19	13	28	18	4.7	10	7.4
25	8.3	7.0	3.6	18	28	19	11	19	11	4.7	8.6	5.6
26	9.2	35	3.6	13	30	37	7.8	50	6.8	4.6	8.1	14
27	9.8	6.3	3.7	32	42	23	12	147	6.6	6.4	7.8	7.6
28	9.5	5.1	3.7	42	37	18	12	34	6.2	5.3	7.6	6.2
29	7.7	5.6	3.5	46	26	23	9.1	----------	5.6	28	7.4	6.0
30	6.1	5.2	3.5	62	24	34	7.4	----------	6.2	70	7.4	5.6
31	5.4	5.6	----------	29	----------	19	6.6	----------	5.6	----------	8.1	----------
Total	433.0	217.2	166.1	776.2	2628	1114	422.6	982.7	496.0	283.8	356.5	207.2
Mean												
Mgd	14.0	7.01	5.54	25.0	87.6	35.9	13.6	35.1	16.0	9.46	11.5	6.91
Cfs	21.7	10.8	8.57	38.7	136	55.5	21.0	54.3	24.8	14.6	17.8	10.7
Ac-ft	1330	667	510	2380	8060	3420	1300	3020	1520	871	1090	636
Max	53	35	24	160	307	212	30	147	49	70	39	14
Min	5.4	4.4	3.5	3.3	24	18	6.6	5.6	5.6	4.6	5.8	4.7

Calendar Year 1965:	Max	750	Min	3.3	Mean (mgd)	39.5	Mean (cfs)	61.1	Ac-ft	44,240
Fiscal Year 1965-66:	Max	307	Min	3.3	Mean (mgd)	22.1	Mean (cfs)	34.2	Ac-ft	24,810

Peak discharge (base, 1,400 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-14	1800	10.50	1,450	2,240

40-0942. Ka Loko ditch near Kilauea

Location.--Lat 22°10'43", long 159°22'59", on left bank 35 ft downstream from Moloaa ditch 400 ft upstream from Ka Loko Reservoir, and 3.5 miles southeast of Kilauea.

Records available.--August 1932 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 754 ft above mean sea level (by stadia survey).

Average discharge.--33 years (1933-66), 3.40 mgd (5.26 cfs).

Extremes.--1932-66: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.05 mgd (0.08 cfs) Apr. 30, May 1, 3, 1965.

Remarks.--Records good. Ditch diverts from Moloaa and Puu Ka Ele Streams at points 0.5 mile southeast and 1.5 miles southwest of station, respectively, for irrigation in vicinity of Kilauea.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.1	2.2	2.1	1.2	17	2.8	2.0	1.7	4.0	1.8	8.5	1.7
2	3.4	2.2	2.9	1.1	12	.70	1.8	1.5	3.6	1.8	3.4	2.1
3	3.2	2.1	1.7	1.1	7.4	1.3	2.0	1.5	3.3	1.7	2.5	2.3
4	2.4	2.9	2.1	1.1	26	1.6	1.8	1.5	3.1	1.7	2.0	1.9
5	2.6	2.2	2.0	1.1	11	1.6	1.6	1.5	3.0	2.0	1.8	2.9
6	2.4	2.0	1.7	.98	22	1.6	1.8	8.3	2.9	1.6	2.0	2.0
7	2.3	2.1	4.5	1.1	10	1.4	2.4	4.1	3.1	1.5	1.9	1.7
8	2.5	1.9	1.9	1.3	10	1.4	2.2	6.9	2.6	1.5	2.0	1.6
9	5.6	3.9	7.2	2.4	7.3	1.1	2.2	4.0	2.6	1.4	3.0	1.5
10	3.0	4.5	3.0	1.5	6.6	1.6	2.1	2.6	2.5	1.4	3.0	1.8
11	3.9	2.2	2.1	1.2	7.3	1.3	2.0	2.3	2.4	1.4	2.7	4.3
12	4.9	1.9	1.9	14	16	1.1	2.0	2.1	2.2	1.4	2.0	2.0
13	2.8	1.9	1.6	3.1	12	.48	2.1	2.1	2.0	1.3	1.9	2.5
14	2.7	2.1	1.6	24	5.2	.11	2.0	14	2.0	1.3	3.3	2.0
15	2.5	3.5	1.6	7.1	3.2	.90	5.9	8.2	9.2	1.2	5.3	1.7
16	2.4	2.0	1.8	3.4	.41	1.1	2.6	3.1	10	1.2	3.3	1.5
17	2.9	2.0	1.6	3.9	1.9	1.1	2.2	3.6	3.6	1.2	2.3	1.4
18	4.3	1.7	1.4	4.5	2.5	.98	2.0	3.3	3.0	1.2	2.0	1.4
19	2.5	1.7	1.4	9.4	1.6	.90	1.9	3.3	2.7	2.2	3.8	1.4
20	2.8	1.6	1.4	4.6	.22	1.8	2.8	5.1	3.1	1.4	2.5	1.4
21	4.4	1.7	1.8	5.0	.18	3.4	2.9	2.8	3.8	1.2	2.1	1.4
22	9.3	2.0	2.0	3.4	1.8	2.1	2.4	3.1	2.6	1.1	5.8	1.4
23	7.9	6.0	2.3	2.8	2.3	1.9	2.2	4.5	2.4	1.1	4.4	1.6
24	3.6	2.3	1.5	2.6	2.0	1.7	2.3	4.1	5.1	1.1	2.4	2.2
25	2.8	3.2	1.3	4.5	2.1	1.7	2.1	3.1	2.6	1.1	2.1	1.8
26	2.6	8.1	1.3	2.8	2.1	2.1	1.9	5.7	2.4	1.7	2.0	5.0
27	3.1	2.6	1.3	7.3	2.1	2.0	2.0	8.0	2.2	1.9	2.0	2.5
28	2.4	2.2	1.2	7.9	2.0	1.7	1.9	4.6	2.0	1.9	1.9	1.7
29	2.2	2.6	1.1	6.5	1.9	2.0	1.7	----------	2.0	19	1.8	1.5
30	2.1	1.9	1.1	8.3	1.9	2.2	1.6	----------	2.4	8.9	1.8	1.6
31	2.1	1.9	----------	4.5	----------	1.8	1.6	----------	1.9	----------	1.8	----------
Total	103.7	81.1	60.4	143.68	198.01	47.47	68.0	116.6	100.3	69.2	87.3	59.8
Mean												
Mgd	3.35	2.62	2.01	4.63	6.60	1.53	2.19	4.16	3.24	2.31	2.82	1.99
Cfs	5.18	4.05	3.11	7.16	10.2	2.37	3.39	6.44	5.01	3.57	4.36	3.08
Ac-ft	318	249	185	441	608	146	209	358	308	212	268	184
Max	9.3	8.1	7.2	24	26	3.4	5.9	14	10	19	8.5	5.0
Min	2.1	1.6	1.1	0.98	0.18	0.11	1.6	1.5	1.9	1.1	1.8	1.4

Calendar Year 1965:	Max	26	Min	0.05	Mean (mgd)	3.20	Mean (cfs)	4.95	Ac-ft	3,580
Fiscal Year 1965-66:	Max	26	Min	0.11	Mean (mgd)	3.11	Mean (cfs)	4.81	Ac-ft	3,480

40-0950. Puu Ka Ele ditch near Kilauea

Location.--Lat 22°11'10", long 159°24'17", on left bank 200 ft upstream from Puu Ka Ele Reservoir and 2 miles south of Kilauea.

Records available.--August 1932 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 426 ft above mean sea level (by stadia survey).

Average discharge.--33 years (1933-66), 2.49 mgd (3.85 cfs).

Extremes.--1932-66: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times each year.

Remarks.--Records good except those below 0.1 mgd, which are fair. Ditch diverts from Puu Ka Ele Stream 0.8 mile south of station for irrigation of sugarcane in vicinity of Kilauea.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	1.8	1.8	1.1	5.0	0.10	0	1.8	0	1.5	6.0	1.1
2	3.8	1.8	2.0	1.1	3.3	0	0	1.8	0	1.6	3.0	1.3
3	3.5	1.8	1.6	1.2	3.9	0	0	1.8	0	1.5	2.3	1.4
4	2.2	2.0	2.1	1.2	5.1	0	0	1.8	0	1.7	2.0	1.1
5	2.5	1.8	1.8	1.3	3.5	0	0	1.7	0	2.0	1.8	1.3
6	2.2	1.6	1.6	1.3	4.2	0	0	5.2	0	1.4	1.8	1.2
7	2.2	1.8	3.6	1.3	3.4	0	0	3.6	0	1.3	1.7	1.1
8	2.5	1.6	1.8	1.5	3.4	0	0	4.1	1.6	1.4	1.8	.98
9	5.2	2.7	5.5	1.9	3.1	0	0	3.4	2.2	1.3	2.0	.98
10	1.4	3.3	2.5	1.7	3.2	.10	1.1	2.6	2.1	1.4	2.1	1.1
11	1.8	1.8	1.8	1.6	3.1	0	2.2	2.5	2.0	1.4	2.2	2.2
12	1.2	1.6	1.8	11	3.7	0	2.2	2.4	1.9	1.3	1.8	1.3
13	2.4	1.5	1.6	2.6	3.5	0	2.3	2.3	1.9	1.2	1.7	1.3
14	2.1	1.5	1.6	18	1.2	0	2.2	3.8	1.8	1.2	2.1	1.1
15	1.9	2.4	1.6	7.1	.10	0	3.9	.13	5.8	1.1	4.0	.98
16	1.8	1.6	1.7	4.3	0	0	2.5	0	7.4	1.1	3.0	.91
17	1.9	1.5	1.6	5.2	0	0	2.3	0	2.4	1.1	2.0	.77
18	3.3	1.3	1.5	5.0	0	0	2.1	0	2.1	1.1	1.8	.77
19	1.8	1.3	1.4	9.5	.10	0	2.6	0	2.0	1.6	2.6	.84
20	2.4	1.4	1.4	5.1	.08	0	2.8	0	2.2	1.3	1.9	.77
21	5.2	1.5	1.8	4.8	0	0	2.5	0	3.4	1.1	1.7	.71
22	9.5	1.4	1.8	3.9	0	0	2.3	0	2.1	1.1	3.9	.77
23	4.1	5.2	1.7	3.5	0	0	2.2	0	1.8	1.1	3.8	1.1
24	1.8	2.0	1.4	3.2	0	0	2.2	0	2.9	1.1	1.8	1.3
25	1.3	2.1	1.3	4.3	0	0	2.0	0	2.0	1.1	1.6	.98
26	2.2	6.9	1.3	3.3	0	0	1.9	0	1.9	1.3	1.5	2.6
27	2.5	2.5	1.3	5.6	0	0	2.0	0	1.8	1.2	1.4	1.5
28	2.1	2.1	1.2	6.5	0	0	1.8	0	1.8	1.3	1.3	1.1
29	2.0	2.1	1.2	6.0	0	0	1.8	----------	1.7	11	1.2	.98
30	1.9	1.8	1.2	6.8	0	0	1.8	----------	1.8	5.1	1.1	1.1
31	1.8	1.8	----------	5.1	----------	0	1.8	----------	1.5	----------	1.2	----------
Total	82.8	65.5	54.5	136.0	49.88	0.20	48.5	38.93	58.1	52.9	68.1	34.64
Mean												
Mgd	2.67	2.11	1.82	4.39	1.66	0.006	1.56	1.39	1.87	1.76	2.20	1.15
Cfs	4.13	3.26	2.82	6.79	2.57	0.009	2.41	2.15	2.89	2.72	3.40	1.78
Ac-ft	254	201	167	417	153	0.6	149	119	178	162	209	106
Max	9.5	6.9	5.5	18	5.1	0.10	3.9	5.2	7.4	11	6.0	2.6
Min	1.2	1.3	1.2	1.1	0	0	0	0	0	1.1	1.1	0.71

Calendar Year 1965:	Max	18	Min	0	Mean (mgd)	1.95	Mean (cfs)	3.02	Ac-ft	2190
Fiscal Year 1965-66:	Max	18	Min	0	Mean (mgd)	1.89	Mean (cfs)	2.92	Ac-ft	2120

Note.--No gage-height record Nov. 21 to Jan. 9.

40-0952. Ross ditch near Kilauea

Location.--Lat 22°11'22", long 159°24'33", on left bank 1,000 ft downstream from intake and 1.7 miles south of Kilauea.

Records available.--October 1956 to June 1966.

Gage.--Digital water-stage recorder and Parshall flume. Datum of gage is 341 ft above mean sea level (by stadia survey). Prior to July 1, 1962, graphic water-stage recorder at same site at datum 0.03 ft higher and July 1, 1962, to Mar. 16, 1964, at same datum.

Average discharge.--9 years (1957-66), 2.48 mgd (3.84 cfs).

Extremes.--1956-66: Maximum daily discharge, 11 mgd (17 cfs) Apr. 15, 1963, Mar. 8, 1964, Mar. 31, Apr. 13, 1965; no flow at times.

Remarks.--Records fair. Ditch diverts from Puu Ka Ele Stream for irrigation in vicinity of Kilauea.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.5	2.1	1.7	1.2	4.2	5.0	2.3	1.4	1.5	1.4	3.1	1.5
2	2.0	2.0	1.8	1.2	3.0	2.7	1.5	1.3	1.2	1.4	2.1	1.6
3	2.0	1.9	1.6	1.2	1.9	2.0	1.5	1.3	1.1	1.4	1.8	1.7
4	1.6	2.1	2.0	1.2	3.4	1.9	1.5	1.3	.94	1.4	1.6	1.5
5	1.8	1.9	1.8	1.2	1.4	2.4	1.5	1.3	.86	1.6	1.5	1.7
6	1.6	1.8	1.8	1.1	1.8	2.8	1.1	5.2	2.5	1.4	1.6	1.5
7	1.5	2.0	2.1	1.1	1.3	1.6	.70	3.9	4.3	1.3	1.5	1.4
8	2.0	1.9	1.8	1.1	1.2	1.6	.66	.06	3.1	1.3	1.5	1.4
9	5.1	2.5	2.6	1.2	1.2	2.0	.63	.05	1.7	1.3	1.8	1.5
10	3.6	3.2	2.1	1.2	1.2	4.5	.46	.03	1.6	1.3	1.6	1.7
11	5.7	2.1	1.8	1.3	1.2	3.2	.06	.02	1.6	1.3	1.8	2.6
12	5.2	2.0	1.6	3.4	1.5	2.5	.05	.02	1.5	1.3	1.6	1.8
13	2.2	1.8	1.5	2.0	3.2	2.4	.86	.01	1.5	1.3	1.5	1.8
14	2.0	1.9	1.4	5.0	4.9	3.2	1.3	4.0	1.5	1.3	1.6	1.6
15	1.8	2.4	1.4	1.4	5.6	2.6	2.2	4.5	2.7	1.3	3.4	1.5
16	1.8	2.0	1.5	1.1	4.4	2.2	1.7	1.8	4.4	1.3	2.6	1.4
17	2.0	1.8	1.5	1.1	3.6	2.4	1.5	1.4	1.8	1.3	1.8	1.4
18	2.4	1.8	1.4	1.1	3.0	1.9	1.4	1.1	1.7	1.3	1.6	1.4
19	2.0	1.8	1.4	5.2	3.8	1.8	2.0	1.4	1.8	1.6	2.1	1.4
20	2.3	1.8	1.4	4.4	7.6	2.1	2.8	6.7	2.0	1.4	1.8	1.4
21	3.4	1.8	1.6	2.3	4.5	3.0	2.1	1.9	3.2	1.3	1.6	1.4
22	6.6	1.8	1.6	1.6	3.8	2.6	1.8	1.2	1.8	1.2	3.4	1.5
23	7.4	2.7	1.5	1.1	3.0	2.1	1.7	1.6	1.6	1.2	3.3	2.1
24	4.9	2.2	1.5	1.0	2.7	1.8	1.7	1.3	2.2	1.2	2.0	2.0
25	4.1	2.1	1.4	1.8	2.5	1.8	1.6	1.0	1.6	1.2	1.8	1.6
26	3.0	3.4	1.4	1.3	2.6	2.1	1.5	4.4	1.7	1.4	1.7	2.9
27	2.6	2.1	1.3	1.8	2.8	2.0	1.5	6.7	1.5	1.4	1.6	2.0
28	2.2	1.8	1.3	3.7	2.4	2.3	1.5	2.1	1.5	1.6	1.6	1.6
29	2.1	1.6	1.3	3.3	1.6	2.5	1.4	----------	1.4	7.4	1.5	1.5
30	2.0	1.5	1.3	4.2	1.6	2.2	1.4	----------	1.6	3.3	1.5	1.5
31	2.0	1.6	----------	2.4	----------	2.3	1.4	----------	1.4	----------	1.5	----------
Total	90.4	63.4	48.4	62.2	86.9	75.5	43.32	55.99	58.80	48.4	59.4	49.9
Mean												
Mgd	2.92	2.05	1.61	2.01	2.90	2.44	1.40	2.04	1.90	1.61	1.92	1.66
Cfs	4.52	3.17	2.49	3.11	4.49	3.78	2.17	3.16	2.94	2.49	2.97	2.57
Ac-ft	277	195	149	191	267	232	133	175	180	149	182	153
Max	7.4	3.4	2.6	5.2	7.6	5.0	2.8	6.7	4.4	7.4	3.4	2.9
Min	1.5	1.5	1.3	1.0	1.2	1.6	0.05	0.01	0.86	1.2	1.5	1.4

Calendar Year 1965:	Max	11	Min	0.32	Mean (mgd)	3.17	Mean (cfs)	4.90	Ac-ft	3550
Fiscal Year 1965-66:	Max	7.6	Min	0.01	Mean (mgd)	2.04	Mean (cfs)	3.16	Ac-ft	2280

40-0959. Kalihiwai ditch above wasteway, near Kilauea

Location.--Lat 22°10'42", long 159°25'43", on left bank 1,800 ft upstream from wasteway gate, 0.7 mile upstream from Kalihiwai Reservoir, and 2.5 miles southwest of Kilauea.

Records available.--April 1960 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 413.4 ft above mean sea level (by stadia survey).

Average discharge.--6 years, 3.95 mgd (6.11 cfs).

Extremes.--1960-66: Maximum daily discharge, 33 mgd (51 cfs) Mar. 31, 1965; minimum daily, 0.87 mgd (1.4 cfs) Feb. 7, 1961.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts from Pohakuhonu Stream for domestic use and irrigation of sugarcane in vicinity of Kilauea.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	2.5	2.6	1.7	12	11	5.0	2.0	3.2	1.7	3.5	1.5
2	3.7	2.5	3.0	1.7	9.8	5.0	4.0	2.0	3.1	1.7	2.4	1.8
3	3.5	2.4	2.4	1.7	8.1	4.2	4.0	2.0	2.6	1.7	2.3	2.0
4	2.8	2.8	3.8	1.7	19	3.9	3.8	2.0	2.4	1.7	2.0	1.5
5	2.8	2.5	3.1	1.7	8.7	4.2	3.6	2.0	3.2	1.9	1.8	1.8
6	2.4	2.4	2.8	1.6	16	4.8	3.4	8.0	3.1	1.6	2.3	1.5
7	2.4	2.5	4.6	1.6	7.0	3.7	3.2	4.5	3.0	1.5	1.9	1.5
8	3.5	2.4	2.8	2.0	6.6	3.8	3.0	2.5	2.8	1.5	1.9	1.4
9	6.2	4.0	4.7	2.6	5.0	4.9	2.8	2.6	2.8	1.5	2.0	1.5
10	3.5	4.7	3.3	1.9	4.8	8.6	2.6	2.4	2.6	1.5	1.8	1.5
11	7.3	2.8	2.8	2.7	4.8	6.0	2.4	2.3	2.5	1.5	1.7	4.0
12	7.0	2.4	2.5	10	9.9	4.4	2.4	2.2	2.4	1.5	1.5	1.9
13	3.9	2.4	2.4	5.4	22	4.2	2.4	2.9	2.4	1.5	1.5	1.9
14	3.3	2.4	2.3	25	28	5.0	2.4	12	2.3	1.5	1.7	1.7
15	2.8	2.5	2.2	7.2	20	6.0	4.0	7.9	2.5	1.4	3.4	1.5
16	2.8	2.4	2.3	4.5	12	5.5	3.0	4.4	2.6	1.4	2.4	1.5
17	3.5	2.3	2.1	5.5	8.0	6.0	2.6	5.5	2.3	1.4	1.8	1.4
18	4.2	2.2	2.0	6.3	6.9	5.5	2.4	4.2	2.2	1.4	1.6	1.3
19	3.1	2.1	2.0	14	13	4.5	3.5	4.0	2.5	2.0	2.8	1.5
20	3.2	2.3	2.0	6.7	20	4.0	6.0	13	2.4	1.5	1.8	1.3
21	5.3	2.8	2.7	5.9	8.0	5.0	4.0	4.5	2.5	1.4	1.6	1.4
22	20	3.0	2.4	4.4	6.3	10	3.0	3.8	2.1	1.4	6.6	1.4
23	7.2	7.8	2.6	3.8	5.5	7.0	2.8	5.7	2.0	1.5	3.9	1.5
24	4.5	3.6	2.2	3.4	5.3	5.0	2.6	3.7	1.9	1.4	2.2	1.7
25	3.9	3.8	2.0	3.8	5.0	4.5	2.6	3.4	1.8	1.4	1.9	2.0
26	3.5	4.3	1.9	3.2	4.9	6.0	2.4	5.6	1.9	1.7	1.8	4.6
27	3.4	3.0	1.9	6.8	5.0	4.0	2.4	9.7	1.8	1.8	1.7	2.6
28	3.1	2.8	1.8	9.3	4.6	3.5	2.2	4.0	1.7	1.5	1.5	1.9
29	2.8	3.2	1.8	11	4.0	4.0	2.2	----------	1.8	6.1	1.5	1.7
30	2.8	2.5	1.7	17	4.0	5.5	2.1	----------	1.9	4.6	1.5	1.7
31	2.6	3.0	----------	6.6	----------	4.0	2.1	----------	1.7	----------	1.5	----------
Total	133.8	92.3	76.7	180.7	294.2	163.7	94.9	128.8	74.0	54.2	67.8	54.5
Mean												
Mgd	4.32	2.98	2.56	5.83	9.81	5.28	3.06	4.60	2.39	1.81	2.19	1.82
Cfs	6.68	4.61	3.96	9.02	15.2	8.17	4.73	7.12	3.70	2.80	3.39	2.82
Ac-ft	411	283	235	555	903	502	291	395	227	166	208	167
Max	20	7.8	4.7	25	28	11	6.0	13	3.2	6.1	6.6	4.6
Min	2.4	2.1	1.7	1.6	4.0	3.5	2.1	2.0	1.7	1.4	1.5	1.3

Calendar Year 1965:	Max	33	Min	1.6	Mean (mgd)	5.14	Mean (cfs)	7.95	Ac-ft	5,750
Fiscal Year 1965-66:	Max	28	Min	1.3	Mean (mgd)	3.88	Mean (cfs)	6.00	Ac-ft	4,340

Note.--No gage-height record Dec. 14 to Feb. 8.

40-0960. Kalihiwai ditch near Kilauea

Location.--Lat 22°11'07", long 159°25'58", on right bank 0.1 mile upstream from Kalihiwai Reservoir and 2.4 miles southwest of Kilauea.

Records available.--June 1934 to June 1966. Monthly discharge only for August 1943, published in WSP 1319.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 409.2 ft above mean sea level (by stadie survey).

Average discharge.--32 years, 2.25 mgd (3.48 cfs).

Extremes.--1934-66: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

Remarks.--Records good. Ditch diverts low flow of most branches of Pohakubonu Stream at intakes about 1 mile south of station. Water discharges into Kalihiwai Reservoir, where it is stored for irrigation of sugarcane in vicinity of Kilauea.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.3	2.0	2.2	1.2	0.24	0.05	0.29	1.5	0.20	1.5	2.8	0.87
2	2.4	1.9	2.5	1.2	.24	.04	.20	1.4	.20	1.4	1.5	1.2
3	2.5	1.9	2.0	1.2	.24	.04	.20	1.5	.16	1.3	1.5	1.4
4	1.1	2.1	3.2	1.2	.55	.03	.74	1.4	.13	1.2	1.2	1.0
5	.24	1.9	3.0	1.2	.29	.03	2.1	1.4	.13	1.5	1.2	1.2
6	.20	1.8	2.4	1.2	.33	.03	2.0	4.7	.13	1.1	1.6	1.0
7	.67	2.0	4.5	1.2	.24	.03	1.4	4.3	.13	1.0	1.3	.87
8	2.2	1.9	2.6	1.5	.20	.03	.44	2.0	.90	1.0	1.3	.80
9	3.5	3.0	3.9	2.3	.16	.03	.98	2.0	2.2	1.0	1.5	.87
10	2.5	4.6	2.7	1.5	.13	.05	1.6	1.9	2.2	1.0	1.3	1.0
11	2.3	2.4	2.2	1.5	.10	.05	1.6	1.8	2.1	.95	1.2	3.4
12	.55	2.2	2.0	10	.13	.04	1.6	1.8	2.0	1.0	1.1	1.4
13	.38	2.0	1.8	2.9	.20	.03	1.5	2.5	2.0	1.0	1.1	1.3
14	.33	2.0	1.7	4.9	.46	.04	1.5	9.9	2.0	1.0	1.2	1.2
15	.93	2.3	1.6	.49	.24	.04	2.2	4.1	2.0	1.0	2.8	1.1
16	2.1	2.0	1.7	.20	.20	.04	1.8	.38	2.3	1.0	2.2	.95
17	2.4	1.8	1.5	.16	.16	.04	1.7	.44	2.0	1.0	1.5	.87
18	2.7	1.7	1.5	2.3	.10	.04	1.6	.33	1.9	1.0	1.3	.87
19	2.2	1.7	1.5	3.9	.13	.04	1.2	.29	2.1	1.5	2.5	.95
20	2.3	1.9	1.5	2.5	.24	.04	.38	.55	2.1	1.1	1.5	.80
21	3.0	2.3	1.9	3.4	.13	2.3	.29	.33	2.2	1.0	1.2	.80
22	3.5	2.3	1.8	2.0	.10	3.9	.29	.24	1.8	.95	5.5	.80
23	.67	7.4	2.0	.38	.07	2.8	.24	.24	1.2	1.0	4.3	1.0
24	.44	3.2	1.6	.29	.07	1.0	.67	.24	.44	.95	1.9	1.0
25	.38	3.2	1.5	.24	.05	.20	1.6	.20	.44	.87	1.5	1.3
26	.98	3.8	1.5	.16	.05	.29	1.6	.29	.44	1.2	1.3	4.2
27	2.5	2.5	1.5	.16	.05	.24	1.5	.44	.38	1.3	1.2	1.8
28	2.3	2.3	1.4	.16	.05	1.1	1.5	.24	.80	.87	1.0	1.2
29	2.1	2.8	1.4	.24	.04	2.6	1.5	----------	1.5	5.4	1.0	1.1
30	2.1	2.1	1.3	.29	.04	2.7	1.5	----------	1.6	3.4	.95	1.0
31	2.0	2.5	----------	.16	----------	.24	1.5	----------	1.4	----------	.95	----------
Total	52.77	77.5	61.9	50.03	5.23	18.13	37.22	46.41	39.08	39.49	52.40	37.25
Mean												
Mgd	1.70	2.50	2.06	1.61	0.174	0.585	1.20	1.66	1.26	1.32	1.69	1.24
Cfs	2.63	3.87	3.19	2.49	0.269	0.905	1.86	2.57	1.95	2.04	2.61	1.92
Ac-ft	162	238	190	154	16	56	114	142	120	121	161	114
Max	3.5	7.4	4.5	10	0.55	3.9	2.2	9.9	2.3	5.4	5.5	4.2
Min	0.20	1.7	1.3	0.16	0.04	0.03	0.20	0.20	0.13	0.87	0.95	0.80

Calendar Year 1965:	Max	10	Min	0	Mean (mgd)	1.18	Mean (cfs)	1.83	Ac-ft	1,330
Fiscal Year 1965-66:	Max	10	Min	0.03	Mean (mgd)	1.42	Mean (cfs)	2.20	Ac-ft	1,590

40-0970. Pohakuhonu Stream near Kilauea

Location.--Lat 22°10'52", long 159°25'40", on left bank 0.8 mile upstream from confluence with Halaulani Stream, 1.2 miles upstream from Stone Dam, and 2.5 miles southwest of Kilauea.

Drainage area.--1.8 sq mi, approximately.

Records available.--October 1957 to June 1966.

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

Average discharge.--8 years (1958-66), 5.34 mgd (8.26 cfs).

Extremes.--Maximum discharge during year, 904 mgd (1,400 cfs) Nov. 14 (gage height, 5.04 ft), from rating curve extended above 420 mgd as explained below; minimum, 0.88 mgd (1.4 cfs) Apr. 22-25, 28.

1957-66: Maximum discharge, 1,750 mgd (2,710 cfs) Aug. 6, 1959 (gage height, 7.23 ft, from floodmark in well), from rating curve extended above 420 mgd on basis of slope-area measurement at gage height 11.0 ft; minimum, 0.80 mgd (1.24 cfs) June 27, 28, 1959.

Maximum stage known, 11.0 ft Jan. 24, 1956, from floodmark (discharge, 3,620 mgd or 5,600 cfs, from slope-area measurement of peak flow).

Remarks.--Records good. Kalihiwai ditch (see sta. no. 959) diverts about 0.5 mile above station for domestic supply and irrigation of sugarcane. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.2	1.8	1.4	1.1	11	16	3.6	1.4	3.1	1.2	1.8	0.95
2	3.1	1.8	1.6	1.1	6.2	4.2	2.8	1.3	2.6	1.2	1.3	1.0
3	3.1	1.7	1.3	1.0	8.0	3.1	2.8	1.2	2.5	1.2	1.4	1.1
4	2.2	2.1	1.6	1.0	55	2.9	2.8	1.2	2.2	1.2	1.1	.95
5	2.4	1.7	1.5	1.0	9.5	3.1	2.6	1.2	1.6	1.3	1.1	1.1
6	2.1	1.6	1.5	1.0	31	3.8	2.5	11	1.5	1.2	1.3	1.0
7	1.9	1.8	2.8	.95	7.3	2.6	2.2	3.6	1.5	1.1	1.1	.95
8	2.9	1.6	1.6	1.1	6.8	2.8	2.1	1.8	1.5	1.1	1.1	.95
9	7.2	3.2	3.2	1.2	4.7	4.2	1.9	1.8	1.4	1.1	1.1	.95
10	3.1	4.8	1.9	1.0	4.0	9.4	1.8	1.6	1.4	1.1	1.0	1.1
11	8.8	2.1	1.6	2.0	4.0	5.3	1.7	1.5	1.3	1.1	1.0	1.9
12	6.1	1.8	1.5	9.9	16	3.6	1.6	1.5	1.3	1.1	.95	1.2
13	3.1	1.7	1.5	8.8	73	3.4	1.6	2.0	1.3	1.1	.95	1.2
14	2.8	1.7	1.4	68	138	4.5	1.5	23	1.3	1.1	.95	1.1
15	2.4	2.1	1.3	3.6	36	3.8	3.6	9.0	1.4	1.1	1.6	1.0
16	2.2	1.8	1.5	2.2	16	4.2	1.9	3.6	1.5	1.1	1.5	.95
17	2.9	1.7	1.4	2.9	7.6	4.0	1.7	4.9	1.3	1.1	1.1	.95
18	3.9	1.6	1.4	3.2	6.2	3.1	1.6	3.4	1.2	1.1	1.0	.95
19	2.4	1.6	1.3	13	17	2.8	2.6	3.6	1.3	1.2	1.5	.95
20	2.8	1.8	1.3	3.8	49	3.2	5.2	25	1.3	1.0	1.1	.95
21	8.2	2.2	1.6	2.9	7.6	10	2.8	4.0	1.4	.95	1.0	.95
22	38	1.9	1.4	2.2	5.3	5.6	2.2	3.1	1.2	.88	7.6	1.0
23	8.0	4.6	1.5	1.9	4.5	3.6	1.9	3.8	1.1	.88	1.9	1.1
24	4.0	1.8	1.3	1.8	4.2	3.1	1.9	3.1	1.1	.88	1.3	1.1
25	3.1	1.8	1.3	2.1	3.8	2.9	1.7	2.6	1.1	.88	1.2	1.0
26	2.8	2.9	1.2	1.7	3.8	4.2	1.6	8.6	1.1	.95	1.1	2.1
27	2.6	1.8	1.3	3.2	4.0	2.9	1.6	14	1.0	.95	1.1	1.3
28	2.4	1.7	1.2	6.6	3.6	2.6	1.5	3.6	1.0	.88	1.0	1.0
29	2.2	1.7	1.2	14	2.9	2.9	1.5	----------	1.1	6.2	1.0	1.1
30	2.1	1.5	1.1	18	2.9	4.2	1.4	----------	1.2	2.2	.95	1.1
31	1.9	1.5	----------	3.1	----------	2.9	1.3	----------	1.1	----------	.95	----------
Total	142.9	63.4	45.7	185.35	548.9	134.9	67.5	146.4	44.9	38.35	43.05	32.95
Mean												
Mgd	4.61	2.05	1.52	5.98	18.3	4.35	2.18	5.23	1.45	1.28	1.39	1.10
Cfs	7.13	3.17	2.35	9.25	28.3	6.73	3.37	8.09	2.24	1.98	2.15	1.70
Ac-ft	439	195	140	569	1680	414	207	449	138	118	132	101
Max	38	4.8	3.2	68	138	16	5.2	25	3.1	6.2	7.6	2.1
Min	1.9	1.5	1.1	0.95	2.9	2.6	1.3	1.2	1.0	0.88	0.95	0.95

Calendar Year 1965: Max 185 Min 0.95 Mean (mgd) 7.73 Mean (cfs) 12.0 Ac-ft 8660
Fiscal Year 1965-66: Max 138 Min 0.88 Mean (mgd) 4.09 Mean (cfs) 6.33 Ac-ft 4590

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-14	1700	5.04	904	1,400

40-0975. 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, 1 mile upstream from Stone Dam, and 2.5 miles south of Kilauea.

Drainage area.--1.1 sq mi, approximately.

Records available.--November 1957 to June 1966.

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

Average discharge.--8 years (1958-66), 7.83 mgd (12.1 cfs).

Extremes.--Maximum discharge during year, 612 mgd (947 cfs) Nov. 14 (gage height, 5.63 ft), from rating curve extended above 130 mgd as explained below; minimum, 2.6 mgd (4.0 cfs) Oct. 2-8, 11.
1957-66: Maximum discharge, 1,340 mgd (2,070 cfs) Aug. 6, 1959 (gage height, 8.30 ft), from rating curve extended above 130 mgd on basis of slope-area measurement of peak flow; minimum, 2.3 mgd (3.6 cfs) Feb. 20-23, 27, 28, Mar. 4, 1963.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.2	4.3	4.2	2.7	20	24	7.5	3.5	5.7	3.0	6.2	3.0
2	8.3	4.3	4.8	2.6	12	7.9	5.9	3.4	5.0	3.1	4.4	3.4
3	7.5	4.0	3.9	2.6	15	6.1	5.9	3.4	4.7	3.1	4.0	4.0
4	5.0	4.7	5.5	2.6	60	5.9	5.9	3.4	4.4	3.1	3.5	3.2
5	5.2	4.2	4.4	2.6	18	6.9	5.9	3.4	4.3	3.5	3.3	3.9
6	4.7	4.0	4.7	2.6	43	7.5	5.2	21	4.2	3.3	5.0	3.2
7	4.6	4.3	6.8	2.6	14	5.6	4.7	7.0	4.0	3.1	4.0	3.0
8	5.5	3.9	4.2	3.3	11	5.7	4.4	5.3	3.9	3.0	4.0	2.8
9	12	8.2	10	4.2	7.5	7.6	4.3	4.6	3.6	3.0	4.0	3.0
10	6.6	7.8	4.8	3.1	6.6	16	4.2	3.9	3.6	3.0	3.8	3.2
11	16	4.3	4.2	6.8	7.0	9.3	4.0	3.6	3.5	3.0	3.5	7.4
12	9.5	4.0	3.9	15	19	6.6	4.0	3.5	3.4	3.0	3.4	3.5
13	6.2	3.9	3.8	11	62	6.4	3.9	4.2	3.4	3.0	3.4	3.9
14	5.7	4.0	3.5	55	100	7.5	3.8	29	3.4	3.0	3.8	3.4
15	5.0	4.7	3.5	9.2	48	6.6	8.8	15	5.5	3.0	7.0	3.1
16	4.8	3.8	3.6	5.9	27	6.2	4.7	6.8	5.8	3.0	5.0	3.0
17	6.2	3.5	3.4	7.5	13	6.6	4.2	9.9	3.5	3.0	3.6	2.8
18	8.7	3.4	3.3	8.6	11	5.6	3.9	6.4	3.4	3.0	3.4	2.8
19	5.4	3.4	3.3	22	28	5.0	5.0	6.5	3.8	3.2	5.7	3.0
20	6.2	3.6	3.3	7.5	41	6.6	7.3	26	4.3	3.0	3.8	2.8
21	13	4.0	4.1	7.3	11	16	5.7	7.0	4.7	2.9	3.4	2.8
22	37	4.3	3.6	5.2	8.6	10	4.7	5.7	3.6	2.8	9.5	3.1
23	19	12	3.8	4.5	7.3	6.6	4.3	7.3	3.4	2.8	5.6	3.6
24	8.6	4.7	3.3	4.2	7.0	5.7	4.4	5.6	3.5	2.7	3.9	3.8
25	6.6	4.8	3.1	4.0	6.6	4.0	4.0	5.0	3.3	2.8	3.5	3.6
26	5.9	9.1	3.0	4.5	7.3	8.1	3.9	16	3.4	3.6	3.4	8.8
27	5.7	4.6	3.0	4.0	7.7	5.7	3.9	20	3.3	3.6	3.3	4.4
28	5.2	4.3	2.8	7.0	6.8	5.2	3.8	6.8	3.2	3.4	3.2	3.5
29	4.7	5.2	2.8	19	5.7	7.1	3.6	----------	3.2	15	3.2	3.4
30	4.6	4.0	2.7	25	5.7	8.9	3.5	----------	3.4	11	3.1	3.4
31	4.4	4.2	----------	7.0	----------	6.8	3.5	----------	3.1	----------	3.1	----------
Total	253.0	149.5	121.3	269.1	636.8	243.7	148.8	243.2	121.5	112.0	130.0	108.8
Mean												
Mgd	8.16	4.82	4.04	8.68	21.2	7.86	4.80	8.69	3.92	3.73	4.19	3.63
Cfs	12.6	7.46	6.25	13.4	32.8	12.2	7.43	13.4	6.07	5.77	6.48	5.62
Ac-ft	776	459	372	826	1950	748	457	746	373	344	399	334
Max	37	12	10	55	100	24	8.8	29	5.8	15	9.5	8.8
Min	4.4	3.4	2.7	2.6	5.7	4.0	3.5	3.4	3.1	2.7	3.1	2.8

Calendar Year 1965:	Max	100	Min	2.6	Mean (mgd)	10.1	Mean (cfs)	15.6	Ac-ft	11,360
Fiscal Year 1965-66:	Max	100	Min	2.6	Mean (mgd)	6.95	Mean (cfs)	10.8	Ac-ft	7,790

Peak discharge (base, 370 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
11-4	about 0600	4.73	416	644	11-14	1730	5.63	612	947

40-1000. Hanalei tunnel outlet near Lihue

Location.--Lat 22°04'57", long 159°27'52", on right bank at outlet of Hanalei tunnel, 2.2 miles downstream from intake on Kaapoko Stream, and 9.8 miles northwest of Lihue.

Records available.--July 1932 to June 1966.

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

Average discharge.--34 years, 17.6 mgd (27.2 cfs).

Extremes.--1932-66: Maximum daily discharge, 64 mgd (99 cfs) Apr. 11, 25, 26, 1942; no flow at times.

Remarks.--Records good except those for period Apr. 26 to June 3, 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 million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.1	11	9.2	8.6	15	7.7	4.8	1.5	2.2	1.4	18	20
2	9.2	9.9	8.4	7.0	10	2.8	2.6	2.0	2.0	1.4	17	25
3	9.6	9.9	8.4	6.3	9.0	2.4	2.2	2.2	2.0	1.4	21	20
4	9.6	9.9	9.2	6.3	22	2.6	2.0	2.4	1.7	1.5	18	17
5	9.2	9.9	9.2	6.3	14	4.0	2.4	2.4	1.7	3.1	17	16
6	9.2	9.6	7.7	6.3	17	7.3	2.0	6.0	1.7	6.6	17	13
7	9.2	9.9	6.6	6.3	10	2.8	1.7	4.2	1.7	11	16	12
8	11	9.6	7.7	7.0	9.9	2.4	1.7	3.9	1.5	11	15	12
9	15	11	11	10	7.3	3.1	1.7	3.1	1.5	11	13	12
10	12	12	7.7	7.0	6.6	5.9	1.5	2.8	1.4	11	10	20
11	17	13	8.1	7.2	6.3	3.1	1.5	2.8	1.4	11	16	28
12	14	11	8.8	10	10	2.2	1.5	2.6	1.4	11	20	17
13	11	11	7.7	7.3	19	2.0	1.5	4.8	1.4	11	15	19
14	11	11	7.3	22	16	4.2	1.4	8.1	1.4	13	20	18
15	9.9	9.9	7.7	9.6	19	2.6	2.2	6.0	1.7	11	25	16
16	9.6	11	12	7.3	10	3.4	1.5	3.4	1.7	11	20	15
17	11	10	10	8.1	4.5	2.6	1.5	5.7	1.7	12	10	15
18	11	9.6	8.4	8.8	5.5	1.7	1.5	3.9	1.5	13	15	15
19	9.9	9.6	7.7	9.9	17	1.4	3.1	3.9	2.4	15	30	18
20	10	9.2	7.7	7.3	18	2.4	3.4	4.5	3.6	12	20	15
21	12	8.8	9.6	7.0	4.8	8.8	2.8	2.8	2.4	12	15	19
22	29	11	8.4	6.0	3.4	3.1	1.7	2.6	1.7	11	35	22
23	17	12	8.8	5.7	3.6	2.0	1.7	2.6	2.4	12	30	24
24	13	10	7.0	5.7	3.4	1.5	1.7	2.2	1.5	12	25	19
25	12	9.9	6.6	6.0	3.6	2.0	1.7	2.2	1.4	13	22	21
26	11	10	6.6	5.7	3.6	3.6	1.4	5.4	1.4	17	20	27
27	11	9.6	6.6	11	4.9	1.7	1.4	8.6	1.4	14	21	21
28	10	8.8	6.6	8.8	3.4	1.5	1.5	2.8	1.4	12	23	20
29	9.9	9.6	6.6	8.1	2.4	4.4	1.5	----------	1.2	25	25	23
30	11	8.8	6.6	16	2.4	5.1	1.5	----------	1.2	20	22	19
31	11	8.8	----------	8.8	----------	3.8	1.5	----------	1.2	----------	15	----------
Total	363.4	315.3	243.9	257.4	281.6	104.1	60.1	105.4	52.8	327.4	606	558
Mean												
Mgd	11.7	10.2	8.13	8.30	9.39	3.36	1.94	3.76	1.70	10.9	19.5	18.6
Cfs	18.1	15.8	12.6	12.8	14.5	5.20	3.00	5.82	2.63	16.9	30.2	28.8
Ac-ft	1.120	968	748	790	864	319	184	323	162	1.000	1.860	1.710
Max	29	13	12	22	22	8.8	4.8	8.6	3.6	25	35	28
Min	8.1	8.8	6.6	5.7	2.4	1.4	1.4	1.5	1.2	1.4	10	12

Calendar Year 1965:	Max	34	Min	1.4	Mean (mgd)	10.4	Mean (cfs)	16.1	Ac-ft	11.610
Fiscal Year 1965-66:	Max	35	Min	1.2	Mean (mgd)	8.97	Mean (cfs)	13.9	Ac-ft	10.050

40-1030. Hanalei River near Hanalei

Location.--Lat 22°11'31", long 159°27'57", on right bank 2.3 miles southeast of Hanalei and 4.9 miles upstream from mouth.

Drainage area.--19.1 sq mi.

Records available.--January 1912 to November 1919, fiscal years 1962-63 (annual maximums), December 1962 to June 1966.

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

Extremes.--Maximum discharge during year, 29,000 mgd (44,900 cfs) Nov. 13 (gage height, 14.23 ft), from rating curve extended above 1,800 mgd; minimum, 26 mgd (40 cfs) June 17, 18.
1912-19, 1961-66: Maximum discharge, that of Nov. 13, 1965.
1912-19, 1962-66: Minimum discharge, 25 mgd (39 cfs) Mar. 4, 1963.

Remarks.--Records good. Since 1925 Hanalei tunnel (see sta. no. 1000) has diverted from Hanalei River and its tributary Kaapoko Stream above station to North Branch of North Fork Wailua River for irrigation.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	80	71	72	50	648	883	219	76	160	53	52	32
2	130	67	68	54	400	200	120	76	90	56	46	38
3	78	65	58	42	232	146	125	76	70	55	78	52
4	65	68	97	40	1,610	141	118	84	60	54	42	34
5	62	66	71	42	456	237	157	76	50	68	36	38
6	60	61	61	40	587	577	138	400	50	50	39	33
7	140	87	61	39	239	198	99	180	50	43	37	29
8	165	63	84	97	218	171	91	110	50	43	36	29
9	276	162	231	252	144	220	86	68	50	43	38	28
10	136	181	90	105	125	445	82	63	50	43	37	34
11	617	140	71	56	120	230	81	60	50	43	36	144
12	538	78	79	330	304	141	78	59	50	43	39	38
13	156	71	59	86	1,590	139	78	222	50	43	38	35
14	113	77	56	1,700	1,830	234	76	640	50	43	45	34
15	90	71	55	290	868	169	117	336	56	43	48	32
16	81	135	92	151	366	213	84	148	50	43	44	28
17	128	91	71	162	198	213	77	316	50	43	34	27
18	122	63	67	254	198	144	73	177	47	43	77	26
19	79	62	51	513	1,040	122	190	235	120	74	63	29
20	77	69	49	192	1,510	157	220	473	170	45	43	28
21	155	78	83	208	267	414	155	153	110	40	33	34
22	1,910	143	84	128	188	221	110	118	90	38	224	40
23	334	235	116	103	162	146	90	125	54	40	77	52
24	173	107	58	90	158	122	93	113	54	40	40	48
25	127	99	51	132	162	125	120	112	56	40	35	56
26	104	130	48	88	158	185	100	257	56	70	33	126
27	104	77	50	281	211	122	90	330	54	56	32	56
28	87	68	46	342	188	106	110	250	54	42	31	37
29	78	101	45	339	128	137	90	----------	54	80	32	40
30	78	66	43	767	118	220	82	----------	66	58	32	36
31	75	66	----------	292	----------	101	76	----------	55	----------	33	----------
Total	6,418	2,918	2,167	7,265	14,423	6,879	3,425	5,333	2,076	1,475	1,510	1,293
Mean												
Mgd	207	94.1	72.2	234	481	222	110	190	67.0	49.2	48.7	43.1
Cfs	320	146	112	362	744	343	170	294	104	76.1	75.4	66.7
Ac-ft	19,700	8,960	6,650	22,300	44,260	21,110	10,510	16,370	6,370	4,530	4,630	3,970
Max	1,910	235	231	1,700	1,830	883	220	640	170	80	224	144
Min	60	61	43	39	118	101	73	59	47	38	31	26

Calendar Year 1965:	Max	2,000	Min	39	Mean (mgd)	214	Mean (cfs)	331	Ac-ft	239,300
Fiscal Year 1965-66:	Max	1,910	Min	26	Mean (mgd)	151	Mean (cfs)	234	Ac-ft	169,300

Peak discharge (base, 3,600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-12	1530	10.23	10,200	15,800	11-4	0300	10.43	10,800	16,700
7-22	1200	12.34	18,300	28,300	11-13	2030	14.23	29,000	44,900
10-14	1000	13.30	23,400	36,200	11-20	0430	9.40	8,000	12,400

40-1080. Wainiha River near Hanalei

Location.--Lat 22°08'10", long 159°33'40", 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.

Records available.--August 1952 to February 1956, October 1957 to June 1966.

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

Average discharge.--10 years (1953-55, 1958-66), 88.8 mgd (137 cfs).

Extremes.--Maximum discharge during year, 4,470 mgd (6,920 cfs) Nov. 13 (gage height, 6.18 ft), from rating curve extended above 660 mgd as explained below; minimum, 27 mgd (42 cfs) May 25-30, June 8, 17.

1952-66: Maximum discharge recorded, 13,000 mgd (20,100 cfs) Aug. 6, 1959 (gage height, 8.19 ft), from rating curve extended above 660 mgd on basis of slope-area measurement at gage height 7.72 ft; minimum, 22.5 mgd (34.8 cfs) Feb. 12, 1954.

Flood of Feb. 17, 1956, which destroyed the station, reached a stage of about 14.1 ft (discharge not determined).

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	52	39	40	61	316	410	92	34	48	30	33	30
2	93	38	36	39	126	114	57	33	43	46	44	62
3	82	38	34	32	65	81	59	37	39	35	74	72
4	49	44	39	31	188	100	57	40	36	33	35	37
5	45	45	35	34	102	239	62	34	35	59	30	41
6	41	39	35	31	91	802	60	298	34	33	31	30
7	41	60	34	31	87	126	41	114	34	30	30	28
8	108	43	37	56	85	112	38	59	34	30	30	27
9	227	77	83	128	46	184	36	46	33	30	39	28
10	81	91	44	64	40	344	35	40	33	30	30	72
11	348	82	53	44	42	117	34	37	33	30	30	173
12	133	43	44	146	149	69	33	35	31	29	42	36
13	71	43	34	61	474	59	36	160	31	29	33	42
14	57	54	34	355	479	165	33	601	31	30	34	43
15	52	53	38	93	544	88	77	297	34	29	29	33
16	52	59	72	57	168	132	46	92	32	29	28	30
17	90	49	49	88	66	118	36	205	32	30	28	27
18	70	41	39	93	66	69	33	107	30	33	36	28
19	52	40	33	185	291	53	171	112	68	47	35	53
20	61	49	36	85	898	148	104	174	82	34	32	36
21	112	52	86	68	99	251	104	70	56	34	29	59
22	544	109	49	50	66	113	58	52	36	31	43	75
23	102	122	54	45	67	53	45	62	33	32	35	89
24	62	66	36	39	73	45	53	60	32	33	29	55
25	49	54	34	44	99	56	54	90	30	34	27	82
26	45	52	33	41	110	78	39	131	30	63	27	187
27	46	44	33	176	143	42	40	180	30	46	27	49
28	39	39	32	140	90	41	46	65	30	33	27	54
29	37	53	31	114	52	66	39	---------	29	49	27	76
30	37	38	31	283	47	88	36	---------	31	33	28	45
31	41	36	---------	120	---------	59	34	---------	33	---------	38	---------
Total	2.919	1.692	1.268	2.834	5.169	4.422	1.688	3.265	1.143	1.064	1.040	1.699
Mean												
Mgd	94.2	54.6	42.3	91.4	173	143	54.5	117	36.9	35.5	33.5	56.6
Cfs	146	84.5	65.4	141	268	221	84.3	181	57.1	54.9	51.8	87.6
Ac-ft	8.960	5.190	3.890	8.700	15.860	13.570	5.180	10.020	3.510	3.270	3.190	5.210
Max	544	122	86	355	898	802	171	601	82	63	74	187
Min	37	36	31	31	40	41	33	33	29	29	27	27

Calendar Year 1965:	Max	1.010	Min	31	Mean (mgd)	103	Mean (cfs)	159	Ac-ft	114.900
Fiscal Year 1965-66:	Max	898	Min	27	Mean (mgd)	77.3	Mean (cfs)	120	Ac-ft	86.550

Peak discharge (base, 2,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-13	2000	6.18	4,470	6,920	2-6	1800	5.17	2,260	3,500
11-20	0430	5.57	3,000	4,640					

40-1300. Nahomalu Stream near Mana

Location.--lat 22°02'41", long 159°45'17", on left bank 1.1 miles northeast of Mana and 5.3 miles northwest of Kekaha School.

Drainage area.--3.77 sq mi.

Records available.--Fiscal years 1962-63 (annual maximums), July 1963 to June 1966.

Gage.--Water-stage recorder. Datum of gage is 236.8 ft above mean sea level (by stadia survey). Prior to July 1, 1963, crest-stage gage at same site and datum.

Extremes.--Maximum discharge during year, 464 mgd (718 cfs) Oct. 14 (gage height, 4.55 ft), from rating curve extended above 15 mgd as explained below; no flow most of the time.
1961-66: Maximum discharge, 629 mgd (973 cfs) Dec. 16, 1964 (gage height, 5.16 ft), from rating curve extended above 15 mgd on basis of slope-area measurement at gage height 5.13 ft.
1963-66: No flow most of the time each year.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		0	0	0	0.07	0.24		0	0.51			
2		0	0	.02	.08	.07		0	.28			
3		0	0	0	.03	.02		0	.17			
4		0	0	0	.01	0		0	.12			
5		0	0	0	0	0		0	.08			
6		0	0	0	0	0		.97	.04			
7		0	0	0	0	0		.74	.12			
8		0	0	0	.26	0		.31	.07			
9		0	0	0	.14	0		.17	.02			
10		0	0	0	.11	0		.10	0			
11		0	0	.45	.15	0		.02	0			
12		0	0	.41	.38	0		0	0			
13		0	0	.67	.31	0		0	0			
14		0	0	13	.31	.11		0	0			
15		.02	0	.38	.28	.01		0	0			
16		0	0	.05	.21	0		0	0			
17		0	0	.02	.18	0		0	0			
18		0	0	0	.15	0		0	0			
19		0	0	0	.31	0		0	0			
20		0	0	.20	.38	0		0	0			
21		0	2.1	.15	.31	0		0	0			
22		0	.34	.10	.28	0		0	0			
23		0	.15	.10	.21	0		0	0			
24		0	.10	.10	.17	0		0	0			
25		0	0	.10	.14	0		0	0			
26		0	0	.11	.11	0		.37	0			
27		.02	0	.08	.08	0		10	0			
28		0	0	.07	.05	0		1.1	0			
29		0	0	.09	.02	0		---	0			
30		0	0	.08	.01	0		---	0			
31		0	---	.07	---	0		---	0	---		---
Total	0	0.04	2.69	16.25	4.74	0.45	0	13.78	1.41	0	0	0
Mean												
Mgd	0	0.001	0.090	0.524	0.158	0.015	0	0.492	0.045	0	0	0
Cfs	0	0.002	0.139	0.811	0.244	0.023	0	0.761	0.070	0	0	0
Ac-ft	0	0.1	8.3	50	15	1.4	0	42	4.3	0	0	0
Max	0	0.02	2.1	13	0.38	0.24	0	10	0.51	0	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965:	Max	25	Min	0	Mean (mgd)	0.477	Mean (cfs)	0.738	Ac-ft	534
Fiscal Year 1965-66:	Max	13	Min	0	Mean (mgd)	0.108	Mean (cfs)	0.167	Ac-ft	121

Peak discharge (base, 60 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
10-14	0300	4.55	464	718	2-27	0030	3.22	160	248

40-2000. 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.

Records available.--May 1913 to July 1953, April 1960 to June 1966. Monthly discharge only for some periods, published in WSP 1319. Prior to July 1960, 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.--44 years (1913-24, 1926-53, 1960-66), 10.7 mgd (16.6 cfs).

Extremes.--Maximum discharge during year, 1,820 mgd (2,820 cfs) July 21 (gage height, 8.85 ft), from rating curve extended above 53 mgd on basis of slope-area measurement at gage height 12.46 ft; minimum, 0.21 mgd (0.32 cfs) May 26, 29.
1913-53, 1960-66: Maximum discharge, 3,550 mgd (5,490 cfs) Jan. 1, 1933 (gage height, 11.7 ft, from floodmarks), from rating curve extended above 44 mgd by test on model of station site; maximum gage height, 12.46 ft Apr. 15, 1963; minimum discharge, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.

Remarks.--Records good except those for period of no gage-height record, which are fair. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	3.8	14	1.4	3.2	17	12	2.4	10	1.2	4.3	0.31
2	7.6	3.2	6.1	1.3	20	9.0	16	2.2	7.0	1.0	1.4	4.5
3	4.5	3.2	3.0	1.0	101	6.3	14	2.1	5.0	.90	3.5	16
4	2.6	3.2	7.4	.89	38	5.7	8.4	2.1	4.0	.80	.69	1.2
5	19	3.7	2.6	.71	6.6	5.2	6.3	1.9	3.5	.80	.37	2.1
6	8.1	4.6	2.4	.62	5.6	37	5.9	30	3.0	.70	.46	.83
7	8.5	6.3	2.2	.56	5.7	6.6	4.9	30	2.5	.70	.49	1.2
8	13	2.6	2.0	7.0	9.6	6.5	4.5	3.7	2.2	.60	.31	.60
9	47	14	1.9	5.4	3.7	30	4.1	2.5	2.0	.60	7.1	.52
10	10	11	1.7	3.2	29	40	4.4	2.2	1.8	.60	2.9	.68
11	22	3.1	2.4	1.4	25	27	3.7	1.9	1.7	.80	.73	6.4
12	32	3.2	1.9	3.9	166	9.3	4.1	1.9	1.6	1.0	4.3	.93
13	6.6	2.8	2.1	121	48	7.5	3.3	3.3	1.5	.70	3.4	4.9
14	5.4	6.8	2.6	15	434	70	3.0	2.5	1.4	.50	2.2	3.0
15	7.9	5.1	2.4	17	190	32	42	10	1.4	.40	17	1.4
16	8.9	4.9	3.8	8.4	46	31	5.6	3.0	5.0	.35	2.5	.83
17	39	2.6	3.1	6.2	20	14	3.7	20	2.0	.30	1.0	.52
18	7.9	2.3	2.2	4.2	16	9.9	3.3	10	1.7	.30	.68	.46
19	5.4	2.1	1.5	18	40	8.8	45	40	4.0	.25	.52	.46
20	7.8	2.0	1.3	3.8	146	20	22	8.0	10	.25	.56	.43
21	154	4.1	1.9	3.0	17	15	9.1	5.0	40	.25	1.4	.52
22	41	5.8	1.4	2.6	13	10	5.9	4.0	10	.25	.49	4.0
23	10	32	5.7	2.1	17	7.0	6.3	8.0	5.0	.25	.37	1.5
24	6.8	4.9	1.9	1.9	10	11	4.6	70	10	.25	.29	.83
25	5.6	14	3.4	1.9	7.9	19	4.9	4.0	5.0	.23	.27	36
26	5.1	54	1.5	2.0	10	18	3.5	5.0	2.0	.23	.23	11
27	4.5	4.4	1.1	19	8.6	7.0	3.2	15	3.0	.23	.27	3.6
28	36	3.4	.97	15	9.9	6.5	4.1	30	4.0	6.9	.31	3.0
29	5.2	9.0	.93	6.7	8.8	26	3.0	---------	4.0	4.6	.25	6.1
30	4.1	3.2	1.4	9.0	30	10	2.6	---------	2.0	.64	.49	2.5
31	6.5	2.8	---------	9.7	---------	13	2.5	---------	1.5	---------	.56	---------
Total	549.4	228.1	86.80	293.88	1,485.6	535.3	265.9	257.7	157.8	26.58	59.33	116.32
Mean												
Mgd	17.7	7.36	2.89	9.48	49.5	17.3	8.58	9.20	5.09	0.886	1.91	3.88
Cfs	27.4	11.4	4.47	14.7	76.6	26.8	13.3	14.2	7.88	1.37	2.96	6.00
Ac-ft	1,690	700	266	902	4,560	1,640	816	791	484	82	182	357
Max	154	54	14	121	434	70	45	40	40	6.9	17	36
Min	2.6	2.0	0.93	0.56	3.2	5.2	2.5	1.9	1.4	0.23	0.23	0.31

Calendar Year 1965:	Max	434	Min	0.30	Mean (mgd)	14.6	Mean (cfs)	22.6	Ac-ft	16,410
Fiscal Year 1965-66:	Max	434	Min	0.23	Mean (mgd)	11.1	Mean (cfs)	17.2	Ac-ft	12,470

No gage-height record Feb. 15 to Apr. 22.

Peak discharge (base, 820 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2230	8.85	1,820	2,820	11-3	1430	6.98	1,110	1,720
8-26	0900	8.08	1,510	2,340	11-14	1430	7.86	1,420	2,200
10-13	1700	8.42	1,650	2,550	1-19	about 0900	8.04	1,500	2,320

40-2030. Mauka ditch near Wahiawa

Location.--Lat 21°30'45", long 157°59'20", on left bank 0.7 mile northwest of Ku Tree Reservoir and 2.9 miles east of Wahiawa Post Office.

Records available.--March 1947 to June 1966. Prior to July 1958, published as Kaukonahua ditch near Wahiawa.

Gage.--Digital water-stage recorder and Parshall flume. Altitude of gage is 1,140 ft (from topographic map). Prior to Apr. 9, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--19 years, 2.93 mgd (4.53 cfs).

Extremes.--1947-66: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts from North Fork Kaukonahua Stream for domestic use in Wahiawa.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.4	0.46	2.3	0.30	0.10	0.36	0.25	0.05	0.19	0.07	0.07	0.04
2	2.5	.35	2.2	.25	.30	.31	.30	.05	.15	.07	.07	.21
3	2.4	.33	1.9	.20	.93	.25	.27	.04	.13	.06	.11	.85
4	1.9	.31	2.1	.15	1.7	.15	.17	.04	.13	.12	.05	.17
5	2.6	.47	.45	.10	.34	.15	.12	.04	.12	.20	.05	.14
6	2.5	.48	.41	.07	.24	.70	.11	.60	.12	.06	.05	.06
7	2.5	.65	.35	.05	.19	.15	.10	.60	.10	.06	.05	.04
8	3.0	.29	.35	.10	.31	.15	.09	.08	.10	.06	.05	.04
9	4.3	.60	.30	.25	.15	.58	.08	.06	.10	.06	.06	.03
10	2.7	1.2	.30	.08	1.3	.80	.09	.05	.10	.06	.06	.04
11	2.8	.32	.40	.05	1.3	.50	.07	.04	.10	.06	.06	.07
12	3.0	.29	.30	.15	2.3	.20	.08	.04	.09	.06	.07	.05
13	2.4	.25	.30	2.5	1.6	.15	.07	.07	.11	.06	.07	.20
14	2.4	.51	.40	1.5	4.0	1.4	.06	.06	.13	.06	.06	.76
15	2.4	.31	.40	.80	1.4	.62	.81	.20	.14	.06	.08	.54
16	2.8	.31	.60	.60	.85	.60	.52	.07	.12	.07	.07	.32
17	3.4	.19	.50	.40	.60	.25	.05	.30	.10	.10	.07	.11
18	2.6	.18	.40	.15	.51	.20	.06	.20	.09	.12	.07	.04
19	2.4	.13	.30	1.0	.45	.17	.10	.80	.08	.14	.07	.03
20	2.4	.13	.25	.50	.80	.35	.54	.15	.08	.11	.07	.03
21	3.4	.29	.35	.18	.41	.30	.50	.10	.11	.05	.07	.21
22	2.1	.50	.30	.13	.33	.20	.36	.09	.08	.05	.05	1.5
23	1.0	1.4	.80	.10	.41	.15	.24	.25	.08	.05	.05	1.5
24	.91	.27	.40	.09	.40	.20	.10	.23	.08	.05	.04	1.2
25	.84	.22	.50	.09	.32	.40	.10	.10	.09	.05	.04	2.2
26	.78	1.2	.30	.07	.30	.35	.08	.10	.08	.06	.04	1.9
27	.78	1.9	.20	.26	.29	.15	.07	.35	.09	.06	.05	1.1
28	1.1	1.8	.20	.22	.32	.13	.09	.60	.10	.07	.04	.86
29	.68	2.0	.20	.44	.26	.50	.08	----------	.07	.07	.04	1.0
30	.51	1.9	.30	.21	.47	.20	.07	----------	.07	.07	.04	.91
31	.58	1.8	----------	.15	----------	.25	.06	----------	.06	----------	.04	----------
Total	66.08	21.04	18.06	11.14	22.88	10.87	5.69	5.36	3.19	2.24	1.81	16.15
Mean												
Mgd	2.13	0.679	0.602	0.359	0.763	0.351	0.184	0.191	0.103	0.075	0.058	0.538
Cfs	3.30	1.05	0.931	0.555	1.18	0.543	0.285	0.296	0.159	0.116	0.090	0.832
Ac-ft	203	65	55	34	70	33	18	16	9.8	6.9	5.6	50
Max	4.3	2.0	2.3	2.5	4.0	1.4	0.81	0.80	0.19	0.20	0.11	2.2
Min	0.51	0.13	0.20	0.05	0.10	0.13	0.05	0.04	0.06	0.05	0.04	0.03

Calendar Year 1965:	Max	9.0	Min	0.05	Mean (mgd)	1.72	Mean (cfs)	2.66	Ac-ft	1,920
Fiscal Year 1965-66:	Max	4.3	Min	0.03	Mean (mgd)	0.506	Mean (cfs)	0.783	Ac-ft	566

Note.--No gage-height record Sept. 5 to Oct. 20, Dec. 3 to Jan. 14, Jan. 23 to Feb. 23.

40-2040. North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'54", long 157°59'19", on left bank 1.0 mile downstream from Poamoho tunnel inflow and 3.1 miles northeast of Wahiawa Post Office.

Drainage area.--4.86 sq mi.

Records available.--September 1946 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 930 ft (from topographic map).

Average discharge.--19 years (1947-66), 22.2 mgd (34.3 cfs).

Extremes.--Maximum discharge during year, 1,960 mgd (3,030 cfs) July 21 (gage height, 13.92 ft), from rating curve extended above 190 mgd as explained below; minimum, 0.41 mgd (0.63 cfs) May 27-30.
1946-66: Maximum discharge, 3,010 mgd (4,660 cfs) Apr. 15, 1963 (gage height, 20.95 ft), from rating curve extended above 190 mgd on basis of slope-area measurements at gage heights 8.39 and 15.55 ft; no flow at times in 1953.

Remarks.--Records good except those for period of no gage-height record, which are poor. Mauka ditch (see sta. no. 2030) diverts 2.6 miles above station for domestic use in Wahiawa. Pomoho tunnel (see sta. no. 2109) diverts from Poamoho Stream into North Fork Kaukonahua Stream 1.0 mile above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.9	9.7	21	2.8	8.5	50	53	8.0	20	2.6	3.2	0.88
2	8.2	7.9	23	2.2	40	30	33	7.0	10	2.4	3.7	2.2
3	12	7.5	5.1	1.7	242	40	39	6.0	7.5	2.4	5.9	23
4	4.6	7.5	14	1.5	206	35	24	7.0	6.9	2.4	2.2	3.5
5	16	8.5	4.6	1.3	24	30	17	6.0	6.6	2.2	1.2	2.6
6	23	8.3	3.7	1.3	17	100	16	50	6.2	2.1	.88	2.2
7	16	14	3.4	1.3	14	30	14	50	5.9	1.9	1.2	1.4
8	24	7.1	3.7	5.6	30	20	12	20	5.7	1.8	.88	1.8
9	117	19	3.1	14	11	50	12	10	5.7	1.7	9.7	.94
10	24	47	2.6	4.7	118	100	12	9.0	5.4	1.6	6.3	1.1
11	44	7.9	3.2	3.2	105	50	11	8.0	5.0	1.8	2.4	10
12	99	7.5	4.1	3.0	357	30	11	7.0	4.5	2.2	4.4	3.0
13	14	6.4	4.1	310	183	20	10	15	4.2	1.7	3.7	5.4
14	11	12	6.2	75	723	300	8.7	10	4.1	1.6	5.6	4.4
15	13	11	5.4	43	426	80	70	30	4.1	1.5	24	3.2
16	14	16	6.3	33	123	70	20	10	12	1.4	10	1.6
17	75	6.9	5.7	19	58	40	15	50	4.6	1.3	2.8	.94
18	20	5.4	3.7	9.1	49	35	10	40	4.1	1.3	1.6	.73
19	9.4	4.8	2.6	60	79	30	100	70	8.4	1.3	1.2	.73
20	9.8	4.5	2.2	15	304	25	50	20	21	1.2	1.3	.73
21	163	6.5	5.7	8.7	49	30	60	15	65	1.1	3.0	1.1
22	170	13	3.7	7.9	37	40	20	10	12	1.1	1.7	6.4
23	26	70	6.2	6.6	41	23	30	20	7.7	1.0	1.1	6.0
24	17	13	5.6	6.2	37	26	15	15	15	.94	.83	2.1
25	14	19	12	5.1	25	66	25	9.0	5.6	.88	.58	77
26	12	102	5.8	5.2	26	53	15	10	4.2	.83	.49	26
27	10	9.0	2.1	40	25	24	10	30	5.0	.78	.41	6.6
28	75	6.2	1.7	52	30	20	15	50	6.9	2.3	.45	4.0
29	10	14	1.6	25	25	57	10	----------	7.1	10	.41	7.1
30	9.7	6.2	2.6	26	40	41	9.0	----------	4.4	3.1	.45	6.8
31	20	4.6	----------	25	----------	19	8.0	----------	2.9	----------	1.1	----------
Total	1090.6	482.4	174.7	814.4	3452.5	1564	754.7	592.0	287.7	58.43	102.68	213.45
Mean												
Mgd	35.2	15.6	5.82	26.3	115	50.4	24.3	21.1	9.28	1.95	3.31	7.12
Cfs	54.5	24.1	9.00	40.7	178	78.0	37.6	32.6	14.4	3.02	5.12	11.0
Ac-ft	3350	1480	536	2500	10600	4800	2320	1820	883	179	315	655
Max	170	102	23	310	723	300	100	70	65	10	24	77
Min	4.6	4.5	1.6	1.3	8.5	19	8.0	6.0	2.9	0.78	0.41	0.73

Calendar Year 1965:	Max	723	Min	1.0	Mean (mgd)	34.9	Mean (cfs)	54.0	Ac-ft	39100
Fiscal Year 1965-66:	Max	723	Min	0.41	Mean (mgd)	26.3	Mean (cfs)	40.7	Ac-ft	29420

Note.--No gage-height record Jan. 15 to Mar. 2.

40-2080. 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.

Records available.--July 1957 to June 1963, July 1964 to June 1966.

Gage.--Digital water-stage recorder and Ogee-type dam control. Datum of gage is 860.35 ft above mean sea level, datum of 1929. Prior to July 1, 1963, graphic water-stage recorder at same site and datum.

Average discharge.--8 years, 14.0 mgd (21.7 cfs).

Extremes.--Maximum discharge during year, 1,820 mgd (2,820 cfs) Nov. 14 (gage height, 7.93 ft), from rating curve extended above 700 mgd as explained below; minimum, 1.2 mgd (1.9 cfs) on several days.
1957-66: Maximum discharge, 3,530 mgd (5,460 cfs) Apr. 15, 1963 (gage height, 11.33 ft), from rating curve extended above 700 mgd on basis of computation of peak flow over dam; no flow Dec. 24, 25, 27, 28, 1960, Feb. 23, 24, 1963.

Remarks.--Records good. Koolau ditch diverts water into Koolau Reservoir (capacity, 43,000,000 gal), and Ku Tree Reservoir (capacity, 293,000,000 gal) located on tributaries above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	35	6.6	10	1.9	6.3	14	12	4.4	11	2.0	1.9	1.2
2	15	6.2	8.6	1.8	42	17	8.8	4.0	6.6	2.0	4.3	1.7
3	20	6.0	5.1	1.9	75	8.8	19	3.8	5.6	2.0	3.0	11
4	7.6	6.4	8.0	1.9	85	8.3	12	4.0	5.0	2.0	2.7	3.0
5	30	10	4.8	1.8	13	7.8	8.3	3.7	4.6	2.0	2.0	2.0
6	25	8.8	4.2	1.7	9.4	77	7.8	41	4.4	2.0	1.8	2.5
7	14	12	4.0	1.9	7.7	15	6.9	57	4.2	2.0	1.8	1.6
8	24	6.5	5.1	10	16	12	6.4	12	4.0	1.9	2.0	1.4
9	143	26	4.2	21	7.0	63	6.1	6.2	4.0	1.9	4.4	1.2
10	32	17	3.7	6.4	50	157	6.0	5.0	3.8	1.8	6.7	1.3
11	30	6.3	3.7	3.8	66	51	5.7	4.4	3.5	1.9	2.6	1.4
12	38	6.1	3.5	3.0	201	21	5.6	4.1	3.4	2.0	1.8	1.9
13	12	5.8	3.2	217	144	16	5.8	5.1	3.2	1.9	2.1	1.6
14	9.6	8.1	3.2	47	599	206	5.1	5.0	3.2	1.8	4.4	14
15	17	8.6	3.4	16	243	149	21	15	5.5	1.7	23	5.8
16	18	5.6	3.2	7.2	73	57	9.7	5.0	18	1.6	9.9	3.4
17	51	4.6	3.3	7.1	36	48	6.3	25	3.9	1.5	2.6	1.8
18	21	4.2	3.2	5.0	29	34	5.0	20	3.2	1.5	1.8	1.5
19	10	4.0	3.2	35	46	25	50	30	3.0	1.5	1.5	1.4
20	8.8	3.8	2.7	11	138	24	59	10	3.0	1.5	1.4	1.3
21	55	8.4	3.0	5.8	28	34	17	6.5	5.4	1.4	1.8	1.2
22	136	11	3.5	5.1	21	19	14	5.5	5.4	1.4	2.0	1.3
23	22	71	3.1	4.0	19	15	9.0	8.1	3.3	1.4	1.5	1.4
24	13	13	4.3	3.6	18	16	7.7	11	5.1	1.4	1.3	1.4
25	9.7	7.8	17	3.4	14	17	7.7	5.3	3.5	1.4	1.3	13
26	8.9	31	5.6	3.4	18	20	5.9	6.0	2.8	1.4	1.2	12
27	12	7.3	2.8	47	17	13	5.3	20	2.6	1.4	1.2	4.7
28	64	5.4	2.2	15	19	11	5.3	42	2.4	1.4	1.2	3.3
29	13	36	2.0	13	16	15	5.1	----------	2.3	4.6	1.2	6.3
30	8.0	7.7	1.9	20	16	18	4.5	----------	2.2	2.6	1.2	7.3
31	7.2	5.7	----------	20	----------	9.1	4.3	----------	2.1	----------	1.2	----------
Total	909.8	366.9	135.7	542.7	2072.4	1198.0	352.3	369.1	140.2	54.9	96.8	112.9
Mean												
Mgd	29.3	11.8	4.52	17.5	69.1	38.6	11.4	13.2	4.52	1.83	3.12	3.76
Cfs	45.3	18.3	6.99	27.1	107	59.7	17.6	20.4	6.99	2.83	4.83	5.82
Ac-ft	2790	1130	416	1670	6360	3680	1080	1130	430	168	297	346
Max	143	71	17	217	599	206	59	57	18	4.6	23	14
Min	7.2	3.8	1.9	1.7	6.3	7.8	4.3	3.7	2.1	1.4	1.2	1.2

Calendar Year 1965: Max 599 Min 1.5 Mean (mgd) 22.3 Mean (cfs) 34.5 Ac-ft 25,000
Fiscal Year 1965-66: Max 599 Min 1.2 Mean (mgd) 17.4 Mean (cfs) 26.9 Ac-ft 19,490

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
7-22	0100	6.78	1,360	2,100	11-20	0700	4.42	484	749
10-13	1830	6.62	1,300	2,010	12-10	1200	4.58	536	829
11-14	1500	7.93	1,820	2,820	12-15	0100	5.39	816	1,260

40-2085. 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.

Records available.--August 1957 to June 1966.

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

Average discharge.--8 years (1958-66), 0.832 mgd (1.29 cfs).

Extremes.--Maximum discharge during year, 556 mgd (860 cfs) Nov. 14 (gage height, 5.47 ft), from rating curve extended above 110 mgd; no flow for many days.
1957-66: Maximum discharge, 880 mgd (1,360 cfs) Apr. 15, 1963 (gage height, 6.00 ft), from rating curve extended above 110 mgd; no flow at times.

Remarks.--Records fair. Diversion from South Fork Kaukonahua Stream into Ku Tree Reservoir (capacity, 293,000,000 gal) above station, then to Schofield Barracks for domestic use.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.22	0.05	0.01	0.02	0.06	1.3	0.07	0.03	0.05	0.10	0.01	0
2	.20	.10	.01	.03	.10	1.6	.12	.03	.05	.10	.01	0
3	.08	.13	.01	.02	.10	1.2	1.9	.03	.05	.10	.01	0
4	.02	.14	.01	.02	.46	1.2	.46	.03	.06	.10	.01	0
5	.05	.10	.01	.04	.02	1.2	.11	.02	.05	.10	.01	0
6	.02	.10	.01	.04	.02	6.2	.08	.52	.04	.10	.01	0
7	.07	.06	.01	.04	.02	1.7	.06	2.9	.05	.06	0	0
8	.15	.06	.15	.05	.10	.23	.06	.86	.04	.01	0	0
9	.46	.07	.01	.05	.02	6.7	.06	.08	.05	.01	0	0
10	.09	.10	.01	.05	.90	13	.06	.06	.05	.01	0	0
11	.09	.10	.01	.05	.64	6.8	.05	.07	.06	.02	0	0
12	.09	.09	.01	.03	21	1.0	.05	.06	.06	.02	0	0
13	.08	.08	.01	2.4	21	.38	.05	.07	.06	.01	0	0
14	.08	.08	.01	2.5	100	26	.05	.08	.07	.01	.05	0
15	.08	.08	.01	.04	10	20	.06	.12	.07	.01	.01	0
16	.46	.08	.01	.04	3.0	15	.04	.05	.06	.01	0	0
17	.70	.07	.01	.04	1.4	6.5	.04	.06	.06	.01	0	0
18	.28	.07	.01	.04	1.0	4.3	.04	.06	.06	.01	0	0
19	.11	.07	.02	.14	.72	2.0	.04	.06	.06	.01	0	0
20	.10	.08	.02	.02	5.8	2.4	.20	.04	.07	.01	0	0
21	1.9	.16	.06	.01	.97	3.0	.05	.04	.07	.01	0	0
22	6.0	.17	.01	.02	.28	1.0	.20	.04	.07	.01	0	0
23	.14	.18	.01	.03	.28	.71	.07	.13	.07	.01	0	0
24	.11	.02	.01	.03	.54	.71	.05	.06	.07	.01	0	0
25	.10	.01	.16	.05	.50	1.4	.05	.04	.08	.01	0	0
26	.10	.01	.02	.08	.34	.76	.06	.03	.08	.01	0	.03
27	.09	.01	.02	.08	.36	.33	.05	.38	.08	.01	0	0
28	.08	.01	.03	.06	.46	.22	.04	.31	.09	.01	0	0
29	.06	.01	.05	.19	1.6	.16	.04	----------	.09	.01	0	0
30	.05	.01	.02	.03	1.4	.19	.04	----------	.10	.01	0	0
31	.05	.01	----------	.05	----------	.08	.04	----------	.10	----------	0	----------
Total	12.11	2.31	0.75	6.29	174.09	127.27	4.29	6.26	2.02	0.91	0.12	0.03
Mean												
Mgd	0.391	0.075	0.025	0.203	5.80	4.11	0.138	0.224	0.065	0.030	0.004	0.001
Cfs	0.605	0.116	0.039	0.314	8.97	6.36	0.214	0.347	0.101	0.046	0.006	0.002
Ac-ft	37	7.1	2.3	19	534	391	13	19	6.2	2.8	0.4	0.09
Max	6.0	0.18	0.16	2.5	100	26	1.9	2.9	0.10	0.10	0.05	0.03
Min	0.02	0.01	0.01	0.01	0.02	0.08	0.04	0.02	0.04	0.01	0	0

Calendar Year 1965:	Max	100	Min	0	Mean (mgd)	1.14	Mean (cfs)	1.76	Ac-ft	1,280		
Fiscal Year 1965-66:	Max	100	Min	0	Mean (mgd)	0.922	Mean (cfs)	1.43	Ac-ft	1,030		

40-2109. 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 northeast of Wahiawa Post Office.

Records available.--July 1958 to June 1966.

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

Average discharge.--8 years, 3.35 mgd (5.18 cfs).

Extremes.--1958-66: Maximum daily discharge, 128 mgd (198 cfs) Apr. 15, 1963; no flow at times.

Remarks.--Records good. Tunnel diverts from Poamoho Stream to North Fork Kaukonahua Stream to augment storage in Wahiawa Reservoir.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.01	0.01	0.05	0.03	0.53	15	12	1.7	3.5	0.20	0.01	0.01
2	.01	.01	.18	.03	6.7	7.6	6.4	1.5	1.5	.20	.01	.01
3	.01	.01	.01	.03	50	13	5.8	1.4	.73	.20	.01	.01
4	.01	.01	.01	.02	47	12	4.6	1.5	.80	.20	.01	.01
5	.01	.01	.01	.02	5.0	11	3.4	1.3	.80	.20	.01	.01
6	.01	.01	.01	.02	3.0	29	3.6	19	.80	.20	.01	.01
7	.10	.01	.01	.02	2.3	5.3	2.8	19	.80	.20	.01	.01
8	.10	.02	.01	.03	6.3	3.9	2.5	4.5	.80	.20	.01	.01
9	5.0	.05	.01	.06	1.7	14	2.3	2.2	.80	.20	.02	.01
10	.10	.10	.01	.03	32	28	2.5	1.9	.80	.20	.03	.02
11	.01	.01	.01	.03	27	11	2.2	1.7	.76	.20	.02	.02
12	5.0	.01	.01	.03	66	5.2	2.3	1.5	.72	.20	.02	.02
13	.01	.01	.01	50	35	4.2	2.2	2.7	.72	.20	.03	.02
14	.01	.02	.01	5.0	87	43	1.9	2.2	.72	.20	.02	.02
15	.01	.02	.01	3.9	64	23	17	6.1	.72	.21	.37	.02
16	.01	.02	.01	5.2	23	21	3.7	2.0	.72	.20	.01	.02
17	1.0	.01	.01	.69	13	9.9	2.2	15	.72	.20	.01	.02
18	.01	.01	.01	.01	11	6.8	2.0	9.0	.72	.20	.01	.02
19	.01	.01	.01	13	11	5.9	28	21	.72	.20	.01	.02
20	.01	.01	.01	.63	41	5.6	9.8	4.0	3.5	.20	.01	.02
21	18	.01	.01	.21	9.7	11	11	2.7	2.6	.20	.01	.01
22	9.8	.02	.01	.04	7.7	9.8	3.9	2.1	.28	.20	.13	.01
23	.01	.06	.01	.01	8.1	4.6	6.0	4.1	.26	.20	.23	.01
24	.01	.01	.01	.01	7.5	4.3	3.2	3.8	.28	.20	.16	.01
25	.01	.06	.19	.01	5.5	16	5.2	1.9	.23	.20	.14	.18
26	.01	1.5	.07	.05	5.2	13	2.5	2.2	.20	.20	.11	.02
27	.01	.01	.04	8.8	5.9	4.9	2.2	8.3	.20	.20	.04	.02
28	2.0	.01	.04	13	7.0	3.9	2.9	16	.20	.08	.02	.02
29	.01	.01	.04	4.2	4.8	8.8	2.1	----------	.20	.02	.01	.02
30	.01	.01	.04	7.4	11	8.7	1.9	----------	.20	.01	.01	.02
31	.01	.01	----------	3.9	----------	3.9	1.7	----------	.20	----------	.01	----------
Total	41.32	2.08	0.87	116.41	604.93	363.3	159.8	160.3	26.20	5.52	1.51	0.63
Mean												
Mgd	1.33	0.067	0.029	3.76	20.2	11.7	5.15	5.72	0.845	0.184	0.049	0.021
Cfs	2.06	0.104	0.045	5.82	31.3	18.1	7.97	8.85	1.31	0.285	0.076	0.032
Ac-ft	127	6.4	2.7	357	1,860	1,110	490	492	80	17	4.6	1.9
Max	18	1.5	0.19	50	87	43	28	21	3.5	0.21	0.37	0.18
Min	0.01	0.01	0.01	0.01	0.53	3.9	1.7	1.3	0.20	0.01	0.01	0.01

Calendar Year 1965:	Max	87	Min	0.01	Mean (mgd)	4.63	Mean (cfs)	7.16	Ac-ft	5,180
Fiscal Year 1965-66:	Max	87	Min	0.01	Mean (mgd)	4.06	Mean (cfs)	6.28	Ac-ft	4,550

40-2110. 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.

Records available.--January 1947 to June 1966.

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

Average discharge.--19 years, 2.63 mgd (4.07 cfs).

Extremes.--Maximum discharge during year, 1,020 mgd (1,580 cfs) Oct. 13 (gage height, 6.13 ft), from rating curve extended above 49 mgd as explained below; no flow May 23-26.
1947-66: Maximum discharge, 1,440 mgd (2,230 cfs) Apr. 15, 1963 (gage height, 8.24 ft), from rating curve extended above 49 mgd by test on model of station site; no flow at times.

Remarks.--Records good. Poamoho tunnel (see sta. no. 2109) diverts 180 ft above station to North Fork Kaukonahua Stream to augment storage in Wahiawa Reservoir.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	2.2	3.9	1.1	1.3	0.23	0.06	0.05	0.08	0.43	0.36	0.15
2	1.8	1.6	6.9	.79	1.4	.07	.05	.05	.85	.43	.28	.17
3	1.8	1.3	1.3	.55	5.8	.07	.04	.06	1.0	.39	.47	.25
4	1.2	1.2	4.3	.51	41	.07	.05	.07	.79	.39	.43	.39
5	1.7	1.5	1.2	.39	1.0	.06	.05	.08	.64	.47	.28	.23
6	3.6	1.3	.99	.33	.99	1.4	.05	7.6	.55	.33	.23	.15
7	5.7	2.7	.85	.33	.92	.11	.05	7.0	.47	.30	.30	.13
8	8.4	1.2	.85	1.5	.99	.10	.05	.10	.43	.28	.28	.10
9	24	3.2	.79	4.0	.92	.11	.05	.08	.47	.25	3.9	.15
10	5.8	7.6	.69	2.3	5.9	3.8	.05	.07	.36	.25	2.3	.13
11	9.8	1.5	1.3	1.1	1.3	.11	.05	.07	.25	.28	.64	1.4
12	20	1.5	6.2	2.3	25	.10	.05	.07	.23	.47	.70	.55
13	3.6	1.1	1.8	62	11	.10	.06	.07	.19	.28	.79	.25
14	3.0	1.4	3.1	4.3	123	39	.06	.06	.17	.28	.92	1.1
15	4.0	1.7	1.6	3.8	10	5.0	3.4	.07	.19	.23	5.1	.84
16	5.0	5.3	3.2	3.7	.10	.81	.08	.06	.28	.17	2.4	.36
17	15	1.6	1.5	3.4	.08	.05	.07	.27	.17	.13	.64	.17
18	5.0	.99	1.1	2.2	.11	.04	.07	.58	.10	.13	.43	.11
19	2.0	.85	.74	3.6	.15	.04	35	1.4	.97	.13	.33	.08
20	3.1	.79	.64	3.0	31	.05	.06	.08	4.6	.11	.33	.07
21	26	.85	1.9	2.2	.06	.04	.39	.07	17	.11	1.0	.10
22	30	2.0	1.1	2.0	.06	.04	.04	.06	2.5	.07	.33	.33
23	5.6	13	2.2	1.3	.08	.03	.03	.07	3.3	.06	0	.92
24	3.7	3.4	1.6	1.1	.10	.04	.03	.07	5.9	.05	0	.43
25	3.2	4.5	3.6	1.0	.04	.43	.03	.05	1.3	.03	0	7.3
26	2.7	21	2.2	1.2	.05	.07	.03	.05	.92	.03	0	2.0
27	2.5	2.8	.59	1.5	.06	.04	.04	.07	.79	.02	.06	.55
28	13	1.7	.47	1.8	.08	.03	.06	.11	.69	.11	.10	.23
29	2.7	3.8	.43	1.8	.07	.05	.04	----------	.64	1.1	.10	.30
30	2.0	1.5	2.7	1.8	.08	.06	.04	----------	.59	.79	.13	.39
31	3.7	1.2	----------	1.6	----------	.05	.05	----------	.51	----------	.21	----------
Total	222.7	96.28	59.74	118.50	262.64	52.20	40.18	18.44	46.93	8.10	23.04	19.33
Mean												
Mgd	7.18	3.11	1.99	3.82	8.75	1.68	1.30	0.659	1.51	0.270	0.743	0.644
Cfs	11.1	4.81	3.08	5.91	13.5	2.60	2.01	1.02	2.34	0.418	1.15	0.996
Ac-ft	683	295	183	364	806	160	123	57	144	25	71	59
Max	30	21	6.9	62	123	39	35	7.6	17	1.1	5.1	7.3
Min	1.2	0.79	0.43	0.33	0.04	0.03	0.03	0.05	0.08	0.02	0	0.07

Calendar Year 1965:	Max	125	Min	0.03	Mean (mgd)	4.70	Mean (cfs)	7.27	Ac-ft	5,270
Fiscal Year 1965-66:	Max	123	Min	0	Mean (mgd)	2.65	Mean (cfs)	4.10	Ac-ft	2,970

40-2116. 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.

Records available.--July 1959 to June 1966.

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.--7 years, 1.34 mgd (2.07 cfs).

Extremes.--Maximum discharge during year, 596 mgd (922 cfs) Nov. 13 (gage height, 5.78 ft), from rating curve extended above 33 mgd as explained below; minimum, 0.05 mgd (0.08 cfs) Sept. 2.

1959-66: Maximum discharge, 756 mgd (1,170 cfs) Mar. 13, 1962 (gage height, 6.50 ft, from floodmarks), from rating curve extended above 33 mgd 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 1,100 mgd or 1,700 cfs).

Remarks.--Records good. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.29	0.20	0.07	0.13	1.2	24	0.74	0.69	4.0	0.49	0.26	0.17
2	.29	.17	.06	.13	.92	7.0	.80	.64	2.8	.45	.26	.15
3	.41	.17	.06	.13	.80	3.3	.80	.59	2.2	.41	.26	.15
4	.33	.15	.06	.11	.74	2.6	.86	1.5	2.0	.41	.23	.17
5	.29	.13	.07	.09	.64	2.4	.80	.86	1.7	.45	.26	.17
6	.26	.13	.41	.09	.54	6.8	3.3	3.2	1.4	.45	.26	.20
7	.26	.11	.15	.07	.49	3.8	.92	15	1.3	.41	.23	.17
8	.41	.11	.15	.07	1.1	3.2	.74	7.1	1.3	.37	.23	.20
9	1.1	.11	5.0	.07	.69	3.5	.64	3.3	2.0	.37	.23	.15
10	.64	.11	.99	.09	3.2	3.8	.64	2.2	1.6	.37	.23	.15
11	4.0	.11	.54	.15	16	2.9	.59	1.7	1.3	.45	.26	.15
12	1.1	.11	.41	.73	33	2.2	.59	1.3	1.0	.99	.23	.17
13	.59	.13	.33	14	68	2.0	.64	1.0	.92	.64	.29	.17
14	.41	.13	.26	7.1	8.8	20	.54	.80	.86	.45	.45	.20
15	.37	.15	.23	2.0	6.0	12	.69	.80	.86	.37	.33	.15
16	.37	.35	.20	1.3	3.9	5.4	.64	.80	.80	.33	.29	.15
17	.41	.41	.17	.92	2.9	4.2	.49	2.3	.74	.66	.26	.17
18	.41	.23	.15	.69	2.4	3.5	.45	3.4	.64	.64	.23	.17
19	.29	.20	.13	.98	2.2	3.0	1.5	2.2	.64	2.1	.26	.15
20	.26	.15	.13	1.3	2.8	2.7	1.1	3.5	.64	1.0	.45	.13
21	.23	.13	.13	2.8	1.8	2.9	.64	1.8	.59	.92	.80	.13
22	.20	.11	.15	1.6	1.3	2.0	.49	1.3	.59	.69	.23	.13
23	.23	.13	.59	1.0	1.3	1.8	.41	2.5	.59	.45	.29	.11
24	.23	.26	.29	.86	1.3	1.3	3.4	3.4	.54	.41	.26	.11
25	.20	.20	.23	1.6	1.1	1.4	2.6	2.0	.54	.41	.23	.11
26	.20	.17	.20	1.0	.99	1.3	1.1	1.8	.49	.37	.23	.13
27	.20	.13	.15	2.0	.92	1.1	2.0	3.6	.49	.37	.20	.13
28	.26	.11	.13	1.3	1.1	.99	1.8	11	.49	.29	.20	.15
29	.41	.11	.13	2.5	.92	.99	1.0	----------	.45	.29	.20	.15
30	.23	.09	.11	1.9	.86	1.0	.86	----------	.49	.29	.20	.13
31	.23	.09	----------	1.5	----------	.92	.69	----------	.64	----------	.17	----------
Total	15.11	4.89	11.68	48.21	167.91	134.00	32.46	80.28	34.60	16.30	8.51	4.57
Mean												
Mgd	0.487	0.158	0.389	1.56	5.60	4.32	1.05	2.87	1.12	0.543	0.275	0.152
Cfs	0.754	0.244	0.602	2.41	8.66	6.68	1.62	4.44	1.73	0.840	0.425	0.235
Ac-ft	46	15	36	148	515	411	100	246	106	50	26	14
Max	4.0	0.41	5.0	14	68	24	3.4	15	4.0	2.1	0.80	0.20
Min	0.20	0.09	0.06	0.07	0.49	0.92	0.41	.59	0.45	0.29	0.17	0.11

Calendar Year 1965:	Max	68	Min	0.06	Mean (mgd)	2.24	Mean (cfs)	3.47	Ac-ft	2510
Fiscal Year 1965-66:	Max	68	Min	0.06	Mean (mgd)	1.53	Mean (cfs)	2.37	Ac-ft	1710

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
9- 9	1400	3.27	121	187	11-13	0130	5.78	596	922
10-13	2130	3.21	112	173	12- 1	1830	3.38	137	212

40-2118. 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.

Records available.--May 1960 to June 1966.

Gage.--Digital water-stage recorder and concrete-masonry control. Datum of gage is 374 ft above mean sea level (by stadia survey). Prior to July 23, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--6 years, 0.614 mgd (0.950 cfs).

Extremes.--Maximum discharge during year, 746 mgd (1,150 cfs) Nov. 13 (gage height, 4.58 ft), from rating curve extended above 98 mgd as explained below; minimum, 0.10 mgd (0.16 cfs) Oct. 17.
1960-66: Maximum discharge, 865 mgd (1,340 cfs) Dec. 23, 1964 (gage height, 4.75 ft), from rating curve extended above 98 mgd on basis of slope-area measurement at gage height 4.06 ft; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Several water-development tunnels above station may affect flow.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.17	0.14	0.15	0.15	0.16	12	0.40	0.36	1.0	0.30	0.27	0.21
2	.16	.14	.15	.15	.16	3.5	.36	.33	.80	.30	.27	.21
3	.16	.14	.15	.15	.16	.93	.36	.33	.70	.30	.27	.18
4	.16	.14	.15	.15	.16	.56	.33	.52	.60	.30	.27	.21
5	.16	.13	.15	.15	.16	.48	.36	.40	.55	.30	.27	.18
6	.16	.14	.20	.15	.16	1.8	.98	.98	.50	.30	.27	.21
7	.16	.13	.15	.15	.15	1.0	.44	4.2	.50	.30	.27	.21
8	.17	.13	.15	.15	.16	.68	.40	2.2	.50	.30	.27	.18
9	.18	.13	5.0	.15	.14	.88	.36	.98	.50	.30	.27	.18
10	.18	.13	2.0	.15	1.9	1.3	.36	.73	.50	.30	.27	.18
11	.19	.13	1.0	1.0	14	1.2	.40	.64	.50	.36	.30	.18
12	.20	.13	.50	3.0	50	.83	.40	.60	.50	.36	.27	.18
13	.20	.14	.40	5.0	78	.68	.36	.56	.50	.33	.27	.18
14	.20	.14	.35	1.0	6.0	29	.36	.52	.50	.33	.27	.18
15	.24	.14	.30	.14	3.4	18	.36	.52	.50	.30	.27	.18
16	.20	.14	.25	.13	1.8	5.0	.33	.48	.45	.30	.27	.18
17	.20	.14	.20	.13	1.1	3.2	.33	.52	.45	.30	.27	.16
18	.20	.14	.18	.13	.83	2.5	.33	.48	.45	.30	.24	.16
19	.20	.14	.16	.14	.60	2.0	.36	.48	.45	.33	.27	.16
20	.18	.14	.15	.17	.48	1.7	.40	.48	.45	.33	.30	.16
21	.16	.14	.15	.16	.33	1.5	.36	.48	.40	.33	.27	.16
22	.16	.14	.15	.15	.30	1.3	.33	.50	.40	.33	.27	.16
23	.16	.15	.40	.14	.24	1.1	.33	.50	.40	.30	.24	.16
24	.15	.15	.30	.14	.24	.93	.60	.50	.40	.30	.24	.14
25	.15	.14	.25	.14	.24	.73	.78	.50	.40	.30	.24	.14
26	.15	.15	.20	.14	.24	.64	.44	.50	.35	.30	.21	.14
27	.15	.14	.18	.15	.21	.56	.44	1.0	.35	.27	.24	.14
28	.16	.14	.16	.15	.21	.52	.44	5.0	.35	.30	.21	.14
29	.15	.14	.15	.16	.21	.48	.36	---------	.35	.27	.21	.14
30	.14	.16	.15	.17	.21	.44	.36	---------	.35	.30	.21	.14
31	.14	.15	---------	.16	---------	.40	.36	---------	.35	---------	.21	---------
Total	5.34	4.33	13.83	14.00	161.95	95.84	12.78	25.29	15.00	9.24	7.98	5.13
Mean												
Mgd	0.172	0.140	0.461	0.452	5.40	3.09	0.412	0.903	0.484	0.308	0.257	0.171
Cfs	0.266	0.217	0.713	0.699	8.36	4.78	0.637	1.40	0.749	0.477	0.398	0.265
Ac-ft	16	13	42	43	497	294	39	78	46	28	24	16
Max	0.24	0.16	5.0	5.0	78	29	0.98	5.0	1.0	0.36	0.30	0.21
Min	0.14	0.13	0.15	0.13	0.14	0.40	0.33	0.33	0.35	0.27	0.21	0.14

Calendar Year 1965: Max 78 Min 0.11 Mean (mgd) 1.15 Mean (cfs) 1.78 Ac-ft 1,290
Fiscal Year 1965-66: Max 78 Min 0.13 Mean (mgd) 1.02 Mean (cfs) 1.58 Ac-ft 1,140

Note.--No gage-height record Aug. 31 to Oct. 14, Feb. 22 to Apr. 5.

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-13	about 2200	2.53	46	71	12- 1	1900	2.72	68	105
11-13	0100	4.58	746	1,150	12-14	1330	3.01	112	173

40-2118.5. Puea mauka ditch near Waianae

Location.--Lat 21°28'12", long 158°09'43", on left bank 2.3 miles northeast of Waianae School and 2.8 miles north of Lualualei Naval Radio Station.

Records available.--June 1960 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 360 ft (from topographic map).

Average discharge.--6 years, 0.348 mgd (0.538 cfs).

Extremes.--1960-66: Maximum daily discharge, 1.4 mgd (2.2 cfs) Oct. 22, 1960; minimum daily, 0.11 mgd (0.17 cfs) Aug. 21, 1961.

Remarks.--Records good. Water is used for irrigation of truck farms in Waianae Valley. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.29	0.32	0.39	0.43	0.29	0.43	0.55	0.51	0.59	0.59	0.47	0.55
2	.32	.32	.32	.39	.32	.39	.47	.55	.59	.55	.43	.55
3	.32	.32	.43	.32	.32	.39	.43	.47	.59	.55	.39	.55
4	.23	.36	.43	.32	.29	.43	.47	.55	.59	.55	.43	.55
5	.29	.32	.40	.36	.32	.43	.51	.51	.59	.55	.47	.51
6	.32	.32	.36	.39	.32	.51	.47	.55	.59	.55	.47	.55
7	.29	.32	.47	.36	.32	.39	.43	.55	.59	.55	.47	.59
8	.32	.32	.43	.39	.29	.43	.47	.43	.67	.55	.47	.59
9	.30	.29	.39	.43	.26	.39	.47	.47	.81	.55	.43	.59
10	.30	.29	.32	.39	.32	.43	.42	.47	.72	.55	.47	.55
11	.30	.29	.32	.32	.29	.39	.51	.51	.67	.66	.51	.55
12	.30	.36	.32	.51	.43	.39	.51	.55	.63	.59	.51	.55
13	.30	.36	.39	.43	.43	.39	.51	.55	.63	.59	.55	.59
14	.30	.32	.39	.36	.26	.55	.51	.55	.63	.59	.43	.59
15	.30	.36	.32	.36	.26	.47	.55	.59	.72	.59	.36	.55
16	.30	.36	.30	.39	.26	.43	.51	.47	.67	.59	.43	.51
17	.30	.26	.30	.32	.26	.47	.47	.55	.59	.55	.47	.47
18	.30	.29	.30	.32	.26	.39	.51	.51	.59	.59	.43	.47
19	.30	.29	.36	.39	.36	.39	.51	.51	.59	.59	.55	.47
20	.30	.32	.39	.32	.29	.39	.51	.59	.63	.59	.47	.51
21	.32	.32	.47	.26	.26	.39	.55	.55	.67	.55	.43	.47
22	.36	.39	.43	.32	.26	.36	.55	.55	.63	.51	.32	.51
23	.32	.36	.36	.39	.29	.36	.51	.63	.63	.55	.36	.47
24	.32	.32	.39	.29	.32	.32	.51	.59	.67	.51	.51	.47
25	.32	.39	.36	.36	.32	.43	.51	.59	.59	.51	.55	.47
26	.32	.39	.29	.43	.36	.39	.51	.59	.59	.47	.55	.51
27	.36	.36	.29	.36	.39	.39	.51	.63	.59	.51	.55	.47
28	.43	.32	.36	.39	.36	.43	.51	.63	.59	.51	.59	.51
29	.39	.32	.36	.39	.32	.47	.43	----------	.59	.47	.55	.51
30	.32	.32	.43	.32	.39	.47	.51	----------	.59	.55	.51	.51
31	.36	.36	----------	.26	----------	.47	.59	----------	.55	----------	.51	----------
Total	9.80	10.24	11.07	11.27	9.42	12.96	15.48	15.20	19.37	16.61	14.64	15.74
Mean												
Mgd	0.316	0.330	0.369	0.364	0.314	0.418	0.499	0.543	0.625	0.554	0.472	0.525
Cfs	0.489	0.511	0.571	0.563	0.486	0.647	0.772	0.840	0.967	0.857	0.730	0.812
Ac-ft	30	31	34	35	29	40	48	47	59	51	45	48
Max	0.43	0.39	0.47	0.51	0.43	0.55	0.59	0.63	0.81	0.66	0.59	0.59
Min	0.23	0.26	0.29	0.26	0.26	0.32	0.42	0.43	0.55	0.47	0.32	0.47

Calendar Year 1965:	Max	0.55	Min	0.18	Mean (mgd)	0.324	Mean (cfs)	0.501	Ac-ft	363	
Fiscal Year 1965-66:	Max	0.81	Min	0.23	Mean (mgd)	0.443	Mean (cfs)	0.685	Ac-ft	497	

40-2128. 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.

Records available.--January 1957 to June 1966.

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

Average discharge.--9 years, 6.78 mgd (10.5 cfs).

Extremes.--Maximum discharge during year, 1,920 mgd (2,970 cfs) July 21 (gage height, 10.19 ft), from rating curve extended above 190 mgd as explained below; no flow for many days.
1957-66: Maximum discharge, 3,670 mgd (5,680 cfs) May 14, 1963 (gage height, 12.29 ft), from rating curve extended above 190 mgd 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. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	1.5	2.2	0.30	3.6	8.1	3.2	0.84	7.6	0.27	1.7	0
2	1.6	1.1	2.0	.16	23	9.0	2.8	.78	3.2	.27	.33	0
3	3.0	1.2	.72	.13	49	3.0	3.9	.72	2.2	.30	.20	.22
4	1.3	1.1	2.6	.11	35	2.4	2.4	.78	1.6	.30	.16	.25
5	3.6	.98	.84	.08	6.7	2.2	2.0	.65	1.2	.37	.07	.16
6	2.8	.91	.33	.07	3.9	43	1.8	29	1.1	.30	.01	.01
7	2.2	1.9	.25	.08	2.6	7.8	1.5	49	1.0	.27	0	0
8	3.9	1.7	.25	20	16	4.3	1.3	6.7	.98	.22	0	0
9	54	5.9	2.2	15	2.8	25	1.2	2.6	1.0	.20	1.6	0
10	13	9.6	1.8	5.6	36	82	1.2	1.6	.72	.18	5.7	0
11	18	1.8	.52	1.6	41	21	1.0	1.1	.59	.22	.72	.05
12	29	1.5	.46	4.2	212	8.4	.98	.98	.46	.37	.25	.57
13	5.3	.98	.33	119	70	6.0	.98	2.4	.41	.22	.16	.47
14	3.0	1.5	.37	24	245	141	.84	4.3	.37	.18	.16	1.0
15	5.3	3.0	.20	13	157	77	18	8.4	.41	.16	.22	.72
16	2.8	1.2	.20	4.1	66	26	7.5	2.0	5.9	.16	4.3	.27
17	9.6	.98	.20	2.4	23	21	1.7	18	.78	.14	.59	.14
18	6.6	.59	.22	1.9	13	9.8	1.0	12	.37	.14	.25	.02
19	2.2	.46	.14	19	15	7.1	26	35	.33	.20	.16	0
20	1.5	.41	.13	4.0	97	6.4	24	4.7	.37	.20	.13	0
21	112	1.1	.64	2.4	15	17	7.1	3.0	3.8	.20	1.5	0
22	46	5.5	.52	1.9	9.3	6.7	3.1	1.6	1.7	.20	.52	0
23	9.5	21	1.3	1.1	11	4.1	9.0	4.4	.72	.22	.22	0
24	3.6	5.6	.65	.84	7.8	5.7	3.1	4.9	5.2	.18	.13	0
25	2.0	3.2	.52	.78	4.7	12	5.7	1.6	1.5	.16	.03	0
26	1.5	13	.33	.84	6.4	23	1.9	1.4	.59	.16	0	2.5
27	1.2	1.8	.25	22	7.8	6.0	1.4	25	.37	.06	0	.89
28	38	.78	.11	6.5	6.7	3.8	1.2	40	.33	0	0	.25
29	4.9	8.3	.08	12	3.9	21	1.1	----------	.30	0	0	.20
30	2.5	1.6	.08	22	9.6	9.0	.91	----------	.30	.62	0	.33
31	1.9	.91	----------	16	----------	3.4	.84	----------	.30	----------	0	----------
Total	395.1	101.10	20.44	321.09	1,199.8	622.2	138.65	263.45	45.70	6.47	19.11	8.05
Mean												
Mgd	12.7	3.26	0.681	10.4	40.0	20.1	4.47	9.41	1.47	0.216	0.616	0.268
Cfs	19.6	5.04	1.05	16.1	61.9	31.1	6.92	14.6	2.27	0.334	0.953	0.415
Ac-ft	1,210	310	63	985	3,680	1,910	426	808	140	20	59	25
Max	112	21	2.6	119	245	141	26	49	7.6	0.62	5.7	2.5
Min	1.2	0.41	0.08	0.07	2.6	2.2	0.84	0.65	0.30	0	0	0

Calendar Year 1965: Max 310 Min 0.07 Mean (mgd) 12.2 Mean (cfs) 18.9 Ac-ft 13,700
Fiscal Year 1965-66: Max 245 Min 0 Mean (mgd) 8.61 Mean (cfs) 13.3 Ac-ft 9,640

Peak discharge (base, 600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2300	10.19	1,920	2,970	11-14	1400	8.92	1,290	2,000
10-13	1730	6.96	620	959	12-14	2230	7.51	778	1,200
11-12	2230	7.10	655	1,010					

40-2130. Waikele Stream at Waipahu

Location.--lat 21°23'09", long 158°00'48", on left bank 300 ft upstream from bridge on Farrington Highway, 0.3 mile south of Waipahu, and 2.5 miles west of Pearl City.

Drainage area.--45.7 sq mi.

Records available.--June to October 1951, December 1951 to October 1959, July 1960 to June 1966.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1.37 ft above mean sea level, datum of 1929. Prior to July 1, 1960, at site 300 ft downstream at datum 1.30 ft higher.

Average discharge.--13 years (1952-59, 1960-66), 26.7 mgd (41.3 cfs).

Extremes.--Maximum discharge during year, 9,400 mgd (14,500 cfs) Nov. 14 (gage height, 9.10 ft), from from rating curve extended above 460 mgd on basis of slope-area measurement at gage height 6.51 ft; minimum, 9.0 mgd (14 cfs) Sept. 21.
1951-66: Maximum discharge, that of Nov. 14, 1965; maximum gage height, 9.65 ft Apr. 15, 1963; minimum discharge, 2.4 mgd (3.7 cfs) Sept. 28, 29, 1962.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	15	12	10	22	31	34	22	57	18	18	14
2	14	15	11	10	38	40	33	22	35	21	18	14
3	13	14	12	9.7	67	28	34	22	30	21	18	14
4	13	12	14	9.7	119	29	33	22	29	17	17	16
5	15	11	13	10	30	30	29	22	27	18	18	16
6	16	13	14	9.5	24	106	28	120	26	18	20	15
7	14	17	13	9.2	23	56	28	223	26	18	22	14
8	12	17	11	11	44	34	29	57	26	20	22	14
9	123	14	11	34	28	56	29	36	27	19	22	14
10	43	15	12	19	97	198	28	30	24	21	17	13
11	28	14	14	14	193	76	26	29	24	17	16	13
12	58	14	14	12	431	49	26	27	23	17	16	14
13	26	14	13	298	285	39	25	28	23	18	16	15
14	19	14	11	170	1.690	1.280	25	36	23	17	16	18
15	17	13	10	45	464	694	33	39	22	16	17	17
16	18	14	9.7	32	204	106	33	36	25	16	17	16
17	22	12	11	27	82	84	26	48	21	16	15	16
18	28	12	14	27	66	63	24	60	18	16	15	14
19	19	12	9.2	34	62	50	35	78	20	15	15	15
20	15	11	9.2	36	230	45	73	44	19	17	15	13
21	16	14	10	24	71	53	44	36	20	17	15	13
22	338	14	12	24	51	43	29	29	22	17	16	13
23	33	22	10	22	45	37	28	31	23	20	15	14
24	26	24	10	19	48	38	29	39	23	21	15	13
25	20	17	10	16	36	43	28	28	24	18	14	14
26	17	20	10	16	34	60	26	26	23	16	15	14
27	15	21	10	26	36	49	24	46	22	16	15	13
28	69	15	10	26	43	38	23	120	19	16	16	12
29	32	16	10	26	36	41	23	----------	18	17	16	12
30	17	16	10	37	35	54	23	----------	17	18	15	12
31	15	14	----------	46	----------	36	23	----------	16	----------	15	----------
Total	1.123	466	340.1	1.109.1	4.634	3.586	931	1.356	752	532	517	425
Mean												
Mgd	36.2	15.0	11.3	35.8	154	116	30.0	48.4	24.3	17.7	16.7	14.2
Cfs	56.0	23.2	17.5	55.4	238	179	46.4	74.9	37.6	27.4	25.8	22.0
Ac-ft	3.450	1.430	1.040	3.400	14.220	11.010	2.860	4.160	2.310	1.630	1.590	1.300
Max	338	24	14	298	1.690	1.280	73	223	57	21	22	18
Min	12	11	9.2	9.2	22	28	23	22	16	15	14	12

Calendar Year 1965: Max 1.690 Min 9.2 Mean (mgd) 51.3 Mean (cfs) 79.4 Ac-ft 57.480
Fiscal Year 1965-66: Max 1.690 Min 9.2 Mean (mgd) 43.2 Mean (cfs) 66.8 Ac-ft 48.400

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	0100	6.46	3,160	4,890	12-10	1200	4.53	848	1,310
10-13	1800	4.96	1,220	1,890	12-14	1430	8.38	7,560	11,700
11-12	2400	6.46	3,160	4,890	2- 7	1200	4.58	885	1,370
11-14	1530	9.10	9,400	14,500					

40-2160. Waiava Stream near Pearl City

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

Drainage area.--26.4 sq mi.

Records available.--June 1952 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Datum of gage is 1.81 ft above mean sea level, datum of 1929. Prior to July 24, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--14 years, 17.3 mgd (26.8 cfs).

Extremes.--Maximum discharge during year, 10,200 mgd (15,800 cfs) Nov. 14 (gage height, 18.29 ft, from floodmark in well), from rating curve extended above 680 mgd as explained below; minimum, 1.9 mgd (2.9 cfs) sometime during period Aug. 6 to Sept. 10.
1952-66: Maximum discharge, 10,900 mgd (16,900 cfs) Nov. 28, 1954 (gage height, 19.27 ft), from rating curve extended above 680 mgd on basis of slope-area measurement at gage height 17.1 ft; minimum, 1.3 mgd (2.0 cfs) June 11, 12, 1965.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Occasional small diversions for irrigation above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	2.7	3.0	3.7	10	12	12	4.6	15	6.4	4.9	6.0
2	2.9	2.7	2.8	3.5	20	24	11	4.8	10	5.8	5.0	6.0
3	2.9	2.6	3.0	3.2	35	8.5	12	5.0	8.0	5.4	5.8	6.0
4	3.6	2.6	3.5	3.0	50	6.8	11	5.4	8.0	5.2	5.8	7.0
5	3.5	2.6	3.5	3.0	15	6.1	10	6.0	7.0	5.3	5.6	7.0
6	3.2	3.5	3.5	3.0	13	74	9.0	30	7.0	5.6	6.2	6.0
7	3.0	4.0	3.0	3.0	11	30	9.0	60	7.0	5.5	5.9	6.0
8	8.7	4.0	2.5	5.0	30	13	10	15	7.0	5.1	5.4	5.6
9	178	3.5	2.5	15	25	23	10	10	6.0	5.1	4.8	5.6
10	33	4.0	3.0	9.0	40	209	9.0	8.0	5.1	4.7	5.5	6.0
11	15	3.5	4.0	6.0	80	72	9.0	8.0	5.0	4.9	6.1	4.9
12	47	3.5	3.4	5.0	200	24	9.0	7.0	4.8	5.3	6.9	4.8
13	13	3.5	3.2	100	150	1690	8.0	8.0	4.6	5.9	6.6	5.3
14	6.7	3.5	3.0	60	2000	257	7.0	9.0	4.5	7.4	6.1	5.6
15	6.2	3.0	2.8	20	500	66	14	10	4.9	9.0	5.8	5.8
16	6.8	3.5	2.9	15	200	35	9.3	10	5.2	6.7	5.6	5.7
17	16	3.0	2.9	13	58	25	6.0	12	5.2	5.9	6.6	5.9
18	18	3.0	2.8	13	36	20	4.8	15	5.0	6.0	7.5	5.3
19	6.5	3.0	2.7	15	29	17	8.4	20	5.8	6.0	6.8	4.8
20	4.4	2.5	3.0	20	212	15	59	15	5.3	6.3	7.6	5.3
21	6.7	3.5	2.8	11	40	18	24	10	4.9	5.9	7.1	5.7
22	94	3.5	2.9	11	26	15	10	8.0	4.4	5.4	6.1	6.2
23	12	5.5	5.9	10	22	12	12	9.0	4.7	5.0	5.7	6.2
24	7.5	6.0	4.4	9.0	26	13	11	10	5.2	4.6	5.4	6.0
25	4.2	4.5	3.0	7.0	15	15	6.8	8.0	5.2	4.4	6.0	4.9
26	3.3	5.0	3.0	7.0	13	20	6.4	7.0	5.2	4.5	6.0	4.3
27	3.1	5.0	3.0	12	14	16	5.5	10	5.1	4.5	6.5	4.8
28	43	4.0	3.1	12	18	13	4.9	30	5.7	5.4	7.0	5.9
29	11	4.0	3.4	12	11	15	4.6	----------	5.4	5.6	7.0	6.7
30	4.3	4.0	3.7	15	14	18	4.4	----------	5.5	5.7	6.5	6.1
31	3.0	3.5	----------	20	----------	13	4.5	----------	5.9	----------	6.5	----------
Total	573.8	112.7	96.2	444.4	3,913	2,795.4	331.6	354.8	187.6	168.5	190.3	171.4
Mean												
Mgd	18.5	3.64	3.21	14.3	130	90.2	10.7	12.7	6.05	5.62	6.14	5.71
Cfs	28.6	5.63	4.97	22.1	201	140	16.6	19.6	9.36	8.70	9.50	8.83
Ac-ft	1,760	346	295	1,360	12,010	8,580	1,020	1,090	576	517	584	526
Max	178	6.0	5.9	100	2,000	1,690	59	60	15	9.0	7.6	7.0
Min	2.9	2.5	2.5	3.0	10	6.1	4.4	4.6	4.4	4.4	4.8	4.3

Calendar Year 1965:	Max	2,000	Min	1.4	Mean (mgd)	38.1	Mean (cfs)	58.9	Ac-ft	42,680
Fiscal Year 1965-66:	Max	2,000	Min	2.5	Mean (mgd)	25.6	Mean (cfs)	39.6	Ac-ft	28,660

Note.--No gage-height record Aug. 6 to Sept. 10, Feb. 5 to Mar. 9.

Peak discharge (base, 1,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-22	0100	10.08	2,430	3,760	11-14	about 1500	18.29	10,200	15,800
10-13	about 2000	7.54	1,220	1,890	11-20	0545	7.17	1,080	1,670
11-12	about 2400	-	about 5,000	about 8,000	12-10	1115	8.62	1,660	2,570
					12-13	2200	15.51	6,860	10,600
					1-20	1430	8.75	1,720	2,660

40-2190. Hawaiian Electric Co. tunnel at Waiau, near Pearl City

Location.--Lat 21°23'30", long 157°57'55", on right bank of ditch at Hawaiian Electric Co. Waiau powerplant, 20 ft downstream from tunnel portal, and 0.6 mile east of Pearl City.

Records available.--October 1939 to April 1942, July 1942 to December 1945, July 1952 to June 1966.

Gage.--Digital water-stage recorder and Parshall flume. Datum of gage is 2.91 ft above mean sea level, datum of 1929. Graphic water-stage recorder at site 120 ft downstream at datum 2.27 ft lower prior to July 1, 1952, and July 1, 1952, to Apr. 8, 1964, at present site and datum.

Average discharge.--16 years (1940-41, 1944-45, 1952-66), 10.5 mgd (16.2 cfs).

Extremes.--1939-45, 1952-66: Maximum daily discharge, 17.3 mgd (26.8 cfs) Mar. 26, 27, 1940; minimum daily, 6.0 mgd (9.3 cfs) Aug. 3, 1941.

Remarks.--Records good. Water is used for cooling condensers in powerplant and afterwards for irrigation of sugarcane.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11	11	11	11	11	12	12	12	13	12	12	11
2	11	11	11	10	11	11	12	12	13	12	12	11
3	11	11	11	10	11	11	12	12	13	12	12	11
4	11	11	11	10	11	11	12	12	13	12	11	11
5	11	11	11	10	11	11	12	12	13	12	11	11
6	11	11	11	10	11	11	12	12	13	12	11	11
7	11	11	11	10	11	11	12	12	13	12	11	11
8	11	11	11	10	11	11	12	12	13	12	12	11
9	11	11	11	10	11	11	12	12	13	12	12	11
10	11	11	11	10	11	11	12	12	13	12	12	11
11	11	11	11	10	11	11	12	12	12	12	11	11
12	11	11	11	10	11	11	12	12	12	12	11	11
13	11	11	11	11	11	11	12	12	13	11	11	11
14	11	11	11	11	12	11	12	12	13	11	11	11
15	11	11	11	11	12	11	12	12	12	11	12	11
16	11	11	11	11	12	11	12	12	12	12	11	11
17	11	11	11	11	11	11	12	12	12	12	11	11
18	11	11	11	11	11	11	12	12	12	11	11	11
19	11	11	11	11	11	11	12	12	12	11	11	11
20	11	11	11	11	12	11	12	13	12	12	12	11
21	11	11	11	11	11	11	12	13	12	11	12	11
22	11	11	11	11	11	11	12	13	12	11	12	11
23	11	11	11	11	12	11	12	13	12	11	11	11
24	11	11	11	11	12	11	12	12	12	12	11	11
25	11	11	11	11	12	11	12	12	12	11	11	11
26	11	11	11	11	12	11	12	12	12	11	11	11
27	11	11	11	11	12	11	12	13	12	11	11	11
28	11	11	10	11	12	11	12	13	12	11	11	11
29	11	11	10	11	12	11	12	----------	12	12	11	11
30	11	11	10	11	12	11	12	----------	12	12	12	11
31	11	11	----------	11	----------	11	12	----------	12	----------	11	----------
Total	341	341	327	330	342	342	372	342	384	348	352	330
Mean												
Mgd	11.0	11.0	10.9	10.6	11.4	11.0	12.0	12.2	12.4	11.6	11.4	11.0
Cfs	17.0	17.0	16.9	16.4	17.6	17.0	18.6	18.9	19.2	17.9	17.6	17.0
Ac-ft	1,050	1,050	1,000	1,010	1,050	1,050	1,140	1,050	1,180	1,070	1,080	1,010
Max	11	11	11	11	12	12	12	13	13	12	12	11
Min	11	11	10	10	11	11	12	12	12	11	11	11

Calendar Year 1965:	Max	12	Min	10	Mean (mgd)	11.2	Mean (cfs)	17.3	Ac-ft	12,510		
Fiscal Year 1965-66:	Max	13	Min	10	Mean (mgd)	11.4	Mean (cfs)	17.6	Ac-ft	12,740		

Note.--No gage-height record Dec. 8 to Jan. 13.

40-2230. Waimalu Stream near Aiea

Location.--Lat 21°23'34", long 157°57'03", on right bank 350 ft downstream from bridge on Moanalua Road and 1.3 miles northwest of Aiea Post Office.

Drainage area.--6.07 sq mi.

Records available.--January 1952 to June 1962, July 1963 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Datum of gage is 1.97 ft above mean sea level. Graphic water-stage recorder at site 350 ft upstream at different datums prior to Feb. 21, 1961, and Feb. 21, 1961, to June 30, 1962, at present site at datum 0.13 ft lower than present datum.

Average discharge.--13 years (1952-62, 1963-66), 4.62 mgd (7.15 cfs).

Extremes.--Maximum discharge during year, 3,440 mgd (5,320 cfs) Nov. 14 (gage height, 5.61 ft), from rating curve extended above 480 mgd as explained below; minimum, not determined; minimum daily, 0.11 mgd (0.17 cfs) June 15-19, 21, 30.

1952-66: Maximum discharge, 4,480 mgd (6,930 cfs) May 2, 1965 (gage height, 6.30 ft), from rating curve extended above 480 mgd on basis of slope-area measurement of peak flow; no flow Sept. 25, Sept. 28 to Oct. 1, 1958.

Maximum discharge of flood of May 14, 1963, was 3,440 mgd (5,320 cfs), from slope-area measurement of peak flow.

Remarks.--Records poor. Occasional small diversions for irrigation of truck farms above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.5	1.5	0.72	0.60	2.4	3.4	1.5	0.25	22	0.26	1.0	0.13
2	2.8	1.0	1.2	.50	2.1	6.9	1.0	.23	6.6	.24	.50	.13
3	1.4	.80	.60	.45	23	2.6	.80	.30	3.7	.28	.40	.13
4	2.4	.70	.49	.40	27	1.5	.70	.25	1.9	.28	.35	.13
5	1.5	.60	.55	.35	5.9	1.2	.60	.23	1.0	1.0	.30	.13
6	5.7	.50	.56	.30	2.8	20	.50	.22	.70	.50	.27	.14
7	2.2	.44	.74	.30	1.8	8.4	.45	10	.52	.40	.25	.14
8	10	.35	.65	.30	14	3.4	.40	2.0	.42	.30	.23	.16
9	50	3.2	.58	13	4.2	3.0	.35	1.0	.52	.40	.21	.16
10	20	4.4	.84	1.6	66	49	.32	.70	.39	.60	.20	.16
11	10	1.4	.44	1.2	57	33	.30	.50	.39	1.0	.19	.14
12	20	.77	.39	1.4	132	8.1	.28	.40	.32	.50	.18	.14
13	8.0	1.5	.37	18	81	4.4	.27	.35	.30	.42	.17	.14
14	5.0	2.0	.33	20	280	65	.27	.32	.30	.35	.16	.13
15	6.0	10	.31	5.9	106	80	5.0	.30	.30	.35	.15	.11
16	5.0	3.4	.30	2.8	50	20	1.0	1.0	.30	.33	.15	.11
17	3.0	2.1	.27	1.7	18	16	.50	5.0	.30	.33	.15	.11
18	7.0	.82	.27	1.3	9.6	9.3	.25	12	.28	.32	.16	.11
19	4.0	.65	.26	2.2	9.6	5.7	.20	36	.28	.33	.18	.11
20	3.0	.50	.41	6.1	42	4.2	15	7.1	.28	.30	.24	.12
21	2.0	.43	5.0	3.4	9.6	6.1	6.5	2.6	.26	.30	.18	.11
22	1.5	.43	6.8	2.0	5.9	4.2	2.1	1.2	.26	.30	.16	.12
23	1.0	14	9.8	.95	4.8	3.0	2.8	1.3	.26	.30	.14	.12
24	.80	6.7	2.5	.85	5.1	2.0	2.4	5.4	.30	.30	.14	.12
25	.70	13	1.0	1.0	3.0	1.5	5.0	2.0	.30	.30	.14	.12
26	.60	5.1	.71	1.0	2.2	20	1.0	.94	.26	.30	.14	.12
27	.50	2.4	.35	2.6	2.6	10	.50	38	.24	.30	.14	.12
28	15	1.4	.50	2.8	4.0	3.0	.40	73	.24	.30	.14	.12
29	5.0	9.1	.70	6.7	3.0	5.0	.35	----------	.24	.30	.13	.12
30	3.0	2.5	.70	5.0	3.4	10	.30	----------	.24	5.0	.13	.11
31	2.0	1.0	----------	5.6	----------	3.0	.27	----------	.24	----------	.13	----------
Total	208.60	92.69	38.34	98.60	978.0	412.9	51.31	202.59	43.64	16.19	7.01	3.81
Mean												
Mgd	6.73	2.99	1.28	3.18	32.6	13.3	1.66	7.24	1.41	0.540	0.226	0.127
Cfs	10.4	4.63	1.98	4.92	50.4	20.6	2.57	11.2	2.18	0.836	0.350	0.196
Ac-ft	640	284	118	303	3000	1270	157	622	134	50	22	12
Max	50	14	9.8	20	280	80	15	73	22	5.0	1.0	0.16
Min	0.50	0.35	0.26	0.30	1.8	1.2	0.20	0.22	0.24	0.24	0.13	0.11

Calendar Year 1965:	Max	537	Min	0.04	Mean (mgd)	9.64	Mean (cfs)	14.9	Ac-ft	10800
Fiscal Year 1965-66:	Max	280	Min	0.11	Mean (mgd)	5.90	Mean (cfs)	9.13	Ac-ft	6610

Peak discharge (base, 350 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
11-10	2045	2.86	508	786	11-14	1400	5.61	3,440	5,320
11-12	2215	3.11	708	1,100	12-14	2400	5.24	2,930	4,530

40-2245. 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.

Records available.--July 1957 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Datum of gage is 12.75 ft above mean sea level, datum of 1929. Prior to Apr. 28, 1964, graphic water-stage recorder at same site and datum. Apr. 28, 1964, to Nov. 14, 1965, digital water-stage recorder at same site and datum and Nov. 15, 1965, to June 16, 1966, at datum 1.00 ft lower.

Average discharge.--9 years, 1.69 mgd (2.61 cfs).

Extremes.--Maximum discharge during year, 1,210 mgd (1,870 cfs) Nov. 14 (gage height, 6.36 ft), from rating curve extended above 50 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) July 1-7.

1957-66: Maximum discharge, 1,670 mgd (2,580 cfs) May 14, 1963 (gage height, 6.63 ft), from rating curve extended above 50 mgd on basis of slope-area measurements at gage heights 6.29 and 6.63 ft; minimum, 0.02 mgd (0.03 cfs) on several days in 1959, 1960, and 1965.

Remarks.--Records fair. Some return of irrigation water above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.02	0.06	0.13	0.07	0.94	0.50	0.66	0.26	20	0.23	0.20	0.17
2	.02	.14	.18	.07	.25	1.2	.62	.26	5.0	.22	.20	.16
3	.02	.09	.09	.07	9.3	.50	.66	.32	3.0	.22	.20	.15
4	.02	.09	.09	.07	12	.43	.62	.43	1.5	.23	.20	.16
5	.03	.13	.09	.07	1.8	.39	.62	.43	.52	.24	.20	.17
6	.07	.07	.09	.07	.68	3.0	.62	.50	.45	.22	.20	.18
7	.02	.06	.09	.07	.21	1.5	.58	8.4	.41	.23	.20	.17
8	2.4	.06	.09	.06	5.0	.66	.58	2.0	.41	.24	.20	.16
9	24	.73	.10	.06	1.4	.58	.58	.70	.41	.27	.23	.17
10	3.7	1.1	.10	.06	40	14	.62	.50	.36	.29	.20	.18
11	2.3	.07	.10	.06	30	8.6	.58	.40	.34	.41	.22	.18
12	9.0	.05	.10	.23	99	1.8	.58	.40	.34	.22	.19	.19
13	1.4	1.3	.12	12	36	.78	.58	.35	.32	.23	.17	.20
14	.52	.72	.14	7.4	147	44	.58	.30	.32	.22	.18	.20
15	.66	1.3	.16	.98	50	67	.92	.30	.30	.23	.18	.20
16	.49	1.6	.16	.18	14	9.9	7.0	.40	.29	.23	.18	.20
17	.14	.59	.16	.09	2.9	11	1.5	11	.27	.22	.19	.16
18	.82	.12	.10	.08	1.5	5.2	1.1	9.0	.27	.22	.19	.16
19	.13	.12	.10	8.0	1.2	2.4	10	25	.27	.22	.22	.18
20	.06	.09	.10	2.3	9.2	1.6	20	5.0	.27	.23	.27	.16
21	.09	.09	1.6	1.4	1.8	2.7	3.1	2.0	.27	.22	.30	.18
22	.09	.10	2.0	.30	1.1	1.5	1.2	.90	.26	.22	.23	.16
23	.13	6.8	3.1	.10	.79	1.0	1.2	1.0	.26	.22	.23	.16
24	.06	2.5	.28	.08	.83	.74	1.2	4.0	.30	.22	.23	.14
25	.06	2.8	.09	.08	.50	.70	.97	1.5	.24	.23	.17	.16
26	.06	1.0	.07	.09	.41	3.9	.62	.70	.26	.22	.11	.14
27	.09	.25	.07	2.6	.39	2.1	.38	20	.24	.22	.10	.14
28	6.7	.13	.07	1.8	.66	.83	.36	50	.24	.22	.11	.14
29	.92	.30	.07	6.7	.47	1.2	.36	---------	.23	.22	.12	.25
30	.10	.30	.07	2.9	.38	2.0	.36	---------	.23	.74	.14	.43
31	.06	.09	---------	3.2	---------	.79	.29	---------	.22	---------	.17	---------
Total	54.18	22.85	9.71	51.24	469.71	192.50	59.04	146.05	37.80	7.55	5.92	5.40
Mean												
Mgd	1.75	0.737	0.324	1.65	15.7	6.21	1.90	5.22	1.22	0.252	0.191	0.180
Cfs	2.71	1.14	0.501	2.55	24.3	9.61	2.94	8.08	1.89	0.390	0.296	0.279
Ac-ft	166	70	30	157	1,440	591	181	448	116	23	18	17
Max	24	6.8	3.1	12	147	67	20	50	20	0.74	0.30	0.43
Min	0.02	0.06	0.07	0.06	0.21	0.39	0.29	0.26	0.22	0.22	0.10	0.14

Calendar Year 1965:	Max	155	Min	0.02	Mean (mgd)	3.75	Mean (cfs)	5.80	Ac-ft	4,200
Fiscal Year 1965-66:	Max	147	Min	0.02	Mean (mgd)	2.91	Mean (cfs)	4.50	Ac-ft	3,260

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-10	2030	3.70	275	425	11-14	1230	6.36	1,210	1,870
11-12	2145	3.96	327	506	12-14	2345	5.59	667	1,030

40-2260. North Halawa Stream near Aiea

Location.--Lat 21°23'45", long 157°53'37" (revised), 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.

Records available.--August 1929 to June 1933, July 1953 to June 1966. 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.--16 years (1930-33, 1953-66), 4.11 mgd (6.36 cfs).

Extremes.--Maximum discharge during year, 1,880 mgd (2,910 cfs) Nov. 14 (gage height, 12.83 ft, from floodmark in well), from rating curve extended above 36 mgd on basis of slope-area measurements at gage height 10.3, 13.04 and 13.46 ft; no flow for many days.
1929-33, 1953-66: Maximum discharge, 4,300 mgd (6,650 cfs) Feb. 28, 1932 (gage height, 13.36 ft), from rating curve extended above 270 mgd; maximum gage height, 13.46 ft May 14, 1963; no flow at times each year.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	1.6	0	3.0	2.0	1.4	0.24	8.0			
2	0	.10	.68	0	2.4	4.0	1.1	.20	3.0			
3	0	0	.35	0	40	2.0	.98	.14	1.6			
4	0	0	1.1	0	45	2.0	.87	.10	.98			
5	0	.10	.26	0	6.3	1.5	.82	.07	.64			
6	0	0	.12	0	2.7	15	.68	.05	.48			
7	0	0	.04	0	1.6	4.2	.60	9.0	.38			
8	2.0	.10	.03	0	12	2.2	.56	1.9	.32			
9	20	3.3	.98	0	3.0	3.1	.48	.72	.26			
10	5.0	1.8	.52	1.7	32	49	.44	.38	.24			
11	2.5	.68	.18	.16	65	30	.41	.26	.14			
12	10	.38	.10	3.7	140	6.6	.44	.26	.06			
13	1.5	.99	.03	32	98	3.2	.38	.20	.03			
14	.50	1.2	.02	18	300	207	.32	.12	.01			
15	.60	1.3	.02	3.2	100	55	3.3	.14	.01			
16	.40	3.9	.01	1.4	50	13	1.0	.24	0			
17	.20	1.4	0	.72	10	17	.52	10	0			
18	.80	.60	0	.44	5.0	7.0	.38	16	0			
19	.20	.56	0	8.3	4.0	3.8	1.4	25	0			
20	.10	35	0	4.2	30	3.0	7.4	5.1	0			
21	0	.29	3.0	2.4	10	5.2	3.7	1.9	0			
22	0	.41	6.5	1.1	4.0	2.9	1.7	.92	0			
23	.10	8.2	10	.60	2.5	2.1	1.9	4.1	0			
24	0	4.7	1.1	.38	3.0	1.7	1.1	3.6	0			
25	0	7.8	.38	.22	2.0	3.1	2.6	1.2	0			
26	.10	3.6	.14	.29	1.5	15	.92	.77	.01			
27	.10	1.2	.05	6.8	1.5	4.0	.77	13	.01			
28	8.0	.72	.02	8.4	2.0	2.2	.92	37	.01			
29	1.0	2.2	.01	12	1.7	8.4	.48	----------	0			
30	.20	.82	0	6.2	1.5	4.0	.38	----------	0			
31	0	.52	----------	11	----------	1.8	.26	----------	0	----------		----------
Total	53.30	47.22	27.23	123.21	979.7	481.0	38.21	132.61	16.18	0	0	0
Mean												
Mgd	1.72	1.52	0.908	3.97	32.7	15.5	1.23	4.74	0.522	0	0	0
Cfs	2.66	2.35	1.40	6.14	50.6	24.0	1.90	7.33	0.808	0	0	0
Ac-ft	164	145	84	378	3,000	1,480	117	407	50	0	0	0
Max	20	8.2	10	32	300	207	7.4	37	8.0	0	0	0
Min	0	0	0	0	1.5	1.5	0.26	0.05	0	0	0	0

Calendar Year 1965:	Max	300	Min	0	Mean (mgd)	7.88	Mean (cfs)	12.2	Ac-ft	8830
Fiscal Year 1965-66:	Max	300	Min	0	Mean (mgd)	5.20	Mean (cfs)	8.05	Ac-ft	5830

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-10	2100	8.57	355	549	11-14	-	12.83	1,880	2,910
11-12	2230	9.57	561	868	12-14	2300	11.70	1,230	1,900

Note.--No gage-height record July 1 to Aug. 9, Nov. 14 to Dec. 6.

40-2280. 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.

Records available.--June 1926 to June 1966.

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.--40 years, 2.02 mgd (3.13 cfs).

Extremes.--Maximum discharge during year, 1,170 mgd (1,810 cfs) Dec. 14 (gage height, 9.20 ft), from rating curve extended above 42 mgd on basis of slope-area measurement at gage height 11.82 ft; no flow for many days.
1926-66: Maximum discharge, 2,960 mgd (4,580 cfs) Nov. 18, 1930 (gage height, 12.58 ft, present datum), from rating curve extended above 72 mgd by test on model of station site; no flow at times each year.

Remarks.--Records fair. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0.04	0.04	0	0.56	0.36	0.41	0.01	1.0			
2	0	.02	.02	0	.10	1.1	.22	0	.50			
3	0	.02	.02	0	19	.13	.14	0	.20			
4	0	.02	.01	0	30	.03	.08	0	.10			
5	0	.01	.01	0	5.5	.01	.03	0	.05			
6	0	.01	0	0	2.3	.92	.02	0	.01			
7	0	.01	0	0	1.2	.56	.01	.68	.01			
8	0	0	0	0	9.9	.13	.01	.01	.01			
9	20	0	0	0	2.7	1.5	.01	.01	.01			
10	3.1	.01	0	0	28	17	.01	.01	.01			
11	10	0	0	0	25	12	.01	.01	.01			
12	15	0	0	0	143	2.9	.01	0	0			
13	3.0	0	0	13	50	.88	0	0	0			
14	.94	0	0	6.0	200	123	0	0	0			
15	.94	0	0	.61	50	50	0	0	0			
16	.28	.32	0	.07	21	9.1	0	0	0			
17	1.0	.44	0	.02	9.1	9.4	0	0	0			
18	2.0	.02	0	.01	4.6	4.1	0	.37	0			
19	.31	.02	0	.01	2.9	2.3	0	7.7	0			
20	.09	.01	0	.01	9.5	1.6	4.6	1.1	0			
21	.04	.01	.13	.01	2.5	1.6	1.7	.09	0			
22	.43	.01	1.2	0	1.2	1.2	.25	.02	0			
23	.40	.28	2.2	0	.76	.66	.10	.32	0			
24	.22	.61	.12	0	.56	.44	.05	.60	0			
25	.04	.31	.01	0	.28	.82	.03	.07	0			
26	.03	.20	.01	0	.20	7.0	.01	0	0			
27	.23	.08	0	0	.25	2.6	.01	0	0			
28	9.4	.03	0	0	.34	.88	.01	10	0			
29	3.0	.10	0	0	.16	4.0	.01	----------	0			
30	.68	.14	0	.21	.11	2.9	.01	----------	0			
31	.13	.07	----------	2.6	----------	.82	.01	----------	0	----------		----------
Total	71.26	2.79	3.77	22.55	620.72	259.94	7.75	21.00	1.91	0	0	0
Mean												
Mgd	2.30	0.090	0.126	0.727	20.7	8.39	0.250	0.750	0.062	0	0	0
Cfs	3.56	0.139	0.195	1.12	32.0	13.0	0.387	1.16	0.096	0	0	0
Ac-ft	219	8.6	12	69	1,900	798	24	64	5.9	0	0	0
Max	20	0.61	2.2	13	200	123	4.6	10	1.0	0	0	0
Min	0	0	0	0	0.10	0.01	0	0	0	0	0	0

Calendar Year 1965: Max 200 Min 0 Mean (mgd) 4.18 Mean (cfs) 6.47 Ac-ft 4,690
Fiscal Year 1965-66: Max 200 Min 0 Mean (mgd) 2.77 Mean (cfs) 4.29 Ac-ft 3,100

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-10	2000	6.41	492	761	11-14	1400	8.81	1,050	1,620
11-12	2200	7.19	638	987	12-14	2230	9.20	1,170	1,810

40-2290. Kalihi Stream near Honolulu

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

Drainage area.--2.61 sq mi.

Records available.--September 1913 to April 1914, July 1914 to June 1966. 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, datum of 1929. Prior to Oct. 12, 1923, at datum 2.00 ft lower.

Average discharge.--52 years (1914-66), 4.55 mgd (7.04 cfs).

Extremes.--Maximum discharge during year, 2,280 mgd (3,530 cfs) Nov. 14 (gage height, 10.96 ft), from rating curve extended above 180 mgd on basis of indirect measurements at gage heights 8.9, 10.96, and 11.27 ft; minimum, 0.08 mgd (0.12 cfs) June 29.
1913-66: Maximum discharge, about 8,000 mgd (about 12,400 cfs) Nov. 18, 1930 (gage height, 13.81 ft), from rating curve extended above 180 mgd on basis of indirect measurements at gage heights 8.9 and 11.27 ft; minimum, 0.06 mgd (0.09 cfs) Oct. 22, 1933.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	2.2	3.2	0.83	2.6	7.6	5.2	1.7	5.4	1.0	1.2	0.23
2	1.5	1.9	1.5	.83	3.4	5.4	5.0	1.6	4.0	.90	.76	.26
3	1.5	1.9	1.9	.97	48	4.4	4.6	1.4	3.4	.90	.70	.30
4	1.4	1.9	1.5	.83	19	4.4	4.2	1.4	2.9	.97	.58	.20
5	1.4	1.9	1.4	.76	5.0	4.0	4.0	1.4	2.6	1.0	.53	.20
6	1.4	2.2	1.3	.76	3.8	10	3.8	1.7	2.3	1.0	.58	.20
7	1.5	2.0	1.3	.76	3.3	4.6	3.4	13	2.2	1.0	.48	.30
8	7.4	1.6	1.2	1.0	8.5	4.2	3.0	2.7	2.0	.97	.70	.23
9	27	3.5	2.7	.97	3.4	5.4	3.0	2.0	2.3	.97	1.7	.14
10	5.2	3.1	1.3	1.0	6.8	53	2.5	1.8	1.9	.97	.90	.12
11	16	1.7	1.2	.83	10	14	2.5	1.7	1.7	1.0	.58	.14
12	25	1.6	1.0	4.8	90	6.4	2.5	1.4	1.6	.97	.53	.12
13	5.4	2.0	.97	32	30	5.2	2.0	1.4	1.5	.97	.53	.14
14	3.8	1.7	1.0	9.1	120	139	2.0	1.4	1.5	.90	.43	.20
15	6.6	1.6	1.0	3.3	95	39	5.0	1.6	1.6	.90	.43	.17
16	4.0	3.4	1.0	2.3	30	13	2.5	1.7	1.5	.83	.43	.12
17	5.4	1.7	.97	1.9	20	16	2.0	4.5	1.3	.90	.38	.12
18	4.0	1.5	1.0	1.8	15	8.6	2.0	3.9	1.2	.83	.38	.17
19	3.1	1.7	1.0	2.4	12	8.1	3.5	10	1.2	.83	.38	.20
20	2.7	1.4	.90	2.3	20	8.6	30	4.2	1.4	.83	.38	.30
21	4.0	1.6	2.0	1.8	9.2	8.1	8.0	2.7	2.7	.83	.53	.20
22	5.0	2.3	8.1	1.6	7.6	6.4	5.0	2.2	1.4	.83	.34	.30
23	4.6	8.4	5.2	1.4	7.4	5.4	5.0	5.7	1.4	.97	.26	.20
24	3.1	2.7	1.8	1.2	6.4	5.6	3.5	4.2	1.4	.97	.38	.20
25	2.7	3.2	1.3	1.6	5.6	6.7	3.5	2.7	1.2	.97	.34	.40
26	2.6	2.7	1.1	1.8	5.6	13	3.0	2.6	1.0	.97	.20	.30
27	2.7	1.8	1.0	4.6	7.6	6.8	3.0	6.7	1.0	1.0	.23	.20
28	27	1.8	.97	3.4	5.2	5.8	2.5	26	1.0	1.2	.23	.20
29	4.2	2.6	.90	2.7	4.8	13	2.0	----------	1.0	1.3	.23	.20
30	2.9	1.5	.97	3.3	5.4	7.4	1.8	----------	1.0	3.1	.20	.17
31	2.4	1.5	----------	4.2	----------	5.6	1.7	----------	.97	----------	.23	----------
Total	186.9	70.6	50.68	97.04	610.6	444.7	131.7	113.3	57.57	30.78	15.75	6.23
Mean												
Mgd	6.03	2.28	1.69	3.13	20.4	14.3	4.25	4.05	1.86	1.03	0.508	0.208
Cfs	9.33	3.53	2.61	4.84	31.6	22.1	6.58	6.27	2.88	1.59	0.786	0.322
Ac-ft	574	217	156	298	1,870	1,360	404	348	177	94	48	19
Max	27	8.4	8.1	32	120	139	30	26	5.4	3.1	1.7	0.40
Min	1.4	1.4	0.90	0.76	2.6	4.0	1.7	1.4	0.97	0.83	0.20	0.12

Calendar Year 1965:	Max	139	Min	0.76	Mean (mgd)	6.41	Mean (cfs)	9.92	Ac-ft	7,180
Fiscal Year 1965-66:	Max	139	Min	0.12	Mean (mgd)	4.97	Mean (cfs)	7.69	Ac-ft	5,570

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1630	6.88	335	518	12-10	1700	6.61	292	452
7-28	1030	7.02	360	557	12-14	2230	10.32	1,720	2,660
11- 3	1630	6.89	336	520	2- 7	1130	6.92	342	529
11-14	-	10.96	2,280	3,530					

40-2293. 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.

Records available.--Fiscal year 1962 (annual maximum), July 1962 to June 1966.

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.

Extremes.--Maximum discharge during year, about 4,500 mgd (about 7,000 cfs) Nov. 14; minimum, 0.10 mgd (0.16 cfs) June 24.
1961-66: Maximum discharge, that of Nov. 14, 1965.
1962-66: Minimum discharge, that of June 24, 1966.
Flood of May 14, 1960, reached a stage of 8.0 ft, from floodmarks, present site and datum (discharge, 4,100 mgd or 6,350 cfs, from slope-area measurement of peak flow).

Remarks.--Records fair. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	2.0	4.2	1.2	4.5	6.0	6.8	2.4	12	2.2	1.6	0.24
2	2.2	1.8	1.7	1.0	6.4	5.7	6.4	2.4	7.6	1.8	.88	.29
3	2.0	1.8	1.7	1.6	67	5.1	6.0	2.4	4.8	1.2	.88	.88
4	1.8	1.8	1.6	1.0	35	4.8	5.4	2.2	3.9	1.6	.65	.40
5	2.2	2.0	1.2	1.0	7.6	4.5	5.1	2.0	3.4	1.8	.54	.54
6	2.2	2.6	1.2	1.0	4.8	29	4.5	2.6	3.4	1.7	.76	.47
7	2.4	2.2	1.4	1.1	3.9	8.0	3.6	26	3.1	1.6	.65	.88
8	17	1.7	1.1	1.6	24	6.4	3.6	5.1	3.1	1.6	1.0	.65
9	59	4.8	4.4	1.2	5.7	8.4	3.4	3.3	4.2	1.2	2.6	.54
10	12	5.7	1.4	1.2	11	98	3.4	2.6	3.1	1.1	1.8	.47
11	24	2.0	1.1	.88	30	35	3.1	2.4	2.6	1.7	1.4	.76
12	41	1.8	.88	14	200	12	3.1	2.4	2.6	1.4	1.1	.65
13	10	2.2	.88	58	70	8.0	2.8	2.4	2.4	1.2	1.1	.88
14	6.0	2.0	1.0	19	250	365	2.6	2.2	2.6	1.4	.88	1.2
15	13	1.8	1.0	6.0	100	111	7.5	3.1	2.6	1.1	.76	.54
16	6.8	4.6	1.0	3.9	30	27	3.1	2.8	2.6	1.0	1.0	.34
17	8.0	1.8	.76	3.4	19	33	2.8	7.2	2.0	1.1	1.2	.40
18	6.8	1.1	.76	3.0	11	19	2.6	6.8	2.0	1.4	1.2	.34
19	4.5	1.6	1.0	3.9	8.8	13	4.5	15	2.0	1.4	1.2	.47
20	3.9	1.6	.76	4.2	22	12	57	6.4	2.0	1.6	2.2	.54
21	4.2	2.2	1.0	3.0	6.4	11	11	4.2	3.4	1.6	1.4	.40
22	7.2	3.6	12	2.4	4.5	9.2	6.8	3.4	2.2	1.2	.54	.88
23	5.7	14	7.6	2.0	3.9	7.6	7.4	12	2.4	1.0	.47	.40
24	4.2	3.4	2.6	2.0	3.1	7.2	4.8	6.8	2.6	.76	.65	.24
25	3.6	3.4	2.0	2.2	2.6	9.7	5.1	3.9	2.0	.76	.54	1.8
26	3.6	3.1	1.7	2.8	2.6	16	3.6	3.6	1.7	.88	.54	.65
27	3.4	1.8	1.6	9.7	6.4	9.2	3.6	14	2.0	1.0	.65	.24
28	51	1.7	1.4	6.4	4.5	8.4	3.1	47	1.8	1.6	.47	.15
29	5.7	3.4	1.2	5.1	3.9	16	2.6	----------	1.7	1.6	.34	.22
30	3.1	1.6	1.4	5.1	5.1	11	2.4	----------	1.7	3.4	.29	.24
31	2.4	1.1	----------	7.6	----------	7.6	2.4	----------	1.7	----------	.29	----------
Total	322.0	86.2	61.54	176.48	953.7	923.8	190.1	196.6	95.2	42.90	29.58	16.70
Mean												
Mgd	10.4	2.78	2.05	5.69	31.8	29.8	6.13	7.02	3.07	1.43	0.954	0.557
Cfs	16.1	4.30	3.17	8.80	49.2	46.1	9.48	10.9	4.75	2.21	1.48	0.862
Ac-ft	988	265	189	542	2.930	2.840	583	603	292	132	91	51
Max	59	14	12	58	250	365	57	47	12	3.4	2.6	1.8
Min	1.8	1.1	0.76	0.88	2.6	4.5	2.4	2.0	1.7	0.76	0.29	0.15

Calendar Year 1965: Max 410 Min 0.76 Mean (mgd) 12.1 Mean (cfs) 18.7 Ac-ft 13,600
Fiscal Year 1965-66: Max 365 Min 0.15 Mean (mgd) 8.48 Mean (cfs) 13.1 Ac-ft 9,500

Peak discharge (base, 600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-28	1030	4.76	980	1,520	12-14	2300	7.65	3,380	5,230
11-14	-	-	about 4,500	about 7,000	1-20	0930	4.19	695	1,080

40-2320. 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.

Records available.--October 1913 to January 1921, September 1921 to June 1966.

Gage.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level, datum of 1929. Prior to Sept. 7, 1915, staff gage at same site at datum 0.03 ft lower and Sept. 7, 1915, to Mar. 31, 1918, at same datum.

Average discharge.--49 years (1914-16, 1917-20, 1922-66), 4.86 mgd (7.52 cfs).

Extremes.--Maximum discharge during year, 1,480 mgd (2,290 cfs) Nov. 14 (gage height, 6.40 ft), from rating curve extended above 270 mgd on basis of slope-area measurement at gage height 6.69 ft; minimum, 0.66 mgd (1.0 cfs) June 19.
1913-66: Maximum discharge, 4,520 mgd (6,990 cfs) Jan. 16, 1921 (gage height, 8.74 ft, from floodmarks), from rating curve extended above 270 mgd by test on model of station site; minimum, 0.06 mgd (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.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	2.3	1.9	1.8	2.6	12	4.2	2.7	4.0	2.0	1.6	0.92
2	2.6	2.2	1.6	1.7	3.4	8.0	4.7	2.6	3.6	2.0	1.2	.92
3	2.4	2.2	1.8	1.7	15	7.8	4.0	2.6	3.4	2.0	1.1	.96
4	2.4	2.2	1.7	1.7	8.2	7.8	4.0	2.6	3.3	2.0	1.2	.96
5	2.6	2.2	1.5	1.6	3.7	7.3	3.9	2.5	3.2	2.4	1.2	.96
6	2.2	2.0	1.4	1.6	3.5	11	3.7	2.6	3.0	2.6	1.2	.88
7	2.4	2.0	1.3	1.6	3.4	6.3	3.6	10	2.8	2.4	1.2	.92
8	7.7	1.9	1.1	2.0	5.7	6.3	3.5	2.9	2.8	1.7	1.2	.88
9	16	2.0	2.0	1.8	3.9	7.3	3.4	2.6	2.9	1.7	1.3	.80
10	3.9	2.5	1.6	1.7	15	39	3.3	2.6	2.8	1.7	1.3	.76
11	6.9	2.0	1.6	1.6	15	20	3.2	2.5	2.7	1.8	1.2	.84
12	12	1.9	1.6	4.8	117	12	3.2	2.4	2.6	1.8	1.3	.80
13	3.0	2.0	1.7	17	112	9.3	3.0	2.4	2.6	1.7	1.2	.92
14	2.5	1.8	1.8	5.9	266	109	3.0	2.4	2.5	1.6	1.2	.96
15	3.1	1.9	1.8	3.4	100	63	5.6	2.4	2.5	1.6	1.2	.92
16	2.6	3.0	2.3	3.0	30	50	3.4	2.4	2.4	1.5	1.1	.84
17	2.9	2.2	1.8	2.8	20	49	2.8	3.2	2.4	1.6	1.1	.80
18	2.6	1.7	1.8	2.7	15	46	2.8	4.0	2.4	1.6	1.1	.80
19	2.0	1.8	1.8	2.8	10	44	5.6	6.2	2.5	1.5	1.1	.80
20	2.2	1.7	1.8	2.7	20	40	15	3.2	2.8	1.4	1.3	.76
21	2.4	1.8	1.8	2.6	10	21	4.0	2.4	3.2	1.5	1.3	.80
22	2.9	2.0	7.3	2.4	9.0	5.2	3.7	2.4	2.6	1.5	1.1	1.1
23	2.4	3.1	2.8	2.3	8.0	5.0	3.7	3.6	2.8	1.5	1.1	.96
24	2.2	2.0	2.0	2.3	7.0	4.7	3.3	3.1	2.6	1.4	1.1	.84
25	2.1	2.0	2.0	2.4	7.0	5.7	3.3	2.7	2.4	1.3	1.0	.96
26	2.0	1.8	1.9	2.5	7.0	5.8	3.2	2.6	2.4	1.2	1.0	.88
27	2.0	1.5	1.8	4.3	10	4.7	3.1	6.1	2.3	1.4	1.0	.76
28	14	1.7	1.8	4.0	8.0	4.3	3.0	16	2.1	1.6	1.0	.76
29	2.9	1.8	1.8	4.5	7.0	9.0	2.8	----------	2.1	1.4	1.0	.88
30	2.4	1.5	2.0	4.1	7.0	5.0	2.8	----------	2.1	2.6	.96	.80
31	2.5	1.5	----------	3.2	----------	4.4	2.8	----------	2.0	----------	.96	----------
Total	122.6	62.2	59.1	98.5	849.4	629.9	121.6	103.7	83.8	52.0	35.82	26.14
Mean												
Mgd	3.95	2.01	1.97	3.18	28.3	20.3	3.92	3.70	2.70	1.73	1.16	0.871
Cfs	6.11	3.11	3.05	4.92	43.8	31.4	6.07	5.72	4.18	2.68	1.79	1.35
Ac-ft	376	191	181	302	2,610	1,930	373	318	257	160	110	80
Max	16	3.1	7.3	17	266	109	15	16	4.0	2.6	1.6	1.1
Min	2.0	1.5	1.1	1.6	2.6	4.3	2.8	2.4	2.0	1.2	0.96	0.76

Calendar Year 1965:	Max	266	Min	1.1	Mean (mgd)	7.98	Mean (cfs)	12.3	Ac-ft	8,930
Fiscal Year 1965-66:	Max	266	Min	0.76	Mean (mgd)	6.15	Mean (cfs)	9.52	Ac-ft	6,890

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
11-10	2030	3.86	186	288	11-14	1530	6.40	1,480	2,290
11-13	0030	5.46	746	1,150	12-14	2230	5.52	783	1,210

40-2390. East Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long 157°48'10", on right bank 5 ft downstream from highway bridge, 400 ft upstream from confluence with West Branch, and 4.2 miles northeast of Honolulu Post Office.

Drainage area.--1.06 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1966.

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, staff 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.--47 years (1913-20, 1926-66), 3.21 mgd (4.97 cfs).

Extremes.--Maximum discharge during year, 835 mgd (1,290 cfs) Nov. 14 (gage height, 5.10 ft), from rating curve extended above 92 mgd by test on model of station site; minimum, 1.2 mgd (1.9 cfs) June 11.
1913-21, 1925-66: Maximum discharge, 2,000 mgd (3,090 cfs) Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 37 mgd; minimum, 0.4 mgd (0.6 cfs) June 7, 8, 1926.

Remarks.--Records fair. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnel above station. Occasional small diversions for irrigation above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.2	2.8	3.5	1.8	12.9	13	4.5	3.0	4.1	2.9	2.5	1.6
2	2.7	2.2	2.9	1.7	3.4	5.8	4.5	2.8	3.5	2.9	2.2	1.6
3	2.9	2.0	4.7	1.6	5.7	5.0	4.8	2.8	3.1	2.8	2.2	1.7
4	2.7	2.5	3.0	1.6	3.7	5.4	4.5	2.8	3.0	2.8	2.1	1.7
5	2.8	2.4	2.8	1.7	2.7	5.1	4.3	2.7	2.8	2.8	2.2	1.7
6	2.6	2.2	2.6	1.5	2.5	13	4.3	2.6	2.6	3.1	2.3	1.7
7	3.5	2.6	2.5	1.5	4.6	6.0	4.3	6.4	2.6	2.9	2.1	1.8
8	11	2.2	2.5	2.4	4.1	6.2	4.2	3.1	2.7	2.8	2.3	1.6
9	18	4.1	5.0	1.9	2.4	6.5	4.2	2.8	2.8	2.8	2.7	1.6
10	4.7	2.8	3.1	1.8	7.9	43	4.2	2.7	2.7	2.9	2.2	1.5
11	10	2.5	2.9	5.6	7.9	12	4.1	2.6	2.6	2.7	2.1	1.4
12	16	2.5	2.7	6.0	56	5.7	4.1	2.5	2.5	2.7	2.1	1.4
13	4.1	2.6	2.7	19	13	5.1	4.0	2.2	2.8	2.6	2.2	1.8
14	3.5	2.9	2.7	3.0	93	56	4.0	2.3	2.8	2.5	2.1	2.2
15	4.8	2.9	2.6	2.0	45	8.9	6.5	3.1	2.7	2.5	2.0	2.2
16	4.0	4.8	3.2	1.7	16	3.9	4.3	3.0	2.9	2.5	2.0	1.8
17	3.4	3.4	2.8	1.6	8.2	3.7	4.1	5.1	2.8	2.4	1.9	1.5
18	3.2	3.1	2.8	1.7	5.8	3.0	4.2	8.3	2.7	2.4	1.9	1.4
19	3.0	3.1	2.7	1.7	5.6	2.6	4.8	7.8	2.8	2.5	1.8	1.4
20	2.9	3.0	2.5	1.8	9.3	2.9	13	4.4	3.1	2.4	2.4	1.4
21	3.6	3.0	2.4	1.7	5.2	2.8	4.5	3.3	3.0	2.4	2.1	1.4
22	4.4	3.8	9.5	1.6	5.0	2.5	3.8	3.2	2.9	2.4	1.8	1.8
23	6.0	6.9	4.2	1.6	5.0	2.2	4.0	5.3	3.2	2.5	1.7	1.6
24	3.5	4.5	2.6	1.6	4.7	2.4	3.9	4.1	4.1	2.5	1.7	1.8
25	3.0	4.3	2.3	1.8	4.2	3.0	4.1	3.6	3.5	2.5	1.7	2.4
26	2.8	3.3	2.1	2.1	4.3	8.0	3.5	3.5	3.3	2.5	1.7	2.0
27	3.7	3.0	1.8	5.0	5.5	4.2	3.5	7.4	3.1	2.5	1.7	1.9
28	15	3.1	1.8	3.7	5.1	4.3	3.3	11	3.0	3.2	1.6	1.8
29	3.8	3.6	1.9	5.6	4.7	8.4	3.1	----------	3.0	3.3	1.7	2.1
30	2.7	3.0	2.1	3.8	6.4	5.2	3.0	----------	3.0	4.9	1.7	1.9
31	2.8	3.0	----------	3.4	----------	6.0	3.0	----------	2.9	----------	1.6	----------
Total	160.3	98.1	90.9	93.5	349.8	261.8	136.6	114.4	92.6	82.6	62.3	51.7
Mean												
Mgd	5.17	3.16	3.03	3.02	11.7	8.45	4.41	4.09	2.99	2.75	2.01	1.72
Cfs	8.00	4.89	4.69	4.67	18.1	13.1	6.82	6.33	4.63	4.25	3.11	2.66
Ac-ft	492	301	279	287	1070	803	419	351	284	253	191	159
Max	18	6.9	9.5	19	93	56	13	11	4.1	4.9	2.7	2.4
Min	2.6	2.0	1.8	1.5	2.4	2.2	3.0	2.2	2.5	2.4	1.6	1.4

Calendar Year 1965: Max 93 Min 0.98 Mean (mgd) 4.59 Mean (cfs) 7.10 Ac-ft 5140
Fiscal Year 1965-66: Max 93 Min 1.4 Mean (mgd) 4.37 Mean (cfs) 6.76 Ac-ft 4890

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-12	0530	3.34	223	345	11-14	1400	5.10	835	1,290
10-13	1130	3.73	318	492	12-10	0930	3.63	335	518
11-10	1600	3.41	238	368	12-14	2200	4.21	458	709
11-12	1700	3.63	292	452	1-20	1000	3.34	223	345

40-2400. West Branch Manoa Stream near Honolulu

Location.--Lat 21°19'54", long 157°48'13", on left bank 100 ft upstream from bridge on Waaloa Road, 1.0 mile northeast of Manoa School, and 4.2 miles northeast of Honolulu Post Office.

Drainage area.--1.14 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1966.

Gage.--Digital 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, staff gage at same site at different datum. June 17, 1914, to Jan. 16, 1921, graphic water-stege recorder at site 150 ft upstream at different datum. Aug. 4, 1925, to Mar. 15, 1928, graphic water-stage recorder at present site at datum 3.35 ft lower and Mar. 16, 1928, to July 2, 1963, at present site and datum.

Average discharge.--47 years (1913-20, 1926-66), 2.43 mgd (3.76 cfs).

Extremes.--Maximum discharge during year, 1,300 mgd (2,010 cfs) Nov. 14 (gage height, 5.70 ft), from rating curve extended above 73 mgd by test on model of station site; minimum, 0.13 mgd (0.20 cfs) June 14, 16-24, 28-30.
1913-21, 1925-66: Maximum discharge, 2,100 mgd (3,250 cfs) Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 40 mgd; minimum, 0.05 mgd (0.08 cfs) Dec. 16, 18, 1913, Jan. 16-18, Feb. 4, 6, 1915, Mar. 16, 22, 1926.

Remarks.--Records good. Occasional small diversion for irrigation above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.2	1.2	1.5	0.40	1.4	7.5	1.7	0.67	2.6	0.27	0.44	0.16
2	.76	1.1	.80	.38	1.8	2.4	2.0	.65	1.6	.25	.25	.16
3	.94	1.1	2.7	.44	6.3	1.6	1.9	.63	1.2	.25	.23	.23
4	.79	1.2	.74	.34	3.2	1.6	1.6	.60	.87	.29	.19	.23
5	.83	1.2	.56	.32	1.5	1.3	1.4	.55	.82	.30	.19	.19
6	.67	1.0	.48	.32	1.3	7.2	1.2	.55	.76	.39	.26	.16
7	1.2	1.2	.43	.29	1.1	2.0	1.1	4.5	.71	.30	.21	.16
8	7.8	.93	.41	.47	3.7	2.2	1.0	.99	.71	.28	.30	.16
9	22	2.7	2.3	.47	1.3	3.2	.90	.73	.66	.23	.86	.16
10	3.3	1.2	.60	.38	8.7	37	.80	.62	.60	.20	.46	.16
11	8.2	.82	.49	.31	8.2	7.8	.75	3.3	.55	.24	.35	.16
12	12	.71	.41	3.7	64	3.6	.70	4.8	.50	.26	.31	.19
13	2.5	.78	.43	12	28	2.8	.65	.84	.46	.25	.43	.32
14	1.8	.83	.44	2.8	109	51	.60	.86	.46	.23	.39	.45
15	4.3	1.1	.38	1.4	40	15	5.0	2.0	.50	.23	.41	.33
16	2.6	3.4	1.3	1.0	14	5.5	2.0	1.5	.50	.23	.32	.15
17	2.2	.89	.47	.83	7.6	5.5	1.0	4.9	.36	.23	.28	.13
18	2.9	.67	.51	.78	5.2	3.2	.80	6.2	.36	.28	.23	.13
19	4.1	.78	.53	.83	4.7	2.6	.70	4.7	.41	.28	.19	.13
20	3.8	.57	.31	.72	9.6	2.7	15	1.7	.71	.28	.36	.13
21	4.4	.55	.25	.66	3.5	2.8	4.0	1.0	1.1	.23	.60	.13
22	4.0	1.3	11	.54	3.0	2.4	2.5	.82	.53	.23	.28	.20
23	3.5	5.8	2.0	.47	2.9	2.0	1.5	2.1	.83	.23	.23	.18
24	2.1	2.0	.79	.43	2.3	1.9	1.2	1.4	.99	.23	.19	.14
25	1.9	1.8	.63	.65	2.0	3.2	1.5	.89	.52	.23	.19	.80
26	1.8	1.1	.60	.53	2.1	5.9	1.2	.91	.44	.23	.19	.44
27	2.4	.82	.61	3.8	3.5	2.4	1.0	5.5	.39	.23	.19	.41
28	19	.75	.50	2.9	2.4	3.5	.90	12	.35	.47	.19	.27
29	2.7	1.3	.38	5.3	1.6	9.4	.80	----------	.31	.57	.19	.21
30	1.7	.68	.50	3.3	3.7	2.8	.75	----------	.29	1.4	.16	.21
31	1.5	.58	----------	1.8	----------	2.0	.70	----------	.28	----------	.19	----------
Total	128.89	40.06	33.05	48.56	347.6	304.0	56.85	65.91	21.37	9.32	9.26	6.88
Mean												
Mgd	4.16	1.29	1.10	1.57	11.6	6.58	1.83	2.35	0.689	0.311	0.299	0.229
Cfs	6.44	2.00	1.70	2.43	17.9	10.2	2.83	3.64	1.07	0.481	0.463	0.354
Ac-ft	396	123	101	149	1070	626	174	202	66	29	28	21
Max	22	5.8	11	12	109	51	15	12	2.6	1.4	0.86	0.80
Min	0.67	0.55	0.25	0.29	1.1	1.3	0.60	0.55	0.28	0.20	0.16	0.13

Calendar Year 1965:	Max	109	Min	0.13	Mean (mgd)	3.01	Mean (cfs)	4.66	Ac-ft	3,370
Fiscal Year 1965-66:	Max	109	Min	0.13	Mean (mgd)	2.66	Mean (cfs)	4.12	Ac-ft	2,980

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
9-22	1630	3.33	232	359	11-14	1500	5.70	1,300	2,010
11-12	2030	3.56	295	456	12-14	1530	4.12	414	641

40-2440. 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.

Records available.--June 1926 to June 1966.

Gage.--Digital 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). Prior to July 3, 1963, graphic water-stage recorder at same site and datum.

Average discharge.--40 years, 1.29 mgd (2.00 cfs).

Extremes.--Maximum discharge during year, 514 mgd (795 cfs) Nov. 14 (gage height, 5.56 ft), from rating curve extended above 62 mgd on basis of slope-area measurement at gage height 6.13 ft; minimum, 0.10 mgd (0.16 cfs) June 19-29.
1926-66: Maximum discharge, 1,680 mgd (2,600 cfs) Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 46 mgd by test on model of station site; minimum, 0.05 mgd (0.08 cfs) Oct. 31, 1929.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.28	0.67	0.34	0.34	0.82	10	1.9	0.60	2.8	0.34	0.40	0.22
2	.26	.62	.31	.34	.98	4.8	1.8	.50	1.7	.34	.26	.26
3	.31	.62	.28	.34	1.4	3.1	1.8	.50	1.4	.31	.28	.26
4	.31	.62	.28	.31	1.9	3.0	1.7	.46	1.3	.31	.26	.22
5	.26	.58	.26	.28	.82	2.4	1.7	.46	1.3	.31	.28	.26
6	.26	.54	.24	.28	1.0	7.3	1.5	.50	1.2	.34	.28	.26
7	.28	.50	.24	.26	3.8	4.2	1.4	1.7	1.1	.31	.26	.22
8	1.7	.46	.24	.28	13	4.2	1.4	.54	1.0	.31	.26	.16
9	13	.50	2.8	.28	5.9	5.2	1.2	.54	1.0	.31	.26	.16
10	1.4	.43	.67	.28	21	19	1.1	.50	.98	.31	.26	.16
11	6.8	.40	.43	.26	25	8.1	1.0	.50	.92	.34	.26	.16
12	10	.40	.40	6.8	90	4.3	.98	.50	.82	.34	.26	.16
13	1.3	.37	.40	34	85	3.3	.82	.50	.77	.31	.22	.16
14	.72	.37	.40	5.9	93	17	.82	.50	.72	.28	.22	.16
15	1.2	.34	.40	2.0	27	11	3.0	.58	.62	.28	.22	.16
16	.77	.34	.40	1.8	16	3.9	.82	.67	.62	.28	.22	.16
17	.77	.31	.37	1.3	14	3.1	.77	2.8	.58	.28	.22	.12
18	.77	.31	.40	.67	13	2.7	.77	3.6	.58	.28	.22	.12
19	.77	.28	.37	.62	12	2.4	.77	4.4	.58	.26	.20	.12
20	.72	.28	.34	.62	13	2.5	15	2.0	.54	.26	.22	.12
21	.72	.28	.37	.58	11	3.0	.80	.77	.54	.26	.22	.10
22	.67	.31	4.2	.54	11	2.3	.70	.58	.46	.26	.20	.10
23	2.6	.54	.92	.50	11	2.2	.70	2.1	.46	.26	.20	.10
24	.62	.37	.31	.43	7.7	2.3	.70	1.5	.43	.22	.20	.10
25	.58	.62	.31	.43	2.2	2.3	.60	.77	.43	.22	.20	.10
26	.58	.34	.34	.50	2.7	5.4	.60	.67	.40	.22	.18	.10
27	.62	.34	.37	2.6	3.5	2.8	.60	3.6	.40	.22	.18	.10
28	7.3	.37	.37	2.0	3.2	2.6	.60	9.4	.40	.22	.18	.10
29	1.7	.37	.37	9.8	3.9	5.6	.60	----------	.40	.22	.18	.10
30	.62	.34	.34	4.2	4.3	3.5	.60	----------	.40	3.5	.18	.12
31	.62	.34	----------	1.9	----------	2.1	.60	----------	.34	----------	.18	----------
Total	58.51	13.16	17.47	80.44	499.12	155.6	47.35	41.74	25.19	11.70	7.16	4.64
Mean												
Mgd	1.89	0.425	0.582	2.59	16.6	5.02	1.53	1.49	0.813	0.390	0.231	0.155
Cfs	2.92	0.658	0.900	4.01	25.7	7.77	2.37	2.31	1.26	0.603	0.357	0.240
Ac-ft	180	40	54	247	1.530	478	145	128	77	36	22	14
Max	13	0.67	4.2	34	93	19	15	9.4	2.8	3.5	0.40	0.26
Min	0.26	0.28	0.24	0.26	0.82	2.1	0.60	0.46	0.34	0.22	0.18	0.10

Calendar Year 1965: Max 93 Min 0.24 Mean (mgd) 2.83 Mean (cfs) 4.38 Ac-ft 3,170
Fiscal Year 1965-66: Max 93 Min 0.10 Mean (mgd) 2.64 Mean (cfs) 4.08 Ac-ft 2950

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1745	3.67	129	200	11-14	1530	5.56	514	795
10-13	1415	4.10	185	286	12-10	0800	3.92	161	249
10-29	1430	3.82	148	229	1-20	1000	4.63	279	432
11-12	2000	4.48	249	385					

40-2460. Waiomao Stream near Honolulu

Location.--Lat 21°18'35", long 157°47'10", on left bank 300 ft west of road, 0.8 mile upstream from confluence with Pukele Stream, and 5 miles east of Honolulu Post Office.

Drainage area.--1.04 sq mi.

Records available.--April to December 1911, May to December 1912, June 1926 to June 1966. Prior to July 1960, published as "above Pukele Stream, near Honolulu."

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 373.66 ft above mean sea level (Honolulu Board of Water Supply bench mark). Apr. 12, 1911, to Dec. 31, 1912, staff gage at site 0.5 mile downstream at different datum.

Average discharge.--40 years (1926-66), 1.19 mgd (1.84 cfs).

Extremes.--Maximum discharge during year, 458 mgd (709 cfs) Nov. 14 (gage height, 5.25 ft), from rating curve extended above 90 mgd on basis of slope-area measurement at gage height 4.74 ft; minimum, 0.03 mgd (0.05 cfs) Apr. 27.
1911-12, 1926-66: Maximum discharge, 1,000 mgd (1,550 cfs) Apr. 11, 1930 (gage height, 6.27 ft), from rating curve extended above 65 mgd by test on model of station site; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.28	0.50	0.50	0.19	1.0	7.7	0.72	0.30	2.0	0.40	0.50	0.10
2	.28	.40	.50	.17	1.5	2.6	.60	.30	1.0	.40	.30	.20
3	.38	.40	.40	.19	2.0	.93	.64	.28	.60	.30	.30	.20
4	.28	.30	.40	.13	2.5	.75	.53	.28	.50	.30	.30	.20
5	.25	.30	.40	.12	.80	.64	.60	.25	.40	.30	.30	.20
6	.25	.30	.40	.12	.90	7.4	.47	.25	.40	.30	.30	.20
7	.50	.30	.40	.10	1.0	2.0	.35	2.1	.40	.30	.30	.20
8	5.0	.40	.50	.15	8.0	1.1	.33	.72	.50	.30	.20	.10
9	5.4	.40	2.0	.05	4.0	1.2	.30	.47	.50	.40	.30	.10
10	1.1	.30	.50	.21	10	20	.30	.33	.40	.50	.30	.10
11	12	.30	.40	.19	15	7.4	.30	.49	.30	.40	.30	.20
12	2.8	.30	.30	10	70	2.2	.30	.55	.30	.30	.30	.20
13	1.0	.40	.30	20	50	1.3	.30	.23	.30	.20	.30	.10
14	1.2	.40	.30	6.0	84	35	.40	.25	.30	.20	.30	.20
15	.97	.40	.30	1.5	37	16	1.5	.44	.30	.10	.30	.30
16	.83	.40	.30	.80	9.4	2.6	.50	1.5	.20	.10	.20	.20
17	.57	.40	.30	.50	3.5	1.7	.40	3.5	.20	.10	.20	.20
18	.44	.40	.30	.70	2.1	1.3	.40	4.0	.20	.12	.20	.20
19	.38	.40	.30	.80	2.2	.93	3.0	5.0	.30	.15	.30	.30
20	.35	.50	.30	1.0	5.8	1.2	20	3.0	.30	.17	.30	.30
21	.93	.60	.50	.80	1.6	1.6	3.0	.50	.30	.12	.20	.30
22	2.1	.80	4.5	.60	1.1	.97	.60	.40	.30	.10	.20	.30
23	2.1	.70	1.5	.60	.93	.72	.50	2.5	.30	.07	.10	.30
24	.57	.90	.72	.50	.79	1.1	.40	1.5	.40	.09	.10	.40
25	.44	.40	.41	.50	.64	1.2	.40	.50	.40	.07	.20	.40
26	.50	.40	.28	1.0	.57	5.1	.30	.40	.40	.06	.20	.40
27	.50	.40	.23	1.5	1.3	1.5	.30	9.0	.40	.03	.20	.30
28	5.0	.50	.21	3.0	1.4	1.5	.30	11	.40	.19	.10	.20
29	2.0	.50	.21	6.0	.64	6.7	.30	---	.40	.75	.10	.20
30	.60	.50	.19	5.0	.93	1.6	.30	---	.40	2.5	.10	.20
31	.50	.50	---	4.0	---	.93	.30	---	.40	---	.10	---
Total	49.50	13.70	17.85	66.42	320.60	136.87	38.64	50.04	13.50	9.32	7.40	6.80
Mean												
Mgd	1.60	0.442	0.595	2.14	10.7	4.42	1.25	1.79	0.435	0.311	0.239	0.227
Cfs	2.48	0.684	0.921	3.31	16.6	6.84	1.93	2.77	0.673	0.481	0.370	0.351
Ac-ft	152	42	55	204	984	420	119	154	41	29	23	21
Max	12	0.90	4.5	20	84	35	20	11	2.0	2.5	0.50	0.40
Min	0.25	0.30	0.19	0.05	0.57	0.64	0.30	0.23	0.20	0.03	0.10	0.10

Calendar Year 1965:	Max	84	Min	0.05	Mean (mgd)	2.24	Mean (cfs)	3.47	Ac-ft	2510
Fiscal Year 1965-66:	Max	84	Min	0.03	Mean (mgd)	2.00	Mean (cfs)	3.09	Ac-ft	2240

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	0930	3.27	79	122	11-14	1330	5.25	458	709
10-13	1430	4.28	211	326	12-10	1100	4.34	222	343
11-11	2000	3.66	119	184	12-14	2300	4.15	189	292
11-13	0100	5.19	437	676	1-20	-	-	about 250	about 390

Note.--No gage-height record July 26 to Sept. 23, Oct. 12 to Nov. 12, Feb. 16 to Apr. 18, Apr. 30 to June 30.

40-2470. 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.

Records available.--April 1952 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Altitude of gage is 95 ft (from topographic map). Prior to Apr. 28, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--14 years, 3.66 mgd (5.66 cfs).

Extremes.--Maximum discharge during year, 2,460 mgd (3,810 cfs) Nov. 14 (gage height, 5.69 ft), from rating curve extended above 86 mgd on basis of slope-conveyance study and slope-area measurements at gage heights 3.92 and 4.13 ft; minimum, 0.34 mgd (0.53 cfs) June 1-3, 12, 13.
1952-66: Maximum discharge, that of Nov. 14, 1965; minimum, 0.01 mgd (0.02 cfs) June 25, 1958.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.3	1.7	1.4	0.61	2.5	22	4.0	1.8	9.7	0.78	1.1	0.34
2	1.3	1.6	1.4	.65	3.7	7.0	3.5	1.6	4.4	.85	.72	.34
3	1.6	1.5	1.1	.66	3.6	2.3	3.5	1.5	2.6	.66	.55	.41
4	1.5	1.3	1.6	.60	5.7	2.5	3.5	1.3	1.9	.66	.50	.41
5	1.6	1.1	1.3	.58	1.8	1.9	3.0	1.2	1.8	.60	.45	.45
6	1.6	.95	1.3	.60	1.6	38	3.5	1.3	1.6	.66	.66	.50
7	2.1	.89	1.2	.63	1.5	8.1	3.0	8.6	1.6	.60	.55	.50
8	16	.85	1.1	.96	23	5.4	2.5	2.0	1.5	.55	.45	.45
9	29	1.5	11	.63	5.0	6.4	2.5	1.4	1.8	.55	.66	.41
10	2.2	1.6	1.1	.61	26	78	2.0	1.2	1.3	.85	.72	.50
11	37	.91	.73	.95	40	22	2.0	1.1	1.2	1.1	.72	.45
12	8.4	.95	.65	27	196	7.5	2.0	1.0	1.0	1.0	.60	.41
13	2.2	1.1	.64	88	137	4.0	2.0	1.4	.93	.66	.60	.41
14	2.4	1.1	.61	13	232	137	1.5	1.2	.85	.55	.66	.66
15	1.8	1.4	.61	2.6	100	49	7.0	1.8	.78	.55	.66	.72
16	1.4	1.4	.72	1.5	50	27	2.0	3.1	.78	.55	.55	.55
17	3.0	1.2	.67	1.1	20	10	2.0	16	.66	.55	.58	.55
18	3.6	1.2	.66	1.6	15	9.0	2.5	16	.60	.55	.57	.55
19	3.0	1.2	.72	1.7	16	8.0	5.0	21	.66	.55	.81	.60
20	2.5	1.2	.69	2.3	20	8.5	60	8.9	.60	.60	2.3	.60
21	3.5	1.7	.89	1.3	14	9.0	5.0	3.1	.60	.55	1.0	.72
22	5.0	1.8	23	1.1	13	8.0	2.0	2.0	.55	.55	.72	.72
23	10	2.8	5.2	.96	12	7.0	1.5	13	.85	.50	.60	.60
24	3.0	2.4	1.8	.94	10	7.5	2.0	6.5	.93	.50	.55	.72
25	2.0	3.2	.79	1.1	9.0	8.0	2.0	2.7	.85	.50	.55	.85
26	2.0	1.3	.68	1.8	7.0	20	1.8	2.5	.72	.50	.50	.76
27	2.0	1.1	.62	7.8	6.0	9.0	1.8	33	.72	.55	.55	.51
28	25	1.2	.59	5.8	3.6	8.0	1.8	59	.72	.66	.41	.45
29	5.0	1.7	.59	13	2.3	21	1.8	----------	.72	.78	.38	.46
30	2.5	1.2	.59	11	3.2	15	1.9	----------	.78	5.6	.38	.41
31	2.0	1.2	----------	7.8	----------	7.0	1.9	----------	.78	----------	.38	----------
Total	185.5	44.25	63.95	198.88	980.5	573.1	140.5	215.2	44.48	24.11	20.43	16.01
Mean												
Mgd	5.98	1.43	2.13	6.42	32.7	18.5	4.53	7.69	1.43	0.804	0.659	0.534
Cfs	9.25	2.21	3.30	9.93	50.6	28.6	7.01	11.9	2.21	1.24	1.02	0.826
Ac-ft	569	136	196	610	3,010	1,760	431	660	137	74	63	49
Max	37	3.2	23	88	232	137	60	59	9.7	5.6	2.3	0.85
Min	1.3	0.85	0.59	0.58	1.5	1.9	1.5	1.0	0.55	0.50	0.38	0.34

Calendar Year 1965:	Max	232	Min	0.58	Mean (mgd)	7.39	Mean (cfs)	11.4	Ac-ft	8,280
Fiscal Year 1965-66:	Max	232	Min	0.34	Mean (mgd)	6.87	Mean (cfs)	10.6	Ac-ft	7,690

Note.--No gage-height record Dec. 17 to Jan. 28.

Peak discharge (base, 220 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
9-9	1400	2.67	262	405	11-14	1545	5.69	2,460	3,810
9-22	1700	2.85	345	534	12-10	0800	3.04	440	681
10-13	1345	3.58	728	1,130	12-14	1445	3.42	632	978
11-12	2030	3.71	806	1,250	1-20	0930	4.22	1,150	1,780

40-2500. Maunawili ditch near Waimanalo

Location.--Lat 21°20'45", long 157°45'10", on left bank 80 ft downstream from Aniani Nui Ridge tunnel and 3.5 miles west of Waimanalo Post Office.

Records available.--March 1954 to June 1966.

Gage.--Digital water-stage recorder and sharp-crested weir. Altitude of gage is 390 ft (from topographic map). Prior to Aug. 11, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--12 years, 1.75 mgd (2.71 cfs).

Extremes.--1954-66: Maximum daily discharge, 7.0 mgd (10.8 cfs) Mar. 5, 1958; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Ditch diverts from headwaters of Maunawili and Makawao Streams for irrigation in vicinity of Waimanalo.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	2.4	3.0	1.9	3.5	0.13	0	0.60	2.0	2.7	3.0	2.1
2	2.2	2.2	2.2	2.4	3.5	0	0	.50	1.0	2.6	2.0	2.1
3	2.3	2.2	2.3	2.7	3.5	0	0	.50	1.0	2.6	1.0	2.1
4	2.2	2.2	2.2	2.9	3.4	0	0	.50	1.0	2.6	.50	2.1
5	2.3	2.2	2.2	3.0	3.3	0	0	.60	1.0	2.6	.46	2.1
6	2.2	2.1	2.2	3.0	3.2	0	0	.60	1.0	2.6	1.2	2.1
7	2.3	2.2	2.2	3.0	3.2	0	0	2.0	1.0	2.6	2.5	2.1
8	2.7	2.2	2.2	3.1	4.5	0	0	.70	1.0	2.7	2.5	2.1
9	3.3	2.2	2.4	3.0	3.7	0	0	.70	1.0	2.5	2.8	1.9
10	2.7	2.3	2.3	3.0	3.5	1.0	0	.60	1.0	2.9	2.6	2.0
11	2.9	2.1	2.3	2.5	1.3	0	0	.50	1.0	2.7	2.5	2.3
12	3.0	2.1	2.0	3.2	5.8	0	0	.60	1.0	2.6	2.4	2.5
13	2.4	2.2	2.0	4.2	2.5	0	.50	.50	1.0	2.5	2.4	2.8
14	2.3	2.3	2.0	.98	5.1	2.3	1.1	.50	1.0	2.5	2.4	3.1
15	2.2	2.4	2.0	.73	.46	.06	1.7	.50	1.0	2.5	2.4	3.1
16	2.2	2.3	2.0	.65	.20	0	1.3	.50	1.0	2.5	2.3	3.2
17	2.0	2.3	2.0	.62	.11	0	1.2	.70	2.0	3.0	2.3	3.1
18	1.8	2.3	2.0	.59	.11	0	1.2	1.0	2.5	2.5	2.3	3.0
19	2.3	2.5	2.0	.61	.08	0	1.4	2.0	2.5	2.5	2.3	3.0
20	2.6	2.2	2.0	1.5	.07	0	1.9	1.0	2.5	2.5	2.7	3.0
21	2.6	2.6	2.0	2.5	.05	0	.13	.70	2.5	2.5	2.8	2.9
22	2.6	3.2	2.0	2.3	.03	0	.03	.60	2.4	2.5	2.8	2.9
23	3.1	3.5	2.0	2.3	0	0	.04	2.0	2.4	2.5	2.7	2.9
24	2.6	3.3	2.0	2.2	0	.01	.02	1.0	2.8	2.5	2.4	2.9
25	2.6	3.3	2.0	2.4	0	0	0	.90	2.8	2.5	2.2	2.9
26	2.5	3.2	2.0	2.6	0	0	.61	.80	2.8	2.5	2.2	2.8
27	2.5	3.3	2.0	3.0	0	0	.63	1.0	2.8	2.5	2.2	2.2
28	3.2	3.1	2.0	2.9	0	0	.59	3.0	2.7	2.5	2.2	1.9
29	3.0	3.1	1.9	3.3	0	0	.68	----------	2.7	2.5	2.2	2.1
30	2.7	3.0	1.8	3.6	0	0	.66	----------	2.7	4.0	2.2	2.0
31	2.6	3.2	----------	3.7	----------	0	.60	----------	2.7	----------	2.1	----------
Total	78.4	79.7	63.2	74.38	51.11	3.50	14.29	25.10	55.8	78.7	68.56	75.3
Mean												
Mgd	2.53	2.57	2.11	2.40	1.70	0.113	0.461	0.896	1.80	2.62	2.21	2.51
Cfs	3.91	3.98	3.26	3.71	2.63	0.175	0.713	1.39	2.78	4.05	3.42	3.88
Ac-ft	241	245	194	228	157	11	44	77	171	242	210	231
Max	3.3	3.5	3.0	4.2	5.8	2.3	1.9	3.0	2.8	4.0	3.0	3.2
Min	2.0	2.1	1.8	0.59	0	0	0	0.50	1.0	2.5	0.46	1.9

Calendar Year 1965: Max 5.8 Min 0 Mean (mgd) 1.36 Mean (cfs) 2.10 Ac-ft 1520
Fiscal Year 1965-66: Max 5.8 Min 0 Mean (mgd) 1.83 Mean (cfs) 2.83 Ac-ft 2050

Note.--No gage-height record Jan. 31 to Mar. 17.

40-2540. Makawao Stream near Kailua

Location (revised).--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.

Records available.--November 1912 to June 1916, January 1958 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Altitude of gage is 80 ft (from topographic map). Prior to Jan. 1, 1958, staff gage at sites about 200 ft upstream at different datums. Jan. 1, 1958, to Feb. 3, 1964, graphic water-stage recorder at present site and datum.

Average discharge.--11 years (1913-16, 1958-66), 3.73 mgd (5.77 cfs).

Extremes.--Maximum discharge during year, 1,240 mgd (1,920 cfs) Nov. 13 (gage height, 8.71 ft), from rating curve extended above 310 mgd as explained below; minimum not determined; minimum daily, 1.0 mgd (1.6 cfs) Sept. 19.
1912-16, 1958-66: Maximum discharge, 3,880 mgd (6,000 cfs) Feb. 4, 1965 (gage height, 12.41 ft), from rating curve extended above 310 mgd on basis of slope-area measurement of peak flow; minimum, 0.28 mgd (0.43 cfs) Sept. 8-12, 14, 16-20, 22, 23, 1964.

Remarks.--Records fair. Maunawili ditch (see sta. no. 2500) diverts 1.5 miles above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.1	1.9	1.5	1.6	3.2	15	5.9	4.7	15	2.5	8.8	2.2
2	2.3	1.8	1.3	1.2	3.2	8.2	6.0	4.7	10	2.4	6.0	2.3
3	2.1	1.8	1.5	1.2	3.0	7.1	5.7	4.6	8.0	2.4	5.2	2.3
4	2.2	1.8	1.5	1.2	2.9	6.9	6.0	4.6	7.0	2.4	4.9	2.2
5	2.2	1.8	1.3	1.2	2.7	6.5	6.0	5.0	6.0	2.4	4.7	2.3
6	2.2	1.7	1.3	1.2	2.7	7.5	6.0	5.0	6.0	2.4	4.1	2.2
7	2.3	1.8	1.4	1.2	2.6	6.4	6.0	21	6.0	2.4	2.6	2.2
8	5.2	1.7	1.3	1.3	10	6.7	6.0	5.5	6.0	2.3	2.6	2.2
9	5.9	1.9	2.0	1.2	3.5	6.4	6.0	5.7	6.0	2.4	3.5	2.2
10	2.9	1.7	1.3	1.4	34	38	6.0	4.9	5.6	2.8	3.0	2.2
11	7.1	1.7	1.2	1.2	26	9.3	5.0	4.6	5.4	2.7	2.8	2.0
12	4.2	1.6	1.3	17	179	7.1	5.0	5.5	5.2	2.5	2.6	1.9
13	2.9	1.6	1.2	58	116	6.5	5.0	4.6	5.1	2.4	2.6	1.8
14	2.5	1.6	1.2	11	165	92	5.0	4.4	5.0	2.3	3.6	1.8
15	2.5	1.6	1.2	6.7	45	20	10	4.6	5.0	2.3	2.7	1.8
16	2.4	1.6	1.2	5.3	23	10	7.0	4.4	4.9	2.3	2.5	1.7
17	2.3	1.5	1.2	4.6	16	8.8	6.0	6.0	3.9	2.7	2.4	1.7
18	2.3	1.5	1.2	4.3	13	7.8	5.0	8.8	3.2	2.4	2.4	1.6
19	2.2	1.5	1.0	4.2	11	7.1	5.0	19	3.1	2.3	2.4	1.6
20	2.1	1.4	2.0	4.0	10	6.0	15	9.0	3.1	2.3	3.9	1.6
21	2.1	1.5	4.0	4.6	8.8	5.9	10	6.2	3.0	2.3	3.5	1.6
22	2.1	1.6	3.0	3.9	8.2	5.7	8.0	5.0	2.9	2.3	2.8	1.6
23	3.1	2.1	2.0	3.5	7.5	3.7	7.0	20	3.0	2.3	2.6	1.6
24	2.0	1.7	2.0	3.3	7.1	5.0	6.0	15	3.0	2.3	2.4	1.6
25	2.0	1.7	2.0	3.6	6.7	4.6	6.0	10	2.8	2.2	2.3	1.6
26	1.9	1.5	2.0	3.2	6.4	3.3	6.0	7.0	2.8	2.2	2.2	1.6
27	2.0	1.4	2.0	4.2	6.4	3.2	5.5	15	2.8	2.3	2.2	1.5
28	6.9	1.5	2.0	3.3	6.0	3.2	5.2	30	2.7	2.2	2.2	1.5
29	2.4	1.5	1.8	3.5	5.7	3.5	5.5	---------	2.7	2.2	2.1	1.5
30	2.0	1.4	1.9	3.2	5.7	28	5.2	---------	2.6	32	2.1	1.6
31	1.9	1.5	---------	3.6	---------	6.4	4.9	---------	2.5	---------	2.2	---------
Total	88.3	50.9	49.8	168.9	740.3	355.8	196.9	244.8	150.3	100.9	99.9	55.5
Mean												
Mgd	2.85	1.64	1.66	5.45	24.7	11.5	6.35	8.74	4.85	3.36	3.22	1.85
Cfs	4.41	2.54	2.57	8.43	38.2	17.8	9.82	13.5	7.50	5.20	4.98	2.86
Ac-ft	271	156	153	518	2,270	1,090	604	751	461	310	307	170
Max	7.1	2.1	4.0	58	179	92	15	30	15	32	8.8	2.3
Min	1.9	1.4	1.0	1.2	2.6	3.2	4.9	4.4	2.5	2.2	2.1	1.5

Calendar Year 1965:	Max	179	Min	1.0	Mean (mgd)	7.28	Mean (cfs)	11.3	Ac-ft	8,150
Fiscal Year 1965-66:	Max	179	Min	1.0	Mean (mgd)	6.31	Mean (cfs)	9.76	Ac-ft	7,070

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-13	1500	7.30	784	1,210	12-30	0100	5.61	372	576
11-10	2000	7.12	734	1,140	1-20	about 1000	-	about 300	about 460
11-13	0100	8.71	1,240	1,920	2- 7	1100	5.56	362	560
12-10	2030	5.01	272	421					
12-14	2130	8.00	990	1,530					

40-2739. Kamooalii Stream at Kaneohe

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

Drainage area.--4.38 sq mi.

Records available.--January 1959 to October 1963, October 1965 to June 1966.

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.

Extremes.--Maximum discharge during period, 3,350 mgd (5,180 cfs) Nov. 14 (gage height, 7.14 ft), from rating curve extended above 250 mgd on basis of slope-area measurements at gage heights 7.14 and 7.47 ft; minimum, 6.8 mgd (10 cfs) on several days in June.
1959-63, 1965-66: Maximum discharge, that of Nov. 14, 1965; minimum, 2.2 mgd (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, 4,270 mgd or 6,610 cfs, from rating curve extended above 72 mgd on basis of slope-area measurement at gage height 5.69 ft). Discharge for peak of Feb. 4, 1965, 4,010 mgd (6,200 cfs), result of slope-area measurement of peak flow.

Remarks.--Records fair. Many diversions for irrigation above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, October 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				-	9.7	18	14	11	35	10	30	7.4
2				-	10	16	14	11	20	10	20	7.4
3				-	49	14	14	11	20	9.7	17	7.4
4				-	12	14	14	11	17	9.7	15	7.4
5				-	10	14	14	12	15	9.7	13	7.4
6				-	10	16	14	14	15	9.7	11	8.0
7				-	9.7	14	13	38	14	9.3	10	7.4
8				-	21	14	13	12	13	9.3	9.0	7.4
9				-	11	14	13	12	13	9.7	11	7.1
10				-	79	45	13	11	13	9.7	10	7.4
11				-	61	17	13	11	12	9.7	9.0	7.4
12				-	299	14	13	11	12	9.7	9.0	7.4
13				-	129	14	13	10	11	10	9.0	7.4
14				-	451	241	12	10	11	9.7	9.0	7.7
15				10	60	38	17	10	13	9.7	9.0	7.4
16				10	37	20	13	10	12	9.7	9.0	7.4
17				9.3	30	20	12	11	11	9.7	9.0	7.4
18				9.3	26	17	13	20	11	9.7	9.0	7.4
19				17	26	17	14	40	11	10	9.0	8.0
20				12	24	17	29	20	11	9.3	10	7.7
21				12	22	17	14	15	11	9.7	9.0	7.4
22				10	20	16	13	12	10	9.3	9.0	7.4
23				9.7	20	16	14	35	12	9.3	9.0	7.1
24				9.3	20	17	12	25	12	9.3	8.5	7.4
25				11	19	17	12	20	11	8.9	8.3	7.4
26				10	18	24	12	15	11	8.6	8.3	7.1
27				11	19	18	12	30	10	8.6	8.3	6.8
28				10	17	17	11	60	10	8.6	8.6	6.8
29				10	17	18	11	----------	10	8.6	8.3	7.1
30				10	17	16	11	----------	10	50	7.7	6.8
31			----------	9.7	----------	16	11	----------	10	----------	7.7	----------
Total				-	1,553.4	786	418	508	407	324.9	329.7	220.8
Mean												
Mgd				-	51.8	25.4	13.5	18.1	13.1	10.8	10.6	7.36
Cfs				-	80.1	39.3	20.9	28.0	20.3	16.7	16.4	11.4
Ac-ft				-	4,770	2,410	1,280	1,560	1,250	997	1,010	678
Max				-	451	241	29	60	35	50	30	8.0
Min				-	9.7	14	11	10	10	8.6	7.7	6.8

Calendar Year 1965: Max - Min - Mean (mgd) - Mean (cfs) - Ac-ft -
Fiscal Year 1965-66: Max - Min - Mean (mgd) - Mean (cfs) - Ac-ft -

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-10	2100	3.97	782	1,210	11-14	1530	7.14	3,350	5,180
11-12	2230	4.90	1,400	2,170	12-14	2300	6.02	2,340	3,620

40-2750. 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.

Records available.--January 1914 to October 1919, July 1939 to June 1966.

Gage.--Digital 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, staff gage and Apr. 28, 1914, to Oct. 25, 1919, graphic water-stage recorder, at same site at different datums. July 1, 1939, to July 7, 1963, graphic water-stage recorder at same site and datum.

Average discharge.--23 years (1943-66), 1.41 mgd (2.18 cfs).

Extremes.--Maximum discharge during year, 762 mgd (1,180 cfs) Nov. 14 (gage height, 3.79 ft), from rating curve extended above 37 mgd as explained below; minimum, 0.99 mgd (1.5 cfs) Sept. 17-21, Oct. 4-7, 9.
1914-19, 1939-66: Maximum discharge, 3,710 mgd (5,740 cfs) May 2, 1965 (gage height, 7.94 ft), from rating curve extended above 37 mgd on basis of slope-area measurements at gage heights 3.87, 3.88, and 7.94 ft; minimum, 0.13 mgd (0.20 cfs) July 20, 1957, Sept. 17, 1961.

Remarks.--Records good except those for period of no gage-height record, which are poor. Honolulu Board of Water Supply has diverted water from tunnel in drainage area since 1943.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.1	1.2	1.1	1.1	1.6	1.5	1.5	1.2	2.9	1.4	1.2	1.2
2	1.1	1.2	1.1	1.0	1.5	2.0	1.5	1.2	2.3	1.4	1.2	1.2
3	1.1	1.3	1.2	1.1	19	1.7	1.5	1.2	2.6	1.4	1.2	1.2
4	1.1	1.2	1.1	1.0	3.2	1.5	1.5	1.2	2.1	1.4	1.2	1.2
5	1.0	1.2	1.1	1.0	1.9	1.5	1.5	1.3	2.0	1.4	1.2	1.2
6	1.0	1.2	1.1	1.0	1.6	1.5	1.4	1.3	1.9	1.4	1.2	1.2
7	1.1	1.2	1.1	1.0	1.5	1.5	1.4	3.4	1.9	1.4	1.2	1.2
8	1.2	1.2	1.1	1.1	5.3	1.5	1.4	1.7	1.8	1.4	1.2	1.2
9	4.2	1.2	1.1	1.0	1.9	2.0	1.4	1.4	1.8	1.4	1.5	1.2
10	1.7	1.2	1.1	1.7	18	10	1.3	1.3	1.6	1.2	1.3	1.2
11	2.4	1.2	1.0	1.3	7.6	6.0	1.3	1.3	1.6	1.2	1.3	1.2
12	2.5	1.2	1.0	2.9	75	4.0	1.3	1.3	1.6	1.2	1.2	1.2
13	1.5	1.2	1.0	7.8	13	2.0	1.3	1.3	1.5	1.2	1.2	1.2
14	1.3	1.2	1.1	4.1	106	60	1.2	1.2	1.5	1.2	1.2	1.2
15	1.2	1.2	1.0	2.0	11	20	1.2	1.3	1.6	1.2	1.2	1.1
16	1.2	1.2	1.0	1.5	6.1	10	1.2	1.3	1.5	1.1	1.2	1.1
17	1.3	1.2	1.0	1.4	4.0	5.0	1.2	1.5	1.5	1.2	1.2	1.1
18	1.2	1.1	1.0	1.3	3.2	3.0	1.2	2.5	1.5	1.1	1.2	1.1
19	1.2	1.1	1.0	1.4	2.8	2.5	1.2	4.7	1.5	1.2	1.2	1.1
20	1.2	1.1	1.0	1.3	2.4	2.2	3.0	2.6	1.4	1.1	1.3	1.1
21	1.2	1.1	1.3	1.3	2.2	2.0	1.5	1.8	1.5	1.2	1.3	1.1
22	1.2	1.1	1.9	1.2	2.1	1.9	1.4	1.6	1.4	1.1	1.2	1.1
23	1.2	1.2	2.9	1.2	2.0	1.8	1.4	2.9	1.5	1.1	1.2	1.1
24	1.2	1.2	1.5	1.2	1.9	1.7	1.3	2.7	1.5	1.1	1.2	1.1
25	1.2	1.2	1.2	1.3	1.8	1.6	1.3	1.9	1.4	1.1	1.2	1.1
26	1.2	1.2	1.2	1.3	1.8	3.0	1.3	1.7	1.4	1.2	1.2	1.1
27	1.2	1.2	1.1	1.5	1.7	2.0	1.3	6.1	1.4	1.3	1.2	1.1
28	6.3	1.2	1.1	3.6	1.7	1.7	1.2	6.4	1.4	1.3	1.2	1.1
29	2.2	1.3	1.1	2.6	1.6	2.0	1.2	----------	1.4	1.3	1.2	1.1
30	1.5	1.2	1.1	1.9	1.6	1.7	1.2	----------	1.4	1.5	1.2	1.1
31	1.3	1.1	----------	1.8	----------	1.6	1.2	----------	1.4	----------	1.2	----------
Total	49.3	36.8	35.6	54.9	305.0	160.4	42.8	59.3	51.8	37.7	37.9	34.4
Mean												
Mgd	1.59	1.19	1.19	1.77	10.2	5.17	1.38	2.12	1.67	1.26	1.22	1.15
Cfs	2.46	1.84	1.84	2.74	15.8	8.00	2.14	3.28	2.58	1.95	1.89	1.78
Ac-ft	151	113	109	168	936	492	131	182	159	116	116	106
Max	6.3	1.3	2.9	7.8	106	60	3.0	6.4	2.9	1.5	1.5	1.2
Min	1.0	1.1	1.0	1.0	1.5	1.5	1.2	1.2	1.4	1.1	1.2	1.1

Calendar Year 1965:	Max	401	Min	0.82	Mean (mgd)	3.95	Mean (cfs)	6.11	Ac-ft	4,420
Fiscal Year 1965-66:	Max	106	Min	1.0	Mean (mgd)	2.48	Mean (cfs)	3.84	Ac-ft	2,780

Note.--No gage-height record Nov. 21 to Jan. 21.

Peak discharge (base, 220 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11- 3	1530	3.50	530	820	11-14	1530	3.79	762	1,180
11-10	2000	3.46	502	777	12-14	about 2300	3.74	722	1,120
11-12	2030	3.49	523	809					

40-2780. Iolekaa Stream mauka near Heeia

Location.--Lat 21°25'15", long 157°49'50", on left bank 0.7 mile upstream from confluence with Haiku Stream, 1.5 miles southwest of Heeia, and 1.8 miles west of Kaneohe Post Office.

Drainage area.--0.29 sq mi.

Records available.--March 1940 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Datum of gage is 320 ft above mean sea level (transit levels by U.S. Navy). Prior to Apr. 30, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--25 years (1940-42, 1943-66), 0.441 mgd (0.682 cfs).

Extremes.--Maximum discharge during year, 167 mgd (258 cfs) Dec. 14 (gage height, 3.32 ft), from rating curve extended above 2.1 mgd as explained below; minimum, 0.55 mgd (0.85 cfs) on several days.
1940-66: Maximum discharge, 212 mgd (328 cfs) May 2, 1965 (gage height, 3.74 ft), from rating curve extended above 2.1 mgd by test on model of station site; minimum, not determined; minimum daily, 0.10 mgd (0.16 cfs) Oct. 31 to Nov. 9, Nov. 24, 27, 1946.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.58	0.70	0.60	0.64	0.67	0.80	0.60	0.61	1.0	0.64	0.67	0.70
2	.58	.70	.60	.61	.67	1.0	.60	.58	.76	.61	.67	.73
3	.58	.70	.60	.64	3.1	.90	.60	.58	.70	.64	.70	.73
4	.58	.70	.60	.61	1.1	.80	.60	.61	.67	.64	.70	.73
5	.61	.70	.60	.61	.79	.80	.60	.61	.64	.64	.70	.73
6	.58	.70	.60	.61	.67	.80	.60	.61	.64	.64	.70	.70
7	.58	.76	.60	.61	.67	.80	.60	1.4	.64	.64	.70	.70
8	.83	.70	.60	.73	1.7	.80	.60	.83	.64	.64	.70	.70
9	2.0	.70	.60	.61	.83	1.0	.60	.73	.64	.64	.83	.70
10	.79	.70	.60	1.1	3.3	3.0	.60	.70	.64	.64	.70	.70
11	1.0	.70	.60	.67	2.9	2.0	.58	.67	.64	.64	.70	.70
12	1.0	.70	.60	1.4	14	1.5	.58	.67	.64	.64	.70	.64
13	.80	.70	.60	3.3	4.2	1.0	.58	.67	.64	.64	.73	.67
14	.70	.70	.60	1.7	14	10	.60	.67	.64	.64	.73	.67
15	.60	.70	.60	.90	3.5	5.0	.60	.64	.64	.64	.73	.64
16	.60	.70	.60	.79	1.5	3.0	.60	.67	.64	.64	.73	.64
17	.60	.70	.60	.70	1.1	2.0	.60	.76	.64	.64	.73	.64
18	.60	.70	.61	.70	1.0	1.5	.58	1.5	.64	.64	.73	.64
19	.60	.70	.61	.70	.94	1.3	.67	2.3	.64	.64	.73	.64
20	.60	.70	.61	.67	.90	1.2	.83	1.1	.64	.64	.79	.64
21	.60	.60	1.2	.67	.83	1.1	.64	.83	.64	.64	.73	.64
22	.60	.60	1.1	.67	.83	1.0	.61	.73	.64	.64	.70	.64
23	.60	.60	1.5	.67	.83	.90	.67	1.4	.64	.64	.70	.64
24	.60	.60	.79	.64	.80	.80	.61	1.0	.64	.64	.70	.64
25	.60	.60	.70	.73	.80	.80	.61	.79	.64	.67	.70	.61
26	.60	.60	.70	.70	.80	1.0	.61	.73	.64	.67	.70	.61
27	.60	.60	.64	.86	.80	.90	.61	2.0	.64	.67	.70	.61
28	3.0	.60	.64	1.9	.80	.80	.58	2.8	.64	.67	.70	.61
29	1.5	.80	.64	1.0	.80	.70	.58	----------	.64	.67	.70	.61
30	.80	.70	.73	.76	.80	.70	.58	----------	.64	.73	.70	.61
31	.70	.60	----------	.70	----------	.70	.61	----------	.61	----------	.70	----------
Total	25.01	20.96	20.67	27.60	65.63	48.60	18.93	27.19	20.38	19.41	22.10	19.86
Mean												
Mgd	0.807	0.676	0.689	0.920	2.19	1.57	0.611	0.971	0.657	0.647	0.713	0.662
Cfs	1.25	1.05	1.07	1.42	3.39	2.43	0.945	1.50	1.02	1.00	1.10	1.02
Ac-ft	77	64	63	85	201	149	58	83	63	60	68	61
Max	3.0	0.80	1.5	3.3	14	10	0.83	2.8	1.0	0.73	0.83	0.73
Min	0.58	0.60	0.60	0.61	0.67	0.70	0.58	0.58	0.61	0.61	0.67	0.61

Calendar Year 1965:	Max	43	Min	0.34	Mean (mgd)	1.05	Mean (cfs)	1.62	Ac-ft	1,180
Fiscal Year 1965-66:	Max	14	Min	0.58	Mean (mgd)	0.921	Mean (cfs)	1.42	Ac-ft	1,030

Note.--No gage-height record Aug. 8 to Sept. 17, Nov. 24 to Jan. 10.

Peak discharge (base, 15 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-28	about 1000	1.63	18	28	11-12	2030	2.17	51	79
9-21	1830	1.66	20	31	11-14	1400	3.20	141	218
10-28	1730	1.69	21	32	12-14	about 2300	3.32	167	258
11- 3	1530	1.77	25	39	2- 7	1100	1.56	16	25
11-10	1930	1.91	32	50	2-27	1430	1.62	18	28

40-2830. Kahaluu Stream near Heeia

Location.--lat 21°26'20", long 157°51'20", on left bank 40 ft upstream from intake of Libby ditch, 0.5 mile upstream from forest-reserve boundary, and 3.0 miles northwest of Heeia.

Drainage area.--0.28 sq mi.

Records available.--October 1935 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 357.52 ft above mean sea level (levels by Wright, Harvey & Wright).

Average discharge.--19 years (1947-66), 0.543 mgd (0.840 cfs).

Extremes.--Maximum discharge during year, 71 mgd (110 cfs) Nov. 14, Dec. 14 (gage height, 3.18 ft), from rating curve extended above 9.9 mgd as explained below; minimum, not determined; minimum daily, 0.15 mgd (0.23 cfs) July 1-7.

1935-66: Maximum discharge, 1,120 mgd (1,730 cfs) Feb. 4, 1965 (gage height, 8.46 ft, from floodmarks), from rating curve extended above 9.9 mgd by test on model of station site; minimum, 0.03 mgd (0.05 cfs) June 25, 1958, Dec. 5-9, 1962, Feb. 22-24, 26-28, Mar. 14-18, 1963.

Remarks.--Records poor. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1947. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.15	0.35	0.34	0.61	0.57	1.6	1.5	0.78	1.9	1.6	1.2	0.30
2	.15	.34	.34	.57	.65	1.5	1.5	.78	1.6	1.6	1.0	.37
3	.15	.33	.30	.61	2.0	1.4	1.5	.88	1.6	1.5	.98	.34
4	.15	.34	.30	.57	.78	1.4	1.5	1.0	1.5	1.5	.93	.30
5	.15	.34	.34	.57	.53	1.5	1.5	1.0	1.5	1.5	.93	.30
6	.15	.34	.30	.61	.49	1.5	1.5	1.2	1.5	1.5	.88	.34
7	.15	.34	.37	.61	.49	1.5	1.4	2.1	1.5	1.4	.88	.34
8	.30	.49	.41	.65	.83	1.5	1.2	1.5	1.6	1.5	.93	.34
9	.80	.61	.49	.65	.57	1.5	1.2	1.4	1.7	1.5	1.0	.30
10	.30	.57	.45	.73	6.0	3.4	1.1	1.4	1.7	1.7	.83	.30
11	.40	.53	.41	.69	3.0	2.3	1.1	1.4	1.7	1.6	.78	.34
12	.50	.49	.41	1.0	15	1.8	1.2	1.4	1.7	1.5	.78	.30
13	.40	.49	.45	2.8	4.2	1.7	1.2	1.4	1.7	1.5	.78	.30
14	.35	.64	.50	1.4	17	12	1.2	1.4	1.6	1.5	.73	.26
15	.30	.90	.50	.78	4.0	2.8	1.4	1.5	2.2	1.4	.73	.26
16	.25	.45	.50	.57	1.2	1.5	.98	1.5	1.7	1.4	.69	.26
17	.20	.37	.50	.53	.88	1.5	1.1	1.5	1.5	1.5	.65	.26
18	.20	.30	.50	.53	.78	1.5	1.2	2.0	1.5	1.5	.57	.26
19	.20	.30	.50	1.2	.88	1.5	2.5	3.5	1.5	1.6	.61	.26
20	.20	.30	.50	.61	1.1	1.5	2.0	1.9	1.4	1.4	.65	.26
21	.20	.34	.70	.53	1.0	1.5	1.5	1.5	1.4	1.2	.65	.26
22	.20	.41	1.0	.49	1.0	1.5	1.2	1.5	1.5	1.1	.57	.26
23	.20	.45	1.5	.49	.69	1.5	1.4	1.9	1.5	1.2	.49	.23
24	.20	.41	.80	.49	.69	1.5	1.2	1.9	1.5	1.1	.49	.23
25	.20	.61	.69	.49	1.0	1.5	1.2	1.6	1.5	1.0	.49	.23
26	.20	.41	.65	.53	1.1	2.5	.98	1.6	1.5	1.0	.41	.23
27	.50	.37	.61	.69	1.2	1.7	.98	4.5	1.5	1.1	.37	.23
28	1.0	.41	.61	.69	1.2	1.5	.78	4.0	1.4	1.1	.34	.23
29	.50	.49	.61	.83	1.2	1.5	.78	----------	1.5	1.1	.34	.23
30	.45	.37	.69	.65	1.4	1.5	.69	----------	1.6	1.2	.30	.20
31	.40	.37	----------	.65	----------	1.5	.69	----------	1.6	----------	.30	----------
Total	9.50	13.46	16.27	22.82	71.43	62.6	39.18	48.04	49.1	41.3	21.28	8.32
Mean												
Mgd	0.306	0.434	0.542	0.736	2.38	2.02	1.26	1.72	1.58	1.38	0.686	0.277
Cfs	0.473	0.671	0.839	1.14	3.68	3.13	1.95	2.66	2.44	2.14	1.06	0.429
Ac-ft	29	41	50	70	219	192	120	147	151	127	65	26
Max	1.0	0.90	1.5	2.8	17	12	2.5	4.5	2.2	1.7	1.2	0.37
Min	0.15	0.30	0.30	0.49	0.49	1.4	0.69	0.78	1.4	1.0	0.30	0.20

Calendar Year 1965: Max 39 Min 0.11 Mean (mgd) 0.995 Mean (cfs) 1.54 Ac-ft 1,110
Fiscal Year 1965-66: Max 17 Min 0.15 Mean (mgd) 1.10 Mean (cfs) 1.70 Ac-ft 1,240

Note.--No gage-height record July 1 to Aug. 3.

Peak discharge (base, 30 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-10	about 2000	2.32	38	59	11-14	1430	3.18	71	110
11-12	2200	2.56	46	71	12-14	2200	3.18	71	110

40-2836. 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.

Records available.--September 1962 to June 1966.

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).

Extremes.--Maximum discharge during year, 99 mgd (153 cfs) Nov. 14 (gage height, 3.20 ft), from rating curve extended above 2.6 mgd as explained below; minimum, 1.3 mgd (2.0 cfs) on many days.
1962-66: Maximum discharge, 180 mgd (279 cfs) May 2, 1965 (gage height, 3.96 ft), from rating curve extended above 2.6 mgd by logarithmic plotting; minimum, 0.92 mgd (1.4 cfs) on many days in 1963.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.5	1.4	1.4	1.4	1.3	1.4	1.3	1.4	1.4	1.4	1.4	1.4
2	1.5	1.4	1.4	1.4	1.3	1.4	1.3	1.4	1.4	1.4	1.4	1.4
3	1.5	1.4	1.4	1.4	1.9	1.3	1.3	1.4	1.4	1.4	1.4	1.4
4	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.4
5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.4
6	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.4	1.4
7	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.6	1.4	1.4	1.4	1.4
8	1.6	1.4	1.4	1.4	1.5	1.4	1.3	1.4	1.4	1.4	1.4	1.4
9	1.7	1.5	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.5	1.4
10	1.4	1.4	1.4	1.4	2.5	2.1	1.3	1.4	1.4	1.4	1.4	1.4
11	1.4	1.4	1.4	1.4	1.7	1.4	1.3	1.4	1.4	1.4	1.4	1.4
12	1.4	1.4	1.4	1.4	5.7	1.4	1.3	1.4	1.4	1.4	1.4	1.4
13	1.4	1.4	1.4	2.0	2.1	1.4	1.3	1.4	1.4	1.4	1.4	1.4
14	1.4	1.4	1.4	1.6	6.8	5.0	1.3	1.4	1.4	1.4	1.4	1.4
15	1.4	1.4	1.4	1.5	2.3	3.0	1.5	1.4	1.5	1.4	1.4	1.4
16	1.4	1.4	1.4	1.4	1.5	2.0	1.3	1.4	1.4	1.4	1.4	1.4
17	1.4	1.4	1.4	1.4	1.4	1.5	1.3	1.4	1.4	1.4	1.4	1.4
18	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.8	1.4	1.4	1.4	1.4
19	1.4	1.4	1.4	1.7	1.4	1.3	1.7	1.9	1.4	1.4	1.4	1.4
20	1.4	1.4	1.4	1.3	1.5	1.3	1.5	1.4	1.4	1.4	1.4	1.4
21	1.4	1.4	1.4	1.3	1.4	1.3	1.4	1.4	1.4	1.4	1.4	1.4
22	1.4	1.4	1.4	1.3	1.4	1.3	1.4	1.4	1.4	1.4	1.4	1.4
23	1.4	1.5	1.4	1.3	1.4	1.3	1.4	1.4	1.4	1.4	1.4	1.4
24	1.4	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4
25	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4
26	1.4	1.4	1.4	1.3	1.3	1.9	1.3	1.4	1.4	1.4	1.4	1.4
27	1.4	1.4	1.4	1.3	1.3	1.4	1.3	2.5	1.4	1.4	1.4	1.4
28	2.0	1.4	1.4	1.3	1.3	1.3	1.3	2.0	1.4	1.4	1.4	1.4
29	1.4	1.4	1.4	1.3	1.3	1.4	1.4	----------	1.4	1.4	1.4	1.4
30	1.4	1.4	1.4	1.4	1.4	1.3	1.4	----------	1.4	1.5	1.4	1.4
31	1.4	1.4	----------	1.4	----------	1.3	1.4	----------	1.4	----------	1.4	----------
Total	45.2	43.6	42.0	43.6	54.7	49.4	41.8	42.0	43.5	42.1	43.5	42.0
Mean												
Mgd	1.46	1.41	1.40	1.41	1.82	1.59	1.35	1.50	1.40	1.40	1.40	1.40
Cfs	2.26	2.18	2.17	2.18	2.82	2.46	2.09	2.32	2.17	2.17	2.17	2.17
Ac-ft	139	134	129	134	168	152	128	129	133	129	133	129
Max	2.0	1.5	1.4	2.0	6.8	5.0	1.7	2.5	1.5	1.5	1.5	1.4
Min	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4

Calendar Year 1965:	Max	21	Min	1.3	Mean (mgd)	1.58	Mean (cfs)	2.44	Ac-ft	1770
Fiscal Year 1965-66:	Max	6.8	Min	1.3	Mean (mgd)	1.46	Mean (cfs)	2.26	Ac-ft	1640

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-3	1330	2.28	38	59	12-14	about 2200	3.04	85	132
11-10	1730	2.12	30	46					
11-12	2100	2.06	27	42	2-27	about 1100	2.27	38	59
11-14	1300	3.20	99	153					

40-2837. 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 Waihole School, and 4.3 miles northwest of Heeia.

Drainage area.--0.03 sq mi.

Records available.--September 1962 to June 1966.

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

Extremes.--Maximum discharge during year, 93 mgd (144 cfs) Nov. 14 (gage height, 2.49 ft), from rating curve extended above 12 mgd as explained below; minimum, 1.3 mgd (2.0 cfs) on many days.
1962-66: Maximum discharge, 243 mgd (376 cfs) Feb. 4, 1965 (gage height, 3.38 ft), from rating curve extended above 12 mgd by logarithmic plotting; minimum, 0.86 mgd (1.3 cfs) on many days in 1963.

Remarks.--Records good except those for period of no gage-height record, which are fair. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	1.6	1.6	1.5	1.4	1.5	1.3	1.4	1.5	1.4	1.5	1.5
2	1.4	1.6	1.6	1.5	1.4	1.4	1.3	1.4	1.5	1.4	1.5	1.5
3	1.4	1.6	1.6	1.5	2.6	1.4	1.3	1.4	1.5	1.4	1.5	1.5
4	1.4	1.6	1.6	1.5	1.5	1.3	1.3	1.4	1.5	1.4	1.5	1.5
5	1.4	1.6	1.6	1.5	1.4	1.3	1.3	1.4	1.5	1.4	1.5	1.5
6	1.4	1.6	1.6	1.5	1.4	1.4	1.3	1.5	1.5	1.4	1.5	1.5
7	1.4	1.6	1.6	1.5	1.4	1.3	1.3	1.7	1.5	1.5	1.5	1.5
8	1.5	1.6	1.6	1.5	1.5	1.3	1.3	1.5	1.5	1.5	1.5	1.5
9	1.7	1.8	1.6	1.5	1.4	1.3	1.3	1.5	1.4	1.5	1.6	1.4
10	1.4	1.6	1.6	1.5	2.2	2.1	1.3	1.5	1.4	1.5	1.5	1.4
11	1.4	1.6	1.6	1.5	1.9	1.3	1.3	1.5	1.4	1.5	1.5	1.4
12	1.7	1.6	1.6	1.6	5.0	1.3	1.3	1.5	1.4	1.5	1.5	1.5
13	1.7	1.6	1.6	1.9	1.8	1.3	1.3	1.5	1.4	1.5	1.5	1.5
14	1.7	1.6	1.6	1.5	6.0	5.0	1.3	1.5	1.4	1.5	1.5	1.4
15	1.7	1.6	1.6	1.4	2.2	3.0	1.5	1.5	1.4	1.5	1.5	1.4
16	1.7	1.6	1.5	1.4	1.5	2.0	1.4	1.5	1.4	1.5	1.5	1.4
17	1.7	1.6	1.5	1.4	1.4	1.5	1.4	1.5	1.4	1.5	1.5	1.4
18	1.7	1.7	1.5	1.4	1.4	1.4	1.4	1.8	1.4	1.5	1.5	1.4
19	1.6	1.7	1.5	1.5	1.4	1.3	1.6	2.0	1.4	1.5	1.5	1.4
20	1.6	1.7	1.5	1.4	1.5	1.3	1.5	1.5	1.4	1.5	1.5	1.4
21	1.6	1.7	1.5	1.4	1.4	1.3	1.4	1.5	1.4	1.5	1.5	1.4
22	1.7	1.7	1.6	1.4	1.4	1.3	1.4	1.5	1.4	1.5	1.5	1.4
23	1.6	1.7	1.6	1.4	1.4	1.3	1.4	1.5	1.4	1.5	1.5	1.4
24	1.6	1.7	1.6	1.3	1.4	1.3	1.4	1.5	1.4	1.5	1.5	1.4
25	1.6	1.7	1.6	1.3	1.4	1.3	1.4	1.5	1.4	1.5	1.5	1.4
26	1.6	1.7	1.6	1.3	1.4	1.9	1.4	1.5	1.4	1.5	1.5	1.4
27	1.6	1.6	1.6	1.3	1.4	1.4	1.4	2.6	1.4	1.5	1.5	1.4
28	2.2	1.6	1.6	1.3	1.4	1.3	1.4	1.9	1.4	1.5	1.5	1.4
29	1.7	1.8	1.5	1.3	1.4	1.4	1.4	----------	1.4	1.5	1.5	1.4
30	1.7	1.6	1.6	1.4	1.4	1.3	1.4	----------	1.4	1.6	1.5	1.4
31	1.7	1.6	----------	1.4	----------	1.3	1.4	----------	1.4	----------	1.5	----------
Total	49.5	50.9	47.3	44.8	54.3	48.8	42.4	44.0	44.2	44.5	46.6	43.0
Mean												
Mgd	1.60	1.64	1.58	1.45	1.81	1.57	1.37	1.57	1.43	1.48	1.50	1.43
Cfs	2.48	2.54	2.44	2.24	2.80	2.43	2.12	2.43	2.21	2.29	2.32	2.21
Ac-ft	152	156	145	137	167	150	130	135	136	137	143	132
Max	2.2	1.8	1.6	1.9	6.0	5.0	1.6	2.6	1.5	1.6	1.6	1.5
Min	1.4	1.6	1.5	1.3	1.4	1.3	1.3	1.4	1.4	1.4	1.5	1.4

Calendar Year 1965:	Max	21	Min	1.3	Mean (mgd)	1.63	Mean (cfs)	2.52	Ac-ft	1,830
Fiscal Year 1965-66:	Max	6.0	Min	1.3	Mean (mgd)	1.54	Mean (cfs)	2.38	Ac-ft	1,720

Note.--No gage-height record Apr. 27 to June 8.

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11- 3	1200	1.85	36	56	12-14	about 2200	2.47	91	141
11-12	1830	1.61	23	36					
11-14	1000	2.49	93	144	2-27	1030	1.64	25	39

40-2838. Waihee Stream at altitude 260 ft, near Heeia

Location.--Lat 21°26'57", long 157°51'55", on right bank 325 ft downstream from confluence of North and South Forks, 2.7 miles southwest of Waiahole School, and 3.7 miles northwest of Heeia.

Drainage area.--0.31 sq mi.

Records available.--May 1961 to June 1966 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 259.28 ft above mean sea level (levels by Honolulu Board of Water Supply).

Average discharge.--5 years, 3.12 mgd (4.83 cfs).

Extremes.--Maximum discharge during year, 256 mgd (396 cfs) Nov. 14 (gage height, 4.58 ft), from rating curve extended above 19 mgd; minimum, 2.4 mgd (3.7 cfs) Nov. 6, 7.
1961-66: Maximum discharge, 1,100 mgd (1,700 cfs) Feb. 4, 1965 (gage height, 6.12 ft), from rating curve extended above 19 mgd; minimum, 1.6 mgd (2.5 cfs) Oct. 10, 1962.

Remarks.--Records fair. Honolulu Board of Water Supply tunnel draft affects flow at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.2	3.5	2.9	3.0	3.4	4.1	4.1	4.1	4.9	3.5	3.9	3.7
2	3.2	3.5	2.9	3.0	3.4	4.0	4.1	4.1	4.3	3.5	3.9	3.7
3	3.2	3.4	2.9	3.0	9.2	3.7	4.1	4.1	4.1	3.5	3.9	3.7
4	3.2	3.4	2.9	3.0	3.0	3.5	4.1	3.9	4.1	3.5	3.9	3.5
5	3.0	3.4	2.9	3.0	2.6	3.4	4.1	3.9	3.9	3.5	3.9	3.5
6	2.9	3.2	2.9	2.9	2.5	3.7	4.1	4.7	3.9	3.3	3.7	3.5
7	2.9	3.2	2.9	2.9	2.5	3.4	4.1	6.4	3.7	3.3	3.7	3.9
8	3.2	3.2	2.9	3.0	3.4	3.4	4.1	4.3	3.7	3.3	3.9	3.9
9	4.6	3.5	3.0	3.0	2.6	3.4	4.1	4.1	3.9	3.5	4.5	3.7
10	3.4	3.2	3.0	3.0	7.7	7.9	4.1	3.9	3.9	3.5	3.9	3.5
11	3.2	3.0	3.0	3.0	5.2	4.4	4.1	3.9	3.9	3.5	3.9	3.5
12	3.7	3.0	2.9	3.5	20	3.5	4.1	4.3	3.9	3.5	3.7	3.5
13	3.2	3.0	2.9	6.4	7.3	3.4	4.1	4.1	3.7	3.5	3.7	3.7
14	3.4	3.0	2.9	4.6	27	22	4.1	3.9	3.7	3.5	3.9	3.7
15	3.4	3.0	2.9	3.5	12	9.0	5.1	4.1	4.5	3.5	3.9	3.7
16	3.4	3.0	2.8	3.5	5.6	4.7	4.5	3.9	3.9	3.5	3.9	3.5
17	3.5	3.0	2.8	3.5	4.4	4.5	4.3	4.5	3.7	3.5	3.9	3.3
18	3.5	3.0	2.8	3.5	4.1	4.3	4.3	6.9	3.7	3.5	3.9	3.1
19	3.4	3.0	2.8	4.4	4.1	4.3	5.8	9.6	3.7	3.5	4.1	3.1
20	3.2	3.0	2.8	3.7	4.3	4.3	5.9	4.9	3.7	3.5	4.3	2.9
21	3.4	3.0	2.8	3.4	3.7	4.1	4.7	4.3	3.7	3.5	4.3	2.9
22	3.5	3.0	2.9	3.4	3.5	4.1	4.3	4.1	3.7	3.7	4.3	2.9
23	3.4	3.2	2.9	3.4	3.8	3.9	4.5	4.9	3.7	3.7	4.1	2.9
24	3.2	3.2	2.9	3.2	3.8	4.1	4.3	4.5	3.7	3.5	4.1	2.7
25	3.2	3.2	2.9	3.2	3.7	4.1	4.3	4.3	3.7	3.5	3.9	2.7
26	3.2	3.2	3.0	3.2	3.5	8.8	4.3	4.1	3.7	3.7	3.9	2.7
27	3.2	3.0	3.0	3.5	3.5	4.7	4.3	14	3.5	3.7	3.9	2.7
28	5.8	3.0	3.0	3.4	3.5	4.3	4.1	10	3.5	3.7	3.9	2.7
29	3.8	3.4	3.0	3.5	3.5	4.3	4.1	----------	3.5	3.7	3.9	2.9
30	3.7	3.0	3.4	3.5	3.5	4.3	4.1	----------	3.5	4.5	3.7	2.7
31	3.5	2.9	----------	3.8	----------	4.1	4.1	----------	3.5	----------	3.7	----------
Total	106.6	97.6	87.6	106.9	170.3	155.7	134.4	143.8	118.5	106.6	122.1	98.4
Mean												
Mgd	3.44	3.15	2.92	3.45	5.68	5.02	4.34	5.14	3.82	3.55	3.94	3.28
Cfs	5.32	4.87	4.52	5.34	8.79	7.77	6.71	7.95	5.91	5.49	6.10	5.07
Ac-ft	327	300	269	328	523	478	412	441	364	327	375	302
Max	5.8	3.5	3.4	6.4	27	22	5.9	14	4.9	4.5	4.5	3.9
Min	2.9	2.9	2.8	2.9	2.5	3.4	4.1	3.9	3.5	3.3	3.7	2.7

Calendar Year 1965:	Max	74	Min	2.5	Mean (mgd)	3.85	Mean (cfs)	5.96	Ac-ft	4,310
Fiscal Year 1965-66:	Max	27	Min	2.5	Mean (mgd)	3.97	Mean (cfs)	6.14	Ac-ft	4,450

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11- 3	1330	3.35	113	175	12-14	2330	4.56	252	390
11-12	2030	3.02	87	135	2-27	1200	2.76	76	118
11-14	1200	4.58	256	396					

40-2840. 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 4.4 miles northwest of Kaneohe.

Drainage area.--0.93 sq mi.

Records available.--December 1935 to June 1966.

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.--30 years (1936-66), 6.11 mgd (9.45 cfs).

Extremes.--Maximum discharge during year, 952 mgd (1,470 cfs) Nov. 14 (gage height, 5.99 ft, from floodmark in well), from rating curve extended above 50 mgd as explained below; minimum, 3.1 mgd (4.8 cfs) Dec. 13, 14.
1935-66: Maximum discharge, 3,300 mgd (5,110 cfs) Feb. 4, 1965 (gage height, 8.72 ft, from floodmarks), from rating curve extended above 50 mgd on basis of slope-area measurements at gage heights 6.06 and 8.72 ft; minimum, 2.2 mgd (3.4 cfs) Oct. 15, 16, 1962.

Remarks.--Records good. Honolulu Board of Water Supply diverts ground water from tunnel in drainage area.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.0	4.5	3.8	4.1	4.8	4.9	4.9	5.2	8.1	5.0	4.9	4.5
2	5.0	4.4	3.8	4.1	4.8	4.5	4.9	5.2	6.8	5.0	4.9	4.5
3	5.0	4.4	3.9	4.1	14	4.1	4.9	5.0	6.4	5.0	4.9	4.4
4	5.0	4.4	3.8	4.1	7.0	4.0	4.9	5.0	6.0	4.9	4.9	4.4
5	5.0	4.4	3.8	4.1	5.2	3.9	4.9	5.0	5.9	4.9	4.9	4.4
6	5.0	4.4	3.7	4.0	4.6	4.1	4.9	5.8	5.8	4.9	4.9	4.4
7	5.0	4.4	3.8	4.0	4.5	3.9	4.9	7.9	5.6	4.9	4.8	4.5
8	5.2	4.2	3.8	4.2	5.6	3.9	5.0	6.2	5.6	4.9	4.9	4.5
9	6.4	4.5	4.0	4.2	4.6	3.9	5.0	5.8	5.8	4.9	5.2	4.5
10	4.8	4.2	3.9	4.4	10	11	5.0	5.4	5.6	4.9	4.9	4.4
11	4.6	4.1	3.9	4.2	7.0	4.6	5.0	5.4	5.4	4.9	4.8	4.4
12	5.2	4.1	3.8	4.9	30	3.4	5.0	5.7	5.4	4.9	4.8	4.4
13	4.6	4.1	3.8	9.0	15	3.2	5.0	5.6	5.4	4.9	4.8	4.4
14	4.6	4.1	3.7	7.1	40	20	5.0	5.4	5.3	4.9	4.8	4.4
15	4.6	4.1	3.7	5.0	16	15	5.9	5.3	6.4	4.8	4.8	4.4
16	4.6	4.1	3.6	4.6	8.7	6.2	5.2	5.3	5.8	4.8	4.8	4.2
17	4.8	4.0	3.7	4.5	6.8	5.0	5.0	5.8	5.4	4.8	4.8	4.1
18	4.6	4.1	3.9	4.5	5.9	4.4	5.0	7.6	5.4	4.8	4.8	4.0
19	4.5	4.1	3.8	6.2	5.4	4.0	6.6	15	5.3	4.8	4.9	3.9
20	4.5	4.1	3.8	4.9	5.3	4.0	6.0	7.4	5.3	4.8	5.0	3.8
21	4.5	4.1	3.8	4.6	4.8	3.9	5.3	6.2	5.2	4.9	5.0	3.8
22	4.5	4.2	3.9	4.5	4.6	3.7	5.0	5.9	5.2	4.8	4.9	3.7
23	4.6	4.4	4.0	4.4	4.6	3.6	5.0	6.4	5.2	4.8	4.9	3.7
24	4.5	4.2	3.9	4.4	4.5	3.6	4.9	6.0	5.2	4.8	4.9	3.6
25	4.5	4.4	4.0	4.4	4.4	3.4	4.9	6.0	5.2	4.8	4.8	3.6
26	4.4	4.4	4.1	4.4	4.4	8.2	5.0	5.9	5.2	4.8	4.8	3.6
27	4.5	4.1	4.1	4.5	4.4	6.6	5.0	18	5.0	4.8	4.8	3.6
28	7.8	4.1	4.1	4.6	4.4	5.4	5.0	16	5.0	4.8	4.8	3.6
29	5.3	4.4	4.2	4.8	4.2	5.3	5.2	---------	5.0	4.9	4.6	3.6
30	4.8	4.0	4.5	5.0	4.4	5.2	5.2	---------	5.0	5.2	4.6	3.6
31	4.5	3.9	---------	5.2	---------	4.9	5.2	---------	5.0	---------	4.6	---------
Total	151.9	130.9	116.6	147.0	249.9	171.8	158.7	195.4	172.9	146.3	150.2	122.9
Mean												
Mgd	4.90	4.22	3.89	4.74	8.33	5.54	5.12	6.98	5.58	4.88	4.85	4.10
Cfs	7.58	6.53	6.02	7.33	12.9	8.57	7.92	10.8	8.63	7.55	7.50	6.34
Ac-ft	466	402	358	451	767	527	487	600	531	449	461	377
Max	7.8	4.5	4.5	9.0	40	20	6.6	18	8.1	5.2	5.2	4.5
Min	4.4	3.9	3.6	4.0	4.2	3.2	4.9	5.0	5.0	4.8	4.6	3.6

Calendar Year 1965:	Max	250	Min	3.2	Mean (mgd)	6.32	Mean (cfs)	9.78	Ac-ft	7070
Fiscal Year 1965-66:	Max	40	Min	3.2	Mean (mgd)	5.25	Mean (cfs)	8.12	Ac-ft	5880

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-3	1330	3.61	112	173	12-14	about 2400	-	about 400	about 620
11-14	about 1400	5.99	952	1,470					

40-2850. Waihole tunnel at Waianu, near Waiahole

Location.--Lat 21°29'05", long 157°53'15", on left bank in Waiahole tunnel at Waianu Stream intake and 2.1 miles west of Waihole School.

Records available.--December 1950 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 785.5 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.--15 years (1951-66), 25.4 mgd (39.3 cfs).

Extremes.--1950-66: Maximum daily discharge, 74.0 mgd (114 cfs) July 28, 1954; minimum daily, 16.0 mgd (24.8 cfs) Jan. 24-29, 1952.

Remarks.--Records excellent except those above 60 mgd, which are good. Tunnel diverts from headwaters of nearly all streams from Waiahole Valley to Kahana Valley for irrigation in central Oahu. Occasional releases at various intakes above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	30	30	28	28	28	37	33	32	35	30	31	27
2	30	30	29	27	37	33	33	32	33	30	28	27
3	30	30	31	27	43	32	33	32	33	30	28	27
4	30	29	33	27	30	32	33	32	33	30	28	27
5	30	29	28	27	28	32	33	32	32	30	28	27
6	30	30	28	27	28	37	33	42	32	30	28	27
7	31	30	28	27	29	32	32	45	32	30	28	27
8	31	29	28	30	30	32	32	34	32	30	28	26
9	46	31	29	30	28	35	32	32	32	30	30	26
10	32	30	28	29	38	43	32	32	32	30	29	26
11	36	29	28	27	42	35	32	32	32	30	28	27
12	36	29	28	31	71	32	32	32	31	30	29	26
13	31	30	28	47	42	32	32	33	31	30	29	27
14	30	30	28	34	63	61	32	32	31	29	28	27
15	30	30	28	30	46	44	39	33	41	29	32	26
16	30	30	28	28	35	35	33	34	33	29	28	26
17	36	29	28	28	31	33	32	45	31	29	28	26
18	30	29	28	28	30	33	32	42	31	29	28	26
19	30	29	28	35	32	33	39	61	31	29	27	26
20	30	29	28	28	35	33	36	37	34	29	29	26
21	41	28	27	28	31	34	32	34	35	28	29	25
22	44	28	27	27	31	33	31	33	32	28	28	25
23	37	36	28	27	32	33	32	35	32	28	27	25
24	32	30	28	27	32	34	32	34	32	28	27	25
25	30	32	28	27	31	33	33	33	31	28	27	26
26	30	36	27	26	32	37	32	33	31	28	27	25
27	31	29	27	33	32	33	32	41	31	28	27	25
28	57	28	27	33	32	33	32	47	31	31	27	25
29	32	30	27	33	32	36	32	---	30	32	27	25
30	30	28	27	36	33	33	32	---	30	31	27	24
31	30	28	---	34	---	33	32	---	30	---	27	---
Total	1033	925	843	926	1064	1088	1017	1016	997	883	872	780
Mean												
Mgd	33.3	29.8	28.1	29.9	35.5	35.1	32.8	36.3	32.2	29.4	28.1	26.0
Cfs	51.5	46.1	43.5	46.3	54.9	54.3	50.7	56.2	49.8	45.5	43.5	40.2
Ac-ft	3170	2840	2590	2840	3270	3340	3120	3120	3060	2710	2680	2390
Max	57	36	33	47	71	61	39	61	41	32	32	27
Min	30	28	27	26	28	32	31	32	30	28	27	24

Calendar Year 1965:	Max	71	Min	26	Mean (mgd)	32.3	Mean (cfs)	50.0	Ac-ft	36230
Fiscal Year 1965-66:	Max	71	Min	24	Mean (mgd)	31.4	Mean (cfs)	48.6	Ac-ft	35120

40-2860. Waiahole tunnel wasteway at intake 31, near Waiahole

Location.--Lat 21°28'30", long 157°53'15", on left bank 150 ft downstream from wasteway gates at Waiahole tunnel intake No. 31 and 2.2 miles west of Waiahole School.

Records available.--January 1951 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 742.7 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.--15 years, 1.10 mgd (1.70 cfs).

Extremes.--1951-66: Maximum daily discharge, 64 mgd (99 cfs) Nov. 12, 1965; no flow most of the time.

Remarks.--Records good. Station measures releases from Waiahole tunnel to Waiahole Stream.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				0	0.50	1.4	27	0	25	0	0.57	
2				0	1.8	0	26	0	24	0	0	
3				0	6.8	0	26	0	17	0	0	
4				0	.23	0	7.1	0	7.0	0	0	
5				0	0	0	0	0	6.7	0	0	
6				0	0	.67	0	2.3	6.7	0	0	
7				0	.51	0	0	16	1.8	0	0	
8				0	.19	0	0	24	0	0	0	
9				0	0	.31	0	23	0	0	0	
10				0	5.2	18	0	23	0	0	0	
11				0	21	28	0	23	0	0	0	
12				0	64	22	0	23	0	0	0	
13				8.1	33	0	0	24	0	0	0	
14				6.5	56	48	0	23	0	0	0	
15				3.3	35	37	1.2	24	0	0	0	
16				1.8	25	30	0	23	0	0	0	
17				1.4	21	28	0	30	0	0	0	
18				1.6	21	27	0	19	0	0	0	
19				6.8	22	27	.41	23	0	0	0	
20				1.7	26	28	.05	2.2	0	0	0	
21				1.4	21	28	0	.66	0	0	0	
22				1.2	22	27	0	.50	0	0	0	
23				1.1	22	26	0	1.4	0	0	0	
24				.98	22	28	0	.91	0	0	0	
25				.28	22	28	0	.56	0	0	0	
26				0	22	31	0	.56	0	0	0	
27				0	22	27	0	2.6	0	0	0	
28				2.1	18	27	0	20	0	0	0	
29				3.5	0	32	0	----------	0	.05	0	
30				5.2	0	28	0	----------	0	.66	0	
31			----------	3.7	----------	28	0	----------	0	----------	0	----------
Total	0	0	0	50.66	510.23	605.38	87.76	329.69	88.2	0.71	0.57	0
Mean												
Mgd	0	0	0	1.63	17.0	19.5	2.83	11.8	2.85	0.024	0.018	0
Cfs	0	0	0	2.52	26.3	30.2	4.38	18.3	4.41	0.037	0.028	0
Ac-ft	0	0	0	155	1570	1860	269	1010	271	2.2	1.7	0
Max	0	0	0	8.1	64	48	27	30	25	0.66	0.57	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965:	Max	64	Min	0	Mean (mgd)	3.79	Mean (cfs)	5.86	Ac-ft	4250
Fiscal Year 1965-66:	Max	64	Min	0	Mean (mgd)	4.58	Mean (cfs)	7.09	Ac-ft	5130

40-2870. Waiahole tunnel at north portal, near Waiahole

Location.--lat 21°28'15", long 157°53'30", on right bank in Waiahole tunnel directly below crest of Koolau Range and 2.6 miles southwest of Waiahole School.

Records available.--January 1951 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 752.5 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.--15 years, 26.9 mgd (41.6 cfs).

Extremes.--1951-66: Maximum daily discharge, 81.0 mgd (125 cfs) July 28, 1954; minimum daily, 1.48 mgd (2.29 cfs) Dec. 9, 1956.

Remarks.--Records excellent. Tunnel diverts from headwaters of nearly all streams from Kahana Valley to Waiahole Valley for irrigation in central Oahu. Occasional releases at numerous intakes above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	34	34	32	31	30	37	3.8	36	11	32	32	30
2	34	34	33	30	37	35	3.8	36	10	32	30	29
3	34	34	33	30	40	33	3.8	36	16	32	30	29
4	34	33	35	30	32	33	25	36	27	32	30	28
5	35	33	30	30	30	33	34	36	27	32	30	28
6	34	33	30	30	30	36	34	43	27	32	30	28
7	36	34	31	30	30	34	34	30	32	32	29	28
8	35	33	32	34	32	33	34	11	34	32	29	28
9	52	36	32	33	30	36	34	11	34	32	32	28
10	37	34	31	32	34	28	34	11	34	32	31	28
11	40	33	32	30	25	5.7	34	10	34	32	30	28
12	41	33	32	33	11	8.4	34	10	34	32	31	28
13	35	33	32	42	10	34	34	11	34	31	31	28
14	34	33	32	30	12	19	35	10	34	31	30	28
15	34	33	31	28	9.8	5.5	41	10	42	31	33	28
16	34	33	32	28	8.7	4.3	37	10	36	31	31	27
17	41	33	32	28	8.0	4.2	36	11	34	31	30	28
18	35	33	32	28	7.8	4.1	36	22	33	31	30	28
19	34	32	30	30	8.0	4.1	43	41	33	31	29	28
20	34	32	31	28	8.6	4.0	39	35	36	31	31	28
21	44	32	31	28	8.0	3.7	35	34	37	31	31	28
22	50	32	31	28	8.0	3.6	34	33	34	31	30	28
23	41	40	31	28	8.0	3.6	35	34	34	31	29	28
24	36	33	31	28	8.0	3.6	34	34	34	30	29	28
25	34	36	31	28	8.0	3.6	36	33	33	30	29	29
26	34	40	31	28	8.0	4.4	36	33	33	30	29	28
27	34	33	31	34	8.0	3.8	36	37	33	30	29	28
28	62	32	31	32	16	3.8	36	25	33	34	29	28
29	36	34	30	31	34	4.1	36	----------	33	34	29	28
30	34	32	31	32	35	3.8	36	----------	33	32	28	28
31	34	31	----------	31	----------	3.8	36	----------	33	----------	29	----------
Total	1,166	1,041	944	943	574.9	473.1	999.4	719	972	945	930	844
Mean												
Mgd	37.6	33.6	31.5	30.4	19.2	15.3	32.2	25.7	31.4	31.5	30.0	28.1
Cfs	58.2	52.0	48.7	47.0	29.7	23.7	49.8	39.8	48.6	48.7	46.4	43.5
Ac-ft	3,580	3,190	2,900	2,890	1,760	1,450	3,070	2,210	2,980	2,900	2,850	2,590
Max	62	40	35	42	40	37	43	43	42	34	33	30
Min	34	31	30	28	7.8	3.6	3.8	10	10	30	28	27

Calendar Year 1965:	Max	76	Min	3.6	Mean (mgd)	31.6	Mean (cfs)	48.9	Ac-ft	35,330		
Fiscal Year 1965-66:	Max	62	Min	3.6	Mean (mgd)	28.9	Mean (cfs)	44.7	Ac-ft	32,380		

40-2872. Waiahole tunnel at adit 8, near Waipahu

Location.--Lat 21°27'00", long 157°57'30", on left bank at adit 8, 2,700 ft downstream from Ewa Forest Reserve, and 5.2 miles northeast of Waipahu Post Office.

Records available.--August 1956 to June 1966.

Gage.--Water-stage recorder and concrete control. Datum of gage is 709.0 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.--9 years (1957-66), 32.4 mgd (50.1 cfs).

Extremes.--1956-66: Maximum daily discharge, 97.4 mgd (151 cfs) Oct. 23, 1958; minimum daily, 6.0 mgd (9.3 cfs) Dec. 9, 1956.

Remarks.--Records good. Records represent entire flow of Waiahole water-development tunnel; water is used for irrigation of sugarcane in vicinity of Waipahu.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	39	39	37	35	34	40	10	41	19	37	37	34
2	39	39	37	35	40	39	10	41	18	37	35	33
3	39	39	37	35	42	38	10	41	22	37	35	33
4	39	39	40	34	37	38	27	41	33	37	35	32
5	40	39	35	34	35	37	38	41	33	37	35	33
6	40	39	35	34	34	41	38	47	33	37	35	32
7	40	39	36	34	35	38	38	38	37	37	34	32
8	41	39	37	37	37	38	39	20	39	37	34	32
9	54	42	36	39	34	40	39	19	39	37	36	32
10	43	40	35	36	38	34	39	18	39	37	37	32
11	44	39	36	35	32	13	39	18	39	37	35	32
12	46	38	36	36	16	14	39	18	39	37	36	32
13	41	38	36	47	16	37	39	18	39	37	36	32
14	40	39	36	35	19	26	40	18	39	36	35	32
15	40	39	36	33	16	13	45	18	45	36	38	32
16	39	38	36	33	15	12	42	18	42	36	36	32
17	44	38	36	32	14	11	42	19	39	36	34	32
18	41	38	36	32	14	11	41	27	39	36	34	33
19	39	37	35	35	14	11	47	46	39	36	34	33
20	39	37	35	33	15	11	45	41	40	36	35	33
21	47	37	35	32	14	10	41	40	42	36	35	32
22	59	37	35	32	14	10	40	39	39	36	34	32
23	45	44	36	32	14	10	40	40	39	36	34	32
24	42	38	35	32	14	10	40	40	40	35	33	32
25	40	40	35	32	14	10	42	39	38	35	33	33
26	39	46	35	33	14	11	42	39	38	35	33	32
27	39	38	35	38	14	11	42	42	38	35	33	32
28	67	37	35	36	21	10	42	34	38	37	33	32
29	42	39	35	36	37	10	42	---------	38	39	33	32
30	40	37	35	36	39	10	42	---------	37	37	33	32
31	40	37	---------	36	---------	10	42	---------	37	---------	33	---------
Total	1,327	1,205	1,074	1,079	732	654	1,162	901	1,136	1,094	1,073	969
Mean												
Mgd	42.8	38.9	35.8	34.8	24.4	21.1	37.5	32.2	36.6	36.5	34.6	32.3
Cfs	66.2	60.2	55.4	53.8	37.8	32.6	58.0	49.8	56.6	56.5	53.5	50.0
Ac-ft	4,070	3,700	3,300	3,310	2,250	2,010	3,570	2,770	3,490	3,360	3,290	2,970
Max	67	46	40	47	42	41	47	47	45	39	38	34
Min	39	37	35	32	14	10	10	18	18	35	33	32

Calendar Year 1965:	Max	85	Min	10	Mean (mgd)	36.7	Mean (cfs)	56.8	Ac-ft	41,090		
Fiscal Year 1965-66:	Max	67	Min	10	Mean (mgd)	34.0	Mean (cfs)	52.6	Ac-ft	38,070		

40-2910. Waiahole Stream at altitude 250 ft, near Waiahole

Location.--Lat 21°28'35", long 157°52'30", on left bank 1.5 miles southwest of Waiahole School and 2.7 miles northwest of Kahaluu.

Drainage area.--0.99 sq mi.

Records available.--July 1955 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 250 ft (from topographic map).

Average discharge.--11 years, 5.38 mgd (8.32 cfs).

Extremes.--Maximum discharge during year, 592 mgd (916 cfs) Nov. 14 (gage height, 4.23 ft), from rating curve extended above 37 mgd as explained below; minimum, 2.7 mgd (4.2 cfs) Oct. 5.
1955-66: Maximum discharge, 1,440 mgd (2,230 cfs) Apr. 15, 1963, May 2, 1965 (gage height, 4.80 ft), from rating curve extended above 72 mgd on basis of field estimate at gage height 4.23 ft and slope-area measurement of peak flow; minimum, 1.5 mgd (2.3 cfs) Oct. 7-13, 1962.

Remarks.--Records fair. During the period Oct. 13 to Mar. 7, water was released from Waiahole tunnel at times, which increased flow at this station and augmented some of the peaks. During the fiscal year, an average of 0.70 million gallons a day was diverted above station by pumping into Waiahole tunnel for irrigation in central Oahu. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.5	3.3	3.4	2.9	5.0	9.7	40	3.8	35	5.3	5.5	3.4
2	3.6	3.3	3.1	2.9	6.7	7.0	39	3.8	32	5.3	5.0	3.9
3	3.6	3.2	3.8	2.9	21	5.9	39	3.8	24	5.3	5.0	4.4
4	3.5	3.3	4.4	2.9	7.7	5.7	16	3.6	13	5.2	4.8	4.4
5	3.5	3.3	4.2	2.8	5.7	5.5	6.1	3.8	13	5.2	4.8	4.4
6	3.5	3.3	4.2	2.8	5.2	6.5	5.9	14	12	5.2	5.2	4.5
7	3.6	3.3	3.3	2.9	5.4	5.7	5.9	30	8.0	5.2	4.8	4.5
8	4.1	3.3	3.0	3.0	7.0	5.5	5.9	32	5.9	5.2	4.8	4.5
9	8.8	3.6	3.2	3.0	5.3	5.9	5.7	30	5.9	5.2	5.3	4.4
10	4.7	3.5	3.2	3.2	19	33	5.7	29	5.7	5.2	5.3	4.4
11	4.0	3.4	3.0	3.1	34	38	5.7	29	5.7	5.2	5.0	4.4
12	4.9	3.4	3.0	3.3	116	31	5.7	30	5.7	5.0	5.0	4.4
13	3.9	3.4	3.0	24	63	5.9	5.7	32	5.5	5.0	5.0	4.5
14	3.6	3.4	2.9	16	115	68	5.0	30	5.5	5.0	5.0	4.4
15	3.5	3.4	3.0	8.7	58	58	5.9	31	5.9	5.0	5.0	4.4
16	3.5	3.3	3.0	6.5	40	43	4.1	31	5.7	5.0	4.8	4.2
17	3.5	3.3	3.0	5.9	33	41	4.0	41	5.5	5.0	4.8	3.6
18	3.5	3.3	3.0	6.1	31	40	3.9	29	5.5	5.0	4.8	3.2
19	3.4	3.3	3.3	12	33	39	4.7	33	5.5	5.0	4.8	3.2
20	3.4	3.2	3.2	6.7	36	40	7.5	12	5.5	5.0	5.3	3.2
21	14	3.2	3.0	6.1	31	41	6.7	8.7	5.5	5.0	5.7	3.2
22	6.5	3.3	3.0	5.5	31	40	5.9	7.7	5.5	5.0	5.2	3.2
23	3.8	4.3	3.4	5.3	32	40	6.1	9.8	5.7	5.0	5.0	3.2
24	3.6	3.5	3.1	5.2	31	42	6.1	8.7	5.7	5.0	4.8	3.2
25	3.4	3.3	2.9	4.7	31	41	4.5	7.5	5.5	5.0	4.7	3.2
26	3.3	3.3	3.1	4.5	31	46	4.0	7.5	5.5	5.0	4.7	3.2
27	3.3	3.2	3.0	4.8	31	41	3.9	23	5.5	5.0	4.7	3.2
28	6.9	3.2	2.9	6.3	21	40	3.9	40	5.5	5.0	4.7	3.2
29	3.8	3.2	2.9	8.1	5.7	43	3.8	---------	5.3	5.0	4.7	3.2
30	3.4	3.1	3.0	9.2	5.7	40	3.8	---------	5.3	5.9	4.7	3.2
31	3.3	3.2	---------	8.3	---------	40	3.8	---------	5.3	---------	4.0	---------
Total	134.9	103.6	96.5	189.6	897.4	948.3	273.9	564.7	270.8	153.4	152.9	114.3
Mean												
Mgd	4.35	3.34	3.22	6.12	29.9	30.6	8.84	20.2	8.74	5.11	4.93	3.81
Cfs	6.73	5.17	4.98	9.47	46.3	47.3	13.7	31.3	13.5	7.91	7.63	5.89
Ac-ft	414	318	296	582	2,750	2,910	841	1,730	831	471	469	351
Max	14	4.3	4.4	24	116	68	40	41	35	5.9	5.7	4.5
Min	3.3	3.1	2.9	2.8	5.0	5.5	3.8	3.6	5.3	5.0	4.0	3.2

Calendar Year 1965: Max 120 Min 2.3 Mean (mgd) 9.99 Mean (cfs) 15.5 Ac-ft 11,190
Fiscal Year 1965-66: Max 116 Min 2.8 Mean (mgd) 10.7 Mean (cfs) 16.6 Ac-ft 11,970

Peak discharge (base, 120 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2230	2.56	154	238	11-14	1300	4.23	592	916
10-13	2130	2.70	177	274	12-14	2330	3.50	354	548
11-10	2030	2.67	181	280	2- 6	1000	2.43	134	207
11-12	2330	3.62	386	597	2- 7	1030	2.70	177	274

40-2949. 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 Waikeekee Stream, 0.7 mile west of Waikane, and 1.2 miles northwest of Waiahole School.

Drainage area.--2.22 sq mi.

Records available.--December 1959 to June 1966.

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

Average discharge.--6 years (1960-66), 5.93 mgd (9.18 cfs).

Extremes.--Maximum discharge during year, 2,090 mgd (3,230 cfs) Nov. 14 (gage height, 8.32 ft), from rating curve extended above 74 mgd as explained below; minimum, 1.8 mgd (2.8 cfs) Sept. 18, June 27.
1959-66: Maximum discharge, 5,690 mgd (8,800 cfs) Feb. 4, 1965 (gage height, 10.76 ft), from rating curve extended above 74 mgd on basis of slope-area measurements at gage heights 4.88, 9.46, and 10.76 ft; minimum, 0.77 mgd (1.2 cfs) Oct. 10, 11, 1962.

Remarks.--Records good. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.6	4.4	2.4	2.2	7.0	13	4.4	2.9	11	3.8	3.6	2.3
2	2.6	4.0	2.3	2.0	9.2	8.2	4.2	2.7	8.5	3.8	2.6	2.2
3	2.6	3.9	2.4	2.2	12	5.5	4.0	2.7	7.6	4.0	2.3	2.2
4	2.6	3.8	3.9	2.0	9.1	5.1	4.0	2.7	6.9	3.8	2.2	2.2
5	3.2	3.6	2.3	2.0	6.4	4.6	4.0	2.7	6.4	3.6	2.2	2.3
6	2.7	3.4	2.2	2.0	6.0	9.6	3.8	23	6.0	3.4	2.3	2.2
7	3.3	3.8	2.2	2.0	5.7	5.3	3.6	25	5.7	3.4	2.0	2.3
8	2.9	3.2	2.2	3.0	7.0	5.1	3.6	7.6	5.3	3.0	2.2	2.2
9	12	4.2	4.2	3.2	5.5	7.4	3.4	5.3	5.3	2.9	2.3	2.2
10	4.6	3.4	2.4	2.9	18	54	3.4	4.9	5.1	3.0	2.6	2.3
11	6.2	3.0	2.3	2.4	29	9.8	3.4	4.4	4.6	2.7	2.2	2.3
12	4.9	3.0	2.3	5.1	220	7.3	3.4	4.6	4.6	2.7	2.3	2.2
13	3.4	3.0	2.2	39	112	6.4	3.2	4.6	4.4	2.6	2.3	2.4
14	3.0	2.9	2.0	17	385	85	3.2	4.0	4.2	2.4	2.6	2.4
15	2.7	2.9	2.0	6.2	81	40	4.8	4.4	7.1	2.3	4.5	2.3
16	2.6	2.9	2.2	4.6	38	15	3.6	4.2	4.9	2.3	3.6	2.2
17	3.8	2.7	2.0	4.0	21	12	3.2	8.6	4.2	2.4	2.6	2.2
18	3.0	2.7	2.0	4.0	15	9.1	3.2	14	4.2	2.7	2.3	2.0
19	2.6	2.7	1.9	7.3	13	7.6	4.0	34	4.0	2.4	2.2	2.0
20	2.6	2.6	1.9	4.2	15	7.3	8.7	14	4.0	2.2	5.0	2.0
21	86	2.6	2.0	8.8	9.8	7.0	4.9	9.1	4.0	2.3	4.9	2.0
22	62	2.7	2.3	5.3	8.2	6.0	3.6	7.3	3.8	2.0	3.2	2.0
23	9.8	3.8	3.2	4.2	7.3	5.5	4.2	11	4.2	2.0	2.9	2.0
24	6.7	2.9	2.2	4.0	6.4	7.7	4.0	9.8	4.8	1.9	2.6	2.0
25	5.3	2.6	2.4	4.0	6.2	5.5	4.2	7.3	4.2	1.9	2.4	2.0
26	4.6	6.1	2.4	3.8	6.0	9.6	3.6	6.4	4.0	1.9	2.4	2.0
27	4.4	2.9	2.0	6.0	5.7	6.4	3.6	19	4.0	1.9	2.4	1.9
28	31	2.6	2.1	6.3	5.5	5.5	3.4	21	4.0	2.2	2.4	2.0
29	6.7	2.7	2.0	12	5.5	6.6	3.2	---------	4.0	3.6	2.3	2.0
30	5.1	2.7	2.3	14	5.5	5.5	3.0	---------	4.0	8.1	2.3	2.0
31	4.6	2.4	---------	11	---------	4.6	2.9	---------	3.8	---------	2.3	---------
Total	300.1	100.1	70.2	196.7	1081.0	387.2	119.7	267.2	158.8	87.2	84.0	64.3
Mean												
Mgd	9.68	3.23	2.34	6.35	36.0	12.5	3.86	9.54	5.12	2.91	2.71	2.14
Cfs	15.0	5.00	3.62	9.82	55.7	19.3	5.97	14.8	7.92	4.50	4.19	3.31
Ac-ft	921	307	215	604	3,320	1,190	367	820	487	268	258	197
Max	86	6.1	4.2	39	385	85	8.7	34	11	8.1	5.0	2.4
Min	2.6	2.4	1.9	2.0	5.5	4.6	2.9	2.7	3.8	1.9	2.0	1.9

Calendar Year 1965:	Max	561	Min	1.9	Mean (mgd)	11.5	Mean (cfs)	17.8	Ac-ft	12,850
Fiscal Year 1965-66:	Max	385	Min	1.9	Mean (mgd)	7.99	Mean (cfs)	12.4	Ac-ft	8,950

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2330	8.08	1,930	2,990	11-14	1300	8.32	2,090	3,230
7-28	1000	4.20	303	469	12-10	0830	4.97	492	761
10-13	2130	4.42	356	551	12-14	2200	4.77	440	681
11-12	2330	7.62	1,630	2,520					

40-2965. 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.

Records available.--December 1958 to June 1966.

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

Average discharge.--7 years (1959-66), 23.5 mgd (36.4 cfs).

Extremes.--Maximum discharge during year, 2,010 mgd (3,110 cfs) Nov. 14 (gage height, 6.33 ft), from rating curve extended above 350 mgd as explained below; minimum, 10 mgd (16 cfs) June 22-24, 27-30.
1958-66: Maximum discharge, 3,510 mgd (5,430 cfs) Apr. 15, 1963 (gage height, 8.10 ft), from rating curve extended above 350 mgd on basis of computation of peak flow over submerged weir; minimum, 6.5 mgd (10 cfs) Sept. 17, 18, 20, 1961.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Approximately 6 mgd is diverted by Waiahole Water Co. at 800-ft elevation, 2.3 miles above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	15	15	15	15	50	30	14	26	13	16	12
2	12	15	17	14	27	30	30	14	22	13	12	12
3	12	14	19	12	108	25	30	14	20	13	12	12
4	12	14	37	12	33	25	30	14	18	13	12	12
5	13	14	15	12	21	25	30	13	17	13	11	12
6	13	14	14	12	18	30	30	70	17	13	12	12
7	17	14	14	12	36	25	30	63	16	13	11	12
8	17	13	13	14	25	25	30	20	15	13	12	12
9	69	16	13	15	17	30	25	17	15	13	19	12
10	21	14	13	15	60	50	25	16	15	13	17	12
11	24	13	13	12	80	30	25	15	14	13	14	13
12	39	13	13	23	430	30	25	20	14	12	17	12
13	17	13	15	184	176	25	30	30	14	12	16	13
14	15	15	13	60	575	150	30	17	13	12	15	13
15	15	15	13	31	479	60	30	20	74	12	41	12
16	14	14	15	21	173	45	25	17	23	12	18	12
17	27	13	15	17	71	35	25	32	15	12	15	12
18	16	12	14	17	48	30	30	43	15	12	14	12
19	14	12	13	33	69	30	100	141	15	12	13	12
20	15	12	13	17	152	30	40	44	26	12	14	11
21	192	12	12	18	41	35	30	29	37	12	15	11
22	106	12	13	15	32	35	25	24	18	12	13	11
23	33	23	15	14	30	30	20	32	17	12	13	10
24	22	14	13	14	30	30	16	25	21	11	12	10
25	18	31	13	14	30	30	16	21	16	11	12	11
26	16	77	12	14	30	40	16	21	15	11	12	11
27	16	17	12	19	25	30	16	38	15	11	12	11
28	116	15	12	20	25	30	15	43	14	30	12	10
29	22	16	12	21	25	40	15	----------	14	24	13	10
30	17	14	23	22	25	35	15	----------	14	13	12	10
31	16	14	----------	23	----------	30	14	----------	14	----------	12	----------
Total	968	520	444	742	2906	1145	848	867	599	398	449	347
Mean												
Mgd	31.2	16.8	14.8	23.9	96.9	36.9	27.4	31.0	19.3	13.3	14.5	11.6
Cfs	48.3	26.0	22.9	37.0	150	57.1	42.4	48.0	29.9	20.6	22.4	17.9
Ac-ft	2970	1600	1360	2280	8920	3510	2600	2660	1840	1220	1380	1060
Max	192	77	37	184	575	150	100	141	74	30	41	13
Min	12	12	12	12	15	25	14	13	13	11	11	10

Calendar Year 1965:	Max	609	Min	8.3	Mean (mgd)	34.5	Mean (cfs)	53.4	Ac-ft	38610
Fiscal Year 1965-66:	Max	575	Min	10	Mean (mgd)	28.0	Mean (cfs)	43.3	Ac-ft	31400

Note.--No gage-height record Nov. 23 to Jan. 25.

Peak discharge (base, 1,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2300	6.08	1,840	2,850	11-12	2400	5.26	1,310	2,030
8-26	0900	4.72	1,010	1,560	11-14	1330	6.33	2,010	3,110
10-13	2200	4.70	1,000	1,550					

40-3020. 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.

Records available.--May 1953 to June 1966.

Gage.--Digital water-stage recorder. Altitude of gage is 200 ft (from topographic map). Prior to Apr. 30, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--13 years, 7.29 mgd (11.3 cfs).

Extremes.--1953-66: Maximum daily discharge, 35 mgd (54 cfs) Oct. 31, 1964; no flow Dec. 7-11, 1963, Jan. 20-22, 25, 1966.

Remarks.--Records good. Ditch diverts from Punaluu Stream for irrigation of sugarcane in the vicinity of Punaluu.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	12	11	11	0.48	0.54	1.1	1.7	2.2	6.2	11	11
2	12	12	11	11	.51	.21	.78	1.6	2.2	8.6	11	11
3	12	12	12	11	.35	.21	.29	1.5	2.2	8.5	11	11
4	12	12	12	11	.04	.21	.28	1.2	2.2	8.6	10	10
5	12	12	11	11	.04	.19	.28	1.1	2.0	8.5	10	10
6	12	11	11	11	.33	.18	.28	.69	2.0	8.4	10	10
7	11	10	11	11	.45	.17	.25	.13	2.0	8.5	10	11
8	11	11	11	12	.02	.17	.63	.02	2.1	8.5	10	11
9	12	11	11	12	.02	.83	.76	.02	2.1	8.4	9.8	11
10	11	11	11	11	.02	.48	.71	.02	2.1	8.5	9.0	12
11	11	11	11	10	.03	.07	.74	.02	2.0	8.5	9.4	12
12	12	11	11	12	1.4	.07	.76	.02	1.9	8.6	9.6	12
13	11	11	11	17	.30	.07	.74	.02	1.8	8.5	9.6	12
14	10	11	11	4.2	1.8	.10	.71	.02	1.9	8.5	9.7	12
15	10	11	11	1.2	.14	.99	.76	.03	2.0	8.5	9.2	12
16	10	11	11	1.1	.11	1.9	.74	.04	2.0	8.4	8.2	11
17	11	11	11	1.1	.08	1.8	.73	.05	2.0	8.5	9.7	12
18	11	11	11	.84	.06	1.7	.76	1.1	2.0	8.5	9.9	11
19	10	11	11	.62	.05	1.6	.32	2.7	2.0	8.5	10	11
20	11	11	11	.70	.05	1.6	0	2.4	2.0	8.4	11	11
21	12	11	11	.84	.04	1.5	0	2.3	2.1	8.4	12	11
22	17	11	11	.43	.04	1.5	0	2.3	2.0	8.4	12	11
23	14	11	11	3.2	.05	1.4	.01	2.3	2.0	8.4	12	11
24	14	11	11	9.3	.06	1.4	.01	2.2	2.1	8.4	12	12
25	14	13	11	2.7	.06	1.3	0	2.2	2.0	10	12	12
26	14	16	11	.78	.07	1.2	1.3	2.2	2.0	11	12	12
27	14	13	11	.74	.08	1.2	1.9	2.3	2.0	11	12	12
28	17	12	11	.50	.08	1.3	1.8	2.3	2.0	11	12	11
29	15	11	11	.42	.08	1.3	1.8	----------	2.0	10	11	11
30	14	11	12	.46	.10	1.1	1.8	----------	2.0	11	10	11
31	14	11	----------	.46	----------	1.0	1.7	----------	.97	----------	10	----------
Total	383	355	333	180.59	6.94	27.29	21.94	32.48	61.87	265.2	325.1	338
Mean												
Mgd	12.4	11.5	11.1	5.83	0.231	0.880	0.708	1.16	2.00	8.84	10.5	11.3
Cfs	19.2	17.8	17.2	9.02	0.357	1.36	1.10	1.79	3.09	13.7	16.2	17.5
Ac-ft	1,180	1,090	1,020	554	21	84	67	100	190	814	998	1,040
Max	17	16	12	17	1.8	1.9	1.9	2.7	2.2	11	12	12
Min	10	10	11	0.42	0.02	0.07	0	0.02	0.97	6.2	8.2	10

Calendar Year 1965:	Max	17	Min	0.02	Mean (mgd)	4.94	Mean (cfs)	7.64	Ac-ft	5,540		
Fiscal Year 1965-66:	Max	17	Min	0	Mean (mgd)	6.38	Mean (cfs)	9.87	Ac-ft	7,150		

40-3030. 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.

Records available.--May 1953 to June 1966.

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

Average discharge.--13 years, 9.73 mgd (15.1 cfs).

Extremes.--Maximum discharge during year, 1,360 mgd (2,100 cfs) Nov. 14 (gage height, 4.79 ft), from rating curve extended above 110 mgd as explained below; minimum, 1.5 mgd (2.3 cfs) Aug. 19-21.
1953-66: Maximum discharge, 1,920 mgd (2,970 cfs) Nov. 1, 1961, and Feb. 4, 1965 (gage height, 6.06 ft), from rating curve extended above 110 mgd on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Records fair. Records do not include flow of Punaluu ditch (see sta. no. 3020).

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.2	3.2	5.2	3.3	16	31	20	16	22	10	3.5	2.7
2	2.4	3.0	5.3	2.8	18	18	18	16	20	8.6	3.3	2.8
3	2.4	2.8	7.1	2.7	35	16	18	16	19	8.3	3.3	2.8
4	2.8	2.7	7.0	2.5	27	16	18	16	18	8.3	3.3	2.8
5	4.9	2.7	4.3	2.4	18	16	18	17	18	8.0	3.5	2.8
6	4.5	2.7	4.1	2.4	17	20	18	35	18	8.3	3.6	2.8
7	6.0	2.7	4.0	2.4	30	16	18	37	18	8.3	3.3	2.8
8	5.7	2.2	4.0	4.8	20	16	18	22	16	8.0	3.6	2.8
9	12	3.5	4.0	4.5	17	17	17	20	16	8.0	5.7	3.2
10	4.9	2.5	3.8	4.1	42	31	17	18	16	8.0	5.6	3.5
11	4.7	1.9	4.0	3.5	49	19	16	18	16	8.0	4.3	3.6
12	17	1.9	4.2	7.7	210	18	17	21	16	8.0	4.3	3.6
13	4.9	1.9	5.7	88	97	16	16	24	16	8.0	4.7	4.0
14	4.1	1.9	4.0	32	223	105	16	19	15	8.0	4.3	3.8
15	3.8	1.9	3.8	22	131	42	19	20	22	7.8	7.9	3.6
16	3.6	3.0	4.7	18	50	28	17	18	17	7.8	4.7	3.6
17	5.6	1.9	4.0	16	34	24	16	24	16	7.8	4.0	3.8
18	4.3	1.8	3.8	16	27	21	18	27	16	7.8	3.8	4.1
19	3.6	1.7	3.6	18	27	20	74	69	16	7.5	4.3	4.1
20	8.3	1.7	3.6	16	41	20	24	34	19	7.2	5.5	4.5
21	33	1.6	3.6	20	22	20	20	25	24	7.2	4.5	4.7
22	25	1.8	4.0	16	20	21	19	22	17	7.2	3.8	4.7
23	8.6	3.8	6.0	12	20	18	23	27	18	7.0	3.5	4.1
24	6.5	2.4	4.1	6.7	18	18	20	22	18	7.2	3.3	4.0
25	4.3	15	3.5	12	18	19	19	20	16	4.3	3.2	4.9
26	3.8	41	2.7	14	18	25	18	20	16	3.2	3.2	4.3
27	3.6	7.5	2.5	18	18	19	17	26	16	3.2	3.2	4.3
28	26	6.3	2.4	18	16	18	16	29	16	3.5	3.2	4.5
29	4.5	5.4	2.4	18	16	25	16	----------	16	4.3	3.3	4.7
30	3.8	4.3	3.4	18	17	20	16	----------	16	3.6	2.7	3.6
31	3.6	4.0	----------	16	----------	20	16	----------	16	----------	2.7	----------
Total	230.4	140.7	124.8	437.8	1,312	733	613	678	539	212.4	123.1	111.5
Mean												
Mgd	7.43	4.54	4.16	14.1	43.7	23.6	19.8	24.2	17.4	7.08	3.97	3.72
Cfs	11.5	7.02	6.44	21.8	67.6	36.5	30.6	37.4	26.9	11.0	6.14	5.76
Ac-ft	707	432	383	1,340	4,030	2,250	1,880	2,080	1,650	652	378	342
Max	33	41	7.1	88	223	105	74	69	24	10	7.9	4.9
Min	2.2	1.6	2.4	2.4	16	16	16	16	15	3.2	2.7	2.7

Calendar Year 1965:	Max	311	Min	1.6	Mean (mgd)	19.5	Mean (cfs)	30.2	Ac-ft	21,810
Fiscal Year 1965-66:	Max	223	Min	1.6	Mean (mgd)	14.4	Mean (cfs)	22.3	Ac-ft	16,130

Peak discharge (base, 600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2230	3.23	632	978	11-12	2130	3.50	740	1,140
8-26	0830	-	about 800	about 1,200	11-14	1430	4.79	1,360	2,100
10-13	1730	4.70	1,320	2,040					

40-3089.9. Malaekahana Stream near Laie

Location.--Lat 21°38'09", long 157°57'54", on left bank 2.3 miles southwest of Laie Temple and 3.0 miles south of Kahuku School.

Drainage area.--0.64 sq mi.

Records available.--July 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 450 ft (from topographic map).

Extremes.--Maximum discharge during year, 256 mgd (396 cfs) Oct. 13 (gage height, 5.18 ft, from floodmark in well), from rating curve extended above 4.3 mgd as explained below; no flow June 22-24.

1963-66: Maximum discharge, 323 mgd (500 cfs) Jan. 6, 1964 (gage height, 5.54 ft), from rating curve extended above 4.3 mgd on basis of slope-area measurement at gage height 4.89 ft; no flow in 1963, 1964 and 1966.

Remarks.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.10	0.25	0.81	0.05	1.0	1.4	0.35	0.15	0.59	0.08	0.05	0.02
2	.10	.20	.32	.04	1.0	.75	.35	.14	.32	.06	.04	.01
3	.21	.15	1.1	.03	20	.29	.55	.14	.25	.05	.03	.02
4	.12	.15	3.5	.03	5.0	.25	.38	.15	.19	.05	.03	.04
5	.09	.20	.17	.02	2.0	.21	.41	.15	.17	.06	.02	.04
6	.13	.20	.10	.02	1.0	3.9	.63	7.7	.15	.05	.02	.05
7	1.5	.15	.07	.02	.70	.41	.32	4.8	.15	.05	.01	.52
8	.30	.15	.05	.10	2.0	.23	.23	.91	.14	.05	.56	.11
9	4.0	1.0	.80	1.0	1.0	.65	.23	.32	.14	.06	.80	.04
10	3.0	1.0	.20	5.0	10	17	.23	.19	.15	.07	.21	.03
11	2.0	.20	.10	.50	5.0	3.3	.21	.14	.14	.07	.07	.32
12	3.0	.15	.08	2.0	30	.63	.21	.53	.13	.57	.04	.10
13	.20	.20	.07	30	15	.38	.21	4.5	.11	.35	.16	.26
14	.10	.25	.06	7.0	70	30	.21	1.7	.10	.11	.45	1.2
15	.07	.20	.05	3.0	40	6.4	3.6	.47	.27	.06	.12	.13
16	.07	.15	.06	2.0	10	1.1	.41	.29	.23	.04	.04	.07
17	1.6	.10	.10	1.5	5.0	1.5	.25	5.2	.21	.26	.03	.04
18	.44	.08	.05	1.0	3.0	.67	.23	3.0	.10	.17	.02	.02
19	.12	.07	.10	5.0	7.0	.47	1.1	23	.12	.12	.03	.02
20	.52	.06	.07	2.0	30	.44	1.6	5.3	.13	.17	.80	.01
21	9.2	.05	.05	1.0	5.0	1.0	.67	1.0	.20	.07	.96	.01
22	5.4	.15	.10	.80	3.0	.47	.32	.59	.19	.05	.11	0
23	.80	1.0	2.0	.70	4.0	.38	2.3	4.0	.14	.04	.05	0
24	.29	.29	.50	.50	3.0	.35	.59	2.0	.69	.03	.03	0
25	.15	.63	.20	.80	2.0	1.0	.85	.63	.13	.03	.02	.36
26	.12	4.0	.10	1.0	1.0	4.1	.38	.44	.09	.03	.02	.53
27	.17	.29	.07	4.0	.70	.51	.35	.47	.08	.02	.01	.13
28	5.9	.11	.05	2.0	.50	.55	.91	1.6	.07	.03	.01	.05
29	1.0	.29	.04	1.0	.40	3.2	.25	---------	.06	.04	.03	.03
30	.50	.13	.04	3.0	.55	1.0	.17	---------	.11	.11	.04	.02
31	.30	.08	---------	2.0	---------	.44	.15	---------	.09	---------	.03	---------
Total	41.50	11.93	11.01	77.11	278.85	82.98	18.65	69.51	5.64	2.95	4.84	4.18
Mean												
Mgd	1.34	0.385	0.367	2.49	9.30	2.68	0.602	2.48	0.182	0.098	0.156	0.139
Cfs	2.07	0.596	0.568	3.85	14.4	4.15	0.931	3.84	0.282	0.152	0.241	0.215
Ac-ft	127	37	34	237	856	255	57	213	17	9.1	15	13
Max	9.2	4.0	3.5	30	70	30	3.6	23	0.69	0.57	0.96	1.2
Min	0.07	0.05	0.04	0.02	0.40	0.21	0.15	0.14	0.06	0.02	0.01	0

Calendar Year 1965:	Max	70	Min	0.02	Mean (mgd)	2.32	Mean (cfs)	3.59	Ac-ft	2600
Fiscal Year 1965-66:	Max	70	Min	0	Mean (mgd)	1.67	Mean (cfs)	2.58	Ac-ft	1870

Note.--No gage-height record Sept. 9 to Nov. 29.

Peak discharge (base, 120 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-13	about 1500	5.18	256	396	2-19	0900	4.29	125	193
11-14	about 1200	5.15	251	388					

40-3250. 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.

Records available.--Occasional low-flow measurements, fiscal years 1961-63; June 1963 to June 1966.

Gage.--Water-stage recorder and culvert control. Altitude of gage is 590 ft (from topographic map).

Extremes.--Maximum discharge during year, 735 mgd (1,140 cfs) Nov. 14 (gage height, 7.82 ft, from floodmark in well), from rating curve extended above 28 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) May 26-28.

1963-66: Maximum discharge, 844 mgd (1,310 cfs) Feb. 4, 1965 (gage height, 8.23 ft), from rating curve extended above 28 mgd on basis of slope-area measurement at gage height 8.12 ft; minimum, that of May 26-28, 1966.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.5	2.3	4.5	0.66	3.9	12	4.0	2.5	6.0	0.80	0.66	0.06
2	1.8	2.2	2.9	.61	4.0	15	3.5	2.2	4.0	.75	.44	.09
3	2.9	2.1	1.6	.57	139	6.0	5.0	2.0	3.5	.70	.44	.23
4	2.0	2.0	11	.57	26	5.0	4.0	2.0	3.0	.70	.44	.31
5	1.3	2.2	1.9	.52	9.4	4.5	3.5	3.0	2.8	.75	.41	.28
6	2.5	2.2	1.2	.44	7.1	20	4.5	35	2.7	.70	.37	.28
7	8.2	2.1	.97	.44	5.8	9.0	3.0	20	2.6	.75	.48	.73
8	3.0	1.9	.91	.52	12	5.0	3.0	12	2.5	1.4	.34	.91
9	22	5.3	4.5	2.6	4.8	8.0	3.0	5.0	2.4	.75	4.9	.34
10	13	5.7	2.4	18	38	70	3.0	3.0	2.3	.66	2.8	.18
11	9.8	2.3	1.2	2.0	60	35	3.0	2.5	2.2	.75	.75	.38
12	14	1.9	.91	6.8	160	12	2.8	2.0	2.1	1.5	.41	1.1
13	3.5	2.1	.85	120	90	9.0	2.5	6.0	1.9	2.5	.41	.41
14	2.1	2.4	.75	30	250	110	2.5	10	1.8	1.0	1.2	3.4
15	1.7	2.3	.75	20	150	50	8.0	4.0	1.7	.66	.66	1.7
16	1.6	1.8	.80	12	60	20	5.0	3.5	1.8	.52	.37	.57
17	9.0	1.4	1.2	9.0	22	18	3.0	22	1.7	.66	.28	.28
18	5.4	1.2	.70	4.0	18	13	2.5	15	1.5	1.8	.25	.16
19	2.0	1.2	1.2	12	30	10	3.5	70	1.6	.80	.23	.10
20	4.4	1.1	.85	7.0	120	9.0	7.0	20	1.6	1.2	.34	.07
21	28	1.1	.66	9.0	18	11	6.0	10	2.9	.85	2.2	.08
22	56	1.5	.91	5.0	15	8.0	3.5	7.0	2.7	.70	.34	.10
23	5.8	6.4	7.7	2.9	15	7.0	4.0	6.0	1.6	.52	.10	.08
24	3.5	2.9	2.8	2.3	12	6.0	4.5	15	3.1	.44	.05	.10
25	2.6	3.3	1.1	3.0	9.0	7.0	7.0	6.0	1.6	.41	.03	7.1
26	2.2	11	.80	3.2	9.0	12	3.0	5.0	1.2	.41	.01	4.4
27	3.0	2.5	.70	15	12	8.0	2.0	4.5	1.1	.37	.01	1.8
28	35	1.4	.61	11	9.0	6.0	3.5	12	.97	.41	.02	.57
29	5.0	2.0	.61	6.5	6.0	5.0	3.0	---------	.91	3.5	.04	.31
30	3.1	1.4	.57	12	14	10	2.7	---------	.97	1.8	.05	.25
31	2.6	1.2	---------	8.7	---------	5.0	2.5	---------	1.0	---------	.06	---------
Total	258.5	80.4	57.55	326.33	1329.0	525.5	118.0	307.2	67.75	28.76	19.09	26.37
Mean												
Mgd	8.34	2.59	1.92	10.5	44.3	17.0	3.81	11.0	2.19	0.959	0.616	0.879
Cfs	12.9	4.01	2.97	16.2	68.5	26.3	5.89	17.0	3.39	1.48	0.953	1.36
Ac-ft	793	247	177	1,000	4,080	1,610	362	943	208	88	59	81
Max	56	11	11	120	250	110	8.0	70	6.0	3.5	4.9	7.1
Min	1.3	1.1	0.57	0.44	3.9	4.5	2.0	2.0	0.91	0.37	0.01	0.06

Calendar Year 1965: Max 258 Min 0.44 Mean (mgd) 12.6 Mean (cfs) 19.5 Ac-ft 14,060
Fiscal Year 1965-66: Max 250 Min 0.01 Mean (mgd) 8.61 Mean (cfs) 13.3 Ac-ft 9,650

Note.--No gage-height record Nov. 11 to Mar. 3.

Peak discharge (base, 420 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2300	7.17	594	919	12-14	about 1700	7.71	708	1,100
10-13	1830	7.62	685	1,060					
11- 3	1530	7.14	588	910	2-19	about 1100	6.25	430	665
11-14	-	7.82	735	1,140					

40-3300. 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.

Records available.--February 1958 to June 1966.

Gage.--Graphic water-stage recorder. Altitude of gage is 20 ft (from topographic map). Prior to May 13, 1964, graphic and May 13, 1964, to May 12, 1965, digital water-stage recorders at same site at datum 2.00 ft higher. May 13, 1965, to May 17, 1966, graphic water-stage recorder at same site at datum 1.00 ft higher than present datum.

Average discharge.--8 years, 10.5 mgd (16.2 cfs).

Extremes.--Maximum discharge during year, 1,360 mgd (2,100 cfs) Nov. 14 (gage height, 6.79 ft), from rating curve extended above 28 mgd on basis of slope-area measurements at gage heights 5.24 and 7.12 ft; no flow June 6,7.
1958-66: Maximum discharge, 2,230 mgd (3,450 cfs) Apr. 15, 1963 (gage height, 7.92 ft, datum and control then in use), from rating curve extended above 210 mgd on basis of slope-area measurement at gage height 7.72 ft; no flow at times.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.5	3.0	5.8	0.50	6.0	19	6.4	4.0	12	0.90	0.70	0.02
2	2.0	2.8	5.1	.52	5.0	26	5.6	3.5	6.7	.80	.50	.02
3	3.7	2.8	2.3	.45	150	9.6	8.6	3.0	5.2	.80	.45	.02
4	3.2	2.5	20	.40	51	7.9	6.2	3.5	5.0	.80	.45	.01
5	1.9	2.5	3.9	.40	15	7.3	5.4	4.0	4.5	.80	.45	.01
6	2.5	2.8	2.0	.37	9.2	36	7.6	60	3.5	.70	.40	0
7	10	2.5	1.3	.37	7.6	14	4.9	37	3.0	.80	.50	0
8	3.5	2.5	1.0	.40	14	8.2	4.9	18	2.8	1.0	.40	1.1
9	36	3.7	4.2	1.0	6.4	13	4.9	8.2	2.5	.80	5.0	1.0
10	33	9.9	6.4	26	80	116	4.9	4.7	2.3	.70	3.0	.34
11	19	3.7	2.2	4.6	100	48	4.9	3.5	2.1	.80	.80	.19
12	36	2.6	1.3	12	300	20	4.9	3.0	2.0	1.5	.45	1.7
13	9.9	2.5	.97	126	150	14	4.4	10	1.8	2.5	.45	1.5
14	2.5	2.5	.84	50	450	184	3.4	17	1.7	1.0	1.0	5.0
15	1.0	3.0	.78	30	300	90	14	7.0	1.6	.70	.70	6.0
16	.90	2.5	.78	20	100	32	8.6	5.2	1.6	.50	.45	1.9
17	9.9	2.0	1.3	15	35	32	4.2	39	1.6	.70	.30	.70
18	15	2.0	.97	7.0	30	21	3.4	23	1.5	1.5	.16	.31
19	2.0	1.8	.78	20	50	18	5.6	126	1.5	.90	.11	.13
20	2.2	1.8	1.3	12	200	16	12	36	1.5	1.3	.08	.05
21	5.1	1.8	.78	15	30	19	9.6	17	3.0	.90	5.8	.03
22	121	2.0	1.1	11	25	14	4.4	11	2.5	.70	3.1	.02
23	12	9.0	8.3	6.0	25	12	4.8	11	1.5	.60	1.0	.01
24	6.5	5.6	6.2	5.0	20	9.6	8.8	24	3.0	.50	.38	.01
25	3.9	3.7	1.8	4.0	15	12	12	10	1.5	.45	.19	6.2
26	3.2	15	.97	5.0	15	21	5.2	7.9	1.1	.45	.08	7.4
27	3.3	5.1	.72	13	20	14	3.6	7.9	1.0	.40	.04	5.4
28	47	2.2	.60	17	15	9.2	6.2	18	1.0	.45	.03	1.8
29	11	1.9	.45	8.0	10	8.8	4.9	----------	.90	3.0	.02	.70
30	4.6	2.2	.45	15	25	19	4.5	----------	.90	2.0	.02	.31
31	3.3	1.6	----------	14	----------	8.6	4.0	----------	1.0	----------	.02	----------
Total	416.60	109.5	84.59	440.01	2259.2	879.2	192.8	522.4	81.80	28.95	27.03	41.88
Mean												
Mgd	13.4	3.53	2.82	14.2	75.3	28.4	6.22	18.7	2.64	0.965	0.872	1.40
Cfs	20.7	5.46	4.36	22.0	117	43.9	9.62	28.9	4.08	1.49	1.35	2.17
Ac-ft	1280	333	260	1350	6930	2700	592	1600	251	89	83	129
Max	121	15	20	126	450	184	14	126	12	3.0	5.8	7.4
Min	0.90	1.6	0.45	0.37	5.0	7.3	3.4	3.0	0.90	0.40	0.02	0

Calendar Year 1965: Max 459 Min 0.37 Mean (mgd) 21.3 Mean (cfs) 33.0 Ac-ft 23810
Fiscal Year 1965-66: Max 450 Min 0 Mean (mgd) 13.9 Mean (cfs) 21.5 Ac-ft 15600

Note.--No gage-height record Nov. 10-30, Mar. 4 to May 17.

Peak discharge (base, 650 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-13	1930	5.28	844	1,310	11-14	-	6.79	1,360	2,100
11-3	1600	5.60	940	1,450					

40-3450. Opaeula 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.

Records available.--August 1959 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Altitude of gage is 1,120 ft (from topographic map). Prior to May 13, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--6 years (1960-66), 9.30 mgd (14.4 cfs).

Extremes.--Maximum discharge during year, 1,480 mgd (2,290 cfs) Oct. 13 (gage height, 8.15 ft), from rating curve extended above 69 mgd as explained below; minimum, 0.07 mgd (0.11 cfs) June 2-4.
1959-66: Maximum discharge, 1,810 mgd (2,800 cfs) Dec. 15, 1964 (gage height, 8.82 ft), from rating curve extended above 69 mgd on basis of slope-area measurement at gage height 6.74 ft; minimum, that of June 2-4, 1966.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9	1.8	1.7	0.70	6.0	12	5.0	1.6	7.0	0.54	1.2	0.09
2	3.4	1.6	3.0	.60	6.0	12	4.5	1.4	5.0	.48	.90	.09
3	3.8	1.5	2.3	.60	100	4.5	6.0	1.3	2.4	.44	.75	.07
4	2.1	1.4	13	.50	50	3.5	4.0	1.6	2.3	.41	.69	.82
5	1.8	1.4	2.6	.50	15	3.0	3.0	1.8	2.2	.51	1.1	.94
6	5.0	1.8	1.3	.45	10	60	3.0	65	2.0	.48	.63	.69
7	14	3.7	1.0	.45	9.0	10	2.5	42	2.0	.44	2.0	.90
8	5.3	2.2	.86	.50	20	5.0	2.5	9.4	2.0	.39	.98	1.9
9	51	8.6	.94	2.5	8.0	19	2.2	3.6	1.8	.39	2.9	.86
10	6.4	12	2.5	15	50	68	2.0	2.2	1.5	.51	7.0	.51
11	12	3.0	1.5	2.0	60	18	2.0	1.8	1.3	.41	1.5	1.4
12	60	2.6	.90	10	180	6.6	2.0	1.5	1.2	.46	.50	2.5
13	5.5	2.7	.90	100	80	4.7	2.0	4.0	1.1	1.4	.35	.94
14	2.9	1.4	.80	24	200	140	1.7	7.0	1.0	.75	.30	3.8
15	2.6	1.7	.80	8.1	150	80	25	10	1.0	.63	.30	3.6
16	2.8	1.7	.80	3.4	90	20	10	3.0	7.0	.90	6.0	2.3
17	13	1.4	1.0	2.3	30	15	3.0	20	2.0	.54	1.0	1.0
18	12	1.2	.70	2.4	20	8.0	2.0	15	1.1	.39	.40	.54
19	2.8	.86	1.0	13	20	7.0	35	45	.78	2.1	.35	.39
20	2.8	.75	.90	4.7	80	6.0	14	7.0	2.2	1.5	.35	.29
21	30	.90	.70	5.8	20	13	9.4	4.0	13	1.3	2.0	.23
22	86	1.3	.90	7.8	13	6.0	4.8	2.5	5.2	.69	1.0	.27
23	12	17	7.0	2.4	14	3.5	5.5	7.0	1.8	.66	.80	.33
24	5.6	8.9	3.0	1.5	11	5.0	5.2	10	10	.48	.54	.23
25	2.9	5.2	1.0	2.7	7.0	9.0	16	4.2	2.7	.39	.37	10
26	2.4	65	.80	4.7	9.0	15	3.2	4.5	1.3	.31	.27	5.2
27	2.1	5.2	.70	27	11	6.0	2.3	8.3	.94	.27	.19	3.3
28	44	2.1	.60	12	10	3.5	9.2	24	.75	.25	.16	1.2
29	5.8	10	.60	15	6.0	20	4.4	----------	.66	8.1	.14	.98
30	2.6	3.2	.60	30	14	8.0	2.1	----------	.60	3.9	.13	.78
31	2.0	2.0	----------	20	----------	6.0	1.7	----------	.57	----------	.10	----------
Total	407.5	174.11	54.40	320.60	1299.0	597.3	195.2	308.7	84.40	30.02	34.90	46.15
Mean												
Mgd	13.1	5.62	1.81	10.3	43.3	19.3	6.30	11.0	2.72	1.00	1.13	1.54
Cfs	20.3	8.70	2.80	15.9	67.0	29.9	9.75	17.0	4.21	1.55	1.75	2.38
Ac-ft	1250	534	167	984	3,990	1830	599	947	259	92.1	107	142
Max	86	65	13	100	200	140	35	65	13	8.1	7.0	10
Min	1.8	0.75	0.60	0.45	6.0	3.0	1.7	1.3	0.57	0.25	0.10	0.07

Calendar Year 1965: Max 274 Min 0.45 Mean (mgd) 13.5 Mean (cfs) 20.9 Ac-ft 15,150
Fiscal Year 1965-66: Max 200 Min 0.07 Mean (mgd) 9.73 Mean (cfs) 15.1 Ac-ft 10,900

Note.--No gage-height record Sept. 10 to Oct. 13, Oct. 29 to Dec. 8, Dec. 15 to Jan. 19.

Peak discharge (base, 750 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-21	2330	6.26	753	1,170	10-13	about 1800	8.15	1,480	2,290
8-26	1000	6.62	867	1,340	11-14	-	6.82	937	1,450

40-4000. 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.

Records available.--July 1917 to July 1932, November 1937 to June 1966.

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.

Average discharge.--43 years (1917-32, 1938-66), 19.7 mgd (30.5 cfs).

Extremes.--Maximum discharge during year, 1,390 mgd (2,150 cfs) Nov. 14 (gage height, 8.84 ft, from floodmark in gage well), from rating curve extended above 33 mgd as explained below; minimum recorded, 1.4 mgd (2.2 cfs) Oct. 6, 7.
1917-32, 1937-66: Maximum discharge, 17,400 mgd (26,900 cfs) Feb. 4, 1965 (gage height, 19.91 ft, from floodmarks), from rating curve extended above 33 mgd on basis of slope-area measurement of peak flow; minimum, 0.49 mgd (0.76 cfs) Nov. 23, 1962.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Small diversion above station by Maui County Board of Water Supply for domestic use at Halawa.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	33	5.0	7.7	1.8	15	150	8.0	12	30	4.0	9.2	2.0
2	16	4.3	4.8	1.8	8.7	50	7.0	7.6	50	3.5	5.4	2.0
3	7.9	4.2	7.7	2.4	6.5	30	7.0	6.4	20	3.5	4.3	3.0
4	5.4	5.4	3.9	1.7	7.4	20	7.0	6.2	13	3.5	3.7	3.0
5	42	7.6	2.9	1.5	6.8	15	7.0	6.0	10	5.8	3.4	2.0
6	7.6	5.5	2.6	1.4	5.8	20	30	7.6	9.0	11	11	4.0
7	10	6.7	2.7	13	4.6	15	10	60	8.0	28	4.1	10
8	44	3.9	2.2	30	21	12	8.0	40	7.4	10.5	3.7	6.0
9	85	19	2.0	70	6.4	15	7.0	50	7.0	42	31	5.0
10	13	7.6	1.9	10	9.3	100	6.0	20	20	32	17	4.0
11	14	4.1	3.2	30	30	30	5.0	13	12	6.7	18	4.0
12	31	6.8	36	100	100	20	6.0	11	6.8	4.7	17	3.0
13	7.4	12	11	50	40	17	8.0	10	5.9	4.0	9.8	3.0
14	6.5	6.2	9.3	20	200	25	20	9.0	5.5	5.1	5.0	3.0
15	33	8.1	5.0	10	100	20	80	9.0	5.8	8.9	30	3.0
16	8.7	14	3.2	8.0	50	17	20	10	5.4	4.4	10	2.0
17	44	5.8	3.4	6.0	30	15	15	15	5.0	4.3	7.0	2.0
18	32	3.9	2.7	5.0	20	13	20	20	4.8	4.1	5.0	2.0
19	8.1	19	2.7	4.0	10	13	15	100	6.0	20	4.0	2.0
20	28	4.3	2.1	9.0	20	12	23	40	5.4	7.4	4.0	2.0
21	29	6.4	1.8	20	10	12	17	20	6.3	8.9	50	2.0
22	27	20	1.7	10	13	11	11	15	5.1	14	20	2.0
23	40	32	13	7.0	11	10	68	30	9.5	5.8	10	2.0
24	12	9.0	40	6.0	10	10	41	20	7.8	4.7	7.0	2.0
25	14	23	19	5.0	10	15	38	15	5.0	3.5	5.0	4.0
26	7.6	9.1	5.2	14	10	20	29	20	4.2	3.2	4.0	6.0
27	10	4.7	3.1	20	10	20	14	100	4.0	4.4	4.0	3.0
28	18	6.8	2.4	21	20	15	30	80	3.7	36	3.0	2.0
29	20	10	2.2	28	15	20	15	----------	3.5	5.7	3.0	4.0
30	6.5	4.3	2.0	9.2	12	15	30	----------	9.0	60	3.0	2.0
31	5.4	3.4	----------	7.8	----------	11	9.4	----------	10	----------	2.0	----------
Total	666.1	282.1	207.4	523.6	812.5	768	611.4	752.8	305.1	359.6	313.6	96.0
Mean												
Mgd	21.5	9.10	6.91	16.9	27.1	24.8	19.7	26.9	9.84	12.0	10.1	3.20
Cfs	33.3	14.1	10.7	26.1	41.9	38.4	30.5	41.6	15.2	18.6	15.6	4.95
Ac-ft	2040	866	636	1610	2490	2360	1880	2310	936	1100	962	295
Max	85	32	40	100	200	150	80	100	50	60	50	10
Min	5.4	3.4	1.7	1.4	4.6	10	5.0	6.0	3.5	3.2	2.0	2.0

Calendar Year 1965:	Max	800	Min	1.4	Mean (mgd)	22.9	Mean (cfs)	35.4	Ac-ft	25640
Fiscal Year 1965-66:	Max	200	Min	1.4	Mean (mgd)	15.6	Mean (cfs)	24.1	Ac-ft	17490

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-14	-	8.84	1,390	2,150

Note.--No gage-height record Nov. 12 to Jan. 19, Feb. 7 to Mar. 7, May 14 to June 30.

40-4053. Molokai tunnel at west portal

Location.--Lat 21°07'27", long 156°59'50", on left bank 50 ft upstream from west portal, 2.5 miles northeast of Kaunakakai, and 4.7 miles south of Kalaupapa.

Records available.--July 1965 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 970 ft (from tunnel plans).

Extremes.--1965-66: Maximum daily discharge, 4.2 mgd (6.5 cfs) June 30; minimum daily, 1.6 mgd (2.5 cfs) Sept. 19-27.

Remarks.--Records excellent. Tunnel diverts from Waikolu Stream and a tributary, and diversion is augmented by water pumped from wells in Waikolu Valley near east portal. Water is used for irrigation in west-central Molokai.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	2.1	2.1	2.0
2	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	2.1	2.1	2.0
3	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	2.0	2.0	2.1	2.0
4	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	2.0	2.0	2.1	2.0
5	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	2.0	2.0	2.1	2.0
6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	2.0	2.0	2.1	2.0
7	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.0	2.0	2.1	2.0
8	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.0	2.0	2.1	2.0
9	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.0	2.0	2.1	2.0
10	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.0	2.0	2.1	2.0
11	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.0	2.0	2.1	2.0
12	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.2	2.0
13	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.2	2.0
14	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.2	1.8
15	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.2	1.8
16	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.2	1.8
17	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.2	1.8
18	1.7	1.7	1.7	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.2	1.8
19	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.1	1.8
20	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.0	1.8
21	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.0	1.8
22	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.0	1.8
23	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.0	1.8
24	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.0	1.8
25	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.0	1.8
26	1.7	1.7	1.6	1.7	1.7	2.0	1.7	1.8	2.1	2.0	2.0	1.8
27	1.7	1.7	1.6	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.0	2.1
28	1.7	1.7	1.7	1.7	1.7	1.8	1.7	1.8	2.1	2.0	2.0	2.1
29	1.7	1.7	1.7	1.7	1.7	1.7	1.7	----------	2.1	2.0	2.0	3.8
30	1.7	1.7	1.7	1.7	1.7	1.7	1.8	----------	2.1	2.1	2.0	4.2
31	1.7	1.7	----------	1.7	----------	1.7	1.8	----------	2.1	----------	2.0	----------
Total	52.7	52.7	50.1	52.7	51.0	56.7	52.9	50.4	63.6	60.3	64.8	61.6
Mean												
Mgd	1.70	1.70	1.67	1.70	1.70	1.83	1.71	1.80	2.05	2.01	2.09	2.05
Cfs	2.63	2.63	2.58	2.63	2.63	2.83	2.65	2.79	3.17	3.11	3.23	3.17
Ac-ft	162	162	154	162	157	174	162	155	195	185	199	189
Max	1.7	1.7	1.7	1.7	1.7	2.0	1.8	1.8	2.1	2.1	2.2	4.2
Min	1.7	1.7	1.6	1.7	1.7	1.7	1.7	1.8	1.8	2.0	2.0	1.8

Calendar Year 1965:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-		
Fiscal Year 1965-66:	Max	4.2	Min	1.6	Mean (mgd)	1.83	Mean (cfs)	2.83	Ac-ft	2050		

40-4055. 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.

Records available.--May 1956 to October 1961, July 1962 to June 1966.

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.--9 years, 6.58 mgd (10.2 cfs).

Extremes.--Maximum discharge during year, 810 mgd (1,250 cfs) Dec. 1 (gage height, 4.48 ft), from rating curve extended above 14 mgd as explained below; minimum, 1.2 mgd (1.9 cfs) Nov. 6-8.
1956-61, 1962-66: Maximum discharge, 1,960 mgd (3,030 cfs) Apr. 13, 1965 (gage height, 6.12 ft), from rating curve extended above 14 mgd on basis of approximate gage height for flood of Oct. 31, 1961; minimum, 0.32 mgd (0.50 cfs) Jan. 15, 16, 1963.
Flood of Oct. 31, 1961, reached a stage of 13.62 ft, from floodmarks, former site and datum (discharge, 4,020 mgd or 6,220 cfs, by slope-area measurement of peak flow).

Remarks.--Records good except those above 30 mgd, which are poor. Since Nov. 16, 1960, water diverted above station at times, either into or from Molokai tunnel.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16	1.7	1.4	1.4	2.3	172	2.3	2.3	9.5	2.6	1.9	1.5
2	6.4	1.7	1.4	1.4	1.9	32	3.7	2.1	67	2.3	1.9	1.7
3	4.0	1.7	1.4	1.4	1.5	3.7	7.8	1.9	9.8	2.1	1.9	1.9
4	2.6	1.7	1.4	1.4	1.5	8.5	6.0	5.5	3.7	2.3	1.7	1.9
5	8.5	1.7	1.5	1.4	1.4	29	2.8	3.1	2.8	6.4	1.7	1.9
6	3.7	1.7	1.5	1.4	1.4	91	38	2.6	2.6	4.7	2.6	1.9
7	2.6	1.7	1.5	1.4	1.2	15	3.7	14	2.3	5.1	1.9	2.1
8	9.1	1.9	1.5	1.5	1.7	5.5	2.3	14	2.3	4.3	1.7	1.9
9	30	5.5	1.5	23	1.9	12	1.9	6.0	2.3	2.3	1.7	1.7
10	4.3	2.6	1.5	11	1.5	40	1.9	2.6	6.8	2.1	2.1	2.1
11	3.7	1.9	1.5	2.3	11	8.6	1.9	2.1	6.4	1.9	1.9	2.3
12	7.3	1.7	11	104	150	4	1.9	1.9	3.1	1.9	1.9	1.9
13	2.6	1.7	4.7	31	16	2.8	1.9	1.7	2.6	1.9	1.9	1.7
14	2.1	1.7	2.3	4.3	82	45	1.9	1.7	2.3	1.9	1.7	1.7
15	2.3	1.5	2.1	2.1	40	15	16	3.1	2.3	2.1	2.6	1.7
16	4.3	1.4	1.7	1.5	7.3	14	2.8	9.4	2.3	1.9	2.3	1.7
17	12	1.4	1.5	1.4	3.1	8.5	2.1	43	2.1	1.9	1.9	1.5
18	10	1.4	1.5	1.5	2.6	37	1.9	52	2.1	1.9	1.7	1.5
19	2.8	1.4	1.5	2.6	2.3	7.3	2.3	39	2.1	12	1.5	1.5
20	2.3	1.4	1.5	5.0	19	13	24	18	2.1	4.7	9.8	1.5
21	2.1	1.4	1.4	38	4.3	12	8.2	6.8	3.1	14	11	2.1
22	2.1	2.1	1.5	13	2.8	6.4	4.7	3.1	2.8	6.8	2.6	12
23	3.4	4.0	2.6	3.4	6.0	3.1	2.8	24	3.4	3.7	1.9	3.1
24	2.8	2.6	3.1	1.9	4.7	2.8	65	25	6.8	2.3	1.7	2.1
25	2.1	2.6	2.1	2.8	2.1	11	56	6.4	2.8	1.9	1.5	9.0
26	1.9	3.7	1.9	7.3	1.9	7.8	4.7	4.7	2.1	1.9	1.5	8.8
27	2.3	1.7	1.5	6.0	6.2	3.4	30	36	2.1	1.7	1.5	3.4
28	2.6	1.5	1.4	16	31	3.1	44	40	1.9	2.1	1.5	1.9
29	2.3	1.4	1.4	29	3.7	2.8	5.1	---------	1.9	1.9	1.5	12
30	1.9	1.4	1.4	12	4.0	3.1	3.1	---------	3.1	1.9	1.5	2.6
31	1.7	1.4	---------	4.0	---------	2.3	2.3	---------	7.8	---------	1.5	---------
Total	161.8	61.2	62.2	334.4	416.3	621.7	353.0	372.0	174.3	104.5	74.0	92.6
Mean												
Mgd	5.22	1.97	2.07	10.8	13.9	20.0	11.4	13.3	5.62	3.48	2.39	3.09
Cfs	8.08	3.05	3.20	16.7	21.5	30.9	17.6	20.6	8.70	5.38	3.70	4.78
Ac-ft	497	188	191	1030	1280	1910	1080	1140	535	321	227	284
Max	30	5.5	11	104	150	172	65	52	67	14	11	12
Min	1.7	1.4	1.4	1.4	1.2	2.3	1.9	1.7	1.9	1.7	1.5	1.5

Calendar Year 1965:	Max	172	Min	0.90	Mean (mgd)	8.42	Mean (cfs)	13.0	Ac-ft	9430
Fiscal Year 1965-66:	Max	172	Min	1.2	Mean (mgd)	7.75	Mean (cfs)	12.0	Ac-ft	8680

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-12	2100	3.46	371	574	12- 1	2000	4.48	810	1,250
10-29	1430	3.33	329	509	12- 6	1630	3.67	448	693
11-12	0600	3.37	341	528	1-24	2030	3.71	464	718
11-14	1430	3.54	399	617	3- 2	1500	3.48	378	585

40-4080. 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 Kalaupapa Lighthouse.

Drainage area.--3.68 sq mi.

Records available.--July 1919 to November 1930, August 1931 to July 1932, September 1937 to January 1948, July 1948 to June 1966. 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 Aug. 14, 1931, at site 500 ft upstream at different datums. Sept. 20, 1937, to Jan. 25, 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, than present datum.

Average discharge.--37 years (1919-30, 1938-47, 1949-66), 12.0 mgd (18.6 cfs).

Extremes.--Maximum discharge during year, 390 mgd (603 cfs) Dec. 1 (gage height, 4.20 ft), from rating curve extended above 25 mgd as explained below; minimum, not determined; minimum daily, 5.1 mgd (7.9 cfs) for many days.
1919-32, 1937-66: Maximum discharge, 4,290 mgd (6,640 cfs) Oct. 31, 1961 (gage height, 13.75 ft, present datum, from floodmarks), from rating curve extended above 25 mgd on basis of slope-area measurement of peak flow; minimum, 1.3 mgd (2.0 cfs) Nov. 1, 2, 1925, June 5, 1926.

Remarks.--Records fair. 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.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16	6.0	5.1	5.1	8.0	92	7.4	6.9	13	7.8	6.7	5.8
2	9.8	6.0	5.1	5.1	7.6	35	8.5	6.7	65	7.4	6.5	6.5
3	8.0	6.2	5.1	5.1	6.9	9.2	10	6.5	14	7.4	6.7	6.2
4	7.4	6.0	5.1	5.1	6.7	12	9.8	8.7	9.8	7.8	6.7	6.2
5	11	6.2	5.1	5.1	6.5	28	7.8	7.6	8.9	9.8	6.7	6.0
6	8.0	6.0	5.1	5.1	6.2	71	32	6.5	8.3	9.2	8.8	6.2
7	7.4	6.0	5.1	5.1	6.5	18	8.3	12	8.5	9.2	6.7	6.5
8	11	6.5	5.1	6.0	6.5	10	7.6	13	8.5	8.7	6.5	6.0
9	27	9.8	5.1	20	6.7	15	6.9	9.6	8.0	7.8	6.5	5.8
10	9.2	7.2	5.1	13	6.5	36	6.7	6.7	12	7.4	6.5	6.0
11	8.7	6.2	5.1	6.2	13	13	6.5	6.5	10	7.2	6.7	6.2
12	11	6.5	12	84	137	9.6	6.5	6.2	8.5	6.9	6.7	5.8
13	7.8	6.5	8.2	32	24	8.3	6.2	6.2	8.3	6.9	6.7	5.5
14	6.9	6.2	6.0	9.0	74	34	6.5	6.2	8.0	7.2	6.5	5.5
15	7.2	6.0	5.8	7.2	44	17	16	7.4	8.0	7.8	6.9	5.5
16	8.0	6.0	5.5	6.2	14	15	8.0	12	7.8	7.2	6.7	5.5
17	14	6.0	5.5	6.5	9.8	12	6.7	38	7.6	6.9	6.7	5.3
18	13	6.0	5.5	6.2	9.2	32	6.5	64	7.8	7.4	6.5	5.3
19	7.6	6.0	5.5	7.2	8.7	12	6.7	51	7.6	13	6.5	5.1
20	6.9	6.0	5.5	10	24	15	22	21	7.4	9.4	10	5.1
21	6.5	6.0	5.5	32	10	15	12	12	8.0	14	12	5.3
22	6.5	6.5	5.5	15	9.2	10	9.2	8.7	8.0	10	7.6	11
23	7.8	7.8	6.2	8.3	11	8.3	7.8	32	8.3	8.5	6.7	6.7
24	7.4	6.7	6.2	6.9	10	8.3	39	25	10	7.8	6.5	6.0
25	6.5	6.5	5.8	7.6	8.3	13	51	11	8.0	7.2	6.2	9.7
26	6.2	7.8	5.3	10	8.3	11	9.4	10	7.4	6.9	6.0	9.4
27	6.7	6.2	5.2	11	13	8.0	22	28	7.4	7.1	6.0	6.9
28	6.9	5.8	5.1	17	31	8.3	36	33	7.2	8.1	6.0	5.8
29	6.7	5.5	5.1	34	9.8	7.8	9.4	----------	7.2	7.2	6.0	7.9
30	6.5	5.3	5.1	19	9.6	8.3	7.8	----------	8.0	6.9	5.8	6.8
31	6.2	5.2	----------	9.8	----------	7.4	6.9	----------	10	----------	5.8	----------
Total	279.8	196.6	170.6	419.8	546.0	599.5	407.1	462.4	326.5	246.1	212.8	191.5
Mean												
Mgd	9.03	6.34	5.69	13.5	18.2	19.3	13.1	16.5	10.5	8.20	6.86	6.38
Cfs	14.0	9.81	8.80	20.9	28.2	29.9	20.3	25.5	16.2	12.7	10.6	9.87
Ac-ft	859	603	524	1,290	1,680	1,840	1,250	1,420	1,000	755	653	588
Max	27	9.8	12	84	137	92	51	64	65	14	12	11
Min	6.2	5.2	5.1	5.1	6.2	7.4	6.2	6.2	7.2	6.9	5.8	5.1

Calendar Year 1965:	Max	188	Min	5.1	Mean (mgd)	13.1	Mean (cfs)	20.3	Ac-ft	14,630
Fiscal Year 1965-66:	Max	137	Min	5.1	Mean (mgd)	11.1	Mean (cfs)	17.2	Ac-ft	12,460

Peak discharge (base, 450 mgd).--No peak above base.

40-4114. 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.

Records available.--July 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 380 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,140 mgd (1,760 cfs) Nov. 12 (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 the time.
1963-66: Maximum discharge, that of Nov. 12, 1965; no flow most of the time each year.

Remarks.--Records good. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		0	0	0	0	0	0	0		0	3.5	
2		0	0	0	0	0	0	0		0	0	
3		0	0	0	0	0	0	0		0	0	
4		0	0	0	0	0	0	0		0	0	
5		0	0	0	0	0	0	0		0	0	
6		0	0	0	0	.70	0	0		0	0	
7		0	0	0	0	0	0	.54		0	0	
8		0	0	0	0	0	0	.40		0	0	
9		0	0	0	0	0	0	0		0	0	
10		0	0	0	0	0	0	0		0	0	
11		0	0	0	11	0	0	0		0	0	
12		0	0	.83	29	0	0	0		0	0	
13		0	0	16	5.0	0	0	0		0	0	
14		0	0	11	24	0	0	0		0	0	
15		0	0	4.3	10	0	0	0		0	18	
16		0	0	1.0	1.0	0	0	0		0	4.3	
17		0	0	0	0	0	0	0		0	0	
18		0	0	0	0	0	0	0		0	0	
19		0	0	11	0	0	16	0		0	0	
20		0	0	2.6	0	0	.57	0		0	1.4	
21		0	0	11	0	0	0	0		0	1.0	
22		0	11	0	0	0	0	0		0	0	
23		2.0	18	0	0	0	0	.12		0	0	
24		0	7.0	0	0	0	0	0		0	0	
25		0	2.6	0	0	0	0	0		0	0	
26		0	0	0	0	0	0	0		0	0	
27		0	0	2.6	0	0	0	14		0	0	
28		0	0	11	0	0	0	7.4		0	0	
29		0	0	45	0	0	0	----------		0	0	
30		0	0	2.5	0	0	0	----------		11	0	
31		0	----------	0	----------	0	0	----------		----------	0	----------
Total	0	2.0	38.6	118.83	80.0	0.70	16.57	22.46	0	11	28.2	0
Mean												
Mgd	0	0.06	1.29	3.83	2.67	0.023	0.535	0.802	0	0.4	0.91	0
Cfs	0	0.09	2.00	5.93	4.13	0.036	0.828	1.24	0	0.6	1.41	0
Ac-ft	0	6.1	118	365	246	2.1	51	69	0	34	87	0
Max	0	2.0	18	45	29	0.70	16	14	0	11	18	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 86 Min 0 Mean (mgd) 1.13 Mean (cfs) 1.75 Ac-ft 1270
Fiscal Year 1965-66: Max 45 Min 0 Mean (mgd) 0.872 Mean (cfs) 1.35 Ac-ft 977

Peak discharge (base, 65 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
9-22	1900	1.28	99	153	11-14	1330	5.76	1,030	1,590
10-19	1600	1.98	214	331	1-19	2100	2.86	391	605
10-29	1200	3.88	614	950	2-27	2300	3.06	433	670
11-11	0600	4.25	695	1,080	5-15	0730	1.34	108	167
11-12	2130	6.28	1,140	1,760					

40-4140. 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.

Records available.--December 1949 to June 1966. 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.--15 years (1950-65), 1.01 mgd (1.56 cfs).

Extremes.--Maximum discharge during year, 496 mgd (767 cfs) Dec. 1 (gage height, 5.32 ft); no flow for many days.
1949-66: Maximum discharge, 1,980 mgd (3,060 cfs) Oct. 31, 1961 (gage height, 9.30 ft), from rating curve extended above 400 mgd on basis of slope-area measurement of peak flow; no flow at times each year.

Remarks.--Records fair. Since May 20, 1965, records include diversion from Molokai tunnel. No other diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0.69	0.40	0.75	61	0.51	0.78	9.5	0	1.1	0.72
2	0	.29	.31	.40	.75	52	.51	.78	8.2	0	.98	.72
3	0	0	.08	.40	.75	.73	.48	.69	5.8	0	.71	.57
4	0	0	0	.40	.75	.05	.40	.50	.54	0	1.1	.75
5	0	.07	.30	.40	.75	1.1	.40	0	0	0	1.1	.72
6	0	.57	.60	.38	.75	62	1.0	0	.07	0	1.1	.48
7	0	.66	.37	.38	.75	14	.02	0	.22	0	1.0	.46
8	0	.69	.03	.38	.86	.66	0	.12	0	0	1.0	.34
9	0	.72	.05	.38	.62	.41	0	.04	.08	0	.75	.37
10	0	.57	.24	.36	.63	2.6	0	0	.12	0	.62	.36
11	0	.01	.05	.36	.69	2.1	0	0	.12	0	.68	.40
12	0	0	.07	24	61	0	.36	0	0	0	.98	.55
13	0	.01	.20	24	6.9	0	.46	0	0	0	.98	.40
14	0	0	.01	1.3	7.9	.97	.51	.04	0	0	.94	.32
15	0	.23	.46	.30	35	3.7	.60	.30	0	0	.94	.46
16	0	.66	.48	.26	2.9	.30	.60	.04	0	0	.90	.49
17	.19	.69	.48	.25	1.1	.32	.31	0	0	.04	.82	.34
18	.48	.66	.51	.25	1.1	5.2	0	1.8	0	.45	.82	.30
19	.40	.39	.51	.17	1.0	.95	0	.42	0	.53	.82	.49
20	.23	.03	.48	.26	.82	.30	0	3.0	0	.05	.94	.37
21	.21	.44	.48	11	.66	.34	0	.05	0	.11	.86	.18
22	.30	.44	.54	1.2	.60	.26	0	0	0	.09	.82	.20
23	.30	.29	.54	.63	.48	.34	0	0	0	.68	.75	.11
24	.26	.66	.46	.60	.66	.32	.06	2.5	0	.94	.60	.06
25	.24	.94	.51	.54	.69	.36	46	.47	0	.98	.66	.19
26	.21	.86	.48	.51	.69	.38	1.4	0	0	.98	.72	.29
27	.24	.78	.46	.75	.69	.38	.70	3.8	0	1.0	.75	.37
28	.44	.75	.44	.75	.63	.38	16	19	0	.94	.75	.39
29	.42	.72	.38	1.7	.66	.36	1.9	---	0	.94	.72	1.1
30	0	.69	.34	1.6	.69	.36	.82	---	0	1.1	.72	1.9
31	.02	.69	---	.69	---	.46	.82	---	0	---	.72	---
Total	3.94	13.51	10.55	75.00	132.22	212.33	73.86	34.33	24.65	8.83	26.35	14.40
Mean												
Mgd	0.127	0.436	0.352	2.42	4.41	6.85	2.38	1.23	0.795	0.294	0.850	0.480
Cfs	0.196	0.675	0.545	3.74	6.82	10.6	3.68	1.90	1.23	0.455	1.32	0.743
Ac-ft	12	41	32	230	406	652	227	105	76	27	81	44
Max	0.48	0.94	0.69	24	61	62	46	19	9.5	1.1	1.1	1.9
Min	0	0	0	0.17	0.48	0	0	0	0	0	0.60	0.06

Calendar Year 1965:	Max	137	Min	0	Mean (mgd)	2.58	Mean (cfs)	3.99	Ac-ft	2890
Fiscal Year 1965-66:	Max	62	Min	0	Mean (mgd)	1.73	Mean (cfs)	2.68	Ac-ft	1930

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-12	2300	4.64	300	464	12- 1	2100	5.32	496	767
11-12	1630	4.18	191	296	12- 6	1730	4.78	335	518
11-14	2130	3.98	151	234	1-25	0230	4.34	225	348

40-4150. East Fork Kawela Gulch near Kamalo

Location.--Lat 21°06'46", long 156°54'23", on left bank at Molokai Ranch pipeline intake, 4.7 miles northwest of Kamalo, and 7.6 miles northeast of Kaunakakai.

Drainage area.--0.45 sq mi.

Records available.--September 1946 to June 1966. Published as Right Branch of East Fork Kawela Stream near Kamalo prior to July 1958 and as Right Branch of East Fork Kawela Gulch near Kamalo July 1958 to June 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,624.86 ft above mean sea level (Territorial Survey bench mark).

Average discharge.--19 years (1947-66), 1.53 mgd (2.37 cfs).

Extremes.--Maximum discharge during year, 115 mgd (178 cfs) Oct. 12 (gage height, 4.31 ft), from rating curve extended above 4.3 mgd as explained below; no flow for many days.
1946-66: Maximum discharge, 1,460 mgd (2,260 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 4.3 mgd on basis of slope-area measurement at gage height 6.50 ft; no flow at times each year.

Remarks.--Records fair. Molokai Ranch diverts from gage pool.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.9	0	0	0	0.01	13	0.36	0	2.4	0.20	0.10	0
2	3.1	0	0	0	0	5.7	2.1	0	6.4	.02	0	.09
3	1.3	0	0	0	0	.64	2.5	0	2.0	.02	0	1.2
4	.56	0	0	0	0	.40	1.8	1.1	.76	.23	0	.26
5	2.4	.11	0	0	0	4.6	.32	.38	.46	2.1	0	.34
6	.71	0	0	0	0	20	5.9	.41	.37	1.1	0	.07
7	.68	0	0	0	0	3.7	.43	5.0	.13	1.2	0	.03
8	2.8	0	0	0	.72	1.9	.04	3.9	0	.79	0	.03
9	6.4	1.1	0	3.9	.50	5.3	0	1.3	0	.22	0	0
10	.71	.40	0	1.8	1.1	9.7	0	.43	.02	.07	.17	.75
11	.64	0	0	.28	3.2	2.1	0	.20	.66	.02	0	.38
12	1.4	.29	.71	23	25	.76	0	.13	.09	0	.19	.01
13	.18	.31	.84	6.5	3.4	.29	0	.08	0	0	.01	0
14	0	.02	.36	.93	12	11	0	.07	0	0	0	.22
15	.80	0	.14	.31	9.1	3.4	4.9	.85	0	0	1.3	.09
16	2.3	0	0	.02	2.0	4.6	.37	2.3	0	0	.28	0
17	4.7	0	0	.18	.49	2.7	.02	7.8	0	0	0	0
18	2.6	0	.09	.19	.46	8.2	0	6.9	0	0	0	0
19	.37	0	.22	.54	.55	1.9	.02	4.7	0	.65	0	0
20	.05	0	0	1.3	4.6	4.7	2.4	3.0	0	.70	2.5	0
21	0	0	.56	8.4	1.1	3.3	1.8	1.2	.78	1.6	3.4	.73
22	.21	1.4	.45	2.4	.70	1.4	1.4	.16	.13	1.1	.36	5.4
23	1.1	1.9	.95	.52	2.9	.40	.34	2.3	.97	.43	0	.58
24	.40	.52	.51	.06	1.6	.14	3.0	3.5	1.7	.22	0	.03
25	.04	.79	.31	.05	.43	2.8	7.5	1.2	.15	.07	0	4.4
26	0	.53	.32	1.7	.40	1.9	.76	.89	0	.02	0	3.5
27	.15	0	0	1.2	1.5	.45	1.9	9.5	0	0	0	1.3
28	.68	0	0	2.0	7.5	.62	6.7	9.3	0	.16	0	.26
29	.26	0	0	2.3	1.1	.53	.73	---------	0	.01	0	5.4
30	0	0	0	.82	1.5	.78	.24	---------	.15	.12	0	1.7
31	0	0	---------	.18	---------	.11	.02	---------	1.7	---------	0	---------
Total	40.44	7.37	5.46	58.58	81.86	117.02	45.55	66.60	18.87	11.05	8.31	26.77
Mean												
Mgd	1.30	0.238	0.182	1.89	2.73	3.77	1.47	2.38	0.609	0.368	0.268	0.892
Cfs	2.01	0.368	0.282	2.92	4.22	5.83	2.27	3.68	0.942	0.569	0.415	1.38
Ac-ft	124	23	17	180	251	359	140	204	58	34	26	82
Max	6.4	1.9	0.95	23	25	20	7.5	9.5	6.4	2.1	3.4	5.4
Min	0	0	0	0	0	0.11	0	0	0	0	0	0

Calendar Year 1965:	Max	41	Min	0	Mean (mgd)	1.75	Mean (cfs)	2.71	Ac-ft	1,960		
Fiscal Year 1965-66:	Max	25	Min	0	Mean (mgd)	1.34	Mean (cfs)	2.07	Ac-ft	1,500		

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
10-12	2200	4.31	115	178

40-4160. 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.

Records available.--March 1947 to June 1966. 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.--19 years, 0.814 mgd (1.26 cfs).

Extremes.--Maximum discharge during year, 236 mgd (365 cfs) Nov. 14 (gage height, 4.93 ft), from rating curve extended above 6.5 mgd as explained below; minimum, 0.03 mgd (0.05 cfs) on several days.
1947-66: Maximum discharge, 368 mgd (569 cfs) Feb. 4, 1965 (gage height, 7.17 ft), from rating curve extended above 6.5 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Mar. 13, 1947, Feb. 19, 1954.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	0.17	0.17	0.05	0.09	4.3	0.28	0.19	1.7	0.05	2.0	0.03
2	.81	.13	.11	.05	.11	1.2	2.2	.14	3.1	.04	.17	.30
3	.40	.11	.09	.08	.07	.19	.69	.13	.94	.04	.07	.70
4	.21	.13	.08	.04	.07	.22	.46	.19	.34	.04	.05	.31
5	1.9	.11	.07	.04	.07	1.1	.28	.16	.21	.17	.04	.11
6	.26	.10	.06	.03	.05	3.1	1.8	.14	.17	.34	.18	.06
7	1.7	.54	.05	.03	.05	.53	.26	4.2	.14	.25	.07	.21
8	2.9	.11	.05	.11	.99	.16	.19	1.7	.14	.21	.05	.23
9	3.8	.70	.05	6.2	.16	.91	.14	.65	.11	.07	2.0	.09
10	.46	.16	.05	.88	.14	9.8	.14	.21	.26	.10	1.4	.15
11	.46	.09	.05	.19	.85	1.4	.11	.13	.21	.05	1.2	.09
12	1.1	.48	1.4	8.4	11	1.0	.09	.10	.10	.04	1.6	.05
13	.21	.76	.67	2.3	.93	.40	.09	.17	.08	.04	.31	.20
14	.19	.16	.60	.37	14	2.8	.61	.13	.07	.04	.31	.95
15	2.3	.12	.21	.14	12	1.3	7.7	.73	.07	.04	.82	.19
16	.95	.28	.09	.11	3.0	1.0	.40	1.4	.07	.04	.16	.08
17	4.3	.09	.07	.09	.57	.57	.17	3.8	.06	.04	.07	.06
18	1.8	.09	.09	.08	.49	2.6	1.5	3.1	.05	.03	.05	.05
19	.46	.78	.14	.16	2.9	.65	2.1	4.6	.07	.05	.04	.05
20	.86	.08	.07	.48	3.9	1.3	1.7	1.8	.06	.07	.06	.04
21	.69	.10	.12	3.9	.40	1.4	.48	.53	.07	.07	.87	.05
22	1.1	.79	.13	.43	.34	.81	.58	.21	.07	.27	.11	.25
23	3.6	2.0	.84	.40	.43	.49	4.5	1.9	.23	.07	.05	.14
24	.83	.43	.30	.30	.58	.88	2.0	1.7	.13	.05	.04	.06
25	.98	.48	1.2	.20	.21	2.1	4.1	.49	.07	.04	.04	1.6
26	.37	.21	.19	.13	.16	5.9	1.4	.34	.05	.03	.03	1.5
27	.69	.09	.08	.34	1.1	.85	1.0	5.2	.05	.03	.03	.70
28	1.1	.09	.06	1.2	3.9	1.6	2.5	7.0	.04	.49	.05	.17
29	1.0	.37	.05	4.3	.81	4.5	.66	----------	.04	.06	.14	.78
30	.28	.10	.05	.37	.99	1.1	1.1	----------	.22	1.2	.04	.34
31	.21	.07	----------	.14	----------	.40	.26	----------	.58	----------	.03	----------
Total	38.72	9.92	7.19	31.54	60.36	54.56	39.49	41.04	9.50	4.06	12.08	9.54
Mean												
Mgd	1.25	0.320	0.240	1.02	2.01	1.76	1.27	1.47	0.306	0.135	0.390	0.318
Cfs	1.93	0.495	0.371	1.58	3.11	2.72	1.96	2.27	0.473	0.209	0.603	0.492
Ac-ft	119	30	22	97	185	167	121	126	29	12	37	29
Max	4.3	2.0	1.4	8.4	14	9.8	7.7	7.0	3.1	1.2	2.0	1.6
Min	0.19	0.07	0.05	0.03	0.05	0.16	0.09	0.10	0.04	0.03	0.03	0.03

Calendar Year 1965: Max 34 Min 0.03 Mean (mgd) 1.06 Mean (cfs) 1.64 Ac-ft 1,190
Fiscal Year 1965-66: Max 14 Min 0.03 Mean (mgd) 0.871 Mean (cfs) 1.35 Ac-ft 976

Peak discharge (base, 85 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-14	1300	4.93	236	365	2-27	1500	3.41	103	159

40-4195. 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.

Records available.--July 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 640 ft (from topographic map).

Extremes.--Maximum discharge during year, 326 mgd (504 cfs) Nov. 14 (gage height, 5.42 ft), from rating curve extended above 6.4 mgd as explained below; no flow for part of Oct. 3.
1963-66: Maximum discharge, 1,760 mgd (2,720 cfs) Apr. 13, 1965 (gage height, 11.25 ft), from rating curve extended above 6.4 mgd on basis of slope-area measurements at gage heights 4.60, 7.15, and 11.25 ft; no flow at times each year.

Remarks.--Records fair. Diversion above station for domestic use at Puu O Hoku Ranch.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.26	0.18	0.19	0.01	0.50	14	0.35	0.69	3.0	0.82	0.86	0.29
2	.26	.15	.13	.01	.30	4.8	.29	.60	5.0	.78	.57	.29
3	.23	.14	.19	.02	.20	1.0	.31	.55	4.0	.75	.52	.33
4	.18	.16	.19	.03	.30	.86	.31	.60	3.0	.75	.49	.31
5	1.1	.16	.11	.02	.30	.86	.28	.72	2.0	.78	.47	.28
6	9.5	.16	.09	.02	.30	1.2	1.6	.57	2.0	.72	.55	.31
7	.31	.15	.12	.02	.20	1.1	.63	4.2	2.0	.82	.49	.44
8	1.3	.15	.10	.17	.50	.82	.55	2.6	1.7	1.1	.52	.33
9	2.6	.23	.07	5.9	.30	.98	.44	3.3	1.7	.86	1.2	.31
10	.60	.20	.06	.31	.40	6.8	.23	1.1	1.9	1.1	.57	.31
11	.35	.13	.08	1.0	1.0	1.7	.19	.86	1.7	.82	.49	.29
12	.28	.15	.12	10	10	1.2	.28	.72	1.5	.72	.49	.28
13	.23	.21	.19	2.0	2.0	1.1	.41	.69	1.4	.72	.55	.28
14	.19	.18	.10	.50	20	1.4	.79	.66	1.4	.69	.89	.28
15	.43	.16	.08	.30	19	1.0	5.4	.69	1.3	.69	1.1	.24
16	.26	.26	.08	.20	4.9	.98	.86	.69	1.3	.69	.57	.21
17	.50	.20	.07	.10	2.6	.86	.60	1.1	1.3	.69	.49	.20
18	.47	.15	.07	.10	2.0	.82	1.0	1.5	1.3	.66	.47	.21
19	.26	.31	.08	.20	1.5	.82	1.3	12	1.2	.69	.41	.20
20	.23	.16	.06	.50	1.7	.78	.66	5.6	1.2	.60	.44	.20
21	.24	.12	.05	1.0	1.3	.82	.60	1.9	1.2	.57	1.4	.20
22	1.1	.13	.05	.50	1.1	.72	.55	1.3	1.1	.55	.57	.20
23	.92	.22	.07	.30	.82	.60	1.6	4.0	1.2	.52	.44	.20
24	.52	.26	1.2	.20	.57	.52	1.1	3.0	1.1	.50	.41	.20
25	.35	.13	1.3	.20	.55	.71	2.5	2.0	1.1	.50	.35	.24
26	.23	.11	.27	.26	.55	.86	1.5	2.0	1.0	.50	.33	.26
27	.31	.08	.08	.24	.57	.90	.90	10	.98	.60	.35	.23
28	.47	.10	.05	.23	1.6	.78	.98	10	.94	.70	.33	.19
29	.47	.11	.03	.28	.98	.86	.72	----------	.90	.60	.37	.24
30	.26	.10	.02	.21	1.0	.82	1.1	----------	.90	1.6	.33	.15
31	.20	.08	----------	.19	----------	.49	.69	----------	.90	----------	.31	----------
Total	24.61	5.03	5.30	25.02	77.04	51.16	28.72	73.64	51.22	22.09	17.33	7.70
Mean												
Mgd	0.794	0.162	0.177	0.807	2.57	1.65	0.926	2.63	1.65	0.736	0.559	0.257
Cfs	1.23	0.251	0.274	1.25	3.98	2.55	1.43	4.07	2.55	1.14	0.865	0.398
Ac-ft	76	15	16	77	236	157	88	226	157	68	53	24
Max	9.5	0.31	1.3	10	20	14	5.4	12	5.0	1.6	1.4	0.44
Min	0.18	0.08	0.02	0.01	0.20	0.49	0.19	0.55	0.90	0.50	0.31	0.15

Calendar Year 1965:	Max	106	Min	0.01	Mean (mgd)	1.41	Mean (cfs)	2.18	Ac-ft	1,580	
Fiscal Year 1965-66:	Max	20	Min	0.01	Mean (mgd)	1.07	Mean (cfs)	1.66	Ac-ft	1,190	

Peak discharge (base, 130 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-14	about 1500	5.42	326	504	probably 2-27	-	4.66	208	322

40-5001. 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.

Records available.--May 1963 to June 1966.

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.

Extremes.--Maximum discharge during year, 23 mgd (36 cfs) Jan. 20 (gage height, 2.84 ft), from rating curve defined as explained below; no flow most of the time.

1963-66: Maximum discharge, 327 mgd (506 cfs) Sept. 17, 1963 (gage height, 6.38 ft), from rating curve defined only by computations of peak flow over dam at gage heights 4.80, 6.38, and 7.95 ft; no flow most of the time each year.

Maximum stage known, 7.95 ft, from floodmarks, present site and datum, sometime prior to July 1962 (discharge, 576 mgd or 891 cfs, result of indirect measurement).

Remarks.--Records good. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1							0					
2							0					
3							0					
4							0					
5							0					
6							0					
7							0					
8							0					
9							0					
10							0					
11							0					
12							0					
13							0					
14							0					
15							0					
16							0					
17							0					
18							0					
19							0					
20							1.3					
21							0					
22							0					
23							0					
24							0					
25							0					
26							0					
27							0					
28							0					
29							0	----------				
30							0	----------				
31			----------		----------		0	----------		----------		----------
Total	0	0	0	0	0	0	1.3	0	0	0	0	0
Mean												
Mgd	0	0	0	0	0	0	0.04	0	0	0	0	0
Cfs	0	0	0	0	0	0	0.06	0	0	0	0	0
Ac-ft	0	0	0	0	0	0	4.0	0	0	0	0	0
Max	0	0	0	0	0	0	1.3	0	0	0	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 4.51 Min 0 Mean (mgd) 0.012 Mean (cfs) 0.019 Ac-ft 14
Fiscal Year 1965-66: Max 1.3 Min 0 Mean (mgd) 0.004 Mean (cfs) 0.006 Ac-ft 4.0

Peak discharge (base, 50 mgd).--No peak above base.

40-5008. Kukuiula Gulch near Kipahulu

Location.--Lat 20°39'15", long 156°04'42", on right bank on downstream side of Highway 31, 1.3 miles west of Kipahulu, and 3.2 miles east of Kaupo.

Drainage area.--0.76 sq mi.

Records available.--May 1963 to January 1966 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 90 ft (from topographic map).

Extremes.--Maximum discharge during period, 646 mgd (1,000 cfs) Jan. 19 (gage height, 3.46 ft), from rating curve extended above 1.4 mgd; no flow for several days.

1963-66: Maximum discharge, 1,010 mgd (1,560 cfs) Jan. 23, 1965 (gage height, 5.11 ft), from rating curve extended above 2.6 mgd on basis of slope-area measurement of peak flow; no flow for several days in 1965.

Remarks.--Records poor. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, July 1965 to January 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	1.1	0.10	0.15	0.04	0.98	4.4					
2	1.4	.88	.06	1.5	.01	.52	7.5					
3	1.1	.52	.02	.15	0	.39	3.0					
4	.22	.45	.01	.02	.60	.52	2.1					
5	.10	3.9	.01	.01	.26	2.4	1.2					
6	.08	1.0	0	.04	.01	6.7	.80					
7	.18	.69	0	.01	0	1.2	.50					
8	.05	.39	0	.01	6.5	.39	.28					
9	.02	9.3	0	.12	.79	4.5	.20					
10	.11	.98	0	.01	.99	3.7	.20					
11	2.1	.52	.03	.01	.12	1.1	.10					
12	1.4	.45	9.6	1.7	1.4	9.4	.07					
13	.60	.88	5.9	.10	2.2	1.0	.07					
14	.34	.69	2.7	.70	8.0	4.0	2.1					
15	1.8	.52	.69	3.7	4.1	7.9	2.6					
16	.69	3.1	.26	.56	3.3	1.1	2.3					
17	5.4	.45	.10	.15	2.0	8.6	.02					
18	6.2	.45	.04	.08	7.3	6.8	8.1					
19	.88	1.0	.02	.12	1.7	2.1	7.1					
20	5.3	.30	.04	.01	2.3	3.4	9.7					
21	4.9	1.3	.01	.17	4.6	6.7	1.5					
22	2.2	.69	0	.01	4.0	5.9	5.3					
23	2.1	3.0	1.4	.04	3.3	8.2	1.6					
24	1.1	.45	5.2	.01	1.8	7.8	2.4					
25	1.1	.26	1.9	.01	1.1	2.6	5.3					
26	.88	.26	.12	0	3.1	2.9	1.7					
27	.69	.15	.04	0	4.7	1.9	1.2					
28	.88	.74	.02	.01	1.4	7.7	4.9					
29	.69	.93	.02	.79	2.0	6.9	4.5	----------				
30	.52	.15	5.6	.12	1.8	5.2	5.4	----------				
31	.52	.12	----------	.01	----------	6.6	3.4	----------		----------		----------
Total	60.55	44.62	33.89	6.99	167.52	284.80	252.44					
Mean												
Mgd	1.95	1.44	1.13	0.225	5.58	9.19	8.14					
Cfs	3.02	2.23	1.75	0.348	8.63	14.2	12.6					
Ac-ft	186	137	104	21	514	874	775					
Max	14	10	9.6	1.7	41	40	71					
Min	0.02	0.12	0	0	0	0.39	0.02					

Calendar Year 1965: Max 68 Min 0 Mean (mgd) 3.58 Mean (cfs) 5.54 Ac-ft 4010
Fiscal Year 1965-66: Max - Min - Mean (mgd) - Mean (cfs) - Ac-ft -

Note.--Stage-discharge relation indefinite Dec. 10 to Jan. 31.

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-12	0030	3.39	604	935	1-19	1730	3.46	646	1,000
12-10	0700	2.89	346	535					

40-5010. 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 northwest of Kipahulu, and 2.1 miles upstream from mouth.

Drainage area.--6.29 sq mi.

Records available.--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 June 1966. 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.--31 years (1927-29, 1932-35, 1940-66), 36.9 mgd (57.1 cfs).

Extremes.--Maximum discharge during year, 2,400 mgd (3,710 cfs) Jan. 21 (gage height, 9.45 ft), from rating curve extended above 2,200 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) on many days.
1927-29, 1931-66: Maximum discharge, 10,400 mgd (16,100 cfs) Jan. 23, 1965 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 2,200 mgd 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. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	46	4.8	0.06	0.73	0.05	1.0	48	2.1	0.49	0.01	23	4.9
2	9.5	1.3	.04	4.1	.02	12	94	.96	.16	.01	9.9	11
3	16	.40	.03	.40	.97	.92	34	.50	.10	.01	1.6	12
4	3.3	.32	.02	.10	14	.16	19	.45	.06	.01	.16	1.2
5	.60	36	.01	.04	1.0	34	4.1	.32	.04	.01	.05	.16
6	.36	97	.01	.02	.06	164	1.2	1.3	.02	.01	.02	.06
7	.36	7.2	.01	.01	.02	34	.71	23	.02	.01	.02	.03
8	.32	1.2	.01	.01	75	7.2	.45	14	.01	.01	.02	.02
9	3.7	93	.01	.06	3.6	74	.29	25	.01	.01	.01	.03
10	24	12	.01	.04	.29	385	.36	.94	.02	3.1	.13	.08
11	84	1.1	.01	.02	.10	177	.19	.36	.02	.05	10	.19
12	175	.50	67	.42	87	117	.10	.36	.01	.02	26	.05
13	12	4.5	49	.10	16	32	.06	26	.01	.03	7.5	.13
14	3.2	6.4	21	.16	56	713	1.4	1.8	.01	.05	28	.10
15	17	.45	4.9	1.3	342	210	169	115	.01	.04	50	.05
16	17	3.3	.40	.25	37	183	33	26	.05	.02	8.7	.02
17	168	.32	.13	.22	22	110	1.9	26	.01	.02	13	.01
18	74	.19	.05	.16	37	70	132	52	.01	.01	1.1	.01
19	12	.53	.04	.10	168	17	302	66	13	.01	.55	.01
20	91	.16	.03	.04	265	52	201	7.7	74	.01	.36	.01
21	43	1.2	.02	.03	19	79	469	1.3	120	.01	.19	17
22	22	11	.01	.02	20	31	67	.65	2.4	.01	.08	72
23	22	35	3.8	.02	21	30	139	.89	28	.01	.05	2.7
24	6.6	3.9	6.1	.02	10	44	54	.89	27	.01	.03	19
25	3.7	1.9	8.7	.01	1.8	190	32	.40	1.6	.01	.02	75
26	2.9	2.7	.19	.01	33	76	41	.22	.32	.01	.02	44
27	.65	.22	.06	.01	48	17	14	.19	.13	.01	.02	36
28	.77	10	.03	.02	110	8.2	2.7	.30	.04	.02	.03	3.8
29	1.3	13	.02	.05	9.7	30	3.3	----------	.02	.10	.64	82
30	1.2	.32	30	.06	11	27	18	----------	.01	1.0	2.5	47
31	.30	.10	----------	.02	----------	40	2.8	----------	.01	----------	5.0	----------
Total	861.76	350.01	191.70	8.55	1,408.61	2,965.48	1,885.56	394.63	267.59	4.64	188.70	428.56
Mean												
Mgd	27.8	11.3	6.39	0.276	47.0	95.7	60.8	14.1	8.63	0.155	6.09	14.3
Cfs	43.0	17.5	9.89	0.427	72.7	148	94.1	21.8	13.4	0.240	9.42	22.1
Ac-ft	2,640	1,070	588	26	4,320	9,100	5,790	1,210	821	14	579	1,320
Max	175	97	67	4.1	342	713	469	115	120	3.1	50	82
Min	0.30	0.10	0.01	0.01	0.02	0.16	0.06	0.19	0.01	0.01	0.01	0.01

Calendar Year 1965:	Max	1,020	Min	0.01	Mean (mgd)	39.0	Mean (cfs)	60.3	Ac-ft	43,650
Fiscal Year 1965-66:	Max	713	Min	0.01	Mean (mgd)	24.5	Mean (cfs)	37.9	Ac-ft	27,480

Peak discharge (base, 1,800 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-21	1100	9.45	2,400	3,710

40-5020. Kahalawe Gulch near Kipahulu

Location.--Lat 20°40'54", long 156°02'50", on left bank at old ditch intake, 0.7 mile upstream from mouth, and 1.8 miles northeast of Kipahulu Church.

Drainage area.--0.43 sq mi.

Records available.--February 1927 to March 1935, May 1935 to April 1937, May 1938 to June 1966. Monthly discharge only May, June 1938, published in WSP 1319. Published as Right Branch Kahalawe Stream near Kipahulu 1927-56 and as Right Branch Kahalawe Stream near Kipahulu 1956-60.

Gage.--Water-stage recorder and concrete control. Datum of gage is 885 ft above mean sea level (by vertical angles). Prior to May 1, 1938, at datum 8.0 ft lower.

Average discharge.--36 years (1927-34, 1935-36, 1938-66), 3.51 mgd (5.43 cfs).

Extremes.--Maximum discharge during year, 386 mgd (597 cfs) May 1 (gage height, 3.59 ft), from rating curve extended above 26 mgd as explained below; minimum, 0.36 mgd (0.56 cfs) Apr. 27.

1927-66: Maximum discharge, 2,300 mgd (3,560 cfs) Apr. 29, 1937 (gage height, 15.74 ft, datum then in use), from rating curve extended above 54 mgd on basis of slope-area measurement at gage height 4.80 ft and by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Dec. 18, 1929.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.8	1.8	1.0	0.94	0.96	1.7	4.0	2.4	1.4	0.50	41	0.97
2	3.0	1.8	.98	2.2	1.5	1.4	9.4	1.7	1.0	.48	2.7	2.0
3	3.1	1.8	.90	.98	1.8	1.3	3.9	1.5	.98	.44	1.4	2.4
4	1.8	1.7	.86	.78	2.4	1.8	3.4	1.4	.90	.42	1.1	1.5
5	1.6	9.4	.82	.67	1.6	7.2	2.8	1.3	.82	.42	.82	1.2
6	1.4	11	.78	.58	1.1	9.5	2.2	1.6	.78	.42	.82	.86
7	1.6	2.4	.74	.53	.82	3.1	1.8	1.4	.74	2.2	.67	.70
8	1.8	1.8	.70	.53	5.1	1.9	1.6	3.1	.67	.82	.64	.67
9	1.8	9.8	.67	2.8	1.2	3.2	1.4	3.3	.64	.67	.67	.78
10	3.4	2.1	.64	.64	1.6	20	2.1	1.6	.61	2.9	2.2	1.2
11	8.3	1.7	.74	.67	.94	9.2	1.4	1.2	.58	2.6	6.9	1.7
12	5.1	1.5	11	1.9	7.3	6.9	1.4	1.1	.55	.82	7.6	.86
13	2.7	3.1	4.8	.67	2.0	2.5	1.2	3.0	.53	.74	4.0	1.5
14	1.9	2.0	2.8	1.2	24	16	5.2	2.0	.53	.61	9.5	1.9
15	4.1	1.6	1.8	.86	37	3.8	21	10	1.1	.86	11	1.3
16	2.7	2.5	1.3	.90	9.4	4.0	3.2	5.7	.95	.66	4.8	.86
17	8.4	1.4	1.1	.78	4.8	7.2	1.8	6.3	.78	.94	7.7	.67
18	7.9	1.4	.90	1.4	4.2	4.0	7.0	12	1.4	.67	1.6	.61
19	2.5	2.1	.78	1.3	14	2.8	9.8	14	1.7	.64	1.2	.53
20	10	1.2	.82	.94	18	5.4	4.7	3.1	2.8	.67	.98	.55
21	9.9	3.1	.67	.82	3.4	5.1	13	2.0	6.3	.50	.86	2.0
22	3.7	2.8	.61	.64	3.9	5.4	4.0	1.5	1.3	.46	.78	3.0
23	8.4	5.7	2.3	.55	2.9	6.1	20	2.0	3.0	.44	.70	1.2
24	3.1	1.8	5.0	.50	2.3	5.2	21	1.9	1.6	.42	.67	2.8
25	3.0	3.0	1.7	.48	1.8	7.8	12	1.5	1.3	.40	.64	3.0
26	2.5	1.6	.86	.48	2.9	16	18	1.3	1.1	.38	.61	3.2
27	2.0	1.3	.74	.48	6.9	6.6	3.9	1.1	.86	.38	.64	6.4
28	4.1	2.6	.64	.67	8.4	5.4	2.6	1.1	.74	2.4	1.2	1.4
29	3.1	1.9	.61	1.4	2.5	13	3.4	----------	.64	2.8	1.7	5.8
30	2.2	1.3	3.9	.61	2.2	6.4	6.7	----------	.58	6.3	1.6	2.7
31	1.8	1.2	----------	.53	----------	5.0	2.4	----------	.53	----------	.90	----------
Total	123.7	88.4	51.16	28.43	176.92	194.9	196.3	90.1	37.41	32.96	117.60	54.26
Mean												
Mgd	3.99	2.85	1.71	0.917	5.90	6.29	6.33	3.22	1.21	1.10	3.79	1.81
Cfs	6.17	4.41	2.65	1.42	9.13	9.73	9.79	4.98	1.87	1.70	5.86	2.80
Ac-ft	380	271	157	87	543	598	602	276	115	101	361	167
Max	10	11	11	2.8	37	20	21	14	6.3	6.3	41	6.4
Min	1.4	1.2	0.61	0.48	0.82	1.3	1.2	1.1	0.53	0.38	0.61	0.53

Calendar Year 1965:	Max	84	Min	0.42	Mean (mgd)	3.81	Mean (cfs)	5.89	Ac-ft	4270
Fiscal Year 1965-66:	Max	41	Min	0.38	Mean (mgd)	3.27	Mean (cfs)	5.06	Ac-ft	3660

Peak discharge (base, 230 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-1	0030	3.59	386	597

40-5060. Makapipi ditch near Nahiku

Location.--Lat 20°48'17", long 156°06'25", on right bank at entrance to tunnel No. 1, 1.8 miles south of Nahiku, and 4.7 miles southeast of Keanae.

Records available.--July 1948 to June 1966 (discontinued).

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 1,300 ft above mean sea level (by stadia survey).

Average discharge.--18 years, 2.86 mgd (4.43 cfs).

Extremes.--1948-66: Maximum daily discharge, 8.2 mgd (13 cfs) May 26, 1964; minimum daily, 0.42 mgd (0.65 cfs) Mar. 22, 23, 25, Apr. 13, 14, 1958.

Remarks.--Records good. Ditch diverts water from water-development tunnels into Koolau ditch for power, domestic use, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.2	2.3	1.6	0.72	2.1	4.6	3.3	3.5	2.6	1.8	1.7	0.92
2	3.1	2.2	1.6	.72	3.5	6.0	3.6	3.3	2.6	1.7	1.7	.92
3	3.1	2.0	1.6	.69	3.5	6.0	3.6	3.1	2.7	1.6	1.7	.88
4	2.9	2.0	1.5	.65	2.7	5.4	3.6	2.8	2.3	1.6	1.7	.84
5	3.0	2.0	1.5	.65	2.8	5.7	3.4	2.7	2.3	1.6	1.7	.80
6	2.8	3.5	1.4	.65	2.8	5.8	4.0	2.5	2.2	1.6	1.6	.80
7	2.8	2.2	1.4	.62	2.9	5.8	3.5	2.3	1.9	3.1	1.6	.76
8	2.6	2.2	1.4	.62	2.8	5.7	3.4	2.3	1.8	2.3	1.6	.72
9	2.7	4.5	1.3	1.8	2.6	5.6	3.3	2.6	1.7	2.2	1.6	.72
10	3.2	3.2	1.3	.92	2.5	6.0	3.1	2.3	1.6	2.2	1.5	.72
11	3.9	2.9	1.2	.80	2.3	6.5	3.0	2.2	1.5	2.2	1.4	.69
12	4.7	2.8	1.2	.76	4.4	6.5	2.8	2.0	1.4	2.1	1.4	.69
13	3.7	2.9	1.1	.72	5.4	6.3	2.6	2.0	1.3	2.0	1.4	.69
14	3.4	3.0	1.1	.69	5.0	6.8	2.5	1.9	1.3	2.0	1.3	.65
15	3.4	2.9	1.1	.65	6.4	7.2	3.6	3.2	1.3	2.0	1.3	.62
16	3.3	2.8	1.0	.65	6.5	6.9	2.8	2.8	1.3	2.1	1.2	.62
17	4.6	2.6	1.0	.65	6.0	6.8	2.7	3.7	1.2	2.3	1.2	.62
18	5.2	2.5	1.0	.65	5.2	6.6	2.8	4.6	2.0	2.6	1.3	.62
19	4.4	2.4	.96	.69	5.2	6.2	3.0	5.4	2.6	2.4	1.4	.59
20	5.0	2.3	.96	.65	6.0	6.0	3.5	5.2	2.2	2.3	1.4	.59
21	4.8	2.2	.92	.65	6.3	6.0	1.1	5.1	2.3	2.2	1.3	.62
22	4.2	2.1	.92	.76	6.0	6.0	.92	4.6	2.3	2.2	1.3	.65
23	3.9	2.0	.92	.76	5.8	5.5	.76	4.1	2.3	2.0	1.2	.65
24	3.7	2.0	.88	.76	5.2	4.9	.69	3.6	2.4	1.9	1.2	.69
25	3.5	2.0	.84	.76	4.6	4.5	.65	3.3	2.3	1.8	1.1	1.0
26	3.3	1.9	.84	.80	4.1	4.1	2.1	3.1	2.2	1.7	1.1	1.2
27	3.1	1.8	.80	.80	4.4	3.9	3.3	2.9	2.0	1.7	1.0	1.5
28	2.9	1.8	.80	.84	5.2	3.7	4.1	2.7	1.8	1.7	1.0	1.5
29	2.7	1.8	.76	.84	5.0	3.7	4.3	---------	1.8	1.7	1.0	2.0
30	2.6	1.7	.72	.88	4.4	3.6	4.3	---------	1.7	1.7	.96	2.2
31	2.4	1.7	---------	.92	---------	3.4	4.0	---------	1.9	---------	.92	---------
Total	108.1	74.2	33.62	23.72	131.6	171.7	90.32	89.8	60.8	60.3	41.78	26.47
Mean												
Mgd	3.49	2.39	1.12	0.765	4.39	5.54	2.91	3.21	1.96	2.01	1.35	0.882
Cfs	5.40	3.70	1.73	1.18	6.79	8.57	4.50	4.97	3.03	3.11	2.09	1.36
Ac-ft	332	228	103	73	404	527	277	276	187	185	128	81
Max	5.2	4.5	1.6	1.8	6.5	7.2	4.3	5.4	2.7	3.1	1.7	2.2
Min	2.4	1.7	0.72	0.62	2.1	3.4	0.65	1.9	1.2	1.6	0.92	0.59

Calendar Year 1965:	Max	7.2	Min	0.62	Mean (mgd)	2.83	Mean (cfs)	4.37	Ac-ft	3,170
Fiscal Year 1965-66:	Max	7.2	Min	0.59	Mean (mgd)	2.50	Mean (cfs)	3.86	Ac-ft	2,800

40-5080. 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.

Records available.--January 1914 to January 1916, November 1921 to June 1966. 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.--45 years (1914-15, 1922-66), 14.4 mgd (22.3 cfs).

Extremes.--Maximum discharge during year, 1,270 mgd (1,960 cfs) Nov. 14 (gage height, 6.97 ft), from rating curve extended above 270 mgd as explained below; minimum, 1.1 mgd (1.7 cfs) June 16-20.

1914-16, 1921-66: Maximum discharge, about 3,600 mgd (about 5,570 cfs) Jan. 18, 1916 (gage height, 11.6 ft, present site and datum), from rating curve extended above 270 mgd by test on model of station site; minimum, 1.0 mgd (1.6 cfs) Nov. 14, 19, 20, 1962, Feb. 10, 11, 16, 17, 1963.

Remarks.--Records good except those above 500 mgd, which are fair. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	2.8	2.4	1.4	27	83	6.6	4.5	4.2	2.4	2.7	1.4
2	4.7	2.7	2.4	1.4	17	85	9.3	4.2	4.8	2.3	5.0	1.5
3	4.7	2.7	2.4	1.3	5.0	11	11	3.9	6.7	2.2	3.5	1.7
4	3.8	2.7	2.3	1.3	3.9	8.0	8.0	3.6	4.8	2.2	2.8	1.5
5	5.7	4.1	2.2	1.3	3.1	45	6.2	3.6	4.1	3.7	2.9	1.3
6	3.5	35	2.2	1.3	2.7	152	13	3.4	4.0	6.7	3.0	1.3
7	3.8	4.9	2.0	1.3	2.3	43	8.2	3.4	3.7	21	2.7	1.3
8	4.3	10	2.0	1.5	2.6	15	5.3	17	3.6	5.6	2.4	1.3
9	5.8	43	2.0	20	2.4	29	4.9	19	3.5	5.5	2.6	1.3
10	34	5.2	1.9	2.6	2.2	87	6.0	6.5	3.6	3.8	2.1	1.3
11	33	3.9	1.9	1.9	2.0	60	4.5	4.1	5.0	3.2	2.1	1.2
12	34	4.5	1.9	1.5	117	20	4.1	4.0	3.7	2.9	2.1	1.2
13	4.8	5.6	1.8	1.6	16	16	3.9	3.6	3.2	2.9	2.0	1.2
14	3.9	5.2	1.8	2.4	127	199	3.9	3.5	5.6	3.8	2.0	1.3
15	3.9	3.4	1.7	1.6	127	53	28	43	6.1	6.1	1.9	1.2
16	6.4	3.1	1.7	1.4	22	36	9.0	19	3.4	10	1.9	1.1
17	47	3.0	1.7	1.5	6.2	65	4.9	50	3.5	7.8	1.8	1.1
18	16	2.9	1.7	8.6	4.5	47	5.5	111	22	8.1	1.8	1.1
19	6.4	2.8	1.6	3.6	35	20	6.0	57	16	6.1	1.7	1.1
20	17	2.7	1.5	2.0	126	33	115	21	6.4	4.3	1.7	1.2
21	5.9	3.3	1.5	1.7	15	28	237	11	4.8	3.4	1.7	2.3
22	4.5	5.9	1.5	4.2	20	11	30	6.4	4.0	3.0	1.6	4.6
23	5.2	6.9	2.1	3.0	12	9.3	9.2	6.1	4.0	2.9	1.6	2.0
24	4.3	5.1	1.7	2.5	5.3	8.4	6.7	9.2	4.0	2.7	1.5	2.8
25	3.7	3.4	1.5	2.0	4.0	8.4	62	5.4	3.3	3.0	1.5	8.4
26	3.4	2.9	1.4	2.0	7.6	7.8	8.6	6.0	3.0	4.2	1.5	13
27	3.4	2.7	1.4	3.8	28	7.4	16	4.9	2.9	3.8	1.4	7.5
28	4.4	3.0	1.4	2.4	38	7.2	28	4.5	2.7	6.7	1.4	3.3
29	3.7	3.0	1.4	2.0	6.7	7.8	16	----------	2.7	8.6	1.4	17
30	3.1	2.7	1.4	2.2	4.9	7.4	6.9	----------	2.7	3.3	1.4	17
31	2.9	2.6	----------	2.2	----------	6.4	5.2	----------	2.7	----------	1.4	----------
Total	299.2	191.7	54.4	87.5	792.4	1,216.1	688.9	438.8	154.7	152.2	65.1	103.5
Mean												
Mgd	9.65	6.18	1.82	2.82	26.4	39.2	22.2	15.7	4.99	5.07	2.10	3.45
Cfs	14.9	9.56	2.82	4.36	40.8	60.7	34.3	24.3	7.72	7.84	3.25	5.34
Ac-ft	918	588	167	269	2,430	3,730	2,110	1,350	475	467	200	318
Max	47	43	2.4	20	127	199	237	111	22	21	5.0	17
Min	2.9	2.6	1.4	1.3	2.0	6.4	3.9	3.4	2.7	2.2	1.4	1.1

Calendar Year 1965:	Max	308	Min	1.3	Mean (mgd)	15.0	Mean (cfs)	23.2	Ac-ft	16,780
Fiscal Year 1965-66:	Max	237	Min	1.1	Mean (mgd)	11.6	Mean (cfs)	17.9	Ac-ft	13,030

Peak discharge (base, 1,000 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-14	1700	6.97	1,270	1,960

40-5120. 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.

Records available.--February 1919 to June 1966.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft above mean sea level, datum of 1929. Prior to Apr. 28, 1922, staff gage at same site and datum.

Average discharge.--47 years, 22.0 mgd (34.0 cfs).

Extremes.--1919-66: Maximum daily discharge, 64 mgd (99 cfs) Apr. 27, May 11, 1963, May 25, 1964; no flow at times.

Remarks.--Records good. Ditch diverts water from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	40	13	10	5.6	39	34	28	24	19	11	14	6.1
2	22	12	10	5.4	49	36	39	22	22	11	18	6.6
3	20	12	9.9	5.4	26	44	43	19	29	10	15	7.1
4	17	12	9.3	5.6	21	35	34	18	20	10	13	6.6
5	26	16	9.0	5.1	18	60	26	17	18	14	14	6.1
6	17	44	8.8	5.1	15	58	42	16	16	21	14	5.8
7	18	20	8.5	4.9	14	56	32	16	15	48	13	5.6
8	20	19	7.9	5.8	15	48	24	29	14	23	12	5.6
9	25	54	7.9	34	13	58	22	44	14	24	14	5.6
10	27	26	7.9	11	12	61	26	27	14	17	11	5.6
11	44	19	7.6	7.9	12	60	20	19	19	14	11	5.6
12	46	20	7.4	6.8	47	56	18	17	14	13	10	5.4
13	24	23	7.6	6.8	42	46	17	16	13	13	9.9	4.9
14	19	24	7.6	8.5	40	62	18	15	18	16	9.6	5.1
15	20	17	7.1	6.1	62	60	44	49	23	24	9.0	5.1
16	22	15	6.8	5.6	54	60	31	48	14	32	8.8	4.9
17	55	14	6.8	6.1	34	60	22	58	13	30	8.5	4.6
18	48	14	6.8	20	27	60	24	56	51	28	8.2	4.6
19	31	13	6.6	13	43	56	26	60	40	28	7.9	4.6
20	42	12	6.3	7.9	62	60	49	58	28	20	7.9	4.6
21	32	14	6.3	7.4	51	58	60	50	23	16	7.6	8.3
22	24	22	6.3	17	54	46	54	34	19	15	7.4	16
23	25	25	8.4	12	46	40	32	32	19	13	7.1	7.9
24	22	20	6.6	9.0	30	35	24	30	20	13	7.1	9.5
25	19	15	6.3	7.6	24	36	52	26	16	13	6.8	27
26	18	13	6.1	9.0	31	32	38	27	15	16	6.8	29
27	17	12	5.8	13	46	30	37	22	14	15	6.6	30
28	19	13	5.8	10	55	28	58	20	13	27	6.3	15
29	16	12	5.6	8.5	32	34	54	---------	12	29	6.3	34
30	15	12	5.6	9.0	26	31	39	---------	12	17	6.1	42
31	14	11	---------	10	---------	27	29	---------	13	---------	6.3	---------
Total	804	568	222.6	289.1	1040	1467	1062	869	590	581	303.2	328.8
Mean												
Mgd	25.9	18.3	7.42	9.33	34.7	47.3	34.3	31.0	19.0	19.4	9.78	11.0
Cfs	40.1	28.3	11.5	14.4	53.7	73.2	53.1	48.0	29.4	30.0	15.1	17.0
Ac-ft	2470	1740	683	887	3190	4500	3260	2670	1810	1780	930	1010
Max	55	54	10	34	62	62	60	60	51	48	18	42
Min	14	11	5.6	4.9	12	27	17	15	12	10	6.1	4.6

Calendar Year 1965:	Max	62	Min	0	Mean (mgd)	22.8	Mean (cfs)	35.3	Ac-ft	25480
Fiscal Year 1965-66:	Max	62	Min	4.6	Mean (mgd)	22.3	Mean (cfs)	34.5	Ac-ft	24930

40-5180. 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.

Records available.--January 1914 to December 1915, May 1916 to October 1917, November 1921 to June 1966. 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.--46 years (1914-15, 1916-17, 1922-66), 23.5 mgd (36.4 cfs).

Extremes.--Maximum discharge during year, 3,020 mgd (4,670 cfs) Nov. 14 (gage height, 10.93 ft), from rating curve extended above 420 mgd as explained below; minimum, 0.96 mgd (1.5 cfs) Oct. 6.
1914-17, 1921-66: Maximum discharge, about 4,500 mgd (about 6,960 cfs) Jan. 14, 1923 (gage height, 13.5 ft, from floodmarks), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 0.3 mgd (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.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17	4.0	3.0	1.4	58	147	5.8	7.7	6.3	3.0	6.3	2.1
2	7.0	3.7	2.9	1.4	31	129	9.0	7.1	6.3	2.6	16	2.8
3	7.2	3.7	2.7	1.2	9.4	20	13	6.2	12	3.0	7.1	2.7
4	5.5	3.7	2.5	1.1	6.4	14	7.8	5.6	6.7	3.4	5.9	2.1
5	9.2	11	2.4	1.1	5.2	55	5.9	6.2	5.5	9.1	5.1	1.8
6	5.4	55	2.6	1.0	4.2	256	29	5.8	5.0	17	7.6	1.7
7	7.0	9.3	2.5	1.2	3.7	68	13	5.4	4.4	53	5.8	1.7
8	8.8	10	2.3	6.1	8.4	24	6.5	44	4.1	12	4.6	1.7
9	14	80	2.1	51	5.4	41	5.6	40	3.8	34	4.2	1.7
10	65	9.7	2.0	7.1	5.3	92	7.2	12	5.6	13	3.6	1.7
11	56	6.7	1.9	4.3	4.4	83	5.1	7.6	9.1	8.1	3.5	1.5
12	29	7.2	2.4	2.7	261	25	4.7	6.3	5.2	5.9	3.4	1.4
13	8.1	8.4	3.0	2.6	33	15	4.3	6.2	4.0	5.1	3.8	1.4
14	6.5	7.1	2.1	4.9	308	76	4.2	6.4	8.7	10	8.7	1.9
15	7.1	5.2	1.7	2.2	187	29	44	63	8.0	23	6.1	1.6
16	10	5.8	1.7	1.8	37	24	17	53	4.1	22	4.6	1.4
17	65	4.5	1.7	2.0	14	77	7.2	75	4.6	18	3.8	1.3
18	24	4.1	2.4	20	9.8	66	6.8	184	34	10	3.1	1.4
19	10	4.1	2.9	9.8	49	29	9.7	85	25	9.5	2.8	1.5
20	22	3.4	2.0	5.0	203	40	41	42	6.5	6.8	2.6	1.5
21	9.0	5.6	1.7	3.1	28	33	142	20	5.1	5.3	2.8	4.5
22	8.0	12	1.6	12	32	14	36	11	4.2	4.7	2.5	7.6
23	8.4	14	6.7	11	20	10	12	19	4.0	4.1	2.2	2.3
24	6.7	10	4.0	6.0	11	8.8	12	24	3.9	4.3	2.1	6.8
25	5.7	6.1	2.4	3.7	8.8	8.0	84	11	3.4	6.1	2.0	14
26	5.2	4.6	2.0	7.3	15	7.1	18	10	3.2	9.9	2.0	18
27	6.2	3.9	1.6	8.8	40	6.4	28	8.0	3.0	7.0	1.9	11
28	12	4.2	1.5	4.5	62	6.0	50	7.0	2.8	13	1.9	5.4
29	6.3	4.4	1.4	6.4	13	7.4	27	----------	2.8	17	1.9	31
30	5.2	3.3	1.5	4.8	9.7	7.0	12	----------	2.8	8.3	1.8	28
31	4.4	3.5	----------	4.5	----------	5.4	8.8	----------	4.7	----------	2.1	----------
Total	460.9	318.2	71.2	200.0	1482.7	1423.1	676.6	778.5	208.8	348.2	131.8	163.5
Mean												
Mgd	14.9	10.3	2.37	6.45	49.4	45.9	21.8	27.8	6.74	11.6	4.25	5.45
Cfs	23.1	15.9	3.67	9.98	76.4	71.0	33.7	43.0	10.4	17.9	6.58	8.43
Ac-ft	1410	977	219	614	4550	4370	2080	2390	641	1070	404	502
Max	65	80	6.7	51	308	256	142	184	34	53	16	31
Min	4.4	3.3	1.4	1.0	3.7	5.4	4.2	5.4	2.8	2.6	1.8	1.3

Calendar Year 1965:	Max	308	Min	1.0	Mean (mgd)	21.5	Mean (cfs)	33.3	Ac-ft	24,040
Fiscal Year 1965-66:	Max	308	Min	1.0	Mean (mgd)	17.2	Mean (cfs)	26.6	Ac-ft	19,220

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
11-12	1500	7.25	1,280	1,980	11-14	1600	10.93	3,020	4,670

40-5220. Taro patch feeder ditch at Keanae

Location.--Lat 20°51'40", long 156°09'00", on left bank at Keanae, 80 ft downstream from intake on Palauhulu Stream, 500 ft downstream from highway bridge, 4.2 miles northwest of Nahiku, and 4.8 miles southeast of Kailua.

Records available.--September 1934 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 51 ft (from topographic map).

Average discharge.--31 years (1935-66), 2.30 mgd (3.56 cfs).

Extremes.--1934-66: Maximum daily discharge, 7.9 mgd (12.2 cfs) June 30, 1941, Feb. 10, 1955; no flow Nov. 15 to Dec. 12, 1965.

Remarks.--Records good. Ditch diverts from Palauhulu Stream for irrigation of taro at Keanae.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	2.2	2.0	2.0	3.4	0	2.1	2.9	2.5	1.7	1.6	1.9
2	2.4	2.2	2.0	2.0	3.0	0	2.5	2.8	2.7	1.5	1.9	1.9
3	2.3	2.2	2.0	2.0	2.6	0	2.9	2.7	3.0	1.5	1.6	1.9
4	2.1	2.1	2.0	2.0	2.2	0	2.5	2.5	2.6	1.6	1.5	1.9
5	2.3	2.1	2.0	2.0	2.0	0	2.2	2.5	2.4	2.2	1.5	1.9
6	2.1	3.1	2.0	2.0	2.0	0	3.0	2.4	2.3	2.6	1.6	1.9
7	2.1	2.4	2.0	2.0	2.0	0	2.6	2.4	2.3	3.3	1.6	1.9
8	2.1	2.4	2.0	2.0	2.0	0	2.1	3.0	2.2	2.0	1.6	1.9
9	2.6	3.7	2.0	2.9	1.9	0	2.0	3.4	2.1	2.6	1.6	1.8
10	3.0	2.6	2.0	2.0	1.9	0	2.3	2.9	2.3	2.2	1.6	1.8
11	3.4	2.5	2.1	2.0	2.1	0	1.9	2.7	2.7	1.8	1.6	1.8
12	3.2	2.5	2.1	2.0	4.8	0	1.9	2.6	2.3	1.8	1.6	1.8
13	2.6	2.4	2.1	1.9	2.2	1.3	1.8	2.6	2.1	1.9	1.9	1.8
14	2.5	2.4	2.1	1.9	1.3	2.9	2.4	2.5	2.4	1.8	2.0	1.8
15	2.5	2.3	2.1	1.9	0	3.5	4.1	4.1	2.7	2.3	2.2	1.8
16	2.5	2.2	2.1	1.9	0	3.3	3.4	3.6	2.2	2.1	2.0	1.9
17	3.8	2.1	2.1	1.9	0	3.8	3.0	4.4	2.2	2.2	2.0	1.9
18	3.0	2.1	2.1	2.2	0	3.8	2.9	5.9	3.8	1.9	2.0	1.8
19	2.6	2.1	2.1	2.1	0	3.2	2.9	4.8	3.2	2.0	2.0	1.8
20	3.0	2.1	2.1	1.9	0	3.5	3.7	3.9	2.4	1.9	2.0	1.7
21	2.7	2.1	2.1	2.0	0	3.6	5.0	3.4	2.2	1.7	2.0	1.8
22	2.5	2.1	2.0	2.3	0	3.0	3.7	3.1	2.1	1.6	2.0	1.8
23	2.5	2.3	2.2	1.9	0	2.8	3.2	3.2	2.0	1.5	2.0	1.8
24	2.5	2.2	2.1	1.9	0	2.6	3.0	3.4	2.0	1.5	2.0	1.8
25	2.5	2.1	2.0	1.9	0	2.5	4.4	3.0	1.9	1.5	2.0	1.8
26	2.4	2.1	2.0	1.9	0	2.4	3.5	2.9	1.9	1.5	2.0	1.9
27	2.4	2.1	2.0	1.9	0	2.3	3.5	2.7	1.8	1.4	2.0	1.8
28	2.4	2.1	2.0	2.0	0	2.2	4.3	2.6	1.8	2.1	2.0	1.8
29	2.3	2.1	2.0	2.0	0	2.4	3.7	----------	1.7	2.3	2.0	2.4
30	2.3	2.1	2.0	2.1	0	2.4	3.2	----------	1.7	1.9	2.0	2.1
31	2.2	2.0	----------	2.0	----------	2.1	3.0	----------	2.1	----------	1.9	----------
Total	79.6	71.0	61.4	62.5	33.4	53.6	92.7	88.9	71.6	57.9	57.3	55.9
Mean												
Mgd	2.57	2.29	2.05	2.02	1.08	1.73	2.99	3.18	2.31	1.93	1.85	1.86
Cfs	3.98	3.54	3.17	3.13	1.67	2.68	4.63	4.92	3.57	2.99	2.86	2.88
Ac-ft	244	218	188	192	103	164	284	273	220	178	176	172
Max	3.8	3.7	2.2	2.9	4.8	3.8	5.0	5.9	3.8	3.3	2.2	2.4
Min	2.1	2.0	2.0	1.9	0	0	1.8	2.4	1.7	1.4	1.5	1.7

Calendar Year 1965:	Max	5.6	Min	0	Mean (mgd)	2.17	Mean (cfs)	3.36	Ac-ft	2430
Fiscal Year 1965-66:	Max	5.9	Min	0	Mean (mgd)	2.15	Mean (cfs)	3.33	Ac-ft	2410

40-5230. 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.

Records available.--January 1910 to December 1912, November 1917 to February 1918, April 1918 to June 1966.

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, staff gage at same site and datum.

Average discharge.--50 years (1910-12, 1918-66), 66.3 mgd (103 cfs).

Extremes.--1910-12, 1917-66: Maximum daily discharge, 172 mgd (266 cfs) Apr. 19, 1935; no flow at times.

Remarks.--Records good. Ditch diverts at altitude 1,260 ft from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	118	36	30	16	119	88	61	66	51	30	49	22
2	61	35	29	15	124	142	95	59	53	29	96	27
3	60	34	28	15	81	126	114	52	101	29	59	29
4	48	34	26	15	58	100	82	50	57	30	47	22
5	79	58	26	14	47	135	58	50	50	63	49	19
6	48	127	26	14	40	138	107	47	45	88	58	18
7	59	72	25	14	35	139	90	48	41	139	49	18
8	68	57	23	30	57	132	57	93	39	93	42	18
9	105	143	22	111	43	135	51	128	36	117	46	18
10	80	82	22	44	39	140	68	88	43	82	36	18
11	131	53	21	30	40	138	47	58	68	53	35	17
12	124	62	27	21	106	134	44	52	42	44	34	16
13	72	75	24	21	131	117	41	48	36	42	36	16
14	56	67	21	33	99	137	40	44	56	77	40	18
15	60	48	19	19	95	134	114	132	75	120	37	17
16	86	44	18	17	70	132	96	119	39	83	35	15
17	142	38	19	19	64	133	60	138	42	111	31	15
18	131	37	19	74	58	138	64	145	131	77	28	16
19	94	37	20	61	106	135	64	143	105	91	26	16
20	123	32	18	30	138	136	119	139	68	60	26	16
21	89	46	17	22	131	135	141	130	56	48	26	39
22	68	93	17	81	131	118	139	96	45	45	25	80
23	76	104	45	60	127	96	106	88	44	41	22	27
24	59	79	29	37	89	82	77	125	50	41	22	54
25	51	48	19	27	66	80	140	82	38	52	21	96
26	48	38	18	44	97	71	126	84	36	71	21	114
27	52	35	16	63	123	62	102	63	34	64	21	109
28	74	39	16	36	134	61	141	56	32	110	20	52
29	51	41	16	34	100	79	136	----------	31	98	20	103
30	43	32	16	36	76	71	109	----------	30	63	20	137
31	39	32	----------	36	----------	56	80	----------	38	----------	22	----------
Total	2395	1758	672	1089	2624	3520	2769	2423	1612	2091	1099	1182
Mean												
Mgd	77.3	56.7	22.4	35.1	87.5	114	89.3	86.5	52.0	69.7	35.5	39.4
Cfs	120	87.7	34.7	54.3	135	176	138	134	80.5	108	54.9	61.0
Ac-ft	7350	5400	2060	3340	8050	10800	8500	7440	4950	6420	3370	3630
Max	142	143	45	111	138	142	141	145	131	139	96	137
Min	39	32	16	14	35	56	40	44	30	29	20	15

Calendar Year 1965:	Max	143	Min	14	Mean (mgd)	65.7	Mean (cfs)	102	Ac-ft	73580
Fiscal Year 1965-66:	Max	145	Min	14	Mean (mgd)	63.7	Mean (cfs)	98.6	Ac-ft	71300

40-5240. Honomanu Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'19", long 156°12'15", on left bank at Haiku-uka trail crossing, 4.5 miles southwest of Keanae, 4.8 miles southeast of Kailiili, and 5 miles south of Kailua.

Drainage area.--2.54 sq mi.

Records available.--October 1919 to February 1927, July 1932 to December 1934, June 1962 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 2,900 ft (from topographic map).

Average discharge.--12 years (1920-26, 1932-34, 1962-66), 8.40 mgd (13.0 cfs).

Extremes.--Maximum discharge during year, 1,090 mgd (1,690 cfs) Nov. 14 (gage height, 8.93 ft), from rating curve extended above 75 mgd; minimum, 0.15 mgd (0.23 cfs) Sept. 27, 28, Oct. 6, 7.
1919-27, 1932-34, 1962-66: Maximum discharge, 1,290 mgd (2,000 cfs) Jan. 14, 1923 (gage height, 9.93 ft), from rating curve extended above 75 mgd; minimum, 0.06 mgd (0.09 cfs) Nov. 20, 1962.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.6	1.1	0.60	0.36	18	40	2.5	1.2	0.95	0.95	1.4	0.60
2	1.3	.90	.47	.25	2.4	57	2.8	1.0	.95	.72	10	.85
3	1.6	.85	.44	.20	1.2	6.1	4.0	.90	1.6	1.7	2.6	1.1
4	1.2	.80	.41	.18	.53	2.4	2.5	.80	.90	1.7	1.4	1.0
5	2.3	10	.54	.17	.44	18	1.6	.85	.80	7.3	1.0	.68
6	1.3	24	.64	.16	.36	109	19	.90	.72	6.9	2.4	.51
7	1.6	2.5	.47	.47	.34	36	10	.85	.64	24	2.1	.48
8	2.4	3.3	.44	4.0	4.1	8.1	3.5	9.0	.54	4.2	1.7	.51
9	11	33	.34	20	.53	15	1.1	12	.48	3.7	1.1	.48
10	60	2.4	.25	2.2	.61	42	1.3	1.4	1.4	2.5	1.0	.39
11	56	1.0	.21	1.2	1.3	36	.95	.95	3.1	1.3	1.0	.30
12	7.9	1.6	10	.72	75	8.4	.80	5.0	1.3	1.0	1.3	.26
13	1.5	7.5	1.4	.58	5.0	3.2	.72	1.9	.46	.72	5.9	.24
14	1.1	1.8	.60	.57	108	8.2	.72	2.1	.91	3.4	1.6	.32
15	2.1	12	.41	.38	107	5.4	24	27	1.2	9.6	1.9	.30
16	3.3	1.9	.48	.31	22	3.5	5.5	10	.68	6.8	1.5	.26
17	30	.95	1.4	.31	8.6	32	1.3	29	.72	6.1	.90	.22
18	9.3	.76	1.3	4.1	4.2	25	1.2	71	6.2	1.8	.72	.26
19	1.8	.64	1.2	2.2	26	11	5.1	23	10	2.8	.64	.24
20	6.4	.57	.57	.95	81	12	12	8.4	1.3	2.1	.60	.22
21	7.7	1.2	.36	.60	11	11	45	5.4	.90	.95	.57	.81
22	2.6	5.0	.29	4.3	12	3.2	10	2.4	.76	.72	.51	1.5
23	2.3	9.5	3.3	4.1	6.1	1.6	7.9	8.2	.68	.93	.48	.64
24	1.7	2.8	.51	1.7	2.4	1.3	2.9	7.9	.85	1.1	.42	2.0
25	13	8.0	.20	.90	1.5	1.1	26	2.4	.64	2.4	.39	5.3
26	1.1	1.9	.17	1.9	4.0	1.2	2.7	2.6	2.80	3.9	.39	5.6
27	3.6	1.0	.17	1.9	18.0	1.0	6.3	1.6	1.30	11	.45	2.9
28	3.7	.90	.17	27	34.0	.90	24	1.2	.64	9.7	1.5	1.4
29	3.6	.95	.21	5.0	2.7	2.5	13	----------	.54	4.7	1.2	12
30	3.0	.76	.29	1.4	2.5	2.4	3.6	----------	.79	3.5	.60	8.3
31	1.6	.68	----------	1.2	----------	1.4	1.6	----------	5.6	----------	.54	----------
Total	238.9	140.26	27.84	89.31	560.81	505.90	243.59	238.95	50.35	128.19	47.81	49.67
Mean												
Mgd	7.71	4.52	0.928	2.88	18.7	16.3	7.86	8.53	1.62	4.27	1.54	1.66
Cfs	11.9	6.99	1.44	4.46	28.9	25.2	12.2	13.2	2.51	6.61	2.38	2.57
Ac-ft	733	430	85	274	1720	1550	748	733	155	393	147	152
Max	60	33	10	27	108	109	45	71	10	24	10	12
Min	1.1	0.57	0.17	0.16	0.34	0.90	0.72	0.80	0.46	0.72	0.39	0.22

Calendar Year 1965: Max 172 Min 0.16 Mean (mgd) 8.15 Mean (cfs) 12.6 Ac-ft 9,120
Fiscal Year 1965-66: Max 109 Min 0.16 Mean (mgd) 6.36 Mean (cfs) 9.84 Ac-ft 7,120

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-10	2300	5.70	480	743	11-14	1530	8.93	1,090	1,690

40-5310. Kula diversion from Haipuaena Stream near Olinda

Location.--Lat 20°48'24", long 156°13'27", on left bank of Haipuaena Stream, 3.4 miles east of Olinda, and 6.2 miles south of Kailua.

Records available.--July 1945 to June 1966.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,320 ft (from topographic map).

Average discharge.--20 years (1946-66), 0.439 mgd (0.679 cfs).

Extremes.--1945-66: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; no flow Nov. 4, 1964.

Remarks.--Records good. Water is diverted from Haipuaena Stream at station for domestic use and irrigation of truck crops in the Olinda and Kula areas.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.89	0.27	0.12	0.02	1.2	0.95	0.72	0.27	0.24	0.44	0.27	0.04
2	.36	.20	.09	.02	.67	1.3	.62	.23	.21	.28	.68	.06
3	.31	.16	.08	.02	.46	.94	.78	.18	.24	.48	.45	.16
4	.27	.16	.08	.02	.28	.64	.36	.14	.19	.36	.23	.27
5	.49	.66	.07	.02	.23	1.6	.26	.13	.13	.66	.16	.15
6	.39	1.4	.08	.02	.16	1.4	1.3	.14	.11	.73	.22	.09
7	.34	.87	.06	.02	.13	.46	1.0	.14	.09	.84	.31	.06
8	.63	.56	.04	.42	1.1	.40	.37	.96	.07	.56	.27	.05
9	1.0	1.5	.03	1.1	.71	.43	.26	1.1	.06	.46	.21	.05
10	.68	.80	.03	.60	.52	.48	.24	.47	.07	.41	.19	.04
11	.07	.38	.02	.46	.54	.45	.20	.28	.20	.33	.18	.03
12	.60	.38	.19	.41	.98	.40	.16	.44	.16	.24	.19	.03
13	.50	1.2	.38	.16	.30	.51	.13	.35	.10	.18	.29	.03
14	.30	.81	.26	.16	.23	1.1	.16	.25	.08	.16	.27	.03
15	.37	.83	.18	.12	.05	.84	.88	.97	.10	.83	.38	.02
16	.50	.74	.14	.08	.04	.74	.64	.73	.10	.75	.41	.02
17	1.4	.38	.18	.06	.04	1.3	.40	.84	.07	.97	.20	.02
18	1.1	.27	.34	.35	.39	1.0	.65	.94	.36	.46	.12	.02
19	.55	.23	.39	.62	1.4	.92	.86	.68	.80	.65	.09	.02
20	.87	.18	.19	.28	1.9	1.2	1.0	.64	.27	.64	.07	.02
21	1.1	.27	.12	.16	1.1	1.4	.79	.58	.19	.28	.07	.02
22	.88	1.1	.08	.80	1.2	.80	.34	.48	.13	.19	.05	.05
23	.62	1.2	.07	1.2	1.0	.64	.31	.69	.20	.14	.04	.06
24	.50	.92	.07	.65	.64	.31	.28	1.1	.44	.14	.04	.14
25	.36	.87	.06	.26	.41	.28	.34	.71	.19	.16	.03	.60
26	.27	.64	.04	.20	.65	.30	.46	.52	.46	.45	.03	.59
27	.52	.33	.03	.27	1.2	.26	.60	.40	.47	.50	.03	.40
28	.88	.24	.03	.71	1.8	.20	1.5	.30	.20	.89	.06	.23
29	.86	.23	.02	.80	.72	.36	1.1	----------	.13	.50	.15	.73
30	.93	.21	.02	.48	.52	.52	.72	----------	.20	.56	.08	.93
31	.53	.16	----------	.31	----------	.41	.38	----------	1.2	----------	.06	----------
Total	19.07	18.15	3.49	10.80	20.57	22.54	17.81	14.66	7.46	14.24	5.83	4.96
Mean												
Mgd	0.615	0.585	0.116	0.348	0.686	0.727	0.575	0.524	0.241	0.475	0.188	0.165
Cfs	0.952	0.905	0.179	0.538	1.06	1.12	0.890	0.811	0.373	0.735	0.291	0.255
Ac-ft	59	56	11	33	63	69	55	45	23	44	18	15
Max	1.4	1.5	0.39	1.2	1.9	1.6	1.5	1.1	1.2	0.97	0.68	0.93
Min	0.07	0.16	0.02	0.02	0.04	0.20	0.13	0.13	0.06	0.14	0.03	0.02

Calendar Year 1965:	Max	1.9	Min	0.02	Mean (mgd)	0.479	Mean (cfs)	0.741	Ac-ft	538		
Fiscal Year 1965-66:	Max	1.9	Min	0.02	Mean (mgd)	0.437	Mean (cfs)	0.676	Ac-ft	490		

40-5311. Haipuaena Stream at Kula pipeline intake, near Olinda

Location.--Lat 20°48'24", long 156°13'27", on left bank at Kula pipeline intake, 3.4 miles east of Olinda, and 6.2 miles south of Kailua.

Drainage area.--0.27 sq mi.

Records available.--January to April 1946 (fragmentary), May 1946 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,320 ft (from topographic map).

Average discharge.--20 years, 0.526 mgd (0.814 cfs).

Extremes.--Maximum discharge during year, 91 mgd (141 cfs) Nov. 14 (gage height, 3.76 ft), from rating curve extended above 1.3 mgd by differential-curve method; no flow for many days.
1946-66: Maximum discharge, that of Nov. 14, 1965; no flow at times each year.

Remarks.--Records fair. Kula pipeline (sea sta. no. 5310) diverts all water from Haipuaena Stream at low flow.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.08	0	0	0	1.1	3.6	0.04	0	0	0	0	0
2	0	0	0	0	0	7.1	.04	0	0	0	.01	0
3	0	0	0	0	0	.40	.08	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	.72	0	0	0	1.2	0	0	0	1.0	0	0
6	0	2.8	0	0	0	9.9	1.7	0	0	.56	0	0
7	0	.01	0	0	0	4.6	.53	0	0	3.0	0	0
8	.12	.02	0	.03	.88	.89	0	1.8	0	.33	0	0
9	1.5	2.8	0	1.8	.02	2.2	0	2.2	0	.08	0	0
10	5.5	.11	0	.03	0	6.1	0	0	0	.01	0	0
11	6.4	0	0	0	0	4.3	0	0	0	0	0	0
12	.88	0	2.4	0	7.7	.84	0	.02	0	0	0	0
13	0	.80	.37	0	2.0	.19	0	0	0	0	0	0
14	0	.06	0	0	9.1	.21	0	0	0	0	0	0
15	0	1.4	0	0	10	.04	3.7	3.7	0	.01	.02	0
16	0	.10	0	0	2.0	.02	.52	.83	0	.22	0	0
17	2.3	0	0	0	.80	2.9	0	2.8	0	.41	0	0
18	1.0	0	0	.17	.26	3.5	.31	8.2	.03	0	0	0
19	0	0	0	.08	.96	1.4	.40	2.3	.57	.01	0	0
20	.11	0	0	0	6.7	1.2	2.8	.99	0	.02	0	0
21	1.0	0	0	0	.57	.61	5.9	.49	0	0	0	0
22	.11	.24	0	.04	.74	.04	1.7	.09	0	0	0	0
23	0	1.1	0	.14	.35	0	.85	1.4	.01	0	0	0
24	0	.42	0	.01	0	0	.50	.90	0	0	0	0
25	0	.64	0	0	0	0	3.4	.05	0	0	0	.02
26	0	.13	0	0	0	0	.22	0	.20	0	0	.02
27	.06	0	0	0	1.5	0	.18	0	.02	.02	0	0
28	.06	0	0	2.3	3.9	0	2.4	0	0	.14	0	0
29	.10	0	0	.30	.02	0	.31	----------	0	.01	0	1.1
30	.09	0	0	0	0	0	.04	----------	.07	0	0	.43
31	0	0	----------	0	----------	.01	0	----------	1.2	----------	0	----------
Total	19.31	11.35	2.77	4.90	48.60	51.25	25.62	25.77	2.10	5.82	0.03	1.57
Mean												
Mgd	0.623	0.366	0.092	0.158	1.62	1.65	0.826	0.920	0.068	0.194	0.001	0052
Cfs	0.964	0.566	0.142	0.244	2.51	2.55	1.28	1.42	0.105	0.300	0.002	0.080
Ac-ft	59	35	8.5	15	149	157	79	79	6.4	18	0.09	4.8
Max	6.4	2.8	2.4	2.3	10	9.9	5.9	8.2	1.2	3.0	0.02	1.1
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 13 Min 0 Mean (mgd) 0.687 Mean (cfs) 1.06 Ac-ft 769
Fiscal Year 1965-66: Max 10 Min 0 Mean (mgd) 0.545 Mean (cfs) 0.843 Ac-ft 611

Peak discharge (base, 42 mgd, revised)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
7-10	2300	3.11	52	80	11-14	1530	3.76	91	141

40-5360. Haipuaena Stream above Spreckels ditch, near Huelo

Location.--Lat 20°51'04", long 156°11'28", on left bank 200 ft upstream from Spreckels ditch, 2.8 miles west of Keanae, 3.3 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Drainage area.--1.16 sq mi.

Records available.--October 1913 to June 1966. Monthly discharge only July 1915, published in WSP 1319. Prior to July 1954, published as "near Huelo." Records for December 1910 to September 1913 at site 600 ft downstream not equivalent owing to inflow from Spreckels ditch.

Gage.--Water-stage recorder and, since Feb. 8, 1951, concrete control. Datum of gage is 1,512.22 ft above mean sea level (East Maui Irrigation Co. bench mark).

Average discharge.--52 years (1914-66), 9.73 mgd (15.1 cfs).

Extremes.--Maximum discharge during year, 1,270 mgd (1,960 cfs) Nov. 14 (gage height, 7.04 ft), from rating curve extended above 150 mgd; minimum, 0.49 mgd (0.76 cfs) Oct. 5-7.
1913-66: Maximum discharge, 1,750 mgd (2,710 cfs) Aug. 12, 1940 (gage height, 6.91 ft), from rating curve extended above 150 mgd; minimum, slightly less than 0.1 mgd (about 0.2 cfs) on several days in January, February, May, June 1945, October 1953.

Remarks.--Records excellent except those for period of no gage-height record, which are fair. Kula pipeline (see sta. no. 5310) diverts above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11	2.1	1.7	0.68	22	54	4.0	4.6	3.5	1.8	4.5	1.4
2	4.2	1.8	1.6	.68	6.7	42	6.4	4.0	4.7	1.5	13	2.1
3	4.0	1.9	1.4	.58	3.9	7.1	8.4	3.7	6.5	1.5	5.8	2.3
4	3.3	1.9	1.4	.53	3.2	5.7	4.8	3.3	3.7	2.2	4.0	1.7
5	4.2	5.6	1.4	.49	2.6	22	3.7	3.2	3.2	8.5	4.3	1.2
6	3.0	22	1.5	.49	2.2	74	16	3.0	3.0	10	4.8	1.1
7	3.4	4.4	1.3	.60	1.9	24	8.3	2.5	2.5	30	4.2	1.0
8	4.4	5.0	1.2	3.1	7.8	10	3.9	11	2.3	8.0	3.8	1.0
9	16	41	1.1	18	3.2	17	3.4	13	2.2	6.5	3.9	.94
10	50	5.7	1.0	3.2	2.9	46	4.4	3.4	3.8	5.0	3.0	.88
11	37	3.7	1.0	1.6	3.9	40	3.2	2.9	7.1	3.5	2.9	.83
12	18	4.2	5.9	1.1	100	16	2.9	4.1	3.2	2.8	3.0	.78
13	4.5	5.0	2.8	.88	9.2	7.7	2.6	3.6	2.2	2.5	5.9	.78
14	3.7	4.0	1.2	1.0	141	19	2.6	2.8	8.0	9.0	3.3	1.0
15	4.6	4.3	.94	.78	98	11	27	32	5.0	12	3.7	.94
16	7.2	3.2	.88	.73	19	9.8	9.8	19	2.8	9.5	2.9	.78
17	41	2.1	1.0	.88	8.7	29	4.8	36	3.0	11	2.1	.68
18	13	2.0	1.3	5.8	6.2	24	4.0	78	14	4.8	1.9	.88
19	5.8	2.1	1.3	3.9	31	11	4.5	36	16	7.0	1.7	1.1
20	12	1.8	.94	1.8	82	16	13	18	3.5	6.0	1.6	1.0
21	7.0	2.8	.83	1.3	11	21	35	10	3.0	3.3	1.6	3.7
22	5.0	7.0	.78	7.5	14	7.5	17	6.2	2.5	3.0	1.4	5.6
23	5.6	9.4	1.3	4.2	9.8	5.6	9.7	11	2.4	2.5	1.4	1.8
24	4.0	4.8	1.4	2.8	5.6	4.6	7.4	14	2.2	2.8	1.4	5.0
25	3.4	5.1	.83	1.8	4.3	4.0	31	6.2	1.9	3.5	1.3	12
26	3.0	3.4	.73	4.0	7.0	3.8	8.4	6.2	2.1	5.5	1.2	12
27	3.8	2.0	.68	4.0	22	3.7	15	4.6	2.3	15	1.2	7.6
28	4.6	2.2	.63	18	29	3.5	27	4.0	1.6	18	1.4	4.2
29	4.2	2.6	.63	7.7	6.0	5.6	16	----------	1.4	13	1.7	17
30	3.3	1.8	.63	3.3	5.2	4.8	8.2	----------	2.2	9.3	1.2	16
31	2.8	1.8	----------	2.6	----------	3.4	5.4	----------	8.0	----------	1.2	----------
Total	297.0	166.7	39.30	104.02	669.3	552.8	317.8	346.3	129.8	219.0	95.3	107.29
Mean												
Mgd	9.58	5.37	1.31	3.36	22.3	17.8	10.3	12.4	4.19	7.30	3.07	3.58
Cfs	14.8	8.31	2.03	5.20	34.5	27.5	15.9	19.2	6.48	11.3	4.75	5.54
Ac-ft	911	511	121	319	2,050	1,700	975	1,060	398	672	292	329
Max	50	41	5.9	18	141	74	35	78	16	30	13	17
Min	2.8	1.8	0.63	0.49	1.9	3.4	2.6	2.5	1.4	1.5	1.2	0.68

Calendar Year 1965: Max 141 Min 0.49 Mean (mgd) 9.87 Mean (cfs) 15.3 Ac-ft 11,050
Fiscal Year 1965-66: Max 141 Min 0.49 Mean (mgd) 8.34 Mean (cfs) 12.9 Ac-ft 9,340

Note.--No gage-height record Mar. 12 to Apr. 28.

Peak discharge (base, 350 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-10	2230	4.82	394	610	11-14	1500	7.04	1,270	1,960
11-12	1500	5.10	490	758	11-20	0700	4.76	375	580

40-5380. Spreckels ditch at Haipuaena weir, near Huelo

Location.--Lat 20°51'15", long 156°11'25", on right bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.7 miles west of Keanae, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1966. 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.--43 years (1922-29, 1930-66), 13.9 mgd (21.5 cfs).

Extremes.--1922-66: Maximum daily discharge, 97 mgd (150 cfs) Feb. 10, 1955, Feb. 18, 1956; no flow at times.

Remarks.--Records good. Spreckela 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 4 mgd 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.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	47	7.7	5.7	2.6	53	33	14	14	11	8.0	15	4.7
2	15	7.0	5.5	2.5	30	57	26	12	17	6.4	43	8.7
3	14	7.0	5.1	2.1	16	20	31	10	27	7.7	19	10
4	11	7.0	4.9	2.0	11	22	18	10	12	11	13	6.4
5	16	18	4.9	2.0	9.3	66	12	10	10	32	17	4.5
6	10	62	5.5	1.9	7.4	63	41	9.9	9.3	36	21	3.8
7	13	18	4.7	2.5	6.4	47	25	8.7	8.2	72	16	3.7
8	17	20	4.4	14	27	35	12	28	7.4	33	13	3.8
9	51	76	4.2	49	11	57	11	38	7.0	40	15	3.8
10	32	21	4.0	14	9.9	64	17	13	15	24	10	3.7
11	67	12	3.8	6.4	21	47	9.9	9.9	31	14	9.9	3.1
12	45	16	17	4.2	63	21	8.7	16	12	11	10	2.8
13	15	22	8.8	3.5	35	19	7.7	12	8.2	9.6	19	2.8
14	11	15	4.5	4.4	22	59	8.7	11	28	35	11	3.7
15	17	18	3.7	3.2	8.4	43	50	57	25	49	14	3.2
16	28	12	3.4	2.9	22	18	29	52	10	36	11	2.8
17	72	7.4	4.9	3.8	24	43	17	70	13	44	7.4	2.5
18	51	7.0	5.5	24	18	50	14	77	61	21	6.4	3.4
19	21	7.3	5.6	16	52	38	16	64	40	28	5.7	3.7
20	41	6.0	3.5	6.9	75	47	34	58	15	20	5.5	3.8
21	28	9.6	2.9	4.9	30	49	58	39	12	12	5.3	18
22	18	30	2.6	32	36	25	44	20	9.9	10	5.1	25
23	22	38	6.6	17	27	18	29	31	9.3	10	4.7	7.2
24	14	20	5.7	11	17	15	22	50	9.9	11	4.4	22
25	11	20	3.1	8.6	12	13	53	20	7.7	18	4.2	43
26	9.6	13	2.5	18	19	12	29	22	10	28	4.0	50
27	15	7.4	2.4	17	38	11	28	15	9.6	44	4.0	31
28	20	8.3	2.3	31	53	11	56	13	6.4	54	5.7	16
29	21	9.7	2.3	24	17	21	45	----------	6.0	41	6.2	46
30	12	6.7	2.4	11	16	18	28	----------	7.9	32	4.2	50
31	10	6.0	----------	9.9	----------	11	17	----------	31	----------	4.4	----------
Total	774.6	535.1	142.4	352.3	786.4	1053	811.0	790.5	486.8	797.7	334.1	393.1
Mean												
Mgd	25.0	17.3	4.75	11.4	26.2	34.0	26.2	28.2	15.7	26.6	10.8	13.1
Cfs	38.7	26.8	7.35	17.6	40.5	52.6	40.5	43.6	24.3	41.2	16.7	20.3
Ac-ft	2380	1640	437	1080	2410	3230	2490	2430	1490	2450	1030	1210
Max	72	76	17	49	75	66	58	77	61	72	43	50
Min	9.6	6.0	2.3	1.9	6.4	11	7.7	8.7	6.0	6.4	4.0	2.5

Calendar Year 1965:	Max	86	Min	1.9	Mean (mgd)	19.7	Mean (cfs)	30.5	Ac-ft	22080
Fiscal Year 1965-66:	Max	77	Min	1.9	Mean (mgd)	19.9	Mean (cfs)	30.8	Ac-ft	22270

40-5410. 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.

Records available.--April 1932 to June 1966.

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.--34 years, 77.6 mgd (120 cfs).

Extremes.--1932-66: Maximum daily discharge, 194 mgd (300 cfs) July 1, 17, 1963; no flow at times.

Remarks.--Records good. Ditch is extension of Wailoa ditch east of Alo Stream; it receives water from Makapipi ditch at Hanawi Stream and diverts from nearly all streams from there west to the Alo. Water is used for power, domestic supply, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	123	36	30	14	134	100	64	68	53	29	52	21
2	61	35	30	14	128	162	95	61	55	28	97	28
3	60	35	29	13	77	126	114	54	101	29	61	30
4	48	35	26	13	57	98	84	52	59	29	48	24
5	77	54	26	13	47	150	61	51	50	60	49	20
6	48	154	26	13	39	158	118	48	45	84	61	19
7	58	73	25	13	34	156	96	48	42	166	51	19
8	67	55	23	36	59	138	60	92	39	95	44	18
9	114	176	22	130	41	144	54	134	37	116	48	18
10	91	85	22	50	37	144	68	90	43	84	37	17
11	156	55	21	30	40	160	50	59	68	54	36	16
12	134	62	30	20	140	148	46	54	42	44	36	15
13	73	75	25	19	136	120	42	50	35	42	36	14
14	55	68	22	33	128	103	42	42	64	76	40	17
15	61	51	19	18	142	118	137	150	76	125	37	16
16	85	46	18	16	73	140	100	133	39	96	35	14
17	165	38	19	18	69	148	63	171	37	112	32	14
18	139	37	20	73	61	159	65	186	139	74	30	14
19	92	37	20	60	122	142	67	166	112	92	28	14
20	128	32	18	28	163	159	123	153	66	61	26	15
21	90	45	17	22	134	155	169	133	56	49	28	36
22	70	92	16	82	133	117	157	98	44	45	26	80
23	77	104	44	59	128	96	110	94	42	41	24	27
24	60	78	27	36	89	83	80	133	49	41	23	51
25	52	51	19	27	68	80	163	84	38	49	23	108
26	48	39	17	43	93	73	128	85	35	72	22	117
27	51	35	16	61	125	65	109	66	33	72	22	109
28	73	40	15	48	139	64	168	58	32	132	21	52
29	53	42	15	36	99	83	156	----------	30	109	21	115
30	43	34	15	35	76	74	115	----------	30	68	20	137
31	39	33	----------	36	----------	59	80	----------	39	----------	23	----------
Total	2491	1832	672	1109	2811	3722	2984	2613	1630	2174	1137	1195
Mean												
Mgd	80.4	59.1	22.4	35.8	93.7	120	96.3	93.3	52.6	72.5	36.7	39.8
Cfs	124	91.4	34.7	55.4	145	186	149	144	81.4	112	56.8	61.6
Ac-ft	7640	5620	2060	3400	8630	11420	9160	8020	5000	6670	3490	3670
Max	156	176	44	130	163	162	169	186	139	166	97	137
Min	39	32	15	13	34	59	42	42	30	28	20	14

Calendar Year 1965:	Max	190	Min	13	Mean (mgd)	70.0	Mean (cfs)	108	Ac-ft	78360
Fiscal Year 1965-66:	Max	186	Min	13	Mean (mgd)	66.8	Mean (cfs)	103	Ac-ft	74790

40-5415. 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.

Records available.--December 1917 to November 1924, January 1925 to June 1966.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (from topographic map).

Average discharge.--47 years (1918-24, 1925-66), 5.67 mgd (8.77 cfs).

Extremes.--1917-66: Maximum daily discharge, 92 mgd (142 cfs) Jan. 3, 1927; no flow at times.

Remarks.--Records good. Ditch is extension of Center ditch and picks up water from streams between Kolea and Waikamoi Streams for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.9	0.42	0.32	0.05	17	23	2.0	2.4	1.3	0.60	2.0	0.28
2	1.0	.42	.32	.05	7.6	27	7.0	1.8	7.5	.54	4.3	.32
3	.66	.37	.28	.05	2.2	4.0	9.0	1.4	6.2	.48	1.6	.32
4	.54	.37	.28	.05	1.4	2.9	6.0	1.2	2.4	.54	1.2	.28
5	.72	.42	.28	.03	1.1	9.8	2.5	1.1	1.8	2.0	1.2	.23
6	.54	6.7	.28	.03	.85	35	10	.93	1.4	2.8	1.2	.23
7	.60	.78	.28	.05	.72	6.7	7.0	.85	1.2	20	.93	.18
8	.93	.54	.28	.11	1.6	3.1	1.2	4.2	1.1	1.8	.85	.18
9	8.0	33	.28	10	.85	5.3	1.1	7.2	.93	3.3	2.0	.18
10	19	1.1	.23	.37	.72	47	1.2	1.2	1.2	1.7	.78	.14
11	18	.60	.23	.18	3.4	39	1.0	.93	2.1	1.0	.66	.14
12	15	.83	.46	.11	49	16	.90	.85	.85	.85	.66	.11
13	1.4	1.0	.37	.08	9.5	6.6	.80	.85	.72	.93	.91	.11
14	1.0	1.2	.28	.14	38	40	.80	.78	5.3	3.5	.62	.14
15	1.1	.60	.18	.14	77	20	15	27	3.8	4.3	.72	.11
16	1.2	.54	.14	.14	36	4.5	6.0	11	.85	3.5	.60	.08
17	41	.48	.14	.23	2.8	15	1.4	26	.72	3.6	.48	.08
18	5.4	.42	.11	1.3	2.6	12	1.4	67	7.8	1.7	.42	.08
19	2.4	.54	.11	.81	18	2.5	1.4	32	5.4	2.7	.37	.05
20	5.1	.42	.08	.23	48	3.3	3.1	29	1.0	1.7	.37	.05
21	2.0	.60	.08	.28	7.1	10	25	9.7	.93	1.2	.32	.14
22	1.4	1.3	.08	2.7	4.7	2.4	7.9	5.4	.72	1.1	.32	.54
23	1.5	2.1	.14	.37	3.9	1.8	3.5	6.5	.93	.93	.28	.18
24	1.2	.93	.11	.28	2.8	1.7	2.5	6.9	1.7	.85	.28	.58
25	.93	.60	.08	.23	2.1	1.6	20	3.1	.78	.72	.28	2.9
26	.78	.54	.05	.37	1.9	1.5	3.3	2.6	.66	.72	.28	.96
27	.78	.48	.05	.28	11	1.4	11	2.0	.60	6.6	.28	1.5
28	.78	.60	.05	11	17	1.3	14	1.6	.54	17	.28	.37
29	.66	.60	.05	2.7	3.1	5.0	6.0	----------	.54	6.7	.28	5.4
30	.54	.42	.05	1.0	2.4	3.5	6.1	----------	.68	7.5	.28	3.3
31	.48	.37	----------	.78	----------	1.6	3.2	----------	2.9	----------	.28	----------
Total	138.54	59.29	5.67	34.14	374.34	354.5	181.30	255.49	64.55	100.86	25.03	19.16
Mean												
Mgd	4.47	1.91	0.189	1.10	12.5	11.4	5.85	9.12	2.08	3.36	0.807	0.639
Cfs	6.92	2.96	0.292	1.70	19.3	17.6	9.05	14.1	3.22	5.20	1.25	0.989
Ac-ft	425	182	17	105	1,150	1,090	556	784	198	310	77	59
Max	41	33	0.46	11	77	47	25	67	7.8	20	4.3	5.4
Min	0.48	0.37	0.05	0.03	0.72	1.3	0.80	0.78	0.54	0.48	0.28	0.05

Calendar Year 1965:	Max	77	Min	0.03	Mean (mgd)	5.08	Mean (cfs)	7.86	Ac-ft	5,700		
Fiscal Year 1965-66:	Max	77	Min	0.03	Mean (mgd)	4.42	Mean (cfs)	6.84	Ac-ft	4,950		

40-5430. Middle Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'42", long 156°12'50", on left bank 200 ft downstream from Haiku-uka trail crossing, 4.0 miles east of Kailiili, and 4.5 miles south of Kailua.

Drainage area.--0.48 sq mi.

Records available.--March 1919 to February 1927, July 1932 to June 1934, June 1962 to June 1966.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 2,900 ft (from topographic map). Prior to June 12, 1962, at site 200 ft upstream at different datum.

Extremes.--Maximum discharge during year, 303 mgd (469 cfs) Nov. 14 (gage height, 5.09 ft), from rating curve extended above 9.0 mgd on basis of slope-conveyance study; minimum, 0.06 mgd (0.09 cfs), Oct. 4-7.
1962-66: Maximum discharge, that of Nov. 14, 1965; minimum, 0.04 mgd (0.06 cfs) Nov. 12, 16-20, 1962, Jan. 20, 1965.

Remarks.--Records good. Kula pipeline (see sta. no. 5310) diverts above station at altitudes 4,300 ft (since 1934) and 3,200 ft (since 1944) for domestic use. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	0.39	0.49	0.08	5.4	12	1.0	0.92	1.0	0.28	0.71	0.17
2	1.2	.31	.39	.07	.85	12	.92	.71	.85	.19	3.9	.22
3	1.2	.31	.31	.07	.54	2.3	1.4	.65	1.0	.31	1.3	.22
4	1.0	.28	.31	.06	.35	1.8	.71	.59	.78	.44	.78	.19
5	1.3	2.6	.31	.06	.25	6.7	.54	.54	.65	2.3	.65	.15
6	1.0	6.5	.31	.06	.17	21	5.1	.49	.59	2.3	.78	.13
7	1.0	1.4	.22	.09	.15	7.2	2.0	.44	.54	6.9	.78	.13
8	1.3	1.8	.12	.81	1.9	3.0	.65	2.7	.49	1.5	.71	.12
9	4.8	11	.12	5.3	.49	5.1	.54	3.8	.49	1.0	.54	.12
10	11	1.7	.10	.71	.35	10	.59	.59	.71	.85	.49	.12
11	14	1.1	.10	.28	.46	10	.39	.44	1.2	.49	.44	.10
12	3.9	1.2	1.4	.12	16	3.4	.35	1.1	.71	.39	.44	.10
13	1.3	1.3	.44	.08	1.9	2.1	.28	.73	.54	.35	1.9	.12
14	.85	1.1	.12	.09	28	3.2	.31	.77	.71	1.0	.71	.15
15	1.1	1.5	.10	.07	23	2.5	6.9	8.2	.65	4.0	.65	.12
16	1.6	1.0	.12	.07	5.2	1.9	1.8	4.0	.44	2.5	.59	.10
17	10	.71	.13	.08	2.6	8.5	.65	9.3	.49	2.6	.35	.09
18	3.7	.65	.17	1.1	1.7	6.2	.54	19	2.2	.85	.28	.12
19	1.3	.65	.17	.67	7.7	3.4	1.3	7.4	4.1	1.2	.25	.12
20	3.4	.59	.10	.13	22	4.7	3.0	3.8	.71	1.1	.22	.12
21	2.0	.78	.09	.10	4.0	4.7	9.8	3.2	.59	.54	.19	.28
22	1.2	2.4	.09	1.4	4.2	1.9	3.1	1.7	.54	.39	.19	.49
23	1.1	3.1	.18	1.3	2.7	1.5	3.1	3.2	.49	.44	.17	.17
24	.92	1.6	.15	.54	1.4	1.3	2.0	4.0	.49	.44	.17	.65
25	.65	2.3	.09	.17	1.2	1.1	7.5	1.7	.44	.39	.15	2.0
26	.54	1.3	.08	.59	2.1	1.1	1.5	1.6	.92	1.2	.15	2.2
27	1.0	.78	.08	.59	6.7	1.0	2.9	1.3	.71	2.9	.15	.92
28	1.2	.71	.08	5.9	8.2	.78	7.7	1.1	.39	3.6	.19	.44
29	.92	.65	.08	1.8	1.7	1.1	4.7	----------	.22	1.8	.22	4.9
30	.85	.59	.08	.49	1.6	.96	1.9	----------	.26	1.6	.15	4.0
31	.65	.54	----------	.35	----------	.65	1.1	----------	2.0	----------	.15	----------
Total	79.08	50.84	6.53	23.23	152.81	143.09	74.27	83.97	25.90	43.85	18.35	18.76
Mean												
Mgd	2.55	1.64	0.218	0.749	5.09	4.62	2.40	3.00	0.835	1.46	0.592	0.625
Cfs	3.95	2.54	0.337	1.16	7.88	7.15	3.71	4.64	1.29	2.26	0.916	0.967
Ac-ft	243	156	20	71	469	439	228	258	79	135	56	58
Max	14	11	1.4	5.9	28	21	9.8	19	4.1	6.9	3.9	4.9
Min	0.54	0.28	0.08	0.06	0.15	0.65	0.28	0.44	0.22	0.19	0.15	0.09

Calendar Year 1965:	Max	33	Min	0.06	Mean (mgd)	2.44	Mean (cfs)	3.78	Ac-ft	2740
Fiscal Year 1965-66:	Max	28	Min	0.06	Mean (mgd)	1.97	Mean (cfs)	3.05	Ac-ft	2210

Peak discharge (base, 87 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
7-10	2300	3.17	99	153	11-20	0630	3.55	130	201
11-14	1500	5.09	303	469					

40-5450. Puohokamoa Stream above Spreckels ditch, near Huelo

Location.--Lat 20°51'21", long 156°11'29", on right bank 150 ft upstream from Spreckels ditch inflow and trail crossing, 3.2 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Drainage area.--2.35 sq mi.

Records available.--June 1913 to June 1966. Monthly discharge only for some periods, published in WSP 1319. Prior to July 1954, published as "near Huelo." Records for December 1910 to May 1913 at site 700 ft downstream not equivalent owing to inflow of Spreckels ditch.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,322.04 ft above mean sea level (East Maui Irrigation Co. bench mark). Prior to May 31, 1934, at site 130 ft downstream at different datum.

Average discharge.--53 years, 21.1 mgd (32.6 cfs).

Extremes.--Maximum discharge during year, 1,660 mgd (2,570 cfs) Nov. 14 (gage height, 7.32 ft), from rating curve extended above 590 mgd; minimum, 0.81 mgd (1.2 cfs) June 17, 18.
1913-66: Maximum discharge, 2,360 mgd (3,650 cfs) Apr. 16, 1960 (gage height, 9.31 ft), from rating curve extended above 410 mgd by logarithmic plotting; minimum, 0.4 mgd (0.6 cfs) Oct. 26, 1917.

Remarks.--Records good. Kula pipeline (see sta. no. 5310) diverts above station at altitudes 4,300 ft (since 1934) and 3,200 ft (since 1944) for domestic use.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	26	3.7	2.6	1.0	50	133	8.1	9.8	7.2	3.7	9.5	2.1
2	8.4	3.3	2.6	1.0	12	94	13	8.1	13	2.9	31	3.3
3	7.8	3.3	2.6	1.0	6.9	18	17	6.9	14	2.9	13	4.3
4	6.3	3.3	2.4	.90	5.8	15	10	6.3	7.5	4.3	8.4	2.6
5	7.8	8.6	2.2	.90	4.8	50	6.9	6.1	6.3	16	8.4	1.8
6	5.6	40	2.4	.90	3.7	174	31	5.6	5.8	20	10	1.7
7	6.6	10	2.1	1.0	3.1	51	16	5.0	5.0	60	8.4	1.7
8	8.1	11	2.0	3.5	14	22	7.5	18	4.8	15	6.9	1.6
9	32	89	1.7	31	6.9	34	6.3	25	4.3	14	8.2	1.6
10	82	12	1.6	6.6	5.8	90	9.1	6.6	8.2	9.6	5.6	1.4
11	85	7.2	1.6	2.9	7.8	81	5.8	5.3	16	6.3	5.3	1.2
12	45	8.4	7.8	1.7	206	33	5.3	6.3	6.6	5.0	5.6	1.1
13	10	8.4	4.2	1.3	20	18	4.8	6.6	4.6	4.7	10	1.1
14	7.2	6.9	1.8	1.4	226	41	5.2	4.9	17	17	6.1	1.6
15	9.6	5.7	1.4	1.2	229	26	60	73	13	26	7.2	1.3
16	16	5.6	1.3	1.1	30	23	18	37	5.6	21	5.3	1.0
17	93	3.9	1.3	1.5	19	63	9.5	72	5.9	23	3.9	.90
18	26	3.7	1.3	10	14	49	8.1	173	30	10	3.3	1.2
19	12	3.9	1.6	8.8	64	23	8.4	93	31	15	2.9	1.7
20	27	3.1	1.3	2.4	182	34	23	41	8.1	12	2.8	1.7
21	13	4.5	1.2	1.7	28	46	72	24	6.3	6.6	2.6	7.8
22	10	12	1.1	17	32	17	34	14	5.3	5.6	2.4	13
23	12	19	1.9	6.1	23	13	20	21	5.3	5.3	2.2	3.4
24	8.1	10	2.4	5.2	14	11	14	31	5.0	5.6	2.1	15
25	6.6	7.8	1.4	2.6	11	9.5	75	14	3.9	7.1	2.0	27
26	5.8	6.4	1.2	6.2	16	8.4	18	13	4.2	13	2.0	27
27	6.1	4.1	1.1	7.8	48	8.1	29	9.8	4.8	34	2.0	17
28	8.8	4.1	1.1	53	62	7.8	59	8.1	3.3	43	1.8	8.4
29	6.6	4.8	1.1	16	16	11	34	----------	2.8	31	2.1	36
30	5.3	3.1	1.0	6.1	13	11	20	----------	4.2	24	1.8	34
31	4.6	2.8	----------	4.6	----------	6.6	12	----------	16	----------	1.8	----------
Total	608.3	319.6	59.3	206.40	1373.8	1221.4	660.0	744.4	275.0	463.6	184.6	223.50
Mean												
Mgd	19.6	10.3	1.98	6.66	45.8	39.4	21.3	26.6	8.87	15.5	5.95	7.45
Cfs	30.3	15.9	3.06	10.3	70.9	61.0	33.0	41.2	13.7	24.0	9.21	11.5
Ac-ft	1870	981	182	633	4,220	3,750	2030	2280	844	1420	567	686
Max	93	89	7.8	53	229	174	75	173	31	60	31	36
Min	4.6	2.8	1.0	0.90	3.1	6.6	4.8	4.9	2.8	2.9	1.8	0.90

Calendar Year 1965: Max 260 Min 0.90 Mean (mgd) 20.7 Mean (cfs) 32.0 Ac-ft 23,150
Fiscal Year 1965-66: Max 229 Min 0.90 Mean (mgd) 17.4 Mean (cfs) 26.9 Ac-ft 19,460

Peak discharge (base, 700 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-12	1500	5.22	906	1,400	11-20	0700	5.20	900	1,390
11-14	1600	7.32	1,660	2,570	12- 6	1530	4.63	729	1,130

40-5528. Waikamoi Stream above reservoir at Kula pipeline intake, near Olinda

Location.--Lat 20°48'27", long 156°14'02", on left bank 1,000 ft upstream from Kula pipeline intake and 3.3 miles east of Olinda Prison Camp.

Drainage area.--2.50 sq mi.

Records available.--July 1953 to June 1966. Prior to July 1956, published as Waiakamoi Stream above reservoir at Kula pipeline intake, near Olinda.

Gage.--Water-stage recorder and concrete control. Datum of gage is 4,487 ft above mean sea level (levels by Maui County Waterworks).

Average discharge.--12 years (1954-66), 1.43 mgd (2.21 cfs).

Extremes.--Maximum discharge during year, 221 mgd (342 cfs) Nov. 14 (gage height, 3.41 ft), from rating curve extended above 6.4 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) on many days.
1953-66: Maximum discharge, 1,680 mgd (2,600 cfs) Dec. 10, 1954 (gage height, 8.16 ft), from rating curve extended above 6.4 mgd on basis of computation of peak flow over dam; no flow at times.

Remarks.--Records good. Diversion above station for livestock.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.29	0.06	0.03	0.03	0.98	5.5	0.18	0.07	0.05	0.15	0.06	0.02
2	.11	.04	.02	.03	.19	8.8	.16	.05	.04	.08	.14	.02
3	.09	.04	.02	.03	.10	.99	.24	.04	.06	.11	.09	.04
4	.08	.04	.03	.03	.07	.39	.09	.03	.04	.09	.04	.04
5	.13	.63	.03	.03	.05	1.8	.06	.03	.04	.37	.03	.02
6	.11	3.7	.04	.03	.04	22	1.5	.03	.03	.42	.04	.01
7	.09	.45	.04	.04	.04	8.2	.97	.04	.03	1.7	.05	.01
8	.21	.22	.04	.08	.92	1.1	.15	.97	.02	.40	.05	.01
9	1.9	4.6	.04	.67	.32	1.6	.08	2.2	.02	.14	.04	.01
10	12	.59	.04	.15	.14	5.9	.06	.23	.03	.09	.03	.01
11	7.1	.16	.04	.12	.12	4.2	.05	.08	.04	.07	.03	.01
12	1.1	.11	2.2	.08	21	.97	.03	.05	.03	.05	.03	.01
13	.32	.82	.41	.04	5.3	.43	.03	.05	.02	.04	.04	.01
14	.11	.40	.08	.05	23	.65	.04	.04	.02	.05	.05	.01
15	.12	.88	.05	.04	29	.43	2.4	2.5	.03	.22	.08	.01
16	.18	.44	.04	.03	3.4	.31	.50	.66	.03	.23	.08	.01
17	3.2	.12	.04	.02	.63	3.2	.13	1.9	.03	.31	.03	.01
18	1.6	.07	.05	.13	.33	4.3	.31	7.3	.13	.11	.02	.01
19	.30	.05	.06	.16	1.5	1.6	.62	2.4	.30	.20	.02	.01
20	.30	.04	.04	.06	9.1	1.5	2.3	1.1	.07	.20	.02	.01
21	1.4	.06	.03	.04	1.5	1.2	5.8	.55	.05	.07	.02	.01
22	.57	.32	.02	.23	1.2	48	1.5	.22	.04	.04	.03	.01
23	.20	1.4	.03	.30	1.1	.22	.50	.87	.06	.04	.02	.01
24	.12	.65	.04	.15	.34	.11	.35	1.4	.08	.03	.01	.08
25	.08	.76	.03	.07	.16	.08	2.5	.44	.04	.04	.01	.15
26	.05	.39	.02	.06	.21	.07	.34	.19	.13	.08	.02	.14
27	.10	.11	.02	.07	1.7	.05	.34	.12	.11	.08	.02	.08
28	.16	.06	.03	2.8	4.6	.05	2.4	.08	.05	.18	.02	.04
29	.15	.05	.03	.63	.50	.07	.65	----------	.04	.10	.02	.46
30	.23	.04	.03	.12	.23	.10	.32	----------	.23	.13	.01	.35
31	.14	.04	----------	.08	----------	.08	.12	----------	.78	----------	.01	----------
Total	32.54	17.34	3.62	6.40	107.77	76.38	24.72	23.64	2.67	5.82	1.16	1.62
Mean												
Mgd	1.05	0.559	0.121	0.206	3.59	2.46	0.797	0.844	0.086	0.194	0.037	0.054
Cfs	1.62	0.865	0.187	0.319	5.55	3.81	1.23	1.31	0.133	0.300	0.057	0.084
Ac-ft	100	53	11	20	331	234	76	73	8.2	18	3.6	5.0
Max	12	4.6	2.2	2.8	29	22	5.8	7.3	0.78	1.7	0.14	0.46
Min	0.05	0.04	0.02	0.02	0.04	0.05	0.03	0.03	0.02	0.03	0.01	0.01

Calendar Year 1965: Max 29 Min 0.01 Mean (mgd) 1.21 Mean (cfs) 1.87 Ac-ft 1350
Fiscal Year 1965-66: Max 29 Min 0.01 Mean (mgd) 0.832 Mean (cfs) 1.29 Ac-ft 932

Peak discharge (base, 130 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-10	1000	2.80	135	209	11-14	1600	3.41	221	342

40-5700. 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.--3.58 sq mi.

Records available.--December 1910 to December 1911, October 1913 to June 1918, August to October 1919, December 1919 to June 1924, January 1925 to June 1966. 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, staff 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.--49 years (1914-18, 1920-24, 1925-66), 24.4 mgd (37.8 cfs).

Extremes.--Maximum discharge during year, 2,230 mgd (3,450 cfs) Nov. 14 (gage height, 8.97 ft), from rating curve extended above 390 mgd as explained below; minimum, 1.6 mgd (2.5 cfs) Oct. 4-7.

1910-11, 1913-66: Maximum discharge, 4,140 mgd (6,410 cfs) Nov. 18, 1930 (gage height, 10.74 ft), from rating curve extended above 390 mgd by logarithmic plotting; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.

Remarks.--Records good. No diversion above station since 1922. All low flow diverted into Wailoa ditch (see sta. no. 5880) 200 ft below station for domestic supply, power, and irrigation.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	5.0	4.0	1.7	5.2	15.6	1.0	1.3	9.7	5.9	1.4	3.8
2	1.0	4.8	3.8	1.8	1.1	10.6	2.0	1.1	3.8	5.0	2.8	4.8
3	8.7	4.8	3.6	1.7	8.7	1.9	2.4	1.0	2.4	4.6	1.4	5.9
4	7.5	4.6	3.4	1.7	8.0	1.7	1.5	9.0	1.1	5.0	1.1	4.4
5	8.3	5.8	3.4	1.6	6.7	6.7	1.1	8.3	9.4	2.2	1.2	3.4
6	6.7	3.5	3.4	1.6	5.7	14.6	4.1	7.7	8.3	1.8	1.4	3.0
7	7.5	1.1	3.2	1.7	5.2	4.6	1.6	7.2	7.5	7.5	1.1	2.8
8	9.0	1.3	3.0	2.2	1.5	2.3	1.1	3.4	7.0	1.6	9.7	2.7
9	4.1	9.4	3.0	1.8	8.3	4.3	9.7	2.3	6.4	1.3	1.5	2.7
10	8.7	1.2	2.8	7.5	8.0	14.4	1.4	8.7	1.3	1.0	8.7	2.7
11	7.0	7.5	2.8	3.6	1.2	11.7	9.0	7.5	3.8	8.0	8.0	2.6
12	6.3	8.4	3.2	2.6	30.1	5.1	8.3	7.2	9.0	7.0	7.7	2.4
13	1.1	9.0	3.4	2.2	2.6	2.4	7.5	7.0	7.0	7.0	7.2	2.4
14	9.0	7.2	3.0	2.1	36.4	6.3	9.9	7.2	3.5	2.5	7.0	2.8
15	1.2	5.9	2.7	2.0	24.9	4.0	7.7	9.0	2.2	2.8	7.0	2.4
16	1.9	5.2	2.6	2.0	5.3	3.3	1.9	5.7	8.3	2.1	6.4	2.1
17	13.4	5.0	2.6	2.6	2.4	6.2	1.3	8.6	7.7	2.6	5.4	2.1
18	3.2	4.8	2.6	1.2	2.0	5.6	1.1	21.3	3.5	1.5	5.2	2.1
19	1.6	4.8	2.6	9.9	7.9	2.6	1.2	10.2	3.6	2.1	4.8	2.4
20	2.5	4.4	2.4	3.8	19.0	4.7	2.0	10.6	1.1	1.4	4.6	2.8
21	1.3	6.1	2.2	3.2	3.4	7.9	7.3	3.2	9.4	9.7	4.4	1.3
22	1.0	1.5	2.1	3.2	4.6	2.3	4.6	1.8	7.7	8.3	4.4	2.0
23	1.2	2.0	2.2	5.4	3.4	1.7	2.1	3.5	8.0	7.5	4.2	5.4
24	9.0	9.7	2.2	4.6	2.0	1.4	1.7	4.9	9.2	7.2	4.0	1.6
25	7.7	6.7	2.1	4.2	1.5	1.2	7.1	1.8	6.2	7.5	3.8	3.9
26	7.2	5.9	2.0	6.2	1.9	1.1	2.4	1.6	5.7	1.1	3.6	3.2
27	7.0	5.0	1.8	7.5	5.5	1.1	4.2	1.3	5.4	4.8	3.6	2.3
28	8.0	5.4	1.8	11.3	7.0	1.2	7.0	1.1	5.0	6.3	3.4	1.2
29	6.2	5.9	1.8	1.9	1.8	1.7	4.2	----------	4.8	6.7	3.4	4.2
30	5.7	4.4	1.8	9.0	1.5	1.3	2.7	----------	5.8	4.7	3.2	4.7
31	5.2	4.2	----------	7.0	----------	9.4	1.6	----------	2.4	----------	3.4	----------
Total	705.7	340.5	81.5	293.4	1,772.6	1,504.4	807.4	1,006.8	434.5	622.7	242.1	309.7
Mean												
Mgd	22.8	11.0	2.72	9.46	59.1	48.5	26.0	36.0	14.0	20.8	7.81	10.3
Cfs	35.3	17.0	4.21	14.6	91.4	75.0	40.2	55.7	21.7	32.2	12.1	15.9
Ac-ft	2,170	1,040	250	900	5,440	4,620	2,480	3,090	1,330	1,910	743	950
Max	134	94	4.0	113	364	156	77	213	38	75	28	47
Min	5.2	4.2	1.8	1.6	5.2	9.4	7.5	7.0	4.8	4.6	3.2	2.1

Calendar Year 1965: Max 364 Min 1.6 Mean (mgd) 24.6 Mean (cfs) 38.1 Ac-ft 27,610
Fiscal Year 1965-66: Max 364 Min 1.6 Mean (mgd) 22.2 Mean (cfs) 34.3 Ac-ft 24,920

Peak discharge (base, 750 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-12	0030	6.22	838	1,300	11-14	1600	8.97	2,230	3,450
10-28	1900	7.46	1,380	2,140	12- 1	2100	6.22	838	1,300
11-12	1330	6.79	1,070	1,660					

40-5745. Kailua Stream near Kailiili

Location.--Lat 20°50'28", long 156°14'24", on right bank 0.4 mile downstream from Haiku-uka boundary trail, 2.1 miles east of Kailiili, and 3.9 miles south of Kailua.

Drainage area.--1.01 sq mi.

Records available.--June 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 2,840 ft (from topographic map).

Extremes.--Maximum discharge during year, 795 mgd (1,230 cfs) Nov. 14 (gage height, 9.22 ft), from rating curve extended above 18 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) June 17, 18.
1963-66: Maximum discharge, 1,150 mgd (1,780 cfs) Feb. 3, 1965 (gage height, 10.51 ft), from rating curve extended above 18 mgd by logarithmic plotting; minimum, that of June 17, 18, 1966.

Remarks.--Records good. Diversion above station at altitude 4,250 ft by Maui County Board of Water Supply for irrigation and domestic use.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	0.20	0.17	0.04	4.4	31	0.83	0.83	0.67	0.30	0.72	0.05
2	.69	.17	.14	.04	1.1	31	.78	.64	.56	.25	4.1	.06
3	.54	.15	.14	.04	.64	3.2	1.2	.48	1.1	.20	1.6	.09
4	.44	.14	.13	.04	.39	1.9	.78	.44	.61	.20	.75	.10
5	.39	.48	.12	.04	.29	8.7	.56	.39	.44	1.5	.46	.08
6	.37	6.3	.12	.04	.23	58	6.7	.39	.35	2.0	.61	.05
7	.37	1.2	.11	.04	.18	16	3.8	.33	.29	6.0	.50	.04
8	.42	1.1	.10	.04	1.9	3.5	1.1	2.4	.25	1.4	.37	.04
9	3.5	17	.09	1.5	1.1	5.1	.78	2.7	.22	.80	.37	.03
10	40	2.0	.08	.75	.75	16	.75	.84	.33	.70	.31	.03
11	25	.86	.07	.33	.89	14	.48	.44	.99	.40	.27	.03
12	4.7	.75	3.8	.20	38	3.9	.39	.31	.46	.30	.23	.03
13	1.0	.70	1.1	.14	4.3	2.1	.35	.29	.27	.25	.48	.03
14	.67	.48	.33	.13	80	3.6	.29	.29	.26	.45	.50	.03
15	.82	1.3	.16	.11	53	2.9	8.7	3.5	.39	1.5	.37	.03
16	1.2	1.1	.12	.09	6.4	2.2	1.9	2.3	.20	1.2	.35	.03
17	12	.48	.11	.07	1.8	12	.86	4.1	.16	1.0	.25	.03
18	4.2	.37	.10	.11	1.3	14	.67	20	.56	.90	.18	.03
19	1.1	.29	.09	.59	5.7	4.3	.88	5.5	4.1	1.9	.16	.03
20	2.3	.23	.08	.27	34	5.9	2.9	2.4	.44	2.2	.14	.04
21	1.1	.22	.08	.18	4.3	6.8	13	1.7	.23	.86	.13	.06
22	.94	.94	.07	1.8	4.2	2.3	5.0	1.3	.14	.59	.12	.20
23	.69	2.3	.07	1.0	3.1	1.6	2.6	1.6	.12	.46	.10	.16
24	.54	1.3	.06	.84	1.6	1.3	2.0	2.4	.11	.46	.08	.20
25	.42	.96	.05	.37	1.2	1.1	10	1.8	.10	.48	.07	1.9
26	.35	1.1	.05	.46	2.0	.95	1.7	1.3	.10	.98	.06	2.0
27	.33	.48	.05	.64	6.7	.80	2.8	.98	.10	.88	.05	.92
28	.42	.33	.04	9.9	15	.70	8.0	.75	.10	2.2	.05	.48
29	.33	.31	.04	3.2	2.1	.72	4.8	----------	.10	1.1	.06	5.3
30	.26	.23	.04	.75	1.5	.83	2.0	----------	.13	2.2	.06	6.9
31	.23	.18	----------	.46	----------	.61	1.1	----------	.70	----------	.06	----------
Total	107.32	43.65	7.71	24.21	278.07	257.01	87.70	60.40	14.58	33.66	13.56	19.00
Mean												
Mgd	3.46	1.41	0.257	0.781	9.27	8.29	2.83	2.16	0.470	1.12	0.437	0.633
Cfs	5.35	2.18	0.398	1.21	14.3	12.8	4.38	3.34	0.727	1.73	0.676	0.979
Ac-ft	329	134	24	74	853	789	269	185	45	103	42	58
Max	40	17	3.8	9.9	80	58	13	20	4.1	6.0	4.1	6.9
Min	0.23	0.14	0.04	0.04	0.18	0.61	0.29	0.29	0.10	0.20	0.05	0.03

Calendar Year 1965: Max 154 Min 0.04 Mean (mgd) 4.53 Mean (cfs) 7.01 Ac-ft 5,070
Fiscal Year 1965-66: Max 80 Min 0.03 Mean (mgd) 2.59 Mean (cfs) 4.01 Ac-ft 2,910

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-10	2200	7.37	406	628	11-20	0800	5.82	202	313
11-14	1530	9.22	795	1,230	12- 6	1700	6.31	256	396

40-5850. Hoolawanui Stream near Huelo

Location.--Lat 20°53'15", long 156°14'55", on right bank 250 ft upstream from Wailoa ditch intake, 2 miles west of Kailua, and 2 miles southwest of Huelo.

Drainage area.--1.34 sq mi.

Records available.--December 1910 to June 1966. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,219.42 ft above mean sea level (East Maui Irrigation Co. bench mark). Prior to June 20, 1914, staff gage at site 180 ft downstream at different datum. June 20, 1914, to Oct. 24, 1933, water-stage recorder at site 80 ft downstream at datum 4.43 ft lower.

Average discharge.--55 years (1911-66), 7.75 mgd (12.0 cfs).

Extremes.--Maximum discharge during year, 3,130 mgd (4,840 cfs) Nov. 14 (gage height, 5.83 ft), from rating curve extended above 92 mgd as explained below; minimum, 0.26 mgd (0.40 cfs) Oct. 15, 16.
1910-66: Maximum discharge, 3,240 mgd (5,010 cfs) Apr. 27, 1950 (gage height, 5.94 ft), from rating curve extended above 92 mgd by logarithmic plotting; minimum, 0.15 mgd (0.23 cfs) Oct. 25, 1917.

Remarks.--Records good. No diversion above station. All low flow diverted into Wailoa ditch (see sta. no. 5880) 250 ft below station for domestic supply, power, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.9	1.6	0.93	0.35	5.0	51	4.1	6.4	5.3	2.5	4.7	1.1
2	2.2	1.5	.93	.35	1.4	36	5.1	5.5	11	2.4	6.4	1.1
3	1.8	1.5	.87	.35	1.0	12	5.7	4.9	9.0	2.3	4.7	1.1
4	1.6	1.4	.81	.32	.93	9.0	4.5	4.5	5.3	2.4	3.6	.94
5	1.7	1.6	.81	.32	.75	18	5.7	4.3	4.7	5.1	3.6	.82
6	1.5	3.7	.81	.32	.64	53	9.7	3.7	4.3	3.9	4.1	.76
7	1.5	2.0	.75	.32	.60	22	4.7	3.6	3.9	11	3.4	.70
8	1.8	1.9	.75	.35	1.6	13	3.9	6.9	3.6	3.9	3.0	.70
9	7.2	19	.69	1.1	1.1	13	3.6	8.0	3.4	3.2	3.7	.70
10	24	3.1	.64	.64	.93	34	4.1	3.7	4.5	3.2	2.7	.70
11	22	2.0	.64	.42	1.2	24	3.4	3.4	5.7	2.8	2.5	.65
12	18	2.2	.75	.29	109	18	3.2	3.2	3.6	2.5	2.3	.60
13	4.1	2.1	.69	.29	8.3	11	3.1	3.1	3.2	2.5	2.2	.60
14	3.2	1.8	.64	.29	265	18	3.4	3.2	6.2	4.9	2.0	.76
15	3.4	1.6	.55	.26	112	13	14	16	5.5	5.5	2.0	.60
16	4.3	1.5	.55	.26	22	12	5.3	10	3.6	4.4	1.8	.55
17	29	1.4	.51	.32	12	18	4.1	16	3.6	5.2	1.8	.51
18	8.7	1.3	.51	.75	8.7	18	3.7	59	6.6	4.4	1.8	.51
19	5.4	1.3	.51	.64	15	12	4.0	31	6.5	5.8	1.6	.55
20	5.2	1.2	.46	.32	46	17	4.9	57	3.9	4.5	1.6	.55
21	4.3	1.4	.46	.38	16	25	13	14	3.6	3.4	1.5	1.4
22	3.6	2.6	.42	2.5	15	11	9.8	9.3	3.4	3.2	1.4	2.4
23	3.8	3.1	.46	.55	12	9.3	6.2	12	3.4	3.1	1.3	.88
24	2.9	2.1	.46	.42	8.7	7.8	8.1	18	3.4	3.0	1.3	1.1
25	2.6	1.5	.42	.35	7.2	7.0	25	9.0	3.1	3.0	1.2	5.6
26	2.5	1.3	.38	.42	7.2	6.2	8.7	8.1	3.0	3.2	1.1	3.5
27	2.5	1.2	.38	.46	10	5.7	9.5	7.0	2.8	9.3	1.1	3.0
28	2.3	1.3	.35	17	16	5.3	24	6.0	2.7	11	1.1	1.8
29	2.1	1.2	.35	2.9	8.1	5.3	13	----------	2.5	20	1.0	6.8
30	1.8	1.1	.35	2.4	7.0	4.9	9.6	----------	2.7	12	.94	8.4
31	1.7	1.0	----------	.93	----------	4.1	7.5	----------	5.1	----------	1.0	----------
Total	183.6	71.5	17.83	36.57	720.35	513.6	234.6	336.8	139.1	153.6	72.44	49.38
Mean												
Mgd	5.92	2.31	0.594	1.18	24.0	16.6	7.57	12.0	4.49	5.12	2.34	1.65
Cfs	9.16	3.57	0.919	1.83	37.1	25.7	11.7	18.6	6.95	7.92	3.62	2.55
Ac-ft	563	219	55	112	2,210	1,580	720	1,030	427	471	222	152
Max	29	19	0.93	17	265	53	25	59	11	20	6.4	8.4
Min	1.5	1.0	0.35	0.26	0.60	4.1	3.1	3.1	2.5	2.3	0.94	0.51

Calendar Year 1965:	Max	265	Min	0.26	Mean (mgd)	8.24	Mean (cfs)	12.7	Ac-ft	9,230
Fiscal Year 1965-66:	Max	265	Min	0.26	Mean (mgd)	6.93	Mean (cfs)	10.7	Ac-ft	7,760

Peak discharge (base, 400 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-12	1430	3.02	448	693	2-20	0300	3.11	485	750
11-14	1430	5.83	3,130	4,840					

40-5870. 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.

Records available.--December 1910 to June 1966. 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, staff gage at same site and datum.

Average discharge.--55 years (1911-66), 3.08 mgd (4.77 cfs).

Extremes.--Maximum discharge during year, 1,020 mgd (1,580 cfs) Nov. 14 (gage height, 4.60 ft), from rating curve extended above 70 mgd as explained below; minimum, 0.20 mgd (0.31 cfs) on several days.
1910-66: Maximum discharge, 3,690 mgd (5,710 cfs) Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) on several days in 1933, 1934.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	0.92	0.48	0.20	1.5	15	2.2	3.4	3.4	1.1	2.6	0.60
2	.76	.92	.48	.20	.54	15	2.6	3.1	8.9	1.0	2.8	.68
3	.68	.84	.42	.20	.48	6.1	2.8	2.8	4.9	.92	2.3	.60
4	.60	.84	.42	.20	.48	5.2	2.2	2.5	3.3	1.0	2.1	.54
5	.60	.92	.42	.20	.42	6.8	1.9	2.3	3.0	1.7	2.0	.48
6	.54	1.5	.42	.20	.42	11	3.5	2.1	2.8	1.3	2.0	.48
7	.60	1.0	.36	.20	.42	7.6	2.1	2.0	2.5	3.2	1.8	.48
8	.68	.84	.36	.25	.92	6.0	1.9	3.2	2.3	1.4	1.7	.42
9	2.8	5.9	.36	.54	.54	6.1	1.8	3.3	2.1	1.1	2.3	.42
10	2.3	1.4	.36	.48	.48	16	2.1	1.9	2.4	1.1	1.5	.36
11	7.1	1.0	.36	.30	.60	9.9	1.7	1.7	2.5	1.0	1.4	.36
12	7.4	1.1	.42	.25	39	8.5	1.7	1.5	1.9	.92	1.3	.36
13	1.6	1.0	.42	.20	4.9	6.4	1.6	1.4	1.7	.92	1.2	.36
14	1.5	.92	.36	.25	86	9.0	1.6	1.4	2.7	1.6	1.1	.42
15	1.6	.84	.36	.25	43	7.1	5.0	4.6	2.8	1.6	1.1	.36
16	1.9	.84	.30	.25	12	6.8	2.1	3.6	1.7	1.3	1.0	.30
17	11	.76	.30	.36	8.1	6.8	1.8	5.1	1.7	1.6	1.0	.30
18	3.7	.68	.30	.48	6.1	7.0	1.8	21	3.4	1.8	1.1	.30
19	2.5	.68	.30	.36	7.2	5.5	1.6	14	2.3	2.0	.84	.30
20	2.2	.60	.30	.25	15	6.6	2.0	27	1.8	1.6	.84	.30
21	2.0	.76	.25	.30	7.6	9.8	3.4	8.6	1.7	1.3	.84	.90
22	1.9	1.1	.25	.76	7.1	6.0	3.3	6.3	1.6	1.2	.76	1.1
23	2.0	1.4	.30	.36	6.3	5.2	2.5	7.3	1.7	1.2	.68	.48
24	1.6	1.1	.36	.30	5.2	4.5	2.4	9.1	1.7	1.2	.68	.60
25	1.5	.76	.30	.25	4.6	3.9	7.2	5.5	1.4	1.1	.60	1.8
26	1.4	.68	.30	.30	4.2	3.5	3.8	4.9	1.4	1.2	.60	1.1
27	1.4	.60	.25	.30	4.8	3.1	3.6	4.2	1.3	4.8	.60	1.1
28	1.3	.68	.25	2.2	6.3	3.1	7.7	3.6	1.2	4.2	.60	.68
29	1.2	.60	.25	1.0	4.1	2.9	5.2	----------	1.1	13	.54	2.1
30	1.1	.54	.25	1.4	3.8	2.5	4.6	----------	1.2	6.0	.54	2.4
31	1.0	.48	----------	.54	----------	2.3	3.8	----------	1.2	----------	.54	----------
Total	68.76	32.20	10.26	13.33	282.10	215.2	91.5	157.4	73.6	63.35	38.96	20.68
Mean												
Mgd	2.22	1.04	0.342	0.430	9.40	6.94	2.95	5.62	2.37	2.11	1.26	0.689
Cfs	3.43	1.61	0.529	0.665	14.5	10.7	4.56	8.70	3.67	3.26	1.95	1.07
Ac-ft	211	99	31	41	866	660	281	483	226	194	120	63
Max	11	5.9	0.48	2.2	86	16	7.7	27	8.9	13	2.8	2.4
Min	0.54	0.48	0.25	0.20	0.42	2.3	1.6	1.4	1.1	0.92	0.54	0.30

Calendar Year 1965: Max 86 Min 0.20 Mean (mgd) 3.06 Mean (cfs) 4.73 Ac-ft 3,430
Fiscal Year 1965-66: Max 86 Min 0.20 Mean (mgd) 2.92 Mean (cfs) 4.52 Ac-ft 3,280

Peak discharge (base, 110 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-14	1500	4.60	1,020	1,580	4-29	2230	2.90	131	203
2-20	0330	3.08	179	277					

40-5880. Wailoa 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.

Records available.--November 1922 to June 1966.

Gage.--Water-stage recorder. Datum of gage is 1,208 ft above mean sea level (by vertical angles).

Average discharge.--43 years (1923-66), 112 mgd (173 cfs).

Extremes.--1922-66: Maximum daily discharge, 195 mgd (302 cfs) for several days in 1954, 1955, and 1956; no flow Jan. 24-27, 1923.

Remarks.--Records good. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from there west to Halehaku Gulch at altitude of about 1,200 ft. Water is used for domestic supply, power, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	181	66	51	24	173	158	128	147	115	68	134	43
2	122	62	50	24	170	165	144	131	126	60	173	58
3	110	62	48	22	127	161	160	114	188	60	153	65
4	92	60	46	22	103	159	155	105	132	67	113	48
5	124	89	45	21	84	161	123	102	107	129	112	40
6	85	183	45	20	70	162	151	95	96	167	146	36
7	103	138	43	22	63	160	155	91	88	181	121	35
8	120	100	40	50	113	160	124	134	81	176	101	34
9	175	188	39	161	98	160	107	159	77	177	123	34
10	145	154	37	93	82	162	137	138	112	152	84	33
11	186	101	36	55	111	161	99	105	171	104	80	30
12	185	110	62	36	166	161	92	104	93	88	80	29
13	148	136	56	30	187	160	82	99	78	82	95	29
14	111	112	40	46	184	161	84	81	103	166	88	34
15	133	93	35	28	182	161	167	162	155	188	92	30
16	159	96	33	26	186	161	153	160	92	160	77	27
17	188	68	34	31	188	161	138	163	83	183	66	26
18	187	64	36	109	175	161	131	172	188	151	60	28
19	178	65	37	108	184	160	132	146	180	171	55	29
20	176	56	31	52	178	161	163	139	137	152	53	31
21	173	77	29	40	182	161	166	131	116	106	53	84
22	147	155	28	145	184	161	161	128	93	94	50	166
23	153	181	58	101	184	159	160	129	92	86	47	58
24	118	141	47	74	187	155	156	134	111	86	46	101
25	99	102	31	52	154	150	162	125	78	100	44	162
26	90	83	28	83	181	138	167	122	77	154	43	170
27	92	64	26	110	187	124	168	117	76	165	42	180
28	133	70	25	103	186	132	166	116	65	181	42	116
29	104	77	24	134	188	129	159	----------	62	180	45	163
30	81	57	24	89	166	144	158	----------	66	188	40	184
31	74	55	----------	74	----------	112	155	----------	140	----------	42	----------
Total	4.172	3.065	1.164	1.985	4.623	4.781	4.403	3.549	3.378	4.022	2.500	2.103
Mean												
Mgd	135	98.9	38.8	64.0	154	154	142	127	109	134	80.6	70.1
Cfs	209	153	60.0	99.0	238	238	220	196	169	207	125	108
Ac-ft	12.800	9.410	3.570	6.090	14.190	14.670	13.510	10.890	10.370	12.340	7.670	6.450
Max	188	188	62	161	188	165	168	172	188	188	173	184
Min	74	55	24	20	63	112	82	81	62	60	40	26

Calendar Year 1965:	Max	188	Min	20	Mean (mgd)	108	Mean (cfs)	167	Ac-ft	120.500
Fiscal Year 1965-66:	Max	188	Min	20	Mean (mgd)	109	Mean (cfs)	168	Ac-ft	122.000

40-5890. New Hamakua 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.

Records available.--January 1918 to June 1966.

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.--48 years, 24.5 mgd (37.9 cfs).

Extremes.--1918-66: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; 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 million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	79	0.64	0.29	0.04	64	26	2.8	1.2	4.7	1.3	6.8	0.32
2	1.7	.59	.26	.04	31	92	8.6	1.2	20	1.1	46	.35
3	.90	.55	.23	.04	14	85	13	1.2	58	1.0	19	.39
4	.74	.55	.23	.05	3.9	56	11	1.2	5.2	.96	2.8	.35
5	3.8	.59	.20	.06	.64	86	3.1	1.2	4.2	28	3.1	.29
6	.69	76	.18	.06	.47	83	15	1.2	3.6	37	3.9	.23
7	.69	4.7	.15	.06	.35	39	16	.67	3.0	96	2.0	.23
8	.79	2.3	.14	.08	24	39	2.8	.43	2.7	37	1.8	.20
9	60	97	.15	42	2.7	39	2.4	.43	2.4	26	14	.20
10	18	22	.11	.98	.51	40	6.5	.43	3.1	20	1.6	.18
11	95	.90	.10	.26	3.1	39	2.3	1.8	39	1.7	1.4	.18
12	74	2.5	.70	.11	68	29	1.9	1.7	7.4	1.4	1.3	.15
13	2.7	3.4	4.4	.11	70	29	1.7	1.5	1.8	1.3	1.2	.15
14	1.2	4.1	.15	.11	51	36	1.8	1.3	21	23	1.1	.20
15	1.3	.59	.13	.10	91	35	49	65	41	72	1.1	.20
16	22	.55	.13	.10	93	35	22	60	2.3	30	1.1	.18
17	96	.47	.10	.11	51	35	5.8	70	1.6	62	.85	.15
18	89	.43	.06	7.3	24	18	3.0	35	87	12	.85	.15
19	20	.43	.06	18	60	.96	2.7	6.6	61	38	.74	.13
20	43	.39	.05	.18	99	15	15	6.0	2.2	17	.69	.15
21	20	.43	.05	.13	95	24	19	5.9	1.9	1.9	.64	.63
22	4.8	14	.05	41	94	23	4.8	6.7	1.5	1.8	.59	23
23	3.6	48	.05	.39	91	23	4.8	6.6	1.6	1.6	.59	.47
24	1.7	6.2	.08	.23	37	18	4.6	6.6	4.3	1.4	.55	3.7
25	1.3	.86	.05	.13	7.2	8.2	3.3	4.6	1.6	1.3	.51	55
26	1.2	.47	.04	.15	25	4.9	1.2	3.2	1.4	2.9	.47	56
27	1.2	.39	.06	1.2	77	4.0	1.2	3.2	1.4	31	.39	57
28	1.2	.43	.03	19	96	6.3	1.2	3.8	1.2	80	.39	.75
29	.90	.51	.04	28	33	7.0	1.1	----------	1.2	65	.35	41
30	.79	.35	.05	1.9	5.9	8.0	1.1	----------	1.2	60	.32	93
31	.74	.32	----------	.55	----------	3.0	1.1	----------	29	----------	.32	----------
Total	647.94	290.64	8.32	162.47	1,312.77	986.36	229.8	298.66	417.5	753.66	116.45	334.93
Mean												
Mgd	20.9	9.38	0.277	5.24	43.8	31.8	7.41	10.7	13.5	25.1	3.76	11.2
Cfs	32.3	14.5	0.429	8.11	67.8	49.2	11.5	16.6	20.9	38.8	5.82	17.3
Ac-ft	1,990	890	26	499	4,030	3,030	705	917	1,280	2,310	357	1,030
Max	96	97	4.4	42	99	92	49	70	87	96	46	93
Min	0.69	0.32	0.03	0.04	0.35	0.96	1.1	0.43	1.2	0.96	0.32	0.13

Calendar Year 1965:	Max	100	Min	0.03	Mean (mgd)	19.1	Mean (cfs)	29.6	Ac-ft	21,460
Fiscal Year 1965-66:	Max	99	Min	0.03	Mean (mgd)	15.2	Mean (cfs)	23.5	Ac-ft	17,060

40-5920. 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.

Records available.--January 1910 to March 1927, February 1930 to June 1966. 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, datum of 1929. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 miles downstream at different datum.

Average discharge.--52 years (1910-26, 1930-66), 26.4 mgd (40.8 cfs).

Extremes.--1910-27, 1930-66: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Records good. 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 million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	56	6.8	4.8	2.0	45	26	17	1.4	1.3	13	17	4.0
2	12	6.4	4.6	1.9	32	54	15	1.2	1.3	13	30	4.4
3	9.8	6.4	4.4	1.9	18	28	1.5	14	1.2	8.1	25	5.0
4	8.9	6.2	4.3	1.8	15	2.5	1.4	24	5.7	8.3	20	4.4
5	9.6	7.0	4.2	1.8	8.5	2.4	1.2	16	17	16	5.3	4.2
6	10	47	4.0	1.7	7.0	18	26	15	23	24	6.1	3.8
7	10	11	4.0	1.8	6.0	2.5	34	14	20	49	13	3.7
8	10	7.3	3.8	2.1	14	10	17	20	18	31	11	3.6
9	43	63	3.7	22	10	37	16	28	17	18	11	3.7
10	22	27	3.4	7.1	7.4	18	22	1.7	23	18	6.0	3.4
11	61	15	3.6	9.3	12	3.0	19	1.6	25	16	11	3.1
12	49	13	3.7	2.4	52	2.6	16	1.6	9.2	14	12	3.1
13	15	15	4.3	2.2	47	2.4	6.4	1.6	15	12	11	3.0
14	13	13	3.8	2.4	53	15	17	3.6	22	16	7.7	3.6
15	14	12	3.2	2.0	56	33	48	30	38	44	8.7	3.4
16	15	7.4	3.1	2.0	39	43	22	2.2	21	18	13	2.8
17	48	7.1	2.8	2.1	19	41	1.9	2.2	22	41	12	2.6
18	51	8.9	2.7	3.2	14	20	2.0	4.2	43	19	9.4	2.5
19	24	6.2	2.6	14	20	2.1	1.9	4.6	39	28	6.2	2.5
20	32	6.5	2.5	2.8	39	2.0	14	2.7	14	27	5.9	2.5
21	29	6.4	2.5	2.7	21	2.0	11	2.0	15	16	5.5	3.2
22	19	8.7	2.5	24	20	1.7	1.9	1.7	16	13	5.5	5.0
23	16	25	2.7	5.5	19	1.6	1.8	2.3	17	10	5.1	3.6
24	11	13	2.8	3.7	12	1.5	12	2.8	21	9.9	5.0	3.1
25	10	8.7	2.5	2.8	9.6	1.5	9.4	1.9	15	15	4.6	34
26	14	8.4	2.4	3.2	8.5	1.4	14	1.7	9.8	14	4.4	31
27	13	5.5	2.1	2.4	11	1.4	16	1.6	9.2	18	4.3	29
28	13	6.2	2.1	18	27	1.4	4.0	1.4	9.7	46	4.2	10
29	13	6.8	2.0	30	26	11	1.7	---------	14	35	3.4	21
30	15	5.1	2.0	28	28	21	1.8	---------	13	47	3.6	51
31	7.2	4.8	---------	13	---------	17	1.4	---------	23	---------	4.0	---------
Total	673.5	390.8	97.1	219.8	696.0	424.0	374.3	205.0	538.4	657.3	290.9	260.2
Mean												
Mgd	21.7	12.6	3.24	7.09	23.2	13.7	12.1	7.32	17.4	21.9	9.38	8.67
Cfs	33.6	19.5	5.01	11.0	35.9	21.2	18.7	11.3	26.9	33.9	14.5	13.4
Ac-ft	2070	1200	298	675	2140	1300	1150	629	1650	2020	893	799
Max	61	63	4.8	30	56	54	48	30	43	49	30	51
Min	7.2	4.8	2.0	1.7	6.0	1.4	1.2	1.2	1.2	8.1	3.4	2.5

Calendar Year 1965:	Max	63	Min	0.72	Mean (mgd)	16.2	Mean (cfs)	25.1	Ac-ft	18,260
Fiscal Year 1965-66:	Max	63	Min	1.2	Mean (mgd)	13.2	Mean (cfs)	20.4	Ac-ft	14,810

40-5940. 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.

Records available.--January 1910 to June 1912, January 1913 to December 1928, February 1930 to June 1966. Published as "at Peahi weir, near Huelo" January 1910 to June 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, datum of 1929. Jan. 1, 1910, to Oct. 6, 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.--52 years (1910-12, 1913-14, 1915-28, 1930-66), 18.1 mgd (28.0 cfs).

Extremes.--1910-28, 1930-66: Maximum daily discharge, 135 mgd (209 cfs) Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

Remarks.--Records good. Ditch diverts water from all streams between Nailiilihaele Stream and Maliko Gulch for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32	0.95	0.48	0.10	31	12	1.3	49	33	1.0	6.1	0.20
2	1.4	.90	.48	.10	5.5	5.3	1.3	36	34	1.0	6.2	.24
3	.75	.90	.44	.12	1.6	.80	1.4	18	41	1.0	2.8	.22
4	.62	.70	.40	.12	.75	.62	1.3	6.5	33	.85	.85	.20
5	.70	.75	.34	.12	.58	.70	14	5.9	17	2.9	7.3	.22
6	.54	38	.30	.14	.48	.54	34	5.3	5.5	1.7	7.6	.20
7	.58	1.6	.28	.16	.44	.44	30	5.2	5.0	59	.70	.18
8	.70	.85	.28	.16	.77	8.0	4.7	17	4.7	8.1	.58	.18
9	30	53	.28	19	.62	35	4.1	66	3.7	1.2	5.1	.18
10	11	14	.26	.37	.65	22	11	42	3.1	1.0	5.0	.16
11	54	1.0	.30	.20	.70	1.9	3.6	20	8.8	.90	2.4	.16
12	26	1.0	.37	.16	45	1.8	7.6	18	5.6	.90	.58	.16
13	2.1	.90	.37	.21	39	1.6	15	19	2.6	.85	.44	.14
14	1.3	.85	.30	.18	31	1.6	4.2	14	5.0	.95	.37	.20
15	1.4	.85	.20	.14	41	1.5	42	52	25	26	.37	.18
16	1.7	.80	.20	.14	56	12	27	30	2.3	3.4	.34	.30
17	36	.75	.22	.14	51	10	23	16	2.0	32	.34	.48
18	31	.65	.22	.20	38	1.8	21	9.1	20	1.4	.37	.48
19	3.2	.70	.20	2.2	45	1.8	19	1.9	25	1.1	.34	.48
20	16	.62	.18	.10	46	1.8	45	.58	1.8	2.7	.30	.48
21	4.7	.70	.18	.16	51	1.8	54	19	1.7	.95	.30	.54
22	1.9	.75	.16	11	58	1.5	44	18	1.5	.90	.30	.54
23	1.9	2.2	.25	.28	59	1.4	34	1.6	1.6	.85	.28	.44
24	1.3	1.3	.22	.16	39	1.4	21	1.6	1.6	.80	.28	.48
25	1.2	.80	.16	.14	26	1.3	12	1.2	1.4	.80	.24	26
26	1.4	.65	.16	.12	23	1.3	50	1.0	1.3	.58	.22	4.7
27	1.4	.58	.14	.12	38	1.3	46	.95	1.2	7.7	.22	3.1
28	1.2	.70	.10	12	61	1.3	27	.90	1.2	35	.20	.62
29	1.1	.80	.10	14	22	8.9	15	---------	1.2	10	.53	22
30	1.0	.58	.10	12	5.7	6.9	21	---------	1.1	30	.70	36
31	1.0	.54	---------	1.7	---------	1.4	31	---------	4.3	---------	.20	---------
Total	269.09	129.37	7.67	75.74	817.79	149.70	665.5	475.73	296.2	235.53	51.55	99.46
Mean												
Mgd	8.68	4.17	0.256	2.44	27.3	4.83	21.5	17.0	9.55	7.85	1.66	3.32
Cfs	13.4	6.45	0.396	3.78	42.2	7.47	33.3	26.3	14.8	12.1	2.57	5.14
Ac-ft	826	397	24	232	2.510	459	2.040	1.460	909	723	158	305
Max	54	53	0.48	19	61	35	54	66	41	59	7.6	36
Min	0.54	0.54	0.10	0.10	0.44	0.44	1.3	0.58	1.1	0.58	0.20	0.14

Calendar Year 1965: Max 63 Min 0.08 Mean (mgd) 7.97 Mean (cfs) 12.3 Ac-ft 8.930
Fiscal Year 1965-66: Max 66 Min 0.10 Mean (mgd) 8.97 Mean (cfs) 13.9 Ac-ft 10.050

40-5962. Halehaku Gulch near Kailiili

Location.--Lat 20°50'53", long 156°15'13", on left bank 1.2 miles east of Kailiili, 3.1 miles northeast of Olinda Prison Camp, and 3.9 miles east of Makawao.

Drainage area.--0.13 sq mi.

Records available.--March 1965 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 2,610 ft (from topographic map).

Extremes.--1965: Maximum discharge during period March to June, 23 mgd (36 cfs) Apr. 5 and May 2 (gage heights, 2.30 and 2.31 ft, respectively), from rating curve extended above 1.5 mgd by logarithmic plotting; minimum, 0.15 mgd (0.23 cfs) May 31, June 1.
1965-66: Maximum discharge during fiscal year, 19 mgd (29 cfs) Nov. 14 (gage height, 2.14 ft), from rating curve extended above 1.5 mgd as explained above; minimum, 0.04 mgd (0.06 cfs) Oct. 6-8.

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

Discharge, in million gallons a day, March to June 1965

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1									0.59	0.39	0.21	0.24
2									2.4	.36	2.4	.33
3									5.3	.36	1.6	.30
4									2.0	1.3	1.2	.30
5									1.3	7.2	.84	.39
6									1.0	3.2	.69	.43
7									.84	2.1	.59	.36
8									.74	1.4	.85	.30
9									.64	1.4	.74	.30
10									.55	1.1	.59	.27
11									.47	.94	.55	.24
12									.43	.79	.47	.24
13									.39	.69	.43	.21
14									.43	.64	.39	.21
15									.69	.59	.46	.21
16									.51	.55	.36	.21
17									.47	.47	.33	.21
18									.43	.43	.30	.19
19									.36	.39	.27	.19
20									.36	.36	.27	.24
21									.30	.33	.24	.24
22									.30	.30	.24	.27
23									.39	.30	.21	.24
24									3.7	.27	.21	.24
25									1.9	.27	.21	.24
26									1.1	.24	.19	.21
27									.84	.21	.19	.21
28									.69	.21	.17	.21
29								----------	.55	.19	.17	.21
30								----------	.51	.24	.17	.21
31			----------		----------			----------	.43	----------	.15	----------
Total									30.61	27.22	15.69	7.65
Mean												
Mgd									0.987	0.907	0.506	0.255
Cfs									1.53	1.40	0.783	0.395
Ac-ft									94	84	48	23
Max									5.3	7.2	2.4	0.43
Min									0.30	0.19	0.15	0.19

Calendar Year Max Min Mean (mgd) Mean (cfs) Ac-ft
Fiscal Year 1964-65: Max - Min - Mean (mgd) - Mean (cfs) - Ac-ft -

Peak discharge (base, 8.0 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-2	2300	1.72	11	17	5-2	1330	2.31	23	36
4-5	0500	2.30	23	36					

40-5962. Halehaku Gulch near Kailiili--Continued

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.27	0.27	0.19	0.06	0.27	2.0	0.47	0.84	0.74	0.21	0.43	0.11
2	.24	.24	.17	.05	.21	3.7	.43	.74	.69	.19	.55	.09
3	.24	.24	.17	.05	.17	1.6	.43	.64	.69	.19	.59	.09
4	.21	.21	.17	.05	.17	1.2	.39	.55	.59	.19	.47	.09
5	.21	.21	.15	.05	.15	1.4	.36	.51	.55	.24	.43	.08
6	.21	.27	.15	.04	.15	3.6	.51	.47	.51	.27	.39	.08
7	.21	.24	.15	.04	.13	3.2	.59	.43	.47	.43	.36	.08
8	.21	.24	.15	.05	.17	1.8	.51	.48	.43	.36	.33	.07
9	.27	.89	.13	.11	.17	1.5	.47	.64	.43	.30	.30	.07
10	1.8	.59	.13	.10	.17	1.9	.43	.51	.39	.30	.30	.07
11	2.2	.43	.13	.08	.17	2.2	.39	.47	.39	.27	.27	.07
12	1.2	.36	.13	.08	2.8	1.8	.36	.43	.36	.27	.27	.07
13	.79	.33	.11	.07	1.1	1.4	.33	.43	.33	.24	.24	.06
14	.64	.30	.11	.06	4.0	1.2	.33	.43	.30	.27	.24	.06
15	.55	.30	.11	.06	5.0	1.2	.59	.99	.30	.43	.24	.06
16	.51	.30	.11	.05	1.8	1.1	.47	.94	.30	.39	.21	.06
17	1.0	.27	.11	.05	1.1	1.3	.43	1.4	.27	.51	.21	.06
18	.99	.27	.09	.07	.84	2.1	.39	3.2	.27	.43	.19	.05
19	.79	.27	.09	.09	.79	1.5	.39	2.2	.30	.47	.19	.06
20	.74	.24	.08	.08	2.7	1.5	.43	1.8	.27	.51	.17	.05
21	.69	.24	.08	.08	1.6	1.8	1.0	1.5	.27	.43	.17	.05
22	.59	.24	.08	.14	1.3	1.4	1.2	1.2	.24	.39	.17	.06
23	.55	.27	.08	.11	1.2	1.2	.94	1.1	.24	.36	.15	.06
24	.51	.24	.08	.09	.94	.99	.89	1.4	.24	.36	.15	.06
25	.47	.24	.07	.08	.79	.89	1.7	1.2	.21	.33	.15	.17
26	.43	.24	.07	.08	.69	.79	1.2	1.0	.21	.33	.13	.13
27	.39	.21	.06	.08	.89	.69	1.1	.89	.21	.33	.13	.11
28	.36	.21	.06	.67	1.8	.64	2.1	.79	.19	.39	.13	.08
29	.33	.21	.06	.37	1.2	.59	1.5	---------	.19	.40	.11	.26
30	.27	.21	.06	.19	.99	.55	1.3	---------	.20	.58	.11	.55
31	.27	.19	---------	.15	---------	.51	.99	---------	.27	---------	.11	---------
Total	18.14	8.97	3.33	3.33	33.46	47.25	22.62	27.18	11.05	10.37	7.89	2.96
Mean												
Mgd	0.585	0.289	0.111	0.107	1.12	1.52	0.730	0.971	0.356	0.346	0.255	0.099
Cfs	0.905	0.447	0.172	0.166	1.73	2.35	1.13	1.50	0.551	0.535	0.395	0.153
Ac-ft	56	28	10	10	103	145	69	83	34	32	24	9.1
Max	2.2	0.89	0.19	0.67	5.0	3.7	2.1	3.2	0.74	0.58	0.59	0.55
Min	0.21	0.19	0.06	0.04	0.13	0.51	0.33	0.43	0.19	0.19	0.11	0.05

Calendar Year 1965: Max - Min - Mean (mgd) - Mean (cfs) - Ac-ft -
Fiscal Year 1965-66: Max 5.0 Min 0.04 Mean (mgd) 0.538 Mean (cfs) 0.832 Ac-ft 603

Peak discharge (base, 8.0 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
7-10	1830	1.58	8.6	13	12-6	1700	1.66	9.9	15
11-14	1430	2.14	19	29					

40-5995. 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.

Records available.--May 1965 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 2,340 ft (from topographic map).

Extremes.--1965-66: Maximum daily discharge, 7.0 mgd (11 cfs) Dec. 6, 1965; minimum daily, 0.15 mgd (0.23 cfs) Oct. 5, 6, 1965.

Remarks.--Records good. Tunnel diverts from Opana Gulch for domestic use in the Kokomo, Makawao and Pukalani areas.

Discharge, in million gallons a day, May to June 1965

Day	May	June	Day	May	June	Day	May	June	Day	May	June	Day	May	June
1	-	3.1	7	-	1.5	13	-	1.2	19	1.7	1.4	25	1.3	0.88
2	-	3.6	8	-	1.3	14	2.0	1.0	20	1.7	1.9	26	1.3	.88
3	-	2.6	9	-	1.2	15	2.5	.88	21	1.6	1.4	27	1.3	.94
4	-	2.1	10	-	1.1	16	2.1	.82	22	1.5	1.4	28	1.2	.82
5	-	3.2	11	-	1.1	17	1.9	.82	23	1.5	1.2	29	1.2	.70
6	-	2.4	12	-	1.2	18	1.7	.94	24	1.4	1.0	30	1.2	.94
												31	1.2	---

Total	-	43.52
Mean, in million gallons a day	-	1.45
Mean, in cubic feet per second	-	2.24
Runoff in acre-feet	-	134
Maximum	-	3.6
Minimum	-	0.70

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	0.88	0.45	0.20	2.3	5.1	2.5	3.3	3.6	1.5	1.5	0.36
2	1.0	.88	.45	.17	1.1	6.4	2.4	3.0	3.6	1.2	2.4	.40
3	.88	.88	.40	.17	.70	5.5	2.3	2.8	3.7	1.1	2.2	.45
4	.76	.82	.36	.17	.45	5.0	2.1	2.8	3.3	1.1	1.4	.36
5	.70	1.0	.36	.15	.36	5.8	2.0	2.6	3.1	1.5	1.3	.32
6	.70	3.5	.32	.15	.29	7.0	4.7	2.6	2.9	2.1	1.2	.32
7	.65	1.8	.32	.17	.23	6.7	4.0	2.5	2.6	2.8	1.2	.29
8	.70	1.5	.29	.20	2.1	5.9	2.6	3.3	2.5	2.1	1.1	.29
9	2.5	5.7	.26	.62	1.4	5.9	2.3	5.2	2.3	1.4	1.0	.26
10	3.9	3.7	.26	.55	1.3	6.3	2.0	3.2	2.6	1.2	.94	.26
11	6.1	1.9	.26	.29	1.3	6.3	2.0	2.6	2.7	1.1	.88	.23
12	4.9	1.5	2.3	.26	6.1	5.8	1.8	2.4	2.2	1.0	.82	.23
13	3.1	1.2	2.3	.23	5.3	5.1	1.6	2.2	2.0	.88	.88	.20
14	2.2	1.1	.82	.20	3.4	5.3	1.5	2.2	1.9	1.3	.94	.20
15	2.3	2.4	.55	.20	6.8	4.9	4.5	5.6	1.8	3.1	.94	.20
16	2.2	2.7	.40	.17	5.7	4.4	3.0	4.5	1.6	2.1	.88	.20
17	4.7	1.3	.36	.17	4.2	5.0	2.3	5.7	1.5	2.6	.76	.20
18	4.6	1.0	.32	.26	3.3	6.4	2.0	6.8	1.6	1.6	.70	.20
19	3.1	.89	.36	.32	4.0	5.8	2.4	6.1	2.0	2.1	.60	.20
20	2.9	.76	.32	.26	6.5	5.9	3.9	6.2	2.5	3.0	.60	.23
21	2.4	.76	.29	.26	5.6	5.8	5.9	5.7	2.9	2.0	.55	.26
22	2.2	1.1	.26	1.3	5.3	5.1	5.5	4.9	2.3	1.4	.55	.29
23	1.9	1.7	.26	.82	4.6	4.4	4.0	4.8	1.3	1.3	.50	.23
24	1.5	1.6	.26	.65	3.7	3.9	3.7	6.2	1.2	1.2	.45	.34
25	1.4	1.2	.26	.40	3.1	3.4	5.9	5.3	1.2	1.1	.45	.94
26	1.2	1.2	.26	.50	3.4	3.3	4.1	4.5	1.1	1.2	.40	.88
27	1.2	.88	.23	.45	4.2	3.1	3.9	4.1	1.1	1.2	.40	.65
28	1.2	.76	.23	2.3	5.9	2.9	6.3	3.7	1.0	1.6	.45	.45
29	1.1	.65	.20	3.8	4.2	2.8	5.3	---	.94	1.4	.45	1.8
30	1.0	.60	.20	1.2	3.4	2.6	4.4	---	1.1	2.7	.40	3.6
31	.94	.55	---	.70	---	2.6	3.6	---	3.7	---	.36	---
Total	65.33	46.40	13.91	17.29	100.23	154.4	104.5	114.8	67.84	49.88	27.20	14.84
Mean												
Mgd	2.11	1.50	0.464	0.558	3.34	4.98	3.37	4.10	2.19	1.66	0.877	0.495
Cfs	3.26	2.32	0.718	0.863	5.17	7.71	5.21	6.34	3.39	2.57	1.36	0.766
Ac-ft	200	142	43	53	308	474	321	352	208	153	83	46
Max	6.1	5.7	2.3	3.8	6.8	7.0	6.3	6.8	3.7	3.1	2.4	3.6
Min	0.65	0.55	0.20	0.15	0.23	2.6	1.5	2.2	0.94	0.88	0.36	0.20

Calendar Year 1965:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-		
Fiscal Year 1965-66:	Max	7.0	Min	0.15	Mean (mgd)	2.13	Mean (cfs)	3.30	Ac-ft	2380		

40-6180. Kahakuloa Stream near Honokohau

Location.--lat 20°58'54", long 156°33'26", on right bank 0.5 mile downstream from Kapuna Stream, 1.3 miles south of Kahakuloa, 2 miles west of Puu Makawana, and 4.3 miles southeast of Honokohau.

Drainage area.--3.47 sq mi.

Records available.--July 1939 to August 1943, September 1947 to June 1966. Records for January 1913 to December 1914 (fragmentary) at site 1 mile upstream not equivalent owing to difference in drainage areas.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 330 ft (from topographic map).

Average discharge.--21 years (1940-43, 1948-66), 10.9 mgd (16.9 cfs).

Extremes.--Maximum discharge during year, 1,060 mgd (1,640 cfs) Apr. 29 (gage height, 6.70 ft, from floodmark in well), from rating curve extended above 110 mgd on basis of slope-area measurements at gage heights 6.70 and 8.48 ft; minimum, 3.2 mgd (5.0 cfs) Oct. 3-7.

1939-43, 1947-66: Maximum discharge, 1,990 mgd (3,080 cfs) Dec. 14, 1942 (gage height, 7.02 ft, control then in use), from rating curve extended above 55 mgd by test on model of station site; minimum, 1.95 mgd (3.02 cfs) Feb. 9-11, 1954.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	4.4	4.1	3.4	13	44	9.0	6.5	6.7	4.7	8.2	3.9
2	6.1	4.3	4.0	3.4	9.2	31	25	5.9	16	4.7	7.0	3.9
3	5.4	4.3	4.0	3.2	10	8.0	12	5.6	13	4.6	5.9	4.3
4	5.0	4.3	4.0	3.2	5.9	10	10	5.8	7.2	5.6	5.4	4.3
5	11	4.1	3.9	3.2	5.4	37	7.0	5.6	6.3	19	5.3	4.0
6	5.4	5.9	3.9	3.2	4.4	25	13	5.3	6.1	15	13	4.0
7	5.4	4.8	3.8	3.4	4.1	13	8.5	6.1	5.9	44	5.9	3.9
8	6.0	4.4	3.8	5.5	33	8.0	7.0	12	5.6	11	5.4	4.3
9	23	17	3.8	40	4.7	12	6	13	5.6	10	90	3.9
10	11	6.3	3.8	13	6.4	66	6.5	5.9	8.5	11	39	3.8
11	22	4.7	3.8	5.4	6.1	15	5.5	5.4	14	6.8	6.5	3.8
12	23	5.2	17	4.3	248	11	5.5	5.6	6.5	5.8	7.0	3.6
13	6.1	6.4	6.3	5.2	20	8.0	5.5	5.9	5.8	5.4	5.4	3.6
14	5.4	5.9	3.9	4.3	143	7.0	6.0	5.2	5.6	5.8	5.2	4.6
15	11	4.6	3.6	3.8	143	6.8	18	18	16	9.8	5.3	3.8
16	11	4.3	3.5	3.6	41	6.5	11	16	6.3	6.6	5.0	3.8
17	47	4.1	3.5	3.6	13	12	10	24	5.6	10	4.8	3.6
18	9.8	4.1	3.5	4.3	9.6	32	12	83	10	7.9	4.7	3.6
19	6.7	4.0	3.6	6.9	42	12	17	78	7.4	8.3	4.6	3.6
20	7.8	4.0	3.5	4.0	65	14	30	35	5.9	7.4	4.4	3.6
21	7.3	4.0	3.5	4.3	14	22	15	14	5.9	5.6	4.7	4.8
22	6.1	5.3	3.5	9.7	15	9.1	10	8.9	5.4	5.3	4.4	5.3
23	14	10	3.9	5.3	11	6.5	8.0	18	5.9	5.3	4.3	4.0
24	7.5	5.4	3.9	4.4	8.0	6.0	6.5	25	6.3	5.3	4.1	4.1
25	5.4	14	3.6	4.0	6.7	11	22	10	5.2	4.8	4.1	9.9
26	5.0	6.5	3.6	7.1	6.3	9.0	9.0	12	5.5	4.7	4.1	4.4
27	5.3	4.6	3.5	5.3	11	6.5	13	7.8	5.8	11	4.1	4.4
28	7.4	4.7	3.5	43	21	8.0	25	7.0	4.8	31	4.1	3.8
29	5.4	7.0	3.4	42	8.9	20	12	----------	4.7	64	4.3	4.1
30	4.8	4.6	3.4	12	13	11	8.5	----------	4.7	72	4.0	7.5
31	4.7	4.1	----------	9.1	----------	7.0	7.2	----------	5.4	----------	3.9	----------
Total	313.0	177.3	127.1	273.1	941.7	494.4	360.7	450.5	223.6	412.4	284.1	130.2
Mean												
Mgd	10.1	5.72	4.24	8.81	31.4	15.9	11.6	16.1	7.21	13.7	9.16	4.34
Cfs	15.6	8.85	6.56	13.6	48.6	24.6	17.9	24.9	11.2	21.2	14.2	6.71
Ac-ft	961	544	390	838	2890	1520	1110	1380	686	1270	872	400
Max	47	17	17	43	248	66	30	83	16	72	90	9.9
Min	4.7	4.0	3.4	3.2	4.1	6.0	5.5	5.2	4.7	4.6	3.9	3.6

Calendar Year 1965: Max 248 Min 3.2 Mean (mgd) 12.8 Mean (cfs) 19.8 Ac-ft 14,390
Fiscal Year 1965-66: Max 248 Min 3.2 Mean (mgd) 11.5 Mean (cfs) 17.8 Ac-ft 12,850

Note.--No gage-height record Dec. 23 to Jan. 30, Apr. 29, 30.

Peak discharge (base, 320 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-29	1500	5.86	620	959	11-14	2300	6.40	910	1,410
11-12	1230	6.31	865	1,340	4-29	about 2330	6.70	1,060	1,640

40-6200. 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.

Records available.--September, November and December 1911 (combined flow of stream and ditch below point of diversion), March 1913 to September 1920, May 1922 to June 1966. 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, staff gage at site just below Honokohau ditch intake at different datum.

Average discharge.--51 years (1913-20, 1922-66), 25.9 mgd (40.1 cfs).

Extremes.--Maximum discharge during year, 1,060 mgd (1,640 cfs) Apr. 29 (gage height, 6.18 ft), from rating curve extended above 120 mgd as explained below; minimum, 8.0 mgd (12 cfs) on several days.
1911, 1913-20, 1922-66: Maximum discharge, 2,420 mgd (3,740 cfs) Dec. 14, 1942, Aug. 30, 1957 (gage height, 8.40 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 5.4 mgd (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.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	50	9.8	9.2	8.2	32	58	17	14	16	12	13	9.2
2	13	9.8	9.2	8.2	11	47	51	13	16	13	18	18
3	12	10	9.0	8.0	9.5	14	26	13	16	12	12	17
4	11	10	9.0	8.0	14	25	21	17	14	15	11	11
5	20	11	9.0	8.0	9.8	80	15	15	13	30	11	10
6	12	21	8.7	8.0	8.4	100	30	14	13	25	16	9.5
7	11	14	8.7	8.2	8.2	29	17	16	13	42	11	9.5
8	15	11	8.7	8.7	12	19	14	26	13	16	13	9.8
9	52	69	8.7	36	9.2	29	13	21	13	13	37	9.8
10	42	13	8.7	12	14	134	16	14	15	12	16	10
11	73	10	8.7	9.2	9.2	74	13	13	18	13	11	9.2
12	30	14	16	8.4	156	20	13	13	13	12	12	9.0
13	12	16	10	11	18	15	13	13	13	11	12	9.5
14	11	11	9.2	8.7	121	25	13	13	14	12	11	19
15	29	16	8.7	8.2	188	24	41	64	24	14	12	11
16	37	12	8.4	8.0	46	20	26	55	13	13	11	9.0
17	119	9.8	8.4	8.7	17	47	26	72	13	16	10	8.7
18	32	9.8	9.4	16	17	68	28	118	20	12	10	8.7
19	15	9.5	9.2	13	86	24	39	72	36	14	9.8	9.0
20	16	9.2	8.4	9.0	144	36	66	33	25	13	9.8	9.8
21	31	9.5	8.4	9.5	24	53	36	20	18	11	12	19
22	14	21	8.4	14	46	16	23	16	13	11	9.8	26
23	29	26	8.7	11	37	14	18	20	25	11	9.8	10
24	15	12	8.7	8.7	17	13	15	30	26	11	9.5	16
25	12	37	9.0	8.2	14	23	53	18	13	11	9.5	33
26	12	14	8.7	9.5	15	19	21	21	13	10	9.5	17
27	14	10	8.4	12	48	14	29	15	13	15	9.5	20
28	14	18	8.4	39	68	18	59	16	12	33	9.8	9.8
29	11	18	8.2	32	17	40	29	----------	12	56	9.5	28
30	10	9.8	8.2	16	17	25	18	----------	12	71	9.2	51
31	10	9.5	----------	17	----------	15	15	----------	15	----------	9.2	----------
Total	784	480.7	270.4	390.4	1,233.3	1,138	814	785	503	560	373.9	446.5
Mean												
Mgd	25.3	15.5	9.01	12.6	41.1	36.7	26.3	28.0	16.2	18.7	12.1	14.9
Cfs	39.1	24.0	13.9	19.5	63.6	56.8	40.7	43.3	25.1	28.9	18.7	23.1
Ac-ft	2,410	1,480	830	1,200	3,780	3,490	2,500	2,410	1,540	1,720	1,150	1,370
Max	119	69	16	39	188	134	66	118	36	71	37	51
Min	10	9.2	8.2	8.0	8.2	13	13	13	12	10	9.2	8.7

Calendar Year 1965: Max 208 Min 8.0 Mean (mgd) 24.1 Mean (cfs) 37.3 Ac-ft 27,020
Fiscal Year 1965-66: Max 188 Min 8.0 Mean (mgd) 21.3 Mean (cfs) 33.0 Ac-ft 23,870

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
11-14	2330	5.45	740	1,140	4-29	2330	6.18	1,060	1,640

40-6290. Honokowai ditch near Lahaina

Location.--Lat 20°55'57", long 156°37'31", on left bank 20 ft downstream from intake on Kapaloa Stream and 5.4 miles northeast of Lahaina lighthouse.

Records available.--July 1912 to December 1917, November 1918 to January 1958, June 1958 to June 1966. Monthly discharge only January 1916, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 1,600 ft (from topographic map). Prior to Jan. 1, 1918, staff gage at site 0.5 mile downstream, Nov. 14, 1918, to May 27, 1921, water-stage recorder at site 1.5 miles downstream, and May 28, 1921, to Apr. 21, 1951, water-stage recorder in tunnel section now abandoned 75 ft downstream from Kapaloa Stream intake, all at different datums.

Average discharge.--50 years (1912-16, 1919-57, 1958-66), 5.80 mgd (8.97 cfs).

Extremes.--1912-66: Maximum daily discharge, 43 mgd (66 cfs) June 30, 1930; no flow at times.

Remarks.--Records fair. Ditch diverts from Amalu and Kapaloa Streams just above station for irrigation of sugarcane and domestic use.

Cooperation.--Records of daily discharge since July 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17	4.1	3.7	3.8	6.9	9.4	4.7	4.1	4.0	4.9	3.7	2.8
2	4.3	4.1	3.7	3.8	3.7	9.6	11	4.1	4.0	4.9	4.8	4.4
3	3.8	4.1	3.6	3.8	3.5	4.1	8.0	3.3	4.0	4.9	3.7	5.1
4	3.8	4.1	3.6	3.8	3.7	7.2	4.3	4.9	4.0	4.9	3.2	3.7
5	5.3	4.3	3.6	3.8	3.5	18	4.0	4.6	4.0	8.9	3.0	3.2
6	4.4	7.6	3.6	3.8	3.3	8.7	4.0	4.1	4.0	7.6	3.2	2.8
7	4.4	5.6	3.2	3.8	3.2	7.3	3.9	4.5	4.0	8.7	3.2	2.8
8	5.1	4.6	3.4	3.8	3.7	5.6	3.9	6.0	4.0	6.1	3.2	2.8
9	16	15	3.4	7.3	3.3	8.4	3.8	4.5	4.1	5.1	7.5	2.8
10	7.3	4.6	3.4	4.8	6.0	15	3.7	5.0	4.1	5.4	4.9	2.8
11	12	4.0	3.4	3.5	3.2	14	3.6	4.5	4.1	5.0	3.4	2.8
12	8.2	3.9	3.4	3.4	24	5.6	3.4	4.0	4.1	4.7	3.3	2.8
13	8.8	5.2	3.5	3.4	5.0	4.6	3.4	3.5	4.1	4.5	3.2	2.8
14	11	4.0	3.5	3.4	13	8.7	3.4	4.0	4.1	4.3	3.2	4.7
15	16	4.2	3.5	3.4	14	7.7	6.9	14	4.7	5.0	3.2	3.7
16	17	4.2	3.5	3.4	6.5	7.3	6.2	11	4.5	4.5	3.2	3.3
17	24	4.0	3.5	3.4	3.9	9.9	5.8	14	4.4	4.8	3.2	3.2
18	11	3.8	3.5	3.4	4.4	16	8.0	17	4.4	4.2	3.0	2.8
19	6.2	3.8	3.5	6.4	12	7.5	9.0	11	12	4.0	3.0	2.8
20	5.1	3.6	3.7	4.0	18	12	10	6.1	7.5	3.5	3.0	2.8
21	7.0	3.6	3.8	3.8	5.8	12	8.6	4.5	6.2	3.0	3.0	5.5
22	5.7	5.5	3.8	3.9	10	4.9	7.5	4.0	5.2	2.9	3.2	9.2
23	6.5	7.8	3.8	4.1	9.4	4.3	5.2	3.9	7.0	2.9	3.0	3.7
24	5.5	3.8	3.8	3.5	4.8	4.1	4.2	6.0	11	2.8	2.9	5.4
25	4.9	6.4	3.8	3.3	3.4	7.2	13	4.4	5.3	2.8	2.7	11
26	4.4	4.6	3.8	3.3	3.7	5.8	6.4	4.8	5.0	2.9	2.9	5.9
27	4.2	3.8	3.8	3.4	9.1	4.2	4.9	4.0	5.0	2.9	3.0	7.4
28	5.4	4.8	3.8	6.3	17	4.0	11	3.8	4.9	5.0	2.9	3.4
29	4.3	6.1	3.8	5.1	5.1	6.2	6.6	----------	4.9	3.3	2.9	18
30	4.1	4.0	3.8	4.6	4.7	5.7	4.5	----------	4.9	8.4	2.8	14
31	4.1	3.7	----------	3.8	----------	3.8	4.2	----------	4.9	----------	2.8	----------
Total	246.8	152.9	108.2	125.3	217.8	248.8	187.1	169.6	158.4	142.8	104.2	148.4
Mean												
Mgd	7.96	4.93	3.61	4.04	7.26	8.03	6.04	6.06	5.11	4.76	3.36	4.95
Cfs	12.3	7.63	5.59	6.25	11.2	12.4	9.35	9.38	7.91	7.36	5.20	7.66
Ac-ft	757	469	332	385	668	764	574	520	486	438	320	455
Max	24	15	3.8	7.3	24	18	13	17	12	8.9	7.5	18
Min	3.8	3.6	3.2	3.3	3.2	3.8	3.4	3.3	4.0	2.8	2.7	2.8

Calendar Year 1965:	Max	25	Min	3.1	Mean (mgd)	5.83	Mean (cfs)	9.02	Ac-ft	6,530
Fiscal Year 1965-66:	Max	24	Min	2.7	Mean (mgd)	5.51	Mean (cfs)	8.53	Ac-ft	6,170

40-6385. Kahoma Stream at Lahaina

Location.--Lat 20°53'10", long 156°40'36", on right bank 0.2 mile west of Kelawea, 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.

Records available.--October 1962 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 90 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,610 mgd (2,490 cfs) July 11 (gage height, 11.03 ft), from rating curve extended above 3.1 mgd on basis of slope-area measurements at gage heights 5.90 and 11.03 ft; no flow most of the time.
1962-66: Maximum discharge, that of July 11, 1965; no flow most of the time each year.
Maximum discharge known, 5,010 mgd (7,750 cfs) May 13, 1960, by slope-area measurement of peak flow at site 0.5 mile upstream.

Remarks.--Records fair. Diversion above station by Pioneer Mill Co. for irrigation of sugarcane. Diversion from Kanaha Stream above station by Maui County Board of Water Supply for domestic use. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0			0	0.13	0	0		0		0
2	0	0			0	.04	0	0		0		0
3	0	0			0	0	0	0		0		0
4	0	0			0	0	.02	0		0		0
5	0	0			0	5.7	0	0		0		0
6	0	0			0	73	0	0		0		0
7	0	0			0	16	0	0		0		0
8	0	0			0	1.9	0	0		0		0
9	0	14			0	1.4	.72	0		0		0
10	0	.47			0	5.6	.46	0		0		0
11	136	0			0	5.3	.03	0		0		0
12	19	0			15	2.1	.02	0		0		0
13	.04	0			2.1	.37	0	0		0		0
14	0	0			3.3	.21	0	0		0		0
15	.05	0			30	3.8	0	.02		0		0
16	0	0			3.5	1.0	0	0		0		0
17	.21	0			.61	1.8	0	0		0		0
18	.26	0			.58	33	0	0		0		0
19	0	0			3.3	6.3	30	0		0		0
20	0	0			43	4.2	14	0		0		0
21	0	0			5.0	1.1	.69	0		0		0
22	0	0			2.1	.29	2.2	0		0		0
23	0	0			2.3	.05	0	0		0		0
24	0	0			.26	0	0	0		0		0
25	0	0			.28	0	0	0		0		0
26	0	0			.35	0	0	0		0		0
27	0	0			.55	0	0	0		0		0
28	0	0			32	0	0	0		0		0
29	0	0			3.3	0	0	----------		0		3.9
30	0	0			.44	0	0	----------		.82		.28
31	0	0	----------		----------	0	0	----------		----------		----------
Total	155.56	14.47	0	0	147.97	163.29	48.14	0.02	0	0.82	0	4.18
Mean												
Mgd	5.02	0.467	0	0	4.93	5.27	1.55	0.0007	0	0.027	0	0.139
Cfs	7.77	0.723	0	0	7.63	8.15	2.40	0.001	0	0.042	0	0.215
Ac-ft	477	44	0	0	454	501	148	0.06	0	2.5	0	13
Max	136	14	0	0	43	73	30	0.02	0	0.82	0	3.9
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 136 Min 0 Mean (mgd) 1.59 Mean (cfs) 2.46 Ac-ft 1,780
Fiscal Year 1965-66: Max 136 Min 0 Mean (mgd) 1.46 Mean (cfs) 2.26 Ac-ft 1,640

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	2030	11.03	1,610	2,490	12- 6	2130	6.10	385	596
8- 9	1700	5.83	290	449	1-19	2200	6.56	549	849
11-20	0900	6.12	392	607					

40-6450. Olowalu ditch near Olowalu

Location.--lat 20°49'33", long 156°36'47", on left bank 1.2 miles northeast of Olowalu and 5.5 miles southeast of Lahaina.

Records available.--August 1911 to January 1916, April 1916 to September 1920, November 1920 to January 1958, June 1958 to June 1966. Prior to July 1913, published as Olowalu ditch 1 near Olowalu. Monthly discharge only for June 1932, published in WSP 1319.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 480 ft (from topographic map). Prior to June 30, 1916, staff gage in tailrace of powerhouse 1,000 ft downstream at different datum. July 28, 1916, to June 8, 1919, staff gage and June 9, 1919, to June 30, 1932, water-stage recorder, at site 300 ft upstream at different datum. July 1, 1932, to Oct. 7, 1933, records obtained by combining flows at three stations about 1,000 ft downstream.

Average discharge.--50 years (1912-15, 1917-20, 1921-57, 1958-66), 4.83 mgd (7.47 cfs).

Extremes.--1911-66: Maximum daily discharge, 13.7 mgd (21.2 cfs) Apr. 17, 1935; no flow at times.

Remarks.--Records good. Ditch diverts from Olowalu Stream at altitude 520 ft for irrigation of sugarcane and domestic use in the Olowalu area.

Cooperation.--Records of daily discharge since July 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.5	4.1	3.2	2.5	4.4	7.4	6.9	5.2	8.2	3.1	3.5	1.9
2	4.6	3.8	3.0	2.4	3.0	7.7	8.2	4.8	7.6	3.3	4.9	2.1
3	3.6	4.1	3.0	2.3	2.6	6.0	6.0	4.5	6.7	3.1	3.6	2.2
4	3.2	3.9	3.0	2.3	2.5	5.9	7.6	5.3	6.0	3.2	3.1	2.0
5	3.3	3.8	3.0	2.3	2.4	8.3	6.5	4.8	5.6	4.0	2.7	2.0
6	3.0	4.3	2.9	2.3	2.2	8.4	5.9	5.0	5.4	4.0	3.0	1.9
7	2.9	3.8	2.9	2.3	2.2	3.9	5.4	7.7	5.1	5.7	2.5	1.9
8	3.2	3.3	2.8	2.3	4.8	3.1	5.2	7.8	4.9	4.3	2.7	1.9
9	6.1	8.1	2.8	4.2	3.7	2.9	4.9	7.8	4.8	3.6	3.3	1.8
10	5.0	6.7	2.7	2.6	6.3	6.8	5.3	7.4	4.6	3.7	3.5	1.8
11	8.8	4.9	2.7	2.5	4.5	9.6	4.8	6.8	4.5	3.4	2.7	1.8
12	6.5	4.6	2.7	2.5	4.3	9.5	4.7	6.0	4.4	3.2	2.5	1.8
13	9.3	4.5	2.6	2.7	.50	9.3	4.4	5.2	4.2	3.2	2.4	1.9
14	7.4	4.1	2.4	2.4	.01	9.0	4.3	4.8	4.1	3.0	2.3	2.3
15	9.0	5.4	2.4	2.2	4.5	8.6	6.6	7.7	4.4	3.1	3.4	1.9
16	8.8	5.5	2.3	2.2	5.7	7.6	5.6	7.6	4.0	3.0	2.6	1.8
17	10	4.6	2.4	2.2	5.1	7.0	5.1	8.3	3.8	3.0	2.3	1.7
18	9.4	4.3	2.4	2.4	4.6	6.9	5.5	8.7	4.4	2.9	2.2	1.8
19	8.8	4.1	2.5	2.5	5.2	7.0	6.3	9.1	4.3	2.9	2.4	1.8
20	8.6	3.9	2.4	2.8	2.1	8.4	6.9	8.7	4.0	2.8	2.3	1.8
21	7.9	4.1	2.4	2.8	4.8	9.7	6.5	8.1	3.8	2.8	2.6	2.0
22	6.9	4.7	2.7	2.3	7.8	9.2	6.1	7.6	3.6	2.7	2.3	2.5
23	7.9	5.6	3.4	2.2	7.9	8.6	5.8	7.2	3.9	2.7	2.1	2.0
24	7.0	4.6	4.2	2.1	4.8	7.8	5.5	7.2	3.9	2.7	2.1	2.2
25	5.9	6.0	6.0	2.2	6.7	8.0	7.0	6.6	3.6	2.6	2.0	3.2
26	5.4	5.8	3.8	2.2	6.0	7.4	7.0	6.3	3.6	2.6	2.0	2.3
27	5.3	4.6	3.0	2.3	6.4	6.6	6.0	6.1	3.5	2.6	2.0	3.2
28	5.0	4.4	2.7	3.0	8.9	7.6	6.0	6.9	3.2	3.8	2.0	2.2
29	4.7	4.2	2.6	3.1	5.6	7.7	6.0	----------	3.3	3.3	2.0	3.1
30	4.4	3.4	2.5	2.8	8.0	9.0	5.5	----------	3.4	2.2	1.9	3.6
31	4.2	3.2	----------	2.4	----------	7.4	5.2	----------	3.3	----------	1.9	----------
Total	194.6	142.4	87.4	77.3	137.51	232.3	182.7	189.2	140.1	96.5	80.8	64.4
Mean												
Mgd	6.28	4.59	2.91	2.49	4.58	7.49	5.89	6.76	4.52	3.22	2.61	2.15
Cfs	9.72	7.10	4.50	3.85	7.09	11.6	9.11	10.5	6.99	4.98	4.04	3.33
Ac-ft	597	437	268	237	422	713	561	581	430	296	248	198
Max	10	8.1	6.0	4.2	8.9	9.7	8.2	9.1	8.2	5.7	4.9	3.6
Min	2.9	3.2	2.3	2.1	0.01	2.9	4.3	4.5	3.2	2.2	1.9	1.7

Calendar Year 1965:	Max	11	Min	0.01	Mean (mgd)	5.03	Mean (cfs)	7.78	Ac-ft	5,640
Fiscal Year 1965-66:	Max	10	Min	0.01	Mean (mgd)	4.45	Mean (cfs)	6.89	Ac-ft	4,990

40-6462. 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.

Records available.--May 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

Extremes.--Maximum discharge during year, 784 mgd (1,210 cfs) July 11 (gage height, 5.31 ft), from rating curve extended above 8.3 mgd on basis of slope-area measurements at gage height 3.72 and 5.31 ft; no flow most of the time.
1963-66: Maximum discharge, that of July 11, 1965; no flow most of the time each year.
Discharge for flood of Nov. 2, 1961, 480 mgd (743 cfs), from slope-area measurement of peak flow.

Remarks.--Records fair. All low flow diverted 1.5 miles above station by Olowalu ditch (see sta. no. 6450) for domestic use and irrigation of sugarcane in vicinity of Olowalu. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0		0	0	5.7	0	1.4	0	8.9	
2	0	0	0		0	.36	8.3	0	0	0	0	
3	0	0	0		0	0	6.4	0	0	0	0	
4	0	0	0		0	0	5.7	.60	0	0	0	
5	0	0	0		0	26	5.2	.01	0	0	0	
6	0	0	0		0	40	1.6	2.0	0	0	0	
7	0	0	0		0	47	0	2.3	0	0	0	
8	0	0	0		1.5	19	0	0	0	0	0	
9	0	7.8	0		.01	16	0	0	0	0	0	
10	3.6	.31	0		25	31	0	0	0	0	0	
11	63	0	0		12	41	0	0	0	0	0	
12	44	0	0		74	22	0	0	0	0	0	
13	0	0	0		42	4.4	0	0	0	0	0	
14	0	0	0		40	0	0	0	0	0	0	
15	0	.03	0		102	0	0	0	0	0	0	
16	1.5	0	0		56	0	0	.92	0	0	0	
17	25	0	0		31	2.8	0	20	0	0	0	
18	2.0	0	0		21	41	0	27	0	0	0	
19	0	0	0		30	18	19	33	0	0	0	
20	0	0	0		85	6.1	14	4.7	0	0	0	
21	0	0	0		51	7.4	0	.02	0	0	0	
22	0	0	0		37	.23	0	0	0	0	0	
23	0	0	0		36	0	0	0	0	0	0	
24	0	0	5.1		29	1.3	0	0	0	0	0	
25	0	0	4.0		24	6.7	.32	0	0	0	0	
26	0	0	.02		20	6.7	0	0	0	0	0	
27	0	0	0		25	6.0	0	0	0	0	0	
28	0	0	0		63	6.4	0	2.5	0	0	0	
29	0	0	0		32	8.5	0	----------	0	.28	0	
30	0	0	0		7.8	11	0	----------	0	44	0	
31	0	0	----------		----------	6.4	0	----------	0	----------	0	----------
Total	139.1	8.14	9.12	0	844.31	375.29	66.22	93.05	1.4	44.28	8.9	0
Mean												
Mgd	4.49	0.263	0.304	0	28.1	12.1	2.14	3.32	0.05	1.48	0.29	0
Cfs	6.95	0.407	0.470	0	43.5	18.7	3.31	5.14	0.08	2.29	0.45	0
Ac-ft	427	25	28	0	2.590	1.150	203	286	4.3	136	27	0
Max	63	7.8	5.1	0	102	47	19	33	1.4	44	8.9	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 102 Min 0 Mean (mgd) 4.35 Mean (cfs) 6.73 Ac-ft 4,870
Fiscal Year 1965-66: Max 102 Min 0 Mean (mgd) 4.36 Mean (cfs) 6.75 Ac-ft 4,880

Peak discharge (base, 220 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1930	5.31	784	1,210	11-20	0830	3.50	225	348
11-14	2400	3.52	230	356	4-30	1500	3.48	220	340

40-6600. Kulanihakoi Gulch near Kihei

Location.--Lat 20°46'06", long 156°27'03", on right bank 0.5 mile northeast of Lihue Cemetery, 0.8 mile upstream from mouth, and 1.3 miles southeast of Kihei.

Drainage area.--14.4 sq mi.

Records available.--October 1962 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 35 ft (from topographic map).

Extremes.--Maximum discharge during year, 144 mgd (223 cfs) Apr. 30 (gage height, 3.31 ft), from rating curve extended above 52 mgd as explained below; no flow most of the time.
1962-66: Maximum discharge, 290 mgd (449 cfs) Jan. 16, 1963 (gage height, 4.02 ft), from rating curve extended above 52 mgd on basis of slope-area measurements at gage heights 3.31 and 4.02 ft; no flow most of the time each year.

Remarks.--Records fair. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1							0			0		
2							0			0		
3							0			0		
4							0			0		
5							0			0		
6							0			0		
7							0			0		
8							0			0		
9							0			0		
10							0			0		
11							0			0		
12							0			0		
13							0			0		
14							0			0		
15							0			0		
16							0			0		
17							0			0		
18							0			0		
19							0			0		
20							0			0		
21							.46			0		
22							0			0		
23							0			0		
24							0			0		
25							0			0		
26							0			0		
27							0			0		
28							0			0		
29							0			0		
30							0	----------		0		
31			----------		----------		0	----------		3.7		----------
Total	0	0	0	0	0	0	0.46	0	0	3.7	0	0
Mean												
Mgd	0	0	0	0	0	0	0.015	0	0	0.12	0	0
Cfs	0	0	0	0	0	0	0.023	0	0	0.19	0	0
Ac-ft	0	0	0	0	0	0	1.4	0	0	11	0	0
Max	0	0	0	0	0	0	0.46	0	0	3.7	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 1.4 Min 0 Mean (mgd) 0.004 Mean (cfs) 0.006 Ac-ft 5.0
Fiscal Year 1965-66: Max 3.7 Min 0 Mean (mgd) 0.011 Mean (cfs) 0.017 Ac-ft 13

Peak discharge (base, 40 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-30	1500	3.31	144	223

40-7000. Waiakea Stream near Mountain View

Location.--Lat 19°38'30", long 155°10'30", on left bank 450 ft upstream from Olaa Flume Road and 7.5 miles northwest of Mountain View.

Drainage area.--17.4 sq mi.

Records available.--September 1930 to June 1966. 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).

Average discharge.--35 years (1931-66), 7.51 mgd (11.6 cfs).

Extremes.--Maximum discharge during year, 40 mgd (62 cfs) Nov. 15 (gage height, 2.98 ft); minimum, 0.88 mgd (1.4 cfs) Sept. 11, 12. 1930-66: Maximum discharge, 365 mgd (565 cfs), Mar. 14, 1942 (gage height, 4.43 ft), from rating curve extended above 110 mgd by logarithmic plotting; no flow at times.

Remarks.--Records good. No diversion above station. Large part of flow comes from 3 tunnels.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.0	4.6	1.4	1.8	3.8	10	11	8.5	4.2	4.7	3.0	7.8
2	3.9	4.4	1.4	1.7	4.6	9.7	12	8.1	4.1	4.4	3.4	7.5
3	3.7	4.1	1.2	1.6	4.6	9.1	12	7.6	3.8	4.1	3.4	7.5
4	3.6	3.9	1.2	1.6	5.0	8.4	12	7.2	3.7	3.9	3.4	7.4
5	3.4	3.8	1.1	1.6	4.5	7.8	11	6.6	3.5	4.0	3.1	7.2
6	3.3	3.6	1.4	1.4	4.2	10	11	6.1	3.4	4.1	3.0	6.9
7	3.1	3.4	1.2	2.1	4.0	11	10	5.8	3.3	5.2	2.8	6.4
8	3.0	3.6	1.1	2.1	3.8	10	9.3	5.8	3.1	6.0	2.8	6.1
9	2.9	3.8	1.0	2.1	3.7	10	8.6	5.8	3.0	5.6	2.7	5.6
10	2.8	3.3	.96	2.0	3.8	12	8.5	5.3	2.8	6.9	2.6	5.3
11	3.4	3.1	.92	2.1	3.7	13	7.6	5.0	2.7	6.2	3.1	5.1
12	2.7	3.7	4.5	2.0	3.7	12	7.2	4.7	2.6	6.8	3.2	4.8
13	2.6	3.8	3.5	1.9	4.0	12	6.7	4.7	2.5	6.3	3.2	4.5
14	2.4	3.4	3.1	1.8	6.0	20	6.2	4.4	2.4	5.7	3.1	4.4
15	2.5	3.2	3.1	1.9	19	19	6.4	7.2	3.3	6.2	3.1	4.2
16	2.4	3.1	2.8	2.2	15	22	5.8	6.6	2.8	5.9	5.0	4.0
17	6.3	2.9	2.7	1.9	15	21	5.6	7.6	2.5	6.4	5.4	3.8
18	6.0	2.8	2.6	1.8	16	20	5.6	7.4	3.6	6.3	5.2	3.6
19	5.2	2.7	2.5	1.8	16	19	6.5	7.2	4.8	5.6	5.2	3.5
20	7.2	2.6	2.4	3.9	18	18	6.9	7.1	8.5	5.4	4.8	3.4
21	7.9	2.7	2.3	3.0	17	17	6.3	6.6	10	5.1	4.4	3.9
22	7.2	2.5	2.2	2.7	16	15	7.6	6.2	9.2	4.6	4.2	4.4
23	6.5	2.5	2.2	2.5	15	14	7.2	6.1	8.6	4.2	4.1	3.7
24	6.2	2.3	2.1	2.4	14	12	6.8	5.6	8.3	4.0	3.8	3.6
25	5.6	2.2	2.0	2.2	13	13	7.0	5.3	7.8	3.8	3.8	4.6
26	5.2	2.1	1.9	2.1	12	12	6.6	5.0	7.2	3.7	3.5	6.2
27	4.9	1.9	1.8	1.9	12	12	6.1	4.8	6.7	3.6	3.4	9.0
28	4.6	1.9	1.8	1.8	12	12	7.2	4.4	6.2	3.4	3.3	8.5
29	4.3	1.7	1.7	1.8	11	11	11	---------	5.8	3.2	3.4	8.7
30	4.1	1.6	1.9	1.7	11	11	9.6	---------	5.4	3.1	3.9	9.8
31	4.1	1.5	---------	4.3	---------	11	9.1	---------	5.0	---------	7.6	---------
Total	135.0	92.7	59.98	65.7	291.4	414.0	254.4	172.7	150.8	148.4	116.9	171.4
Mean												
Mgd	4.35	3.00	2.00	2.12	9.71	13.4	8.21	6.17	4.86	4.95	3.77	5.71
Cfs	6.73	4.64	3.09	3.28	15.0	20.7	12.7	9.55	7.52	7.66	5.83	8.83
Ac-ft	414	284	184	202	894	1,270	781	530	463	455	359	526
Max	7.9	4.6	4.5	4.3	19	22	12	8.5	10	6.9	7.6	9.8
Min	2.4	1.5	0.92	1.4	3.7	7.8	5.6	4.4	2.4	3.1	2.6	3.4

Calendar Year 1965: Max 24 Min 0.92 Mean (mgd) 6.37 Mean (cfs) 9.86 Ac-ft 7,140
Fiscal Year 1965-66: Max 22 Min 0.92 Mean (mgd) 5.68 Mean (cfs) 8.79 Ac-ft 6,360

Peak discharge (base, 50 mgd).--No peak above base.

40-7012. Waiakea Stream near Hilo

Location.--Lat 19°41'35", long 155°05'55", on right bank 2.5 miles south of Hilo Post Office and 3.0 miles southeast of Piihonua.

Drainage area.--33.6 sq mi.

Records available.--May 1957 to June 1966.

Gage.--Water-stage recorder and, since June 19, 1964, concrete control. Datum of gage is 369 ft above mean sea level (by stadia survey).

Average discharge.--9 years, 3.71 mgd (5.74 cfs).

Extremes.--Maximum discharge during year, 75 mgd (116 cfs) Nov. 15 (gage height, 3.49 ft); no flow most of the time.
1957-66: Maximum discharge, 736 mgd (1,140 cfs) May 5, 1965 (gage height, 6.14 ft), from rating curve extended above 190 mgd by logarithmic plotting; no flow most of the time each year.

Remarks.--Records good. Board of Water Supply, County of Hawaii, diverts about 25,000,000 gal per year above station at 1,500-ft elevation.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1					0	0	0		0			
2					0	0	0		0			
3					0	0	0		0			
4					0	0	0		0			
5					0	0	0		0			
6					0	0	0		0			
7					0	2.3	0		0			
8					0	0	0		0			
9					0	0	0		0			
10					0	1.1	0		0			
11					0	3.6	0		0			
12					0	0	0		0			
13					0	0	0		0			
14					2.0	18	0		0			
15					23	6.3	0		0			
16					15	12	0		0			
17					.05	4.4	0		0			
18					0	2.9	0		0			
19					.09	1.1	0		0			
20					6.2	.08	0		0			
21					6.5	0	0		.05			
22					.04	0	0		0			
23					0	0	0		0			
24					0	0	0		0			
25					0	0	0		0			
26					0	0	0		0			
27					0	0	0		0			
28					0	0	.01		0			
29					0	0	.01	----------	0			
30					0	0	0.01	----------	0			
31			----------		----------	0	0	----------	0	----------		----------
Total	0	0	0	0	52.88	51.78	0.03	0	0.05	0	0	0
Mean												
Mgd	0	0	0	0	1.76	1.67	0.001	0	0.002	0	0	0
Cfs	0	0	0	0	2.72	2.58	0.002	0	0.003	0	0	0
Ac-ft	0	0	0	0	162	159	0.1	0	0.2	0	0	0
Max	0	0	0	0	23	18	0.01	0	0.05	0	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965:	Max	180	Min	0	Mean (mgd)	2.21	Mean (cfs)	3.42	Ac-ft	2480
Fiscal Year 1965-66:	Max	23	Min	0	Mean (mgd)	0.287	Mean (cfs)	0.444	Ac-ft	321

Peak discharge (base, 200 mgd).--No peak above base.

40-7017.5. Wailuku River near Humula

Location.--Lat 19°42'55", long 155°18'36", on right bank 300 ft upstream from trail terminus, 10 miles east of Humula, and 14 miles west of Hilo.

Drainage area.--34.8 sq mi.

Records available.--February 1965 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 4,250 ft (from topographic map).

Extremes.--1965: Maximum discharge during period February to June, 702 mgd (1,090 cfs) Apr. 6 (gage height, 7.84 ft), from rating curve extended above 12 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) Feb. 25 to Mar. 2.
1965-66: Maximum discharge during fiscal year, 74 mgd (114 cfs) Dec. 14 (gage height, 4.17 ft), from rating curve extended above 12 mgd by logarithmic plotting; no flow Oct. 4-6, Nov. 2.

Remarks.--Records good except those above 30 mgd, which are poor. No diversion above station.

Discharge, in million gallons a day, February to June 1965

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1								0.06	0.02	0.05	0.12	0.21
2								.06	.02	.18	.33	.33
3								.05	2.5	.12	4.4	.24
4								.08	.72	2.3	37	.27
5								.10	.36	14	3.6	.57
6								.10	.95	109	9.3	.36
7								.08	.36	11	6.4	.18
8								.15	.12	2.9	31	.12
9								.15	.08	2.1	12	.10
10								.08	.05	1.9	5.3	.10
11								.07	.05	1.1	1.7	.08
12								.07	.04	.80	1.2	.12
13								.07	.04	.69	.97	.08
14								.18	.04	.57	.72	.07
15								.33	.07	.42	.60	.05
16								.12	.07	.36	.51	.10
17								.08	.03	.33	.45	.08
18								.05	.03	.33	.42	.05
19								.04	.03	.36	.36	.05
20								.05	.03	.48	.42	.24
21								.04	.03	.36	.39	.39
22								.03	1.2	.27	.30	.15
23								.03	2.2	.21	.27	.08
24								.03	.48	.18	.24	.05
25								.02	.12	.15	.27	.05
26								.02	.08	.15	.33	.08
27								.02	.07	.12	.27	.08
28								.02	.05	.10	.24	.07
29								----------	.04	.10	.21	.05
30								----------	.08	.12	.21	.03
31			----------		----------			----------	.07	----------	.15	----------
Total								2.18	10.03	150.75	119.68	4.43
Mean								0.078	0.324	5.02	3.86	0.148
Mgd								0.121	0.501	7.77	5.97	0.229
Cfs								6.7	31	463	367	14
Ac-ft								0.33	2.5	109	37	0.57
Max								0.02	0.02	0.05	0.12	0.03
Min												

Calendar Year	Max		Min		Mean (mgd)		Mean (cfs)		Ac-ft	
Fiscal Year 1964-65:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-6	0100	7.84	702	1,090	5-8	1500	6.68	416	644

40-7017.5. Wailuku River near Homuula--Continued

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.03	0.04	0.03	0.02	0.02	0.10	0.36	0.05	0.03	0.02	0.01	0.69
2	.03	.05	.03	.01	0	.08	.54	.04	.03	.02	.15	.60
3	.03	.03	.04	.01	.97	.07	.60	.04	.03	.02	.18	.24
4	.03	.03	.04	0	.39	.05	.36	.03	.03	.02	.12	.07
5	.03	.03	.04	0	.04	.04	.27	.03	.02	.02	.03	.03
6	.02	.04	.04	0	.02	.10	.24	.03	.02	.02	.02	.03
7	.03	.03	.03	.10	.01	1.0	.21	.45	.02	.04	.02	.02
8	.02	.03	.03	.05	.01	.24	.18	1.1	.02	.05	.01	.02
9	.03	.03	.02	.02	.01	.18	.18	.30	.02	.05	.01	.02
10	.03	.03	.02	.01	.01	1.2	.15	.10	.02	.15	.02	.02
11	.03	.03	.02	.17	.01	1.7	.15	.05	.02	.08	.24	.02
12	.02	.03	1.0	.04	.02	.54	.12	.04	.02	.02	.24	.02
13	.02	.15	.36	.01	.05	.39	.10	.05	.01	.02	.05	.01
14	.02	.05	.08	.01	.10	38	.10	.03	.01	.02	.34	.01
15	.02	.84	.04	.01	5.2	17	.27	1.0	.02	.02	.68	.01
16	.02	.42	.03	.01	1.6	5.3	.12	.33	.02	.03	1.3	.01
17	.95	.12	.03	.01	.45	4.9	.12	.24	.02	.08	.63	.01
18	.36	.05	.02	.01	.33	2.0	.30	.15	.13	.03	.18	.01
19	.08	.03	.02	.01	.42	1.4	.51	.12	.79	.02	.10	.01
20	.08	.03	.02	.01	1.7	1.0	.54	.15	1.3	.02	.05	.01
21	.10	.03	.02	.01	.75	.80	.27	.08	2.6	.02	.04	.02
22	.07	.03	.02	.01	.33	.69	.39	.07	.39	.02	.03	.02
23	.04	.03	.02	.01	.21	.54	.24	.05	.15	.01	.03	.01
24	.03	.03	.02	.01	.21	.51	.18	.05	.10	.01	.03	.02
25	.03	.05	.02	.01	.15	.57	.12	.04	.07	.01	.03	.03
26	.03	.08	.02	.01	.10	.48	.10	.04	.04	.01	.02	.33
27	.03	.03	.01	.01	.15	.39	.08	.04	.03	.01	.02	.12
28	.03	.05	.01	.01	.40	.36	.07	.03	.03	.01	.02	.04
29	.03	.07	.02	.01	.20	.39	.18	---------	.02	.01	.03	.21
30	.03	.03	.02	.01	.15	.42	.10	---------	.02	.01	.03	.42
31	.03	.03	---------	.04	---------	.33	.08	---------	.02	---------	.39	---------
Total	2.33	2.55	2.12	0.65	14.01	80.77	7.23	4.73	6.05	0.87	5.05	3.08
Mean												
Mgd	0.075	0.082	0.071	0.021	0.467	2.61	0.233	0.169	0.195	0.029	0.163	0.103
Cfs	0.116	0.127	0.110	0.032	0.723	4.04	0.361	0.261	0.302	0.045	0.252	0.159
Ac-ft	7.2	7.8	6.5	2.0	43	248	22	15	19	2.7	15	9.5
Max	0.95	0.84	1.0	0.17	5.2	38	0.60	1.1	2.6	0.15	1.3	0.69
Min	0.02	0.03	0.01	0	0	0.04	0.07	0.03	0.01	0.01	0.01	0.01

Calendar Year 1965:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-		
Fiscal Year 1965-66:	Max	38	Min	0	Mean (mgd)	0.355	Mean (cfs)	0.549	Ac-ft	397		

Peak discharge (base, 200 mgd).--No peak above base.

40-7040. 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.

Records available.--July 1928 to July 1940, October 1940 to December 1947, April 1948 to June 1966. Monthly discharge only July 1928, published in WSP 1319. Prior to July 1960, published as "above Hilo Boarding School ditch intake, near Hilo."

Gage.--Digital water-stage recorder. Altitude of gage is 1,070 ft (from topographic map). Prior to Apr. 28, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--36 years (1928-40, 1941-47, 1948-66), 177 mgd (274 cfs).

Extremes.--Maximum discharge during year, 4,260 mgd (6,590 cfs) Dec. 14 (gage height, 13.88 ft); minimum, 1.2 mgd (1.9 cfs) Sept. 11, 12. 1928-66: Maximum discharge, 41,000 mgd (63,400 cfs) Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 6,600 mgd; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.

Remarks.--Records good. Hawaii County Board of Water Supply diverts about 4 mgd above station for domestic supply. Kapehu ditch diverted from Kapehu Stream into Wailuku River above station 1938-63.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	22	52	7.4	19	97	67	170	71	34	20	30	375
2	21	52	6.0	8.2	81	55	295	58	48	18	56	210
3	19	27	5.2	5.7	241	45	285	51	34	16	90	142
4	17	22	4.2	4.7	151	39	167	43	24	15	74	87
5	15	20	3.1	3.0	42	35	118	37	21	15	36	61
6	13	32	3.4	2.3	27	103	91	33	18	24	26	46
7	13	24	7.0	4.6	21	378	74	38	17	43	20	38
8	13	22	4.2	61	84	96	61	131	15	85	17	32
9	11	42	3.0	32	65	103	53	72	14	53	15	32
10	9.4	30	2.1	14	38	459	63	42	13	320	14	28
11	28	19	1.7	19	28	595	46	35	12	159	65	26
12	19	22	211	28	43	279	40	35	11	65	68	21
13	15	63	81	14	59	188	35	36	9.8	46	32	20
14	12	27	26	11	107	2780	32	30	9.8	35	246	22
15	13	20	24	10	1280	1230	102	350	54	41	226	20
16	14	19	16	16	666	765	54	122	35	36	285	16
17	56	17	13	13	299	715	62	124	18	73	180	14
18	85	14	11	9.4	229	383	71	87	32	40	84	12
19	73	13	9.4	30	241	248	90	88	278	33	59	12
20	83	12	12	26	509	182	123	93	363	30	44	12
21	85	13	11	11	399	171	244	66	624	27	35	42
22	85	14	7.2	6.8	198	148	224	53	188	23	28	61
23	70	15	6.0	4.7	150	121	135	46	120	20	24	31
24	59	15	5.0	3.8	126	106	114	41	110	18	21	23
25	50	19	6.8	3.2	98	276	109	35	71	16	18	71
26	39	27	6.4	3.0	105	193	88	31	53	17	17	187
27	31	12	4.3	2.8	122	129	72	30	44	21	19	248
28	27	9.8	3.3	8.0	209	128	86	26	36	16	16	139
29	24	14	2.7	10	118	114	208	---------	30	14	30	122
30	23	11	5.4	4.4	85	166	113	---------	26	16	31	295
31	27	8.9	---------	53	---------	113	98	---------	22	---------	424	---------
Total	1071.4	707.7	508.8	441.6	5918	10410	3523	1904	2384.6	1355	2330	2445
Mean												
Mgd	34.6	22.8	17.0	14.2	197	336	114	68.0	76.9	45.2	75.2	81.5
Cfs	53.5	35.3	26.3	22.0	305	520	176	105	119	69.9	116	126
Ac-ft	3290	2170	1560	1360	18160	31950	10810	5840	7320	4160	7150	7500
Max	85	63	211	61	1280	2780	295	350	624	320	424	375
Min	9.4	8.9	1.7	2.3	21	35	32	26	9.8	14	14	12

Calendar Year 1965: Max 2780 Min 1.7 Mean (mgd) 125 Mean (cfs) 193 Ac-ft 140,000
Fiscal Year 1965-66: Max 2780 Min 1.7 Mean (mgd) 90.4 Mean (cfs) 140 Ac-ft 101,300

Peak discharge (base, 5,600 mgd).--No peak above base.

40-7176. Alia Stream near Hilo

Location (revised).--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 Honomu, and 8 miles north of Hilo.

Drainage area.--0.58 sq mi.

Records available.--April 1962 to June 1966.

Gage.--Water-stage recorder. Datum of gage is 489 ft above mean sea level (by stadia survey).

Extremes.--Maximum discharge during year, 118 mgd (183 cfs) Nov. 2 (gage height, 3.35 ft); minimum, 1.5 mgd (2.3 cfs) Sept. 29.
1962-66: Maximum discharge, 254 mgd (393 cfs) Nov. 8, 1964 (gage height, 4.12 ft); minimum, 0.70 mgd (1.1 cfs) sometime during period Jan. 24 to Feb. 12, 1963.

Remarks.--Records good. No diversion above station. Spring water not used by sugar mills enters stream above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.1	6.4	3.1	5.0	8.3	6.9	10	14	8.4	5.7	6.0	9.6
2	5.4	6.6	2.9	2.8	14	12	12	13	9.0	5.8	6.9	8.4
3	5.1	5.8	2.8	2.4	9.9	9.7	11	13	7.9	5.7	7.8	9.0
4	4.2	5.1	2.7	2.2	8.3	10	10	12	7.1	5.3	7.6	7.2
5	3.9	4.5	2.6	1.8	6.4	10	9.4	11	6.8	5.8	6.8	5.3
6	3.6	5.1	2.6	1.7	5.1	13	9.0	11	6.3	8.8	5.6	4.5
7	3.9	5.4	2.6	1.7	4.5	12	8.8	11	6.0	9.2	4.8	4.1
8	3.5	5.6	2.4	2.2	8.5	11	8.4	12	5.7	9.7	4.4	3.9
9	3.3	6.0	2.3	4.7	7.8	11	8.3	12	5.4	9.7	4.1	4.2
10	3.0	5.6	2.2	3.5	5.6	12	8.1	10	5.4	9.9	3.7	4.8
11	8.5	4.8	2.1	4.9	5.1	18	7.6	9.4	7.1	9.0	6.4	4.2
12	5.5	5.1	4.8	4.5	5.6	12	9.2	11	5.8	8.1	7.4	3.1
13	4.8	6.0	7.6	2.4	7.6	12	11	11	4.8	7.6	6.8	3.6
14	5.0	5.0	4.8	2.1	18	16	11	9.0	5.9	6.6	8.1	5.6
15	5.0	4.5	5.0	2.1	23	14	15	12	12	8.4	10	5.8
16	5.4	4.2	3.4	4.6	17	13	13	13	10	8.8	11	3.7
17	16	3.9	2.7	3.7	12	12	13	13	8.1	8.8	9.6	3.3
18	7.8	3.6	2.4	2.4	11	11	12	13	9.5	8.1	7.4	3.0
19	6.2	3.5	2.4	2.8	12	10	13	15	13	6.9	5.8	3.4
20	9.6	3.3	2.4	6.4	17	9.7	14	14	13	6.2	5.0	5.0
21	7.8	3.5	2.2	3.0	14	10	18	13	13	5.6	5.8	7.4
22	7.1	3.4	1.8	3.0	12	9.4	16	12	12	5.3	4.9	7.8
23	6.9	4.2	1.8	3.3	11	8.8	14	12	11	5.1	4.4	6.9
24	6.6	4.8	1.7	3.9	11	8.6	14	12	11	5.0	4.0	5.4
25	6.4	3.9	1.7	2.7	10	10	14	10	10	4.9	4.0	7.6
26	7.2	4.6	1.8	2.1	10	10	15	10	8.6	6.0	3.9	9.4
27	7.4	3.7	1.6	1.7	10	9.4	14	9.9	7.5	7.2	4.8	11
28	6.9	3.5	1.6	4.7	9.9	9.4	18	9.0	5.6	5.7	4.1	9.0
29	6.4	3.9	2.2	7.6	9.9	9.7	21	----------	6.8	5.0	5.4	9.4
30	6.2	3.6	5.3	3.7	9.4	9.7	16	----------	6.4	4.6	7.1	11
31	5.8	3.1	----------	4.8	----------	10	15	----------	6.0	----------	10	----------
Total	189.5	142.2	85.5	104.4	313.9	340.3	388.8	327.3	255.1	208.5	193.6	186.6
Mean												
Mgd	6.11	4.59	2.85	3.37	10.5	11.0	12.5	11.7	8.23	6.95	6.25	6.22
Cfs	9.45	7.10	4.41	5.21	16.2	17.0	19.3	18.1	12.7	10.8	9.67	9.62
Ac-ft	582	406	262	320	963	1040	1190	1000	783	640	594	573
Max	16	6.6	7.6	7.6	23	18	21	15	13	9.9	11	11
Min	3.0	3.1	1.6	1.7	4.5	6.9	7.6	9.0	4.8	4.6	3.7	3.0

Calendar Year 1965: Max 31 Min 1.6 Mean (mgd) 7.51 Mean (cfs) 11.6 Ac-ft 8410
Fiscal Year 1965-66: Max 23 Min 1.6 Mean (mgd) 7.50 Mean (cfs) 11.6 Ac-ft 8400

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-2	0500	3.35	118	183

40-7178. Pohakupuka Stream near Papaaloa

Location.--Lat 19°57'20", long 155°11'20", on right bank 200 ft downstream from Mamalahoa Highway, 2.8 miles northwest of Honohina, and 3.0 miles southwest of Papaaloa.

Drainage area.--2.76 sq mi.

Records available.--April 1962 to June 1966.

Gage.--Water-stage recorder. Datum of gage is 250 ft above mean sea level (by stadia survey).

Extremes.--Maximum discharge during year, 399 mgd (617 cfs) Dec. 6 (gage height, 5.67 ft); minimum, 0.35 mgd (0.54 cfs) Oct. 18-21. 1962-66: Maximum discharge, 3,280 mgd (5,070 cfs) Nov. 7, 1964 (gage height, 13.06 ft), from rating curve extended above 670 mgd by logarithmic plotting; minimum, 0.18 mgd (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.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.7	1.6	0.66	0.43	19	3.8	9.9	8.7	4.8	5.3	4.0	28
2	1.6	1.6	.63	.41	3.7	96	21	7.6	4.5	5.0	17	9.7
3	1.5	1.6	.63	.41	15	20	19	7.0	5.3	5.6	13	6.7
4	1.5	1.6	.60	.41	8.4	8.0	10	6.4	4.5	4.8	11	4.2
5	1.4	1.0	.57	.41	2.4	6.0	7.8	5.8	4.0	16	4.8	3.2
6	1.2	1.0	.57	.43	1.6	66	12	5.6	3.7	34	4.0	2.7
7	1.4	1.6	.54	.43	1.2	78	16	5.6	3.5	26	3.5	2.5
8	1.3	2.0	.54	.41	1.0	12	7.5	9.6	3.4	34	3.4	2.3
9	1.2	4.9	.54	.41	1.0	12	6.7	6.8	3.3	11	3.1	2.3
10	1.2	2.0	.51	.41	.92	38	10	5.4	3.4	14	2.9	2.3
11	1.6	1.4	.51	.41	.86	57	7.0	5.1	7.2	12	3.0	2.2
12	1.6	1.8	.60	.41	.78	12	5.8	4.8	4.8	7.0	3.0	2.0
13	1.2	6.1	.57	.39	.78	8.5	5.6	4.7	3.8	5.9	3.0	1.9
14	1.2	1.9	.57	.39	2.1	160	6.1	4.4	9.0	6.6	12	2.1
15	1.1	1.3	.54	.39	109	39	16	35	19	20	21	2.7
16	1.0	1.1	.51	.37	53	35	10	17	8.2	20	15	2.0
17	67	.92	.51	.37	11	34	8.5	25	5.3	20	8.3	1.8
18	9.0	.86	.51	.35	10	21	6.8	15	20	9.8	5.2	1.7
19	6.1	.86	.51	.35	9.2	12	9.5	9.9	37	9.6	3.8	1.7
20	28	.75	.48	.35	45	11	11	11	25	6.8	9.1	1.8
21	9.8	.78	.48	2.1	27	11	29	9.8	17	5.3	8.5	5.1
22	3.6	.75	.48	2.2	12	8.3	30	7.8	8.2	4.8	3.8	8.9
23	2.5	.86	.45	2.2	14	6.8	9.8	6.2	6.2	4.4	3.1	2.6
24	3.0	1.4	.45	2.1	7.0	6.2	7.5	7.5	5.8	4.6	2.9	2.3
25	2.1	1.3	.45	1.0	6.0	6.8	14	6.1	5.0	4.5	2.7	6.1
26	1.8	.86	.43	.72	6.2	6.6	8.5	7.2	4.5	16	2.6	43
27	1.6	1.0	.43	.51	16	5.6	7.3	6.6	4.3	17	3.4	35
28	1.4	.82	.41	.97	9.1	6.2	72	5.3	4.0	5.2	2.7	13
29	1.3	.75	.48	1.6	5.6	7.0	78	----------	3.8	4.2	2.8	17
30	1.3	.69	.54	1.2	3.8	14	15	----------	9.9	3.8	3.0	32
31	1.2	.72	----------	50	----------	7.3	11	----------	12	----------	43	----------
Total	161.4	45.82	15.70	72.54	402.64	815.1	488.3	256.9	260.4	343.2	228.6	248.8
Mean												
Mgd	5.21	1.48	0.523	2.34	13.4	26.3	15.8	9.18	8.40	11.4	7.37	8.29
Cfs	8.06	2.29	0.809	3.62	20.7	40.7	24.4	14.2	13.0	17.6	11.4	12.8
Ac-ft	495	141	48	223	1,240	2,500	1,500	788	799	1,050	702	764
Max	67	6.1	0.66	50	109	160	78	35	37	34	43	43
Min	1.0	0.69	0.41	0.35	0.78	3.8	5.6	4.4	3.3	3.8	2.6	1.7

Calendar Year 1965:	Max	367	Min	0.35	Mean (mgd)	10.9	Mean (cfs)	16.9	Ac-ft	12,180
Fiscal Year 1965-66:	Max	160	Min	0.35	Mean (mgd)	9.15	Mean (cfs)	14.2	Ac-ft	10,250

Peak discharge (base, 600 mgd).--No peak above base.

40-7178.2. Manowaiopae Stream near Laupahoehoe

Location.--Lat 19°58'35", long 155°14'45", on left bank 1.0 mile upstream from mouth, 1.2 miles south of Laupahoehoe, and 1.5 miles west of Papaaloa.

Drainage area.--1.04 sq mi.

Records available.--August 1965 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 900 ft (from topographic map).

Extremes.--Maximum discharge during period, 524 mgd (811 cfs) Nov. 15 (gage height, 4.06 ft), from rating curve extended above 92 mgd by logarithmic plotting; minimum, 0.07 mgd (0.11 cfs) Oct. 13, 15, 16.

Remarks.--Records good except those above 200 mgd, which are fair. Board of Water Supply, County of Hawaii, diverts from 20,000 to 100,000 gallons a day by pipeline from 5 springs along the stream above station for domestic use in the Laupahoehoe area.

Discharge, in million gallons a day, August 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		-	0.18	0.10	2.3	15	3.7	4.2	2.4	2.3	3.0	3.1
2		-	.18	.10	.28	38	3.7	4.1	2.3	2.3	3.1	1.8
3		-	.16	.10	.44	5.2	3.5	4.1	2.6	2.3	3.0	1.8
4		-	.16	.10	.39	3.7	3.3	4.0	2.3	2.3	3.0	1.7
5		-	.16	.10	.18	3.5	3.2	3.9	2.3	4.3	2.9	1.7
6		-	.16	.12	.20	17	4.1	3.8	2.3	5.4	2.9	1.6
7		-	.14	.14	.22	12	3.6	3.5	2.2	3.7	2.9	1.6
8		-	.14	.16	.24	4.7	3.1	3.4	2.1	4.2	2.8	1.6
9		-	.14	.12	.24	4.2	3.0	3.2	2.1	2.5	2.8	1.5
10		-	.14	.12	.22	5.8	2.9	3.1	2.2	3.6	2.7	1.4
11		-	.12	.12	.22	7.1	2.8	3.0	2.4	2.7	2.6	1.4
12		-	.14	.10	.18	4.6	2.7	2.9	2.0	2.4	2.5	1.4
13		-	.14	.09	.18	4.5	2.7	2.8	1.9	2.5	2.4	1.3
14		-	.14	.09	.24	25	2.7	2.7	2.6	2.8	2.4	1.3
15		-	.14	.09	35	8.2	2.7	3.6	2.5	3.9	3.7	1.2
16		-	.12	.09	6.3	7.6	2.7	2.8	2.2	4.8	2.8	1.2
17		-	.12	.09	.69	8.0	2.6	3.3	2.2	3.9	2.3	1.2
18		-	.12	.09	.54	6.9	2.5	2.9	3.5	4.2	2.3	1.1
19		-	.10	.12	.54	6.6	2.5	2.7	4.0	4.5	2.2	1.0
20		0.22	.10	.08	4.2	6.4	2.4	2.7	3.2	3.6	3.1	1.0
21		.22	.10	.12	2.2	6.2	2.3	2.9	3.1	3.4	2.3	1.0
22		.22	.10	.18	1.0	5.9	2.3	2.6	3.0	3.3	2.1	1.0
23		.22	.10	.12	1.0	4.8	2.3	2.5	2.9	3.3	2.1	1.0
24		.22	.10	.10	1.0	5.4	2.2	2.9	2.8	3.3	2.0	1.0
25		.20	.10	.08	.92	5.2	2.3	2.6	2.7	3.2	2.0	.96
26		.20	.09	.10	.96	5.0	2.1	2.6	2.6	12	2.0	5.6
27		.20	.09	.12	.92	4.7	2.1	2.5	2.5	4.3	2.0	3.3
28		.20	.09	.12	1.0	4.5	13	2.5	2.4	3.2	2.0	1.4
29		.20	.10	.12	.96	4.2	15	----------	2.4	3.2	2.0	1.4
30		.20	.14	.10	.96	4.0	5.3	----------	2.7	3.1	2.0	2.8
31		.18	----------	18	----------	3.9	4.5	----------	2.8	----------	5.3	----------
Total		-	3.81	21.28	63.72	248.8	113.8	87.8	79.2	110.5	81.2	49.36
Mean												
Mgd		-	0.127	0.686	2.12	8.03	3.67	3.14	2.55	3.68	2.62	1.65
Cfs		-	0.196	1.06	3.28	12.4	5.68	4.86	3.95	5.69	4.05	2.55
Ac-ft		-	12	65	196	764	349	269	243	339	249	151
Max		-	0.18	18	35	38	1.5	4.2	4.0	12	5.3	5.6
Min		-	0.09	0.08	0.18	3.5	2.1	2.5	1.9	2.3	2.0	0.96

Calendar Year 1965: Max - Min - Mean (mgd) - Mean (cfs) - Ac-ft -
Fiscal Year 1965-66: Max - Min - Mean (mgd) - Mean (cfs) - Ac-ft -

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	1830	3.66	376	582	12-1	2330	3.35	280	433
11-15	about 1800	4.06	524	811					

40-7200. Kawainui Stream above Upper Hamakua ditch, 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.

Records available.--January 1964 to June 1966.

Gage.--Digital water-stage recorder. Altitude of gage is 4,060 ft (from topographic map).

Extremes.--Maximum discharge during year, 414 mgd (641 cfs) July 11 (gage height, 5.62 ft), from rating curve extended above 34 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) Oct. 5, 6.
1964-66: Maximum discharge, 502 mgd (777 cfs) Dec. 12, 1964 (gage height, 6.01 ft), from rating curve extended above 34 mgd by logarithmic plotting; minimum, that of Oct. 5, 6, 1965.

Remarks.--Records good except those above 100 mgd and those for period of no gage-height record, which are fair. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.8	0.44	0.40	0.09	13	11	16	1.3	0.91	0.53	0.70	19
2	1.4	.40	.30	.06	3.1	64	32	.91	.77	.48	18	6.0
3	.98	.36	.30	.04	21	15	21	.70	2.0	.66	11	10
4	.61	.36	.30	.04	7.5	14	9.9	.57	2.1	1.1	3.1	7.1
5	.48	.31	.30	.02	3.3	12	4.2	.53	1.2	1.7	1.3	2.4
6	.40	.31	.20	.02	1.6	87	8.9	.44	1.1	20	.84	1.1
7	1.2	.27	.20	12	.98	68	15	9.9	.77	11	1.3	.66
8	1.2	15	.20	10	3.4	20	2.9	15	.61	9.2	6.8	.53
9	1.6	15	.10	9.4	9.3	10	1.6	13	.53	6.0	6.9	4.7
10	12	5.3	.10	4.0	3.8	8.9	2.5	2.5	.44	2.5	2.4	5.0
11	53	2.1	.20	2.2	2.0	20	1.6	2.5	.84	1.4	1.3	3.8
12	6.5	6.5	.20	2.4	2.0	6.7	1.1	4.0	.91	.91	1.3	1.6
13	2.0	7.9	.20	.98	1.8	2.9	.91	1.5	1.3	.66	1.0	4.4
14	1.7	1.8	.20	.70	6.2	1.8	.84	4.1	9.7	.84	.91	32
15	5.7	1.4	.20	.77	45	5.3	1.8	32	38	10	1.3	7.1
16	4.4	1.5	.20	2.9	21	15	1.9	35	8.9	5.7	1.3	2.1
17	36	.77	.20	2.5	6.2	27	3.5	33	2.0	9.7	2.1	1.9
18	14	.57	.20	1.5	5.2	16	4.8	26	11	2.4	.91	1.9
19	3.3	.48	.10	1.0	11	15	3.3	8.1	27	1.2	.57	3.5
20	13	.40	.10	.66	35	30	3.1	2.7	15	.84	.44	11
21	19	.36	.10	.53	18	45	2.9	4.1	6.2	.66	.36	49
22	5.5	.31	.10	.53	23	6.0	17	2.8	2.3	.53	.25	25
23	2.8	.48	.10	.61	12	2.3	8.3	1.8	1.3	.44	.22	12
24	2.3	.70	.10	.61	4.1	1.5	2.1	1.8	.98	.48	.16	30
25	1.8	.70	.20	.48	4.8	2.3	32	2.5	.70	.48	.13	18
26	1.0	.60	.10	.53	19	2.2	11	3.8	.61	5.8	.13	71
27	.70	.50	.10	.53	31	1.3	3.6	2.7	.53	7.5	.20	30
28	.70	.40	.06	.61	25	1.7	40	1.4	.44	3.6	.20	14
29	.66	.60	.06	.48	5.3	7.5	32	----------	.40	1.6	.40	28
30	.57	.50	.06	.36	2.9	12	5.3	----------	.31	.91	.70	46
31	.48	.40	----------	44	----------	9.4	2.0	----------	.48	----------	16	----------
Total	196.78	66.72	5.18	100.55	347.48	540.8	293.05	214.65	139.33	108.82	82.22	448.79
Mean												
Mgd	6.35	2.15	0.173	3.24	11.6	17.4	9.45	7.67	4.49	3.63	2.65	15.0
Cfs	9.82	3.33	0.268	5.01	17.9	26.9	14.6	11.9	6.95	5.62	4.10	23.2
Ac-ft	604	205	16	309	1070	1660	899	659	428	334	252	1380
Max	53	15	0.40	44	45	87	40	35	38	20	18	71
Min	0.40	0.27	0.06	0.02	0.98	1.3	0.84	0.44	0.31	0.44	0.13	0.53

Calendar Year 1965: Max 87 Min 0.02 Mean (mgd) 6.23 Mean (cfs) 9.64 Ac-ft 6970
Fiscal Year 1965-66: Max 87 Min 0.02 Mean (mgd) 6.97 Mean (cfs) 10.8 Ac-ft 7810

Note.--No gage-height record Aug. 26 to Sept. 27.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1500	5.62	414	641	12-6	2030	4.90	276	427

40-7205. 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.

Records available.--January 1964 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,020 ft (from topographic map).

Extremes.--1964-66: Maximum daily discharge, 24 mgd (37 cfs) June 30, 1966; minimum daily, 0.03 mgd (0.05 cfs) Oct. 4-6, 1965.

Remarks.--Records good except those for period of backwater from debris, which are fair. Ditch diverts from Kawainui and Kawaiki Streams for irrigation near Kamuela. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	0.44	0.48	0.05	13	3.6	11	1.6	1.2	0.56	0.76	18
2	1.9	.44	.37	.04	4.6	12	12	1.1	1.1	.48	13	7.8
3	1.3	.40	.30	.04	7.4	11	12	.81	2.8	.76	14	12
4	.82	.37	.24	.03	11	11	11	.65	2.7	1.6	3.9	8.7
5	.58	.34	.21	.03	5.0	7.8	5.5	.56	1.6	5.6	1.8	3.1
6	.48	.30	.18	.03	2.3	12	6.8	.48	1.6	19	1.0	1.6
7	2.1	.24	.15	3.9	1.3	12	8.9	10	1.0	13	1.8	.98
8	2.2	11	.12	12	2.7	11	4.5	14	.76	12	5.6	.70
9	2.6	19	.10	13	11	10	2.0	12	.56	12	10	6.3
10	7.6	9.7	.08	5.7	6.1	8.4	5.0	2.9	.48	3.1	3.2	5.9
11	21	2.7	.12	3.0	3.0	11	2.2	3.7	1.3	1.8	1.8	4.9
12	12	11	.15	2.9	3.1	6.7	1.5	4.6	1.6	1.1	1.8	2.2
13	2.8	12	.12	1.1	2.8	3.1	1.2	1.8	2.2	.81	1.6	6.2
14	2.8	2.2	.12	.65	5.7	2.6	1.1	3.8	12	1.1	1.2	22
15	12	2.5	.15	.58	16	4.4	2.8	22	23	14	1.6	8.6
16	9.8	2.2	.12	4.1	15	11	2.7	23	10	6.7	1.9	2.9
17	20	.98	.10	4.1	9.8	11	4.9	23	2.5	12	2.6	2.7
18	18	.62	.08	2.3	8.7	9.2	5.9	22	11	2.8	1.1	2.6
19	5.5	.51	.07	1.2	13	9.8	3.9	9.4	21	1.4	.65	4.5
20	18	.37	.06	.82	15	11	3.9	3.3	15	.98	.48	9.6
21	21	.34	.05	.58	15	11	3.9	5.6	7.3	.70	.36	23
22	9.9	.30	.04	.58	15	5.8	21	3.8	2.9	.52	.30	20
23	4.6	.54	.04	.87	13	2.8	9.3	2.4	1.7	.44	.24	14
24	3.6	.98	.05	.87	5.5	2.0	2.5	2.5	1.2	.48	.21	19
25	2.3	1.0	.06	.54	6.8	2.9	22	3.2	.92	.52	.15	18
26	1.4	.98	.05	.58	12	2.9	12	5.2	.76	9.0	.18	23
27	.92	.54	.04	.58	16	1.8	4.1	3.4	.60	8.8	.40	19
28	.82	.62	.04	.87	15	2.5	11	1.7	.52	4.8	.40	15
29	.82	1.8	.04	.58	7.3	5.4	23	----------	.40	1.9	.86	14
30	.58	1.1	.04	.44	3.8	10	6.2	----------	.36	1.1	1.4	24
31	.51	.62	----------	5.5	----------	6.5	2.5	----------	.56	----------	17	----------
Total	190.43	86.13	3.77	67.56	265.9	232.2	226.3	188.50	130.62	139.05	91.29	320.28
Mean												
Mgd	6.14	2.78	0.126	2.18	8.86	7.49	7.30	6.73	4.21	4.64	3.80	10.7
Cfs	9.50	4.30	0.195	3.37	13.7	11.6	11.3	10.4	6.51	7.18	5.88	16.6
Ac-ft	584	264	12	207	816	713	694	578	401	427	280	983
Max	21	19	0.48	13	16	12	23	23	23	19	17	24
Min	0.48	0.24	0.04	0.03	1.3	1.8	1.1	0.48	0.36	0.44	0.15	0.70

Calendar Year 1965:	Max	22	Min	0.03	Mean (mgd)	4.64	Mean (cfs)	7.18	Ac-ft	5,190
Fiscal Year 1965-66:	Max	24	Min	0.03	Mean (mgd)	5.32	Mean (cfs)	8.23	Ac-ft	5,960

Note.--Backwater from debris Oct. 31 to Jan. 7.

40-7250. Alakahi Stream above Upper Hamakua ditch, 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.

Records available.--January 1964 to June 1966.

Gage.--Digital water-stage recorder. Altitude of gage is 3,900 ft (from topographic map).

Extremes.--Maximum discharge during year, 96 mgd (149 cfs) July 11 (gage height, 4.80 ft), from rating curve extended above 23 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) Sept. 22, 23, 26-30, Oct. 4-7.
1964-66: Maximum discharge, 78 mgd (121 cfs) Feb. 24, 1964 (gage height, 4.46 ft), from rating curve extended above 23 mgd by logarithmic plotting; minimum, 0.02 mgd (0.03 cfs) on several days in 1965.

Remarks.--Records fair. Parker Ranch pipeline diverts from tributary 0.4 mile above station for ranch use in Kamuela area.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.54	0.25	0.13	0.03	8.0	3.7	8.0	0.90	0.60	0.20	0.23	11
2	.38	.20	.12	.03	2.0	24	16	.64	.54	.20	8.0	3.9
3	.25	.18	.11	.03	4.1	8.8	11	.48	.86	.20	6.4	5.7
4	.16	.16	.10	.02	2.9	7.7	5.9	.38	.98	.25	1.6	3.5
5	.15	.13	.11	.02	1.7	6.2	3.0	.36	.60	1.3	.64	1.6
6	.13	.12	.10	.02	.82	27	5.2	.34	.60	10	.31	.67
7	.18	.12	.08	8.6	.48	30	8.1	1.5	.41	6.5	.48	.38
8	.44	8.6	.07	9.4	.60	12	1.8	5.0	.36	6.2	2.0	.31
9	1.2	12	.07	6.1	5.8	5.8	1.1	5.9	.31	2.5	5.7	2.0
10	5.2	5.0	.06	2.6	2.5	4.8	1.9	1.5	.27	1.2	1.6	2.4
11	20	1.1	.07	1.2	1.3	11	1.2	1.0	.74	.67	.70	1.6
12	5.2	5.7	.08	1.1	.86	3.7	.82	2.0	.94	.38	.60	.82
13	1.1	6.3	.06	.51	.90	2.0	.67	.90	.82	.31	.44	2.8
14	.94	.86	.07	.38	4.4	1.4	.57	1.2	6.3	.34	.44	20
15	5.1	2.7	.06	.31	25	2.3	.67	15	22	6.4	.34	4.0
16	4.5	1.9	.04	.90	15	5.8	.86	20	5.2	2.9	.70	1.4
17	16	.60	.04	1.5	4.3	11	1.9	20	1.6	5.1	.90	1.2
18	9.0	.31	.04	1.1	3.6	7.8	2.9	16	8.0	1.3	.34	.74
19	2.3	.25	.03	.67	9.2	7.2	1.9	5.1	17	.51	.18	1.1
20	11	.20	.03	.38	20	14	1.2	1.9	8.8	.29	.15	5.1
21	14	.16	.03	.31	10	21	1.6	2.6	3.9	.23	.16	19
22	5.6	.15	.02	.25	14	3.6	9.9	2.1	1.7	.16	.15	12
23	1.6	.15	.02	.31	7.1	1.8	4.1	1.3	1.0	.13	.13	5.8
24	1.9	.15	.03	.29	2.6	1.2	1.6	1.0	.74	.13	.12	12
25	.82	.27	.03	.23	1.8	1.5	19	1.2	.52	.13	.11	8.0
26	.54	.32	.02	.18	7.7	1.8	6.8	2.3	.41	4.3	.12	26.0
27	.34	.20	.02	.12	16	1.1	1.8	2.0	.38	4.5	.29	16.0
28	.54	.16	.02	.12	14	1.3	19	.90	.31	2.1	.25	8.1
29	.51	.15	.02	.10	2.9	5.8	18	----------	.27	.90	.31	12
30	.31	.16	.02	.07	1.8	7.7	3.2	----------	.25	.36	.31	21
31	.27	.13	----------	11	----------	5.0	1.5	----------	.25	----------	7.1	----------
Total	110.20	48.68	1.70	47.88	191.36	248.0	161.19	113.50	86.66	59.69	40.80	210.12
Mean												
Mgd	3.55	1.57	0.057	1.54	6.38	8.00	5.20	4.05	2.80	1.99	1.32	7.00
Cfs	5.49	2.43	0.088	2.38	9.87	12.4	8.05	6.27	4.33	3.08	2.04	10.8
Ac-ft	338	149	5.2	147	587	761	495	348	266	183	125	644
Max	20	12	0.13	11	25	30	19	20	22	10	8.0	26
Min	0.13	0.12	0.02	0.02	0.48	1.1	0.57	0.34	0.25	0.13	0.11	0.31

Calendar Year 1965:	Max	30	Min	0.02	Mean (mgd)	3.06	Mean (cfs)	4.73	Ac-ft	3,430		
Fiscal Year 1965-66:	Max	30	Min	0.02	Mean (mgd)	3.62	Mean (cfs)	5.60	Ac-ft	4,050		

Peak discharge (base, 60 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
7-11	1600	4.80	96	149	12-6	2000	4.14	64	99

40-7322. Wailoa Stream near Waipio

Location.--Lat 20°05'28", long 155°37'01", on right bank 1.0 mile downstream from confluence of Waipio and Waima Streams, 1.8 miles southwest of Waipio, and 3.3 miles southwest of Kukuihaele.

Drainage area.--14.3 sq mi.

Records available.--August 1901 to January 1902 (prior to any upstream diversions), July 1911 to December 1912 (gage heights only), February 1964 to June 1966. Published as Waipio River at elevation 360 ft, near Waipio 1901-2 and as Waipio River below Waima Stream, near Waipio 1911-12.

Gage.--Digital water-stage recorder. Altitude of gage is 150 ft (from topographic map). Aug. 15, 1901, to Jan. 22, 1902, and July 20, 1911, to Dec. 31, 1912, staff gage at site 1.0 mile upstream (400 ft below Waima Stream) at different datums. Feb. 19, 1964, to June 2, 1965, graphic water-stage recorder at present site and datum.

Extremes.--Maximum discharge during year, 1,060 mgd (1,640 cfs) July 11 (gage height, 5.51 ft), from rating curve extended above 190 mgd on basis of slope-area measurement at gage height 8.2 ft; minimum, 25 mgd (39 cfs) on several days.
1901-2, 1964-66: Maximum discharge, that of July 11, 1965; minimum, 25 mgd (39 cfs) at times in 1964-66.
Maximum discharge known, 3,960 mgd (6,130 cfs) Nov. 8, 1963 (gage height, 8.2 ft, from floodmarks), result of slope-area measurement of peak flow.

Remarks.--Records good. Upper and Lower Hamakua ditches divert water out of basin from upstream tributaries for irrigation in vicinity of Kamuela and for mill and domestic use, power generation, and irrigation on Hamakua coast. Parker Ranch pipeline diverts from Alakahi Stream for ranch use in Kamuela area.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	28	28	26	29	84	63	45	26	26	27	28	70
2	28	28	26	29	30	247	77	26	27	28	47	41
3	28	28	26	29	46	58	60	25	29	28	44	34
4	28	28	26	29	33	47	37	25	28	28	30	33
5	28	28	26	29	28	42	30	25	27	42	29	31
6	29	28	26	30	28	264	36	25	27	77	29	30
7	29	27	26	138	28	296	62	27	27	55	31	30
8	29	56	26	57	28	94	29	40	27	45	43	30
9	29	50	26	37	33	46	28	36	27	31	51	30
10	42	31	27	30	28	42	28	26	28	30	32	32
11	175	26	27	28	28	62	27	27	29	29	30	30
12	43	28	27	28	28	40	27	29	28	29	30	30
13	26	34	27	27	28	32	27	26	27	29	30	31
14	25	25	27	27	41	28	27	26	33	32	30	129
15	26	26	27	27	224	27	27	82	152	64	31	41
16	26	26	27	27	94	33	27	109	47	35	31	30
17	89	25	27	27	35	43	27	107	28	42	30	29
18	46	25	27	27	31	52	28	97	52	30	30	28
19	26	25	27	27	41	34	27	43	105	30	30	28
20	50	25	28	27	126	61	26	28	59	29	30	35
21	73	25	28	27	56	137	26	35	36	29	30	124
22	36	25	28	28	69	33	36	28	28	28	31	69
23	26	25	28	28	44	28	36	27	27	28	31	45
24	26	26	28	28	30	28	26	30	27	28	31	59
25	26	27	29	28	29	29	104	28	27	28	31	47
26	26	26	28	28	54	28	53	28	27	43	32	226
27	27	26	28	28	80	28	27	27	27	45	32	139
28	28	26	28	28	74	28	152	27	27	31	32	42
29	28	26	28	28	32	42	141	----------	27	29	32	63
30	28	26	29	28	30	50	37	----------	27	28	32	139
31	28	26	----------	162	----------	33	28	----------	28	----------	58	----------
Total	1,182	881	814	1,150	1,540	2,075	1,368	1,085	1,141	1,057	1,038	1,725
Mean												
Mgd	38.1	28.4	27.1	37.1	51.3	66.9	44.1	38.8	36.8	35.2	33.5	57.5
Cfs	58.9	43.9	41.9	57.4	79.4	104	68.2	60.0	56.9	54.5	51.8	89.0
Ac-ft	3,630	2,700	2,500	3,530	4,730	6,370	4,200	3,330	3,500	3,240	3,190	5,290
Max	175	56	29	162	224	296	152	109	152	77	58	226
Min	25	25	26	27	28	27	26	25	26	27	28	28

Calendar Year 1965:	Max	296	Min	25	Mean (mgd)	40.0	Mean (cfs)	61.9	Ac-ft	44,780
Fiscal Year 1965-66:	Max	296	Min	25	Mean (mgd)	41.2	Mean (cfs)	63.7	Ac-ft	46,210

Peak discharge (base, 600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	1615	5.51	1,060	1,640	10-31	1900	4.84	652	1,010
10- 7	1900	5.10	800	1,240	12- 6	2130	5.34	944	1,460

40-7330. 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.

Records available.--February 1964 to June 1966.

Gage.--Graphic water-stage recorder and sharp-crested weir. Altitude of gage is 980 ft (from topographic map). Prior to Apr. 22, 1964, digital water-stage recorder at same site and datum.

Extremes.--1964-66: Maximum daily discharge, 12 mgd (19 cfs) Dec. 30, 1965, Jan. 2, 1966; no flow most of the time.

Remarks.--Records good. The wasteway diverts excess water from Lower Hamakua ditch (see sta. no. 7331).

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0			0	1.2	0	8.9	0	0	0		0
2	0			0	0	0	12	0	0	0		0
3	0			0	0	0	10	0	0	0		0
4	0			0	0	0	7.8	0	0	0		0
5	0			0	0	0	8.1	0	0	0		0
6	0			0	0	4.2	5.0	0	0	6.3		0
7	0			0	0	0	7.9	0	0	7.0		0
8	0			0	0	.11	5.1	0	0	9.0		0
9	0			0	0	2.9	2.8	0	0	6.5		0
10	0			0	0	7.0	2.6	0	0	3.8		0
11	1.1			0	0	7.5	.61	0	0	0		0
12	0			0	0	7.7	0	1.0	0	0		0
13	0			0	0	3.6	0	0	0	0		0
14	0			0	0	0	0	0	0	0		0
15	0			0	5.4	0	0	6.4	6.2	6.4		1.4
16	0			0	9.4	6.7	0	7.4	4.8	7.2		0
17	1.6			0	9.6	9.7	0	7.6	.56	6.7		0
18	1.4			0	7.3	11	0	6.6	0	1.7		0
19	0			0	5.8	7.1	0	4.9	7.8	0		0
20	0			0	9.2	8.4	0	.10	6.3	0		0
21	0			0	9.9	11	0	3.0	2.4	0		2.1
22	0			0	9.6	9.0	0	1.7	0	0		2.1
23	0			0	8.6	6.2	5.1	0	0	0		0
24	0			0	5.8	4.5	1.8	0	0	0		.06
25	0			0	1.7	2.2	0	0	0	0		4.1
26	0			0	0	.47	7.3	0	0	1.9		3.5
27	0			0	5.3	0	2.4	0	0	4.6		3.4
28	0			0	7.5	3.0	6.9	0	0	.84		1.1
29	0			0	4.6	5.7	8.6	---------	0	0		3.2
30	0			0	0	12	7.0	---------	0	0		8.4
31	0		---------	.78	---------	7.0	1.6	---------	0	---------		---------
Total	4.1	0	0	0.78	100.9	136.98	111.51	38.70	28.06	61.94	0	29.36
Mean												
Mgd	0.13	0	0	0.025	3.36	4.42	3.60	1.38	0.905	2.06	0	0.979
Cfs	0.20	0	0	0.039	5.20	6.84	5.57	2.14	1.40	3.19	0	1.51
Ac-ft	13	0	0	2.4	310	420	342	119	86	190	0	90
Max	1.6	0	0	0.78	9.9	12	12	7.6	7.8	9.0	0	8.4
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965:	Max	12	Min	0	Mean (mgd)	1.04	Mean (cfs)	1.61	Ac-ft	1,160		
Fiscal Year 1965-66:	Max	12	Min	0	Mean (mgd)	1.40	Mean (cfs)	2.17	Ac-ft	1,570		

40-7331. 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.

Records available.--February 1964 to June 1966.

Gage.--Graphic water-stage recorder and sharp-crested weir. Altitnde of gage is 990 ft (from topographic map). Prior to Apr. 22, 1964, digital water-stage recorder at same site and datum.

Extremes.--1964-66: Maximum daily discharge, 44 mgd (68 cfs) Mar. 2, 1964; minimum daily, 0.05 mgd (0.08 cfs) Dec. 6, 1965.

Remarks.--Records good. At high flow, water can be diverted from the ditch 1/8 mile upstream and at the gage (see sta. no. 7330) to prevent flume damage downstream.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23	22	21	19	32	22	28	30	28	25	26	22
2	22	22	21	18	26	20	27	29	27	25	32	27
3	22	22	21	18	27	18	27	28	33	25	36	31
4	22	22	21	18	31	18	25	27	31	26	29	31
5	22	22	20	18	25	15	24	27	27	28	27	27
6	22	22	20	18	22	.05	27	27	27	36	25	25
7	22	21	20	21	21	.29	25	29	26	33	26	24
8	23	28	20	32	21	3.6	23	37	25	32	31	23
9	25	35	20	34	30	17	26	37	25	29	35	24
10	26	32	20	26	26	21	28	30	25	27	30	29
11	32	25	20	23	23	22	27	29	32	27	27	25
12	27	28	20	21	22	21	27	34	30	25	27	24
13	28	33	20	21	22	25	26	28	26	25	26	27
14	27	25	20	21	25	29	26	27	37	29	26	38
15	30	24	20	21	33	30	27	35	37	34	27	34
16	29	26	20	22	29	27	27	35	33	29	27	27
17	37	22	20	22	25	25	28	34	30	32	25	27
18	36	22	20	22	25	25	30	36	34	29	25	25
19	29	22	20	21	26	25	30	35	31	27	24	25
20	34	21	20	21	27	27	27	34	32	26	24	27
21	35	21	20	20	25	25	27	36	34	25	23	38
22	33	21	19	21	25	24	36	34	31	25	23	34
23	27	21	19	22	25	24	32	32	29	25	22	35
24	27	22	19	22	24	23	27	34	27	25	22	35
25	25	23	19	21	25	24	32	34	27	25	22	1.1
26	24	24	19	21	30	29	32	34	26	33	22	25
27	23	22	19	21	30	26	28	32	26	32	24	34
28	24	21	19	21	29	23	33	29	25	33	23	39
29	25	22	18	20	26	25	33	----------	25	28	23	35
30	22	21	19	20	24	24	29	----------	25	26	23	37
31	22	21	----------	24	----------	25	29	----------	25	----------	25	----------
Total	825	735	594	670	781	662.94	873	893	896	846	807	855.1
Mean												
Mgd	26.6	23.7	19.8	21.6	26.0	21.4	28.2	31.9	28.9	28.2	26.0	28.5
Cfs	41.2	36.7	30.6	33.4	40.2	33.1	43.6	49.4	44.7	43.6	40.2	44.1
Ac-ft	2530	2260	1820	2060	2400	2030	2680	2740	2750	2600	2480	2620
Max	37	35	21	34	33	30	36	37	37	36	36	39
Min	22	21	18	18	21	0.05	23	27	25	25	22	1.1

Calendar Year 1965:	Max	40	Min	0.05	Mean (mgd)	25.6	Mean (cfs)	39.6	Ac-ft	28670
Fiscal Year 1965-66:	Max	39	Min	0.05	Mean (mgd)	25.9	Mean (cfs)	40.1	Ac-ft	28960

40-7332. Honokaa diversion at Honokaa

Location.--Lat 20°05'12", long 155°28'36", on left bank 50 ft downstream from Lower Hamakua ditch and 0.5 mile northwest of Honokaa Hospital.

Records available.--March 1964 to June 1966.

Gage.--Graphic water-stage recorder and sharp-crested weir. Altitude of gage is 950 ft (from topographic map). Prior to Apr. 17, 1964, digital water-stage recorder at same site and datum.

Extremes.--1964-66: Maximum daily discharge, 15 mgd (23 cfs) Apr. 25, May 22, 1964; no flow Dec. 8, 1965.

Remarks.--Records good. The diversion is from Lower Hamakua ditch (see sta. no. 7333) for use in Honokaa Sugar Co. mill.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.9	6.8	6.4	6.5	9.7	10	10	11	9.8	8.8	9.0	8.8
2	7.8	7.5	6.5	3.9	9.5	8.7	10	10	9.8	8.8	9.2	8.1
3	6.8	7.3	6.8	2.4	8.5	7.9	10	10	10	8.8	11	9.3
4	5.9	7.2	4.8	4.0	10	7.9	10	9.6	10	9.0	11	9.3
5	6.8	7.2	1.8	6.4	9.4	7.8	10	9.4	9.9	9.0	9.2	8.6
6	7.9	7.3	3.5	6.1	8.8	1.8	10	9.4	9.9	11	8.8	8.1
7	7.9	5.1	6.4	6.1	8.8	.09	10	9.6	9.4	12	8.8	8.1
8	8.0	3.7	6.9	8.4	7.9	0	10	11	9.3	12	9.2	8.1
9	7.9	7.9	6.8	8.0	9.4	3.4	10	12	9.2	12	11	8.1
10	6.4	7.9	6.7	5.8	8.6	7.4	11	10	9.0	11	11	8.3
11	6.6	7.6	4.7	5.6	8.1	7.4	11	9.9	9.9	10	10	7.4
12	8.1	7.8	4.5	7.0	8.3	7.4	10	10	10	9.3	9.9	6.7
13	7.4	8.1	6.9	7.0	8.4	8.5	9.6	9.9	9.9	9.3	9.4	7.8
14	8.3	6.9	6.9	7.0	8.4	9.9	9.3	9.8	11	9.3	9.2	9.3
15	7.9	6.6	6.8	6.8	11	10	9.2	11	12	10	9.2	10
16	7.9	7.9	6.8	5.7	11	10	9.2	12	12	10	9.6	9.3
17	7.9	7.4	6.8	1.8	12	10	9.9	12	11	10	9.6	8.3
18	8.4	7.3	4.4	3.2	12	10	10	12	11	10	9.2	7.8
19	8.7	7.4	3.6	7.3	12	9.9	11	12	11	10	9.0	7.4
20	8.8	7.4	6.8	7.9	12	10	10	12	11	10	9.0	7.8
21	8.8	5.2	6.8	7.8	12	10	10	12	11	9.9	8.8	9.3
22	8.8	4.3	6.7	7.8	11	9.9	11	12	11	9.9	8.8	10
23	8.0	7.4	6.7	7.6	12	9.9	11	11	11	9.8	8.3	10
24	7.3	7.3	6.7	7.6	11	9.9	10	10	10	9.8	8.0	10
25	6.7	7.3	4.6	7.8	11	10	12	11	9.9	9.3	8.0	2.7
26	7.8	7.4	2.1	7.4	9.9	10	12	11	9.9	9.8	8.0	4.6
27	7.8	7.4	3.8	7.4	11	10	11	11	9.8	11	8.1	10
28	7.8	5.1	6.4	7.4	11	9.9	11	10	9.2	11	8.1	11
29	8.0	3.5	6.8	7.4	11	9.9	12	----------	8.8	10	8.1	10
30	8.2	6.5	6.7	7.3	11	9.9	11	----------	8.8	9.3	8.1	10
31	7.7	6.4	----------	7.2	----------	9.6	11	----------	8.8	----------	8.7	----------
Total	240.2	210.1	172.1	199.6	304.7	257.09	322.2	300.6	313.3	300.1	283.3	254.2
Mean												
Mgd	7.75	6.78	5.74	6.44	10.2	8.29	10.4	10.7	10.1	10.0	9.14	8.47
Cfs	12.0	10.5	8.88	9.96	15.8	12.8	16.1	16.6	15.6	15.5	14.1	13.1
Ac-ft	737	645	528	613	935	789	989	922	961	921	869	780
Max	8.8	8.1	6.9	8.4	12	10	12	12	12	12	11	11
Min	5.9	3.5	1.8	1.8	7.9	0	9.2	9.4	8.8	8.8	8.0	2.7

Calendar Year 1965:	Max	14	Min	0	Mean (mgd)	8.54	Mean (cfs)	13.2	Ac-ft	9570
Fiscal Year 1965-66:	Max	12	Min	0	Mean (mgd)	8.65	Mean (cfs)	13.4	Ac-ft	9690

40-7333. Lower Hamakua 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.

Records available.--February 1964 to June 1966.

Gage.--Graphic water-stage recorder and Parshall flume. Altitude of gage is 950 ft (from topographic map). Prior to Apr. 17, 1964, digital water-stage recorder at same site and datum.

Extremes.--1964-66: Maximum daily discharge, 25 mgd (39 cfs) Jan. 23, 1965; no flow Dec. 7, 8, 1965.

Remarks.--Records good. Excess water is spilled at wasteway 8½ miles above station (see sta. no. 7330) and water for Honokaa Sugar Co. mill is diverted 100 ft above station (see sta. no. 7332).

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11	11	8.4	9.2	17	9.0	14	13	13	11	12	9.2
2	9.7	11	8.6	9.6	14	8.7	12	13	12	11	14	11
3	9.8	10	9.0	10	13	7.6	13	12	14	11	18	14
4	10	9.8	10	9.8	17	7.2	11	12	14	11	14	15
5	9.2	10	12	8.7	13	5.4	10	12	12	12	13	12
6	8.8	10	11	8.4	11	.72	12	12	12	16	12	11
7	9.8	10	8.4	8.8	10	0	12	12	11	14	12	11
8	9.7	14	8.6	16	11	0	9.5	16	11	14	15	10
9	10	17	8.9	18	16	4.2	11	17	11	12	17	10
10	10	15	9.0	15	14	11	12	14	11	11	15	13
11	20	11	9.8	12	12	12	11	13	13	12	13	12
12	12	12	11	10	12	11	12	16	14	12	12	12
13	14	16	8.6	9.7	11	12	12	13	11	11	12	12
14	13	11	8.9	9.2	12	10	12	12	15	14	12	15
15	15	9.5	8.8	9.4	19	12	13	16	16	17	12	16
16	16	12	8.8	11	16	13	13	16	15	14	13	12
17	19	10	8.8	14	10	11	13	15	13	16	11	12
18	19	9.4	9.8	12	9.7	12	14	16	14	14	11	11
19	16	9.0	10	10	10	11	15	16	15	13	11	11
20	17	8.8	8.6	9.4	12	13	12	15	15	12	10	12
21	19	9.7	8.6	9.5	11	12	13	16	15	11	10	17
22	18	11	8.8	10	11	10	16	15	15	11	10	16
23	14	8.8	8.8	11	11	11	16	15	13	11	10	15
24	14	9.4	9.0	11	9.7	10	12	16	12	11	11	15
25	13	9.7	10	9.7	9.8	11	15	16	12	11	10	3.6
26	11	12	11	10	13	16	15	15	12	15	10	7.4
27	10	9.5	10	9.7	15	13	12	15	11	17	11	16
28	11	11	9.0	10	14	11	17	13	11	16	10	18
29	13	11	8.6	10	11	12	16	----------	11	14	11	15
30	11	9.1	8.9	9.4	9.5	11	12	----------	11	13	10	17
31	11	8.8	----------	10	----------	9.8	12	----------	12	----------	11	----------
Total	404.0	336.5	279.7	330.5	374.7	297.62	399.5	402	397	388	373	381.2
Mean												
Mgd	13.0	10.9	9.32	10.7	12.5	9.60	12.9	14.4	12.8	12.9	12.0	12.7
Cfs	20.1	16.9	14.4	16.6	19.3	14.9	20.0	22.3	19.8	20.0	18.6	19.6
Ac-ft	1,240	1,030	858	1,010	1,150	913	1,230	1,230	1,220	1,190	1,140	1,170
Max	20	17	12	18	19	16	17	17	16	17	18	18
Min	8.8	8.8	8.4	8.4	9.7	0	9.5	12	11	11	10	3.6

Calendar Year 1965:	Max	25	Min	0	Mean (mgd)	12.5	Mean (cfs)	19.3	Ac-ft	14,020		
Fiscal Year 1965-66:	Max	20	Min	0	Mean (mgd)	12.0	Mean (cfs)	18.6	Ac-ft	13,390		

40-7420. Kukui Stream near Waimanu

Location.--Lat 20°09'14", long 155°40'15", on left bank 300 ft upstream from Waimanu trail crossing, 0.4 mile east of head of Awini ditch, and 2.2 miles west of Waimanu.

Drainage area.--0.21 sq mi.

Records available.--February 1939 to July 1952, September 1959 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 1,940 ft (by barometer).

Average discharge.--19 years (1939-52, 1960-66), 1.24 mgd (1.92 cfs).

Extremes.--Maximum discharge during year, 91 mgd (141 cfs) July 11 (gage height, 3.74 ft), from rating curve extended above 9.0 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) Sept. 19-23.
1939-52, 1959-66: Maximum discharge, 195 mgd (302 cfs) Feb. 25, 1962 (gage height, 4.45 ft), from rating curve extended above 2.4 mgd by test on model of station site; minimum, that of Sept. 19-23, 1965.

Remarks.--Records fair except those above 20 mgd, which are poor. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.16	0.30	0.16	0.14	1.5	7.2	0.81	0.92	0.75	0.76	0.62	0.54
2	.16	.30	.16	.12	.54	14	2.7	.81	.70	.76	1.4	.27
3	.14	.30	.16	.10	.46	1.5	1.4	.71	7.0	.66	.87	.21
4	.14	.27	.14	.14	.39	1.2	.98	.62	1.2	.66	.54	.18
5	.14	.27	.14	.12	.27	1.0	.76	.58	.98	3.2	.46	.16
6	.14	.24	.14	.12	.24	7.4	2.1	.54	.87	3.2	.42	.16
7	.16	.21	.14	1.6	.21	1.9	1.0	.92	.71	2.8	.42	.16
8	.14	.33	.14	.54	.27	.98	.66	3.2	.62	2.2	1.2	.16
9	.16	.39	.12	.78	.50	.87	.58	1.9	.58	1.6	.97	.18
10	2.6	.30	.12	.94	.42	.92	.81	.62	1.0	1.1	.50	.21
11	17	.21	.18	.39	.30	1.1	.54	6.1	3.3	.76	.42	.21
12	1.3	.50	.18	.21	.39	.71	.50	1.6	.87	.66	.39	.24
13	.66	.46	.14	.16	.42	.62	.50	.81	.76	2.1	.36	.27
14	.58	.24	.12	.16	2.0	.58	1.2	1.1	3.2	3.9	.36	1.6
15	.54	.21	.10	.16	15	.54	1.9	3.4	6.4	3.4	.36	.36
16	.54	.18	.10	.18	5.5	.62	.81	4.9	1.8	3.2	.33	.24
17	5.4	.18	.10	.16	1.4	.98	.87	4.2	.92	1.8	.33	.24
18	.87	.18	.10	.16	1.0	.81	.71	6.0	1.9	.98	.30	.21
19	.82	.18	.10	.14	1.4	.58	.54	1.7	3.6	.98	.27	.21
20	1.3	.18	.10	.14	5.5	3.8	.50	1.6	2.8	.87	.27	.24
21	1.4	.18	.10	.14	1.4	3.6	1.0	2.4	1.2	.71	.27	1.2
22	.62	.18	.10	.67	1.3	.76	2.2	.92	.81	.62	.27	1.4
23	.46	.18	.10	.39	.92	.62	.92	.98	.76	.58	.24	.54
24	.42	.21	.14	.39	.66	.54	.71	4.4	.66	.66	.24	.42
25	.39	.18	.12	.21	.62	.54	5.5	1.1	.58	.62	.24	.42
26	.36	.16	.12	.24	1.4	.54	1.5	1.0	.54	3.8	.24	14
27	.33	.16	.12	.21	1.2	.50	1.5	.90	.50	4.1	.24	5.9
28	.33	.18	.12	.33	1.8	.71	8.4	.80	.50	1.8	.27	1.7
29	.30	.16	.12	.18	.76	2.1	8.4	---------	.46	.87	.24	1.8
30	.30	.16	.16	.16	1.3	.87	1.8	---------	.95	.66	.24	2.7
31	.30	.16	---------	4.8	---------	.79	1.2	---------	5.0	---------	1.1	---------
Total	38.16	7.34	3.84	14.18	49.07	58.88	53.00	54.73	51.92	50.01	14.38	36.13
Mean												
Mgd	1.23	0.237	0.128	0.457	1.64	1.90	1.71	1.95	1.67	1.67	0.464	1.20
Cfs	1.90	0.367	0.198	0.707	2.54	2.94	2.65	3.02	2.58	2.58	0.718	1.86
Ac-ft	117	23	12	44	151	181	163	168	159	153	44	111
Max	17	0.50	0.18	4.8	15	14	8.4	6.1	7.0	4.1	1.4	14
Min	0.14	0.16	0.10	0.10	0.21	0.50	0.50	0.54	0.46	0.58	0.24	0.16

Calendar Year 1965: Max 17 Min 0.10 Mean (mgd) 1.11 Mean (cfs) 1.72 Ac-ft 1,250
Fiscal Year 1965-66: Max 17 Min 0.10 Mean (mgd) 1.18 Mean (cfs) 1.83 Ac-ft 1,320

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-11	0300	3.74	91	141	2-11	1900	3.18	61	94
12- 1	2300	3.45	74	114					

40-7430. 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.

Records available.--October 1927 to June 1938, September 1938 to June 1949, July 1950 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--36 years (1928-38, 1939-49, 1950-66), 11.6 mgd (17.9 cfs).

Extremes.--1927-66: Maximum daily discharge, 35 mgd (54 cfs) Jan. 29, 1966; no flow at times.

Remarks.--Records good. Ditch diverts at altitude 2,000 ft from all streams between the Waikaloa and the Honokane for irrigation in vicinity of Kohala.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.6	2.6	0.91	0	19	14	22	13	9.8	11	1.9	17
2	2.2	2.5	.79	0	7.0	27	26	12	10	10	7.8	12
3	1.8	2.5	.70	0	6.2	17	27	10	30	11	8.5	9.5
4	1.4	2.2	.58	0	8.9	14	21	9.5	20	11	5.1	8.4
5	1.2	2.0	.49	0	4.8	12	18	8.6	13	15	7.5	5.3
6	1.1	1.8	.40	0	2.8	21	25	7.7	13	28	6.2	3.4
7	1.6	1.6	.34	3.2	1.9	24	25	15	9.8	23	5.6	2.5
8	2.2	4.1	.31	14	1.6	16	17	26	8.3	20	8.9	2.1
9	4.5	16	.24	13	7.5	14	13	23	7.3	18	20	2.0
10	11	12	.21	14	6.7	16	17	13	8.5	16	13	4.4
11	11	6.1	.24	9.2	5.6	21	13	18	25	11	7.8	4.2
12	2.2	7.8	1.4	4.0	11	14	10	25	15	8.6	7.0	3.3
13	2.6	14	.73	1.9	11	10	8.8	14	10	8.5	6.0	4.5
14	4.0	6.0	.49	1.1	12	10	13	11	23	26	5.0	20
15	9.3	3.4	.46	.82	32	16	26	29	32	27	5.6	14
16	11	2.5	.34	1.8	26	20	17	30	22	21	7.7	6.5
17	17	2.0	.27	2.2	17	24	16	32	11	22	5.3	5.4
18	19	1.7	.19	1.8	15	24	17	32	6.8	15	4.0	5.3
19	12	1.5	.10	1.3	15	17	15	24	2.5	12	3.2	7.8
20	19	13	.04	.94	26	26	10	18	1.8	12	2.8	6.8
21	20	1.2	0	.70	21	30	9.0	26	1.4	9.7	2.6	25
22	16	1.2	0	6.6	21	20	22	19	1.2	7.8	2.4	22
23	11	1.4	0	5.9	19	16	20	14	.64	7.0	2.2	18
24	8.8	1.6	0	4.0	14	13	12	28	0	7.7	2.1	20
25	7.0	1.8	0	1.8	12	14	30	21	0	8.2	2.0	19
26	5.6	2.0	0	4.6	19	19	25	19	0	20	1.9	31
27	4.6	1.5	0	2.7	23	12	16	16	0	23	2.4	27
28	4.2	1.4	0	3.0	24	14	34	12	0	11	2.3	17
29	3.9	1.4	0	1.6	16	19	35	----------	1.8	4.1	2.5	17
30	3.2	1.4	0	.97	13	22	23	----------	4.4	2.5	2.7	28
31	2.9	1.2	----------	13	----------	17	17	----------	24	----------	15	----------
Total	223.9	109.7	9.23	114.13	419.0	553	599.8	525.8	312.24	427.1	177.0	368.4
Mean												
Mgd	7.22	3.54	0.308	3.68	14.0	17.8	19.3	18.8	10.1	14.2	5.71	12.3
Cfs	11.2	5.48	0.477	5.69	21.7	27.5	29.9	29.1	15.6	22.0	8.83	19.0
Ac-ft	687	337	28	350	1,290	1,700	1,840	1,610	958	1,310	543	1,130
Max	20	16	1.4	14	32	30	35	32	32	28	20	31
Min	1.1	1.2	0	0	1.6	10	8.8	7.7	0	2.5	1.9	2.0

Calendar Year 1965: Max 32 Min 0 Mean (mgd) 7.26 Mean (cfs) 11.2 Ac-ft 8,140
Fiscal Year 1965-66: Max 35 Min 0 Mean (mgd) 10.5 Mean (cfs) 16.2 Ac-ft 11,780

40-7440. East Honokane Iki intake to Awini ditch near Niulii

Location.--Lat 20°09'55", long 155°43'15", on intake tunnel delivering water from East Honokane Iki Gulch to Awini ditch, on west side of gulch, and 4.5 miles southeast of Niulii.

Records available.--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 June 1966. 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.--33 years (1928-36, 1937-38, 1939-40, 1941-49, 1951-66), 1.17 mgd (1.81 cfs).

Extremes.--1927-49, 1951-66: Maximum daily discharge, 8.4 mgd (13.0 cfs) Aug. 6, 1957; no flow at times.

Remarks.--Records good. Records are of diversion from East Honokane Iki Gulch to Awini ditch (see sta. no. 7430) for irrigation in vicinity of Kohala.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.04	0.06	0	0	1.9	1.0	2.8	0.83	0.52	0.68	0.26	1.9
2	.03	.04	0	0	.48	.23	4.6	.68	.52	.48	2.2	.56
3	.02	.04	0	0	.26	.03	3.8	.56	5.4	.44	1.5	.35
4	.01	.03	0	0	.35	.02	1.8	.44	1.6	.48	.48	.23
5	.01	.03	0	0	.12	.02	1.1	.38	.71	2.1	.29	.10
6	.01	.03	0	0	.06	.38	4.6	.32	.68	4.3	.20	.04
7	.01	.03	0	.01	.03	.26	4.7	2.0	.48	3.0	.20	.03
8	.01	.04	0	.75	.02	1.8	.97	3.3	.41	1.6	.70	.01
9	.02	1.1	0	.68	.68	2.4	.64	2.3	.38	1.2	2.6	.01
10	1.8	.68	0	.83	.64	1.9	.92	.87	.41	.87	.94	.01
11	1.3	.23	0	.68	.73	3.2	.56	1.4	3.6	.48	.35	.01
12	.70	.32	0	.32	1.4	1.4	.41	1.6	.87	.35	.23	.02
13	.92	.75	.01	.08	.98	.87	.32	.83	.44	.47	.17	.02
14	.68	.17	.01	.02	1.9	.83	1.1	.60	2.5	4.7	.14	3.6
15	.87	.06	.01	.01	5.5	1.5	3.4	2.0	5.8	5.5	.27	.96
16	.60	.03	.01	0	3.3	2.5	.97	1.9	2.5	2.4	.41	.23
17	2.2	.02	0	0	1.0	3.6	.60	1.9	.75	2.5	.17	.12
18	.83	.01	0	0	.56	3.0	1.3	2.0	2.0	.75	.10	.12
19	.56	.01	0	0	.64	1.3	.92	1.4	2.2	.60	.06	.35
20	.64	0	0	0	3.2	4.7	.38	1.2	.68	.68	.04	.26
21	1.5	0	0	0	2.2	5.5	.35	1.6	.60	.48	.04	4.1
22	.87	0	0	.17	2.5	1.9	2.5	1.2	.56	.38	.03	3.7
23	.52	0	0	.35	1.8	1.1	1.8	.87	.56	.32	.03	1.9
24	.41	0	0	.17	.83	.79	.52	1.9	.52	.32	.02	3.3
25	.32	0	0	.04	.70	1.7	5.1	1.4	.48	.32	.02	2.9
26	.26	0	0	.48	2.3	1.8	3.0	1.2	.41	3.0	.02	2.6
27	.23	0	0	.17	2.9	.75	.79	.97	.35	2.7	.02	1.4
28	.20	0	0	.06	3.0	.92	5.4	.68	.29	1.3	.02	1.0
29	.17	0	0	.03	1.2	2.0	4.4	----------	.26	.52	.02	1.1
30	.05	0	0	.01	.75	2.5	2.2	----------	.26	.32	.02	1.4
31	.04	0	----------	1.9	----------	1.5	1.2	----------	4.0	----------	1.6	----------
Total	15.83	3.68	0.04	6.76	41.93	51.40	63.15	36.33	40.74	43.24	13.15	32.33
Mean												
Mgd	0.511	0.119	0.001	0.218	1.40	1.66	2.04	1.30	1.31	1.44	0.424	1.08
Cfs	0.791	0.184	0.002	0.337	2.17	2.57	3.16	2.01	2.03	2.23	0.656	1.67
Ac-ft	49	11	0.1	21	129	158	194	111	125	133	40	99
Max	2.2	1.1	0.01	1.9	5.5	5.5	5.4	3.3	5.8	5.5	2.6	4.1
Min	0.01	0	0	0	0.02	0.02	0.32	0.32	0.26	0.32	0.02	0.01

Calendar Year 1965: Max 5.5 Min 0 Mean (mgd) 0.677 Mean (cfs) 1.05 Ac-ft 758
Fiscal Year 1965-66: Max 5.8 Min 0 Mean (mgd) 0.955 Mean (cfs) 1.48 Ac-ft 1,070

40-7455. Awini ditch at Awini weir, near Kohala

Location.--Lat 20°08'20", long 155°43'55", on right bank at Awini weir, 6 miles south of Niulii, and 8 miles southeast of Kohala.

Records available.--July 1907 to June 1917 (published as Kohala ditch at Awini weir, near Kohala), May 1963 to June 1966.

Gage.--Graphic water-stage recorder and sharp-crested weir. Altitude of gage is 1,840 ft (from topographic map). July 1, 1907, to June 30, 1917, staff gage at same site at different datum and May 16, 1963, to Jan. 12, 1965, digital water-stage recorder at same site and datum.

Average discharge.--13 years, 12.6 mgd (19.5 cfs).

Extremes.--1907-17, 1963-66: Maximum daily discharge, 36 mgd (56 cfs) May 20, 24, 1964; no flow at times.

Remarks.--Records fair prior to Jan. 4, good thereafter. Ditch diverts at altitude 2,000 ft from all streams between the Waikaloa and the Honokane and empties into Kohala ditch (see sta. no. 7509) for irrigation in vicinity of Kohala.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	3.0	0.33	0	20	15	23	16	12	15	2.1	20
2	2.4	2.8	.40	0	7.0	28	27	14	11	13	12	13
3	2.0	2.6	.32	0	6.0	18	27	13	30	14	14	10
4	1.5	2.6	.23	0	8.5	14	20	11	24	14	7.0	8.6
5	1.3	2.2	.07	0	4.5	12	18	9.8	16	17	8.6	5.8
6	.93	1.7	0	0	2.5	21	24	8.3	16	33	7.0	3.3
7	1.3	1.3	0	3.0	1.5	25	26	17	12	28	6.0	1.9
8	1.9	2.4	0	14	1.0	17	18	28	10	25	9.4	1.4
9	3.8	14	0	13	7.0	16	14	24	8.9	22	25	1.3
10	9.0	12	0	14	6.5	17	17	14	9.9	20	17	4.0
11	11	5.7	0	9.0	5.0	23	14	16	28	14	9.2	4.4
12	2.5	6.7	.08	3.5	10	15	11	23	18	11	8.0	3.1
13	3.0	13	0	1.0	11	11	9.5	16	12	9.5	6.8	4.0
14	4.5	5.7	0	.60	11	11	13	12	25	31	5.5	23
15	10	3.0	0	.50	32	16	26	26	32	32	5.8	17
16	12	2.0	0	1.0	26	22	19	29	26	26	8.9	6.8
17	19	1.3	0	1.5	16	25	17	30	14	27	5.8	5.5
18	20	.93	0	1.0	15	25	19	30	11	19	4.2	5.1
19	13	1.1	0	.60	14	18	17	27	7.5	15	3.1	7.8
20	19	.78	0	.50	22	27	10	22	4.4	15	2.6	6.8
21	21	.23	0	.40	22	32	9.2	27	3.5	12	2.3	28
22	16	0	0	6.0	22	22	23	23	1.5	9.8	2.1	26
23	11	.18	0	5.0	20	17	23	18	.59	8.6	1.8	21
24	9.0	.23	0	2.6	15	14	14	27	.50	9.2	1.6	24
25	7.0	.32	0	1.1	13	15	30	25	.50	9.8	1.5	24
26	6.0	.65	0	3.6	19	20	28	23	.40	21	1.4	31
27	5.0	.23	0	2.0	24	13	19	20	.35	29	1.6	28
28	4.2	.07	0	2.0	26	15	32	15	.25	17	1.6	18
29	4.0	.23	0	.65	17	20	33	---------	1.2	5.8	2.1	14
30	3.6	.23	0	0	14	24	28	---------	4.4	3.0	2.3	23
31	3.2	.11	---------	14	---------	18	20	---------	27	---------	17	---------
Total	231.13	87.29	1.43	100.55	418.5	586	628.7	564.1	367.89	525.7	203.3	389.8
Mean												
Mgd	7.46	2.82	0.048	3.24	14.0	18.9	20.3	20.1	11.9	17.5	6.56	13.0
Cfs	11.5	4.36	0.074	5.01	21.7	29.2	31.4	31.1	18.4	27.1	10.1	20.1
Ac-ft	709	268	4.4	309	1,280	1,800	1,930	1,730	1,130	1,610	624	1,200
Max	21	14	0.40	14	32	32	33	30	32	33	25	31
Min	0.93	0	0	0	1.0	11	9.2	8.3	0.25	3.0	1.4	1.3

Calendar Year 1965:	Max	33	Min	0	Mean (mgd)	7.91	Mean (cfs)	12.2	Ac-ft	8,860
Fiscal Year 1965-66:	Max	33	Min	0	Mean (mgd)	11.2	Mean (cfs)	17.3	Ac-ft	12,600

Note.--No gage-height record Dec. 2 to Jan. 3.

40-7475. East Branch Honokane Nui Stream near Niulii

Location.--Lat 20°08'18", long 155°44'00", on left bank 500 ft upstream from Awini falls, 1.2 miles upstream from confluence with West Branch, and 6.0 miles south of Niulii.

Drainage area.--4.96 sq mi.

Records available.--May 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 1,080 ft (from topographic map). Prior to Dec. 13, 1964, at datum 1.00 ft higher.

Extremes.--Maximum discharge during year, not determined; maximum daily, 70 mgd (108 cfs) Dec. 7; minimum, not determined; minimum daily, 9.4 mgd (15 cfs) Sept. 14-23.
1963-66: Maximum discharge not determined; maximum daily, 77 mgd (119 cfs) Jan. 22, 1965; minimum, not determined; minimum daily, that of Sept. 14-23, 1965.

Remarks.--Records poor. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	12	10	10	25	14	25	11	11	10	11	14
2	12	12	10	9.8	14	50	30	10	11	10	12	12
3	12	12	10	9.8	16	20	30	10	11	10	15	11
4	12	12	10	9.8	16	20	20	10	10	10	12	13
5	11	12	10	9.8	13	18	17	10	10	10	11	11
6	11	12	10	9.8	12	50	16	10	10	15	11	11
7	11	12	10	21	11	70	25	15	10	14	12	11
8	12	15	10	19	11	25	14	20	10	14	12	11
9	14	20	10	14	19	20	12	25	10	13	13	11
10	16	18	10	14	16	17	12	16	10	12	12	10
11	28	14	10	16	16	20	11	13	10	12	11	10
12	20	14	10	16	16	17	10	12	10	11	11	11
13	18	17	9.8	13	15	16	10	11	10	11	11	11
14	15	13	9.4	13	18	14	10	11	15	11	11	20
15	17	12	9.4	12	40	15	10	30	30	14	11	15
16	18	11	9.4	13	30	24	10	40	20	13	11	12
17	30	11	9.4	13	19	33	10	45	15	13	12	11
18	25	11	9.4	13	13	25	10	40	18	12	11	11
19	17	10	9.4	13	16	22	11	20	25	12	11	11
20	18	10	9.4	12	35	33	10	15	20	12	11	11
21	20	10	9.4	12	30	50	10	14	15	12	10	50
22	16	11	9.4	12	30	20	15	13	14	11	10	30
23	14	11	9.4	12	25	17	17	12	13	11	10	20
24	13	11	11	12	18	15	13	12	12	11	10	30
25	13	11	11	12	14	14	25	12	12	11	10	30
26	13	11	11	13	25	13	18	11	12	11	10	60
27	13	11	11	12	40	12	14	12	11	13	10	30
28	13	11	11	12	35	13	50	11	11	12	10	20
29	13	10	10	12	20	14	40	---------	11	12	10	30
30	12	10	10	12	16	23	18	---------	11	12	10	50
31	12	10	---------	23	---------	18	13	---------	11	---------	10	---------
Total	481	377	298.8	405.0	624	732	536	471	409	355	342	588
Mean												
Mgd	15.5	12.2	9.96	13.1	20.8	23.6	17.3	16.8	13.2	11.8	11.0	19.6
Cfs	24.0	18.9	15.4	20.3	32.2	36.5	26.8	26.0	20.4	18.3	17.0	30.3
Ac-ft	1,480	1,160	917	1,240	1,910	2,250	1,640	1,450	1,260	1,090	1,050	1,800
Max	30	20	11	23	40	70	50	45	30	15	15	60
Min	11	10	9.4	9.8	11	12	10	10	10	10	10	10

Calendar Year 1965:	Max	77	Min	9.4	Mean (mgd)	16.3	Mean (cfs)	25.2	Ac-ft	18,230
Fiscal Year 1965-66:	Max	70	Min	9.4	Mean (mgd)	15.4	Mean (cfs)	23.8	Ac-ft	17,240

Note.--No gage-height record Nov. 18 to June 30.

40-7509. 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.

Records available.--May 1963 to June 1966.

Gage.--Graphic water-stage recorder. Altitude of gage is 960 ft (from topographic map). Prior to Apr. 20, 1965, digital water-stage recorder at same site and datum.

Extremes.--1963-66: Maximum daily discharge, 62 mgd (96 cfs) May 24, 1964; no flow at times each year.

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 million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	11	10	9.7	34	31	37	26	22	23	14	34
2	11	11	10	9.7	20	56	42	24	21	21	22	26
3	11	11	10	9.6	24	29	41	22	37	22	29	22
4	10	11	10	9.7	25	29	35	21	32	22	17	22
5	9.7	10	10	9.7	17	27	30	19	26	25	19	16
6	9.6	11	10	9.7	14	45	35	18	25	42	17	14
7	9.8	11	10	15	13	47	40	34	22	36	17	14
8	10	14	9.8	28	13	30	28	44	19	34	19	13
9	12	31	9.8	25	23	28	25	42	18	31	31	13
10	16	26	9.8	24	20	26	27	28	18	29	26	15
11	34	17	10	25	18	34	24	28	32	23	20	14
12	9.0	17	10	19	24	25	22	33	27	20	19	14
13	8.0	28	10	13	24	21	20	27	11	18	17	16
14	9.0	17	10	12	22	24	21	24	0	34	16	34
15	20	14	9.8	10	50	30	32	46	0	38	18	28
16	22	13	9.7	11	42	37	28	46	0	33	20	19
17	33	12	9.7	12	30	44	26	47	0	34	19	17
18	25	12	9.7	13	27	37	27	46	0	28	16	17
19	20	12	9.7	12	26	31	27	37	0	23	15	19
20	27	12	9.7	11	41	43	22	31	0	23	14	18
21	30	12	9.7	10	40	50	20	34	0	20	14	54
22	27	12	9.7	16	40	31	30	31	0	19	14	48
23	22	13	9.8	16	38	27	32	28	0	19	13	37
24	19	13	10	15	28	26	24	34	0	19	13	45
25	17	13	10	11	23	27	42	33	0	19	13	46
26	15	13	10	15	34	30	38	31	0	28	13	57
27	13	13	10	14	46	24	28	30	0	32	13	48
28	13	12	9.8	14	45	26	54	25	5.3	24	13	36
29	13	12	9.8	13	32	30	48	---------	11	16	13	38
30	12	12	9.8	12	26	34	34	---------	14	14	13	56
31	12	12	---------	26	---------	30	28	---------	34	---------	27	---------
Total	511.1	438	296.3	450.1	859	1.009	967	889	374.3	769	544	850
Mean												
Mgd	16.5	14.1	9.88	14.5	28.6	32.5	31.2	31.8	12.1	25.6	17.5	28.3
Cfs	25.5	21.8	15.3	22.4	44.3	50.3	48.3	49.2	18.7	39.6	27.1	43.8
Ac-ft	1.570	1.340	909	1.380	2.640	3.100	2.970	2.730	1.150	2.360	1.670	2.610
Max	34	31	10	28	50	56	54	47	37	42	31	57
Min	9.6	10	9.7	9.6	13	21	20	18	0	14	13	13

Calendar Year 1965:	Max	59	Min	0	Mean (mgd)	17.7	Mean (cfs)	27.4	Ac-ft	19.870
Fiscal Year 1965-66:	Max	57	Min	0	Mean (mgd)	21.8	Mean (cfs)	33.7	Ac-ft	24.420

40-7510. 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.

Records available.--August 1927 to June 1938, September 1938 to June 1966.

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

Average discharge.--37 years (1928-38, 1939-66), 26.7 mgd (41.3 cfs).

Extremes.--1927-66: Maximum daily discharge, 66 mgd (102 cfs) May 24, Oct. 19, 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 and all streams west. Water is used for irrigation in vicinity of Kohala.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14	13	11	11	37	30	40	27	24	24	16	36
2	13	12	11	11	22	55	40	26	22	22	24	29
3	13	12	11	11	26	31	44	24	40	23	30	25
4	12	12	11	11	27	31	35	22	34	23	20	25
5	12	12	11	11	19	28	31	21	27	26	21	19
6	12	12	11	11	16	44	38	21	26	43	20	16
7	12	12	11	17	15	48	43	35	23	38	19	16
8	13	15	11	30	14	32	30	45	21	35	21	16
9	15	32	11	27	25	30	26	44	20	32	22	16
10	20	27	11	25	22	28	28	30	20	30	19	18
11	37	18	11	26	20	35	26	31	34	24	22	16
12	9.6	18	12	21	26	27	23	36	28	21	21	16
13	9.2	28	11	15	26	23	21	29	13	20	20	18
14	10	18	11	13	24	25	22	25	1.0	36	19	35
15	22	14	11	12	52	30	33	48	2.0	40	20	30
16	24	14	11	13	44	38	28	48	1.0	34	22	22
17	35	13	11	14	31	44	26	50	.80	35	21	19
18	26	13	11	14	28	41	28	50	1.0	29	18	19
19	21	13	11	14	27	31	27	39	1.0	24	17	21
20	28	13	11	12	42	44	23	33	.70	25	17	21
21	31	13	11	11	42	54	21	36	.70	22	16	43
22	28	13	11	17	41	33	31	33	.60	21	16	43
23	23	14	11	18	39	28	33	29	.60	21	16	38
24	20	14	12	16	29	27	26	39	.50	21	16	42
25	18	14	11	13	25	27	44	36	.50	21	15	43
26	16	14	11	16	35	33	40	32	.50	29	15	45
27	15	14	11	16	47	26	29	31	.50	34	16	44
28	15	14	11	16	47	26	55	27	6.2	20	16	38
29	14	13	11	14	33	30	51	---------	13	18	15	36
30	14	13	11	13	27	37	36	---------	17	16	15	46
31	13	13	---------	25	---------	29	30	---------	36	---------	29	---------
Total	564.8	470	332	494	908	1,045	1,008	947	415.60	807	594	851
Mean												
Mgd	18.2	15.2	11.1	15.9	30.3	33.7	32.5	33.8	13.4	26.9	19.2	28.4
Cfs	28.2	23.5	17.2	24.6	46.9	52.1	50.3	52.3	20.7	41.6	29.7	43.9
Ac-ft	1,730	1,440	1,020	1,520	2,790	3,210	3,090	2,910	1,280	2,480	1,820	2,610
Max	37	32	12	30	52	55	55	50	40	43	30	45
Min	9.2	12	11	11	14	23	21	21	0.50	16	15	16

Calendar Year 1965:	Max	56	Min	0.02	Mean (mgd)	19.7	Mean (cfs)	30.5	Ac-ft	22,040	
Fiscal Year 1965-66:	Max	55	Min	0.50	Mean (mgd)	23.1	Mean (cfs)	35.7	Ac-ft	25,890	

40-7550. Kehena ditch near Kohala

Location.--Lat 20°07'25", long 155°45'05", on right bank at old Honokane weir, near head of West Branch Honokane Nui Stream, and 8.5 miles southeast of Kohala.

Records available.--December 1917 to November 1919, April 1928 to June 1966 (discontinued).

Gage.--Water-stage recorder and weir control. Altitude of gage is 3,850 ft (from topographic map). Prior to Apr. 26, 1928, at same site at different datum.

Average discharge.--39 years (1918-19, 1928-66), 7.38 mgd (11.4 cfs).

Extremes.--1917-19, 1928-66: Maximum daily discharge, 54 mgd (84 cfs) Mar. 23, 1919; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Ditch diverts from East Branch Honokane Nui Stream 2 miles above station for irrigation near Hawi. Small diversion upstream for watering stock.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	0		0	6.0	11	9.6	1.5	1.5	1.3	0.33	7.2
2	1.9	0		0	3.0	3.9	13	.98	1.3	.70	5.0	4.7
3	1.2	0		0	2.0	14	14	.7	8.1	.84	9.2	5.0
4	.56	0		0	2.0	11	8.2	.56	5.4	.98	3.7	5.4
5	.33	0		0	1.0	9.6	5.4	.44	2.1	2.9	1.3	2.1
6	.23	0		0	.50	25	14	.33	1.5	12	.56	.84
7	.70	0		2.0	.30	36	16	16	.98	9.6	.23	.33
8	.98	2.2		7.0	1.0	16	4.7	20	.56	7.2	.98	.14
9	1.3	7.9		5.0	4.0	10	2.3	19	.33	4.0	5.4	.85
10	3.5	5.6		4.0	3.0	7.9	2.3	4.7	.23	2.5	2.3	4.4
11	30	2.3		3.0	2.0	11	1.7	2.7	.70	1.3	.84	3.2
12	9.6	3.2		1.0	3.0	7.9	1.2	3.7	.56	.56	.70	1.5
13	3.4	5.9		.30	5.0	4.4	.98	1.9	.33	.33	.44	1.2
14	1.9	1.7		.20	8.0	3.0	.84	1.4	2.1	1.2	.23	12
15	4.0	.70		.10	17	4.0	1.3	19	12	8.5	.84	8.2
16	4.2	.44		.20	13	12	1.3	15	6.9	5.0	3.3	2.5
17	20	.14		.30	5.6	19	1.3	16	2.5	5.6	6.7	1.7
18	14	.08		.50	4.0	16	2.3	16	2.5	2.3	1.5	1.7
19	4.7	0		.40	4.0	11	3.4	7.2	10	.98	.56	2.5
20	5.0	0		.30	12	20	1.7	4.2	8.5	.70	.23	5.1
21	8.2	0		.20	12	25	1.7	5.9	5.0	.33	.08	29
22	5.0	0		.50	14	8.2	5.4	4.0	2.7	.23	.02	22
23	2.3	0		1.0	12	4.4	6.2	2.3	1.3	.14	0	12
24	1.9	.06		.60	5.9	3.0	2.5	7.0	.84	.05	0	23
25	1.3	.08		.20	5.4	2.7	16	5.9	.56	0	0	21
26	.70	0		.30	11	4.0	10	4.7	.33	.86	0	32
27	.44	0		.30	20	2.3	6.3	4.7	.23	4.0	0	21
28	.23	0		.40	18	1.9	31	2.1	.14	1.9	0	12
29	.44	.08		.30	7.2	2.1	20	----------	.01	.84	0	21
30	.23	.14		.10	4.4	5.6	6.6	----------	0	.44	0	31
31	.14	0	----------	10	----------	4.0	3.0	----------	2.5	----------	4.4	----------
Total	130.68	30.52	0	38.20	206.30	315.9	214.22	187.91	81.70	77.28	48.84	294.56
Mean												
Mgd	4.22	0.985	0	1.23	6.88	10.2	6.91	6.71	2.64	2.58	1.58	9.82
Cfs	6.53	1.52	0	1.90	10.6	15.8	10.7	10.4	4.08	3.99	2.44	15.2
Ac-ft	401	94	0	117	633	969	657	577	251	237	150	904
Max	30	7.9	0	10	20	36	31	20	12	12	9.2	32
Min	0.14	0	0	0	0.30	1.9	0.84	0.33	0	0	0	0.14

Calendar Year 1965:	Max	42	Min	0	Mean (mgd)	4.28	Mean (cfs)	6.62	Ac-ft	4,800		
Fiscal Year 1965-66:	Max	36	Min	0	Mean (mgd)	4.46	Mean (cfs)	6.90	Ac-ft	4,990		

Note.--No gage-height record Oct. 7 to Nov. 15.

40-7560. Kohakohau Stream near Kamuela

Location.--Lat 20°03'02", long 155°40'58", on left bank 0.2 mile downstream from Kohala Forest Reserve boundary and 2 miles northwest of Kamuela.

Drainage area.--2.34 sq mi.

Records available.--March 1956 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from topographic map). Prior to Oct. 23, 1957, at datum 0.35 ft lower.

Average discharge.--10 years, 5.69 mgd (8.80 cfs).

Extremes.--Maximum discharge during year, 206 mgd (319 cfs) Dec. 6 (gage height, 3.73 ft), from rating curve extended above 45 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) Oct. 6, 7.
1956-66: Maximum discharge, 2,510 mgd (3,880 cfs) Aug. 7, 1958 (gage height, 10.76 ft), from rating curve extended above 45 mgd by test on model of station site; minimum, that of Oct. 6, 7, 1965.

Remarks.--Records good. Parker Ranch pipeline diverts above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.50	0.45	0.17	0.04	8.0	1.5	6.6	0.96	0.65	0.19	0.36	4.0
2	.40	.40	.15	.04	1.5	31	13	.75	.55	.19	1.1	2.4
3	.36	.32	.15	.03	.96	7.2	13	.65	.55	.19	4.2	2.1
4	.32	.32	.15	.02	.80	5.2	5.5	.55	.50	.19	1.6	2.3
5	.28	.32	.15	.02	.70	3.5	2.7	.50	.45	.32	.80	1.2
6	.25	.32	.15	.01	.50	46	2.2	.45	.45	4.0	.55	.70
7	.36	.32	.13	16	.36	62	6.4	.96	.36	2.8	.50	.45
8	.32	3.1	.13	5.9	.45	16	2.0	2.8	.32	3.0	1.3	.32
9	.50	8.2	.11	3.3	2.1	5.5	1.3	5.4	.32	1.4	3.0	.84
10	1.6	2.4	.11	1.5	1.8	4.0	1.4	1.3	.28	.96	1.5	1.3
11	12	1.2	.11	1.0	1.1	8.2	1.1	.88	.36	.60	.88	.88
12	2.8	2.9	.13	1.0	.80	4.0	.80	.96	.40	.45	.65	.60
13	1.4	3.0	.11	.50	.75	2.2	.70	.65	.40	.36	.45	.88
14	1.0	1.2	.11	.28	2.2	1.6	.65	.60	2.0	.32	.40	15
15	1.5	1.8	.11	.22	28	1.6	.60	7.6	18	2.6	.45	3.8
16	1.8	1.4	.09	.36	16	3.6	.55	19	4.3	1.8	.96	1.4
17	15	.80	.09	.50	3.5	8.7	.50	20	1.4	2.4	1.4	1.1
18	6.4	.65	.07	.55	2.4	10	.75	15	4.0	1.3	.60	.80
19	1.7	.55	.07	.36	4.7	4.3	.96	4.2	12	.70	.36	.88
20	4.8	.45	.07	.25	21	16	.65	1.8	7.4	.50	.28	2.2
21	7.2	.40	.06	.17	9.6	37	.60	1.8	3.0	.36	.22	26
22	2.8	.36	.06	.15	12	4.5	2.3	1.4	2.7	.28	.17	8.8
23	1.5	.36	.06	.13	7.6	2.2	2.9	1.1	1.0	.25	.15	4.0
24	1.3	.32	.19	.09	2.6	1.5	1.2	1.0	.75	.28	.13	11
25	1.0	.32	.22	.06	1.8	1.3	15	.80	.60	.25	.11	8.4
26	.80	.32	.11	.05	4.2	1.2	5.5	1.0	.50	1.4	.11	41
27	.65	.25	.06	.04	20	.96	1.6	1.3	.40	2.6	.17	26
28	.65	.25	.04	.04	16	1.0	15	.80	.32	1.2	.11	6.2
29	.65	.25	.03	.04	3.0	2.8	23	----------	.28	.75	.11	14
30	.55	.19	.04	.03	2.0	5.6	2.8	----------	.25	.55	.09	35
31	.45	.19	----------	6.2	----------	2.3	1.4	----------	.25	----------	1.6	----------
Total	70.84	33.31	3.23	38.88	176.42	302.46	132.66	94.21	64.74	32.19	24.31	223.55
Mean												
Mgd	2.29	1.07	0.107	1.25	5.88	9.76	4.28	3.36	2.09	1.07	0.784	7.45
Cfs	3.54	1.66	0.166	1.93	9.10	15.1	6.62	5.20	3.23	1.66	1.21	11.5
Ac-ft	217	102	9.9	119	541	928	407	289	199	99	75	686
Max	15	8.2	0.22	16	28	62	23	20	18	4.0	4.2	41
Min	0.25	0.19	0.03	0.01	0.36	0.96	0.50	0.45	0.25	0.19	0.09	0.32

Calendar Year 1965: Max 62 Min 0.01 Mean (mgd) 2.90 Mean (cfs) 4.49 Ac-ft 3,250
Fiscal Year 1965-66: Max 62 Min 0.01 Mean (mgd) 3.28 Mean (cfs) 5.07 Ac-ft 3,670

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-7	1900	3.68	201	311	12-6	2200	3.73	206	319

40-7565. Keanuiomano 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.

Records available.--November 1963 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 2,410 ft (from topographic map).

Extremes.--Maximum discharge during year, 347 mgd (537 cfs) Dec. 6 (gage height, 4.89 ft), from rating curve extended above 110 mgd as explained below; no flow for many days.
1963-66: Maximum discharge, 1,430 mgd (2,210 cfs) Nov. 8, 1963 (gage height, 5.89 ft), from rating curve extended above 82 mgd by logarithmic plotting; no flow at times in 1965-66.

Remarks.--Records good. Two Parker Ranch pipeline diversions above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.12	0.07		0	9.0	0.31	6.1	0.92	0.57	0.09	0.06	2.4
2	.10	.04		0	.56	28	11	.70	.50	.08	1.0	2.0
3	.06	.03		0	.13	6.7	14	.56	.49	.07	5.0	.84
4	.04	.01		0	.02	4.3	5.9	.46	.50	.07	1.2	1.8
5	.02	.01		0	.01	2.4	2.9	.47	.36	.07	.46	.68
6	.01	0		0	0	70	1.7	.39	.34	2.5	.16	.28
7	.01	0		22	0	92	6.2	.67	.29	2.4	.07	.11
8	.04	.65		5.7	0	17	2.0	2.8	.23	2.5	.16	.05
9	.04	7.1		2.9	.42	5.1	1.1	5.6	.20	1.2	2.2	.03
10	.11	3.1		.73	.54	3.6	1.0	1.6	.17	.61	1.1	.72
11	8.2	.87		.23	.19	6.8	.92	.82	.17	.39	.40	.46
12	3.1	1.0		.48	.05	4.0	.68	.82	.26	.25	.18	.27
13	.82	3.5		.11	.02	1.9	.52	.61	.22	.16	.08	.20
14	.49	.89		.01	.50	1.2	.46	.46	.63	.10	.04	12
15	.75	.52		0	24	1.0	.41	6.3	17	1.7	.04	5.4
16	.94	1.8		0	21	2.4	.37	20	6.1	1.4	.17	1.1
17	11	.52		0	1.8	5.8	.34	25	1.4	1.7	.94	.74
18	8.4	.29		0	1.3	10	.37	18	2.2	.84	.29	.44
19	1.5	.18		0	2.1	3.0	.94	6.0	12	.42	.10	.40
20	2.6	.13		0	17	12	.54	2.2	10	.22	.04	.52
21	5.3	.10		0	12	43	.44	1.7	3.4	.11	.02	28
22	2.8	.05		0	8.9	4.9	.94	1.4	1.4	.07	.01	8.7
23	.76	.02		0	9.2	2.0	3.5	1.0	.82	.04	.01	6.2
24	.54	.01		0	1.8	1.2	1.0	.80	.61	.03	0	6.1
25	.36	0		0	.92	.89	13	.76	.40	.04	0	12
26	.31	0		0	.84	.89	6.9	.72	.34	.04	0	42
27	.29	.01		0	20	.72	1.6	1.2	.27	2.3	0	40
28	.23	0		0	15	.68	14	.76	.21	.61	0	3.9
29	.26	0		0	2.6	.97	28	----------	.16	.34	0	6.6
30	.16	0		0	.61	6.2	3.9	----------	.11	.15	0	36
31	.11	0	----------	.14	----------	1.8	1.5	----------	.10	----------	.31	----------
Total	49.47	20.90	0	32.30	150.51	340.76	132.23	102.72	61.45	20.50	14.04	219.94
Mean												
Mgd	1.60	0.674	0	1.04	5.02	11.0	4.27	3.67	1.98	0.683	0.453	7.33
Cfs	2.48	1.04	0	1.61	7.77	17.0	6.61	5.68	3.06	1.06	0.701	11.3
Ac-ft	152	64	0	99	462	1.050	406	315	189	63	43	675
Max	11	7.1	0	22	24	92	28	25	17	2.5	5.0	42
Min	0.01	0	0	0	0	0.31	0.34	0.39	0.10	0.03	0	0.03

Calendar Year 1965: Max 92 Min 0 Mean (mgd) 2.83 Mean (cfs) 4.38 Ac-ft 3,170
Fiscal Year 1965-66: Max 92 Min 0 Mean (mgd) 3.14 Mean (cfs) 4.86 Ac-ft 3,510

Peak discharge (base, 350 mgd).--No peak above base.

40-7570. Waikoloa Stream near Kamuela

Location.--Lat 20°03'17", long 155°40'01", on left bank 0.2 mile south of Puu Iki and 2.2 miles north of Kamuela.

Drainage area.--0.78 sq mi.

Records available.--May 1947 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,570 ft (from topographic map).

Average discharge.--19 years, 4.64 mgd (7.18 cfs).

Extremes.--Maximum discharge during year, 289 mgd (447 cfs) Oct. 7 (gage height, 4.41 ft), from rating curve extended above 62 mgd; minimum, 0.48 mgd (0.74 cfs) Sept. 28 to Oct. 7.
1947-66: Maximum discharge, 860 mgd (1,330 cfs) Oct. 23, 1957 (gage height, 6.55 ft), from rating curve extended above 62 mgd; minimum, that of Sept. 28 to Oct. 7, 1965.

Remarks.--Records good except those above 150 mgd, which are fair. No diversion above station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.2	1.2	0.88	0.48	6.0	2.2	5.2	1.9	1.8	1.3	1.5	4.7
2	1.0	1.2	.88	.48	2.2	18	9.9	1.8	1.6	1.3	4.3	2.9
3	1.0	1.2	.82	.48	1.8	4.7	6.4	1.6	2.4	1.3	4.3	2.9
4	.95	1.2	.76	.48	1.6	3.6	5.2	1.6	2.5	1.6	2.2	2.6
5	.95	1.1	.76	.48	1.4	3.0	3.5	1.5	1.6	3.9	1.6	1.8
6	.95	1.0	.76	.48	1.1	23	4.8	1.4	1.6	10	1.5	1.4
7	1.2	1.1	.76	26	1.0	24	7.1	1.8	1.4	5.3	1.8	1.2
8	1.3	4.2	.76	7.6	1.1	7.3	2.6	4.1	1.3	5.5	3.9	1.1
9	1.8	5.4	.70	5.2	2.5	4.2	2.1	4.2	1.2	3.0	4.9	1.8
10	3.4	2.9	.64	3.0	2.0	4.0	2.4	2.1	1.2	2.4	2.6	2.4
11	9.2	1.8	.70	1.9	1.5	5.3	2.1	1.8	2.0	1.9	1.8	1.8
12	3.0	3.5	.64	1.8	1.4	3.6	1.9	2.4	2.4	1.6	1.6	1.4
13	1.8	3.5	.58	1.2	1.3	2.6	1.8	1.6	1.9	1.6	1.4	2.0
14	1.9	1.8	.58	1.0	2.6	2.4	1.8	1.8	5.6	1.8	1.3	12
15	2.5	1.8	.58	.88	16	2.6	1.8	6.7	17	9.4	1.5	4.0
16	2.7	1.8	.58	1.0	11	3.4	1.6	12	4.2	4.3	2.0	2.1
17	7.9	1.5	.53	1.5	3.6	3.8	1.8	12	2.0	4.9	2.2	2.0
18	3.4	1.4	.53	1.8	2.5	4.2	2.8	12	5.0	2.4	1.5	1.6
19	3.0	1.2	.53	1.4	4.3	3.1	2.8	4.7	11	1.8	1.2	1.8
20	4.4	1.2	.53	1.0	11	5.9	1.9	2.6	6.1	1.6	1.1	2.9
21	6.6	1.1	.53	.88	4.2	13	1.8	3.9	4.0	1.5	1.0	12
22	3.0	1.0	.53	.88	6.4	3.9	3.8	3.0	2.2	1.4	1.0	5.6
23	2.0	1.0	.53	1.1	4.7	2.6	3.8	2.2	1.8	1.4	.95	4.0
24	1.8	1.0	.82	1.0	2.6	2.2	2.0	3.2	1.6	1.5	.95	4.5
25	1.6	1.1	.64	.82	1.9	2.1	11	3.0	1.6	1.5	.88	4.2
26	1.5	1.1	.53	.76	2.9	2.2	5.1	3.0	1.6	6.1	.95	19
27	1.4	1.0	.53	.76	7.1	1.9	2.7	2.8	1.5	5.0	1.2	13
28	1.5	1.0	.53	.76	6.3	2.7	17	1.9	1.4	2.8	1.2	4.6
29	1.6	1.0	.48	.70	2.8	4.8	16	----------	1.4	2.0	1.2	5.3
30	1.4	.95	.53	.70	2.1	6.2	3.6	----------	1.4	1.6	1.2	15
31	1.2	.88	----------	9.2	----------	3.7	2.4	----------	1.4	----------	4.3	----------
Total	77.15	51.13	19.15	75.72	116.9	176.2	138.7	102.6	93.7	91.7	59.03	141.6
Mean												
Mgd	2.49	1.65	0.638	2.44	3.90	5.68	4.47	3.66	3.02	3.06	1.90	4.72
Cfs	3.85	2.55	0.987	3.78	6.03	8.79	6.92	5.66	4.67	4.73	2.94	7.30
Ac-ft	237	157	59	232	359	541	426	315	288	281	181	435
Max	9.2	5.4	0.88	26	16	24	17	12	17	10	4.9	19
Min	0.95	0.88	0.48	0.48	1.0	1.9	1.6	1.4	1.2	1.3	0.88	1.1

Calendar Year 1965:	Max	29	Min	0.48	Mean (mgd)	2.71	Mean (cfs)	4.19	Ac-ft	3,040
Fiscal Year 1965-66:	Max	26	Min	0.48	Mean (mgd)	3.13	Mean (cfs)	4.84	Ac-ft	3,510

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
10-7	1800	4.41	289	447

40-7580. 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.

Records available.--May 1947 to June 1966.

Gage.--Digital water-stage recorder and concrete control. Altitude of gage is 3,460 ft (from topographic map). Prior to Apr. 20, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--19 years, 5.69 mgd (8.80 cfs).

Extremes.--Maximum discharge during year, 236 mgd (365 cfs) Oct. 7 (gage height, 4.14 ft), from rating curve extended above 76 mgd; minimum, 0.38 mgd (0.59 cfs) Oct. 3-6.
1947-66: Maximum discharge, 1,180 mgd (1,830 cfs) Oct. 23, 1957 (gage height, 6.99 ft), from rating curve extended above 76 mgd; minimum, that of Oct. 3-6, 1965.

Remarks.--Records fair. Diversion above station for livestock and domestic use.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.0	1.1	0.85	0.45	8.6	2.4	6.0	2.2	1.7	1.3	1.4	5.4
2	1.0	1.0	.80	.41	2.4	20	12.0	2.0	1.6	1.3	4.7	3.3
3	.90	1.0	.75	.41	1.7	6.0	7.5	1.8	2.5	1.4	5.0	3.0
4	.85	.96	.75	.41	1.5	4.0	6.0	1.7	2.6	1.5	2.4	3.0
5	.80	.96	.65	.41	1.2	3.2	4.0	1.7	1.6	3.7	1.7	2.0
6	.80	.90	.65	.41	.96	28	5.0	1.6	1.5	12	1.4	1.4
7	1.0	.90	.65	26	.85	30	9.8	2.6	1.4	6.4	1.6	1.2
8	1.2	4.5	.65	10	.96	8.0	3.2	6.0	1.3	6.2	4.2	1.1
9	1.5	6.4	.65	6.6	2.6	4.5	2.4	6.0	1.2	3.2	6.0	1.6
10	3.3	3.2	.60	3.4	2.2	4.2	2.6	2.5	1.2	2.4	2.8	2.7
11	12	1.7	.60	2.1	1.5	6.0	2.3	2.0	2.0	2.0	1.8	1.7
12	3.7	2.9	.60	2.0	1.3	4.0	2.0	2.5	2.5	1.7	1.6	1.4
13	1.7	4.3	.57	1.2	1.2	2.5	1.8	1.6	1.9	1.7	1.4	1.7
14	1.7	1.7	.60	.96	3.7	2.3	1.7	1.6	6.0	1.9	1.4	15
15	2.3	1.5	.57	.90	24	2.5	1.7	10	20	12	1.6	6.2
16	2.8	1.7	.53	1.0	15	3.5	1.7	17	5.0	4.5	2.3	2.3
17	10	1.3	.51	1.4	3.5	3.7	1.8	16	2.0	6.0	2.6	2.2
18	3.9	1.2	.49	1.6	2.5	4.7	2.8	15	7.0	2.5	1.6	1.7
19	2.0	1.1	.49	1.3	4.5	3.3	2.9	6.0	13	1.8	1.3	1.7
20	5.4	1.0	.49	.96	12	7.3	2.0	2.5	8.0	1.6	1.2	2.7
21	8.6	.96	.49	.80	4.5	20	1.7	4.0	5.0	1.5	1.1	17
22	3.6	.96	.49	.85	7.0	4.5	4.0	3.0	2.3	1.4	1.1	7.5
23	2.1	1.0	.45	1.0	5.0	2.5	4.7	2.5	1.9	1.4	1.0	5.6
24	1.7	.96	.75	.96	2.5	2.1	2.2	3.5	1.7	1.5	1.0	4.9
25	1.5	1.0	.60	.80	1.8	2.0	14	3.0	1.7	1.5	.96	5.4
26	1.3	1.1	.49	.75	3.0	2.1	7.1	3.0	1.6	7.0	.96	24
27	1.2	.96	.49	.65	8.0	1.8	3.3	2.8	1.5	6.4	1.3	20
28	1.4	.96	.45	.65	6.5	3.0	25	2.0	1.4	3.0	1.2	6.0
29	1.5	.96	.41	.60	3.0	5.0	23	----------	1.4	2.1	1.2	6.6
30	1.2	.90	.45	.57	2.2	7.0	4.9	----------	1.4	1.6	1.2	15
31	1.2	.85	----------	13	----------	4.0	2.7	----------	1.4	----------	4.5	----------
Total	83.15	49.93	17.52	82.55	135.67	204.1	171.8	126.1	105.3	102.5	63.52	173.3
Mean												
Mgd	2.68	1.61	0.584	2.66	4.52	6.58	5.54	4.50	3.40	3.42	2.05	5.78
Cfs	4.15	2.49	0.904	4.12	6.99	10.2	8.57	6.96	5.26	5.29	3.17	8.94
Ac-ft	255	153	54	253	416	626	527	387	323	315	195	532
Max	12	6.4	0.85	26	24	30	25	17	20	12	6.0	24
Min	0.80	0.85	0.41	0.41	0.85	1.8	1.7	1.6	1.2	1.3	0.96	1.1

Calendar Year 1965:	Max	37	Min	0.41	Mean (mgd)	3.06	Mean (cfs)	4.73	Ac-ft	3,420		
Fiscal Year 1965-66:	Max	30	Min	0.41	Mean (mgd)	3.60	Mean (cfs)	5.57	Ac-ft	4,040		

Note.--No gage-height record Feb. 18 to Mar. 24.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
10-7	1830	4.14	236	365	12-6	2145	3.32	109	169

40-7590. 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.

Records available.--March 1956 to June 1966. Prior to July 1960, published as Hauani Stream near Kamuela.

Gage.--Digital water-stage recorder and, since Feb. 27, 1963, concrete control. Datum of gage is 3,117.42 ft above mean sea level (Hawaii County Board of Water Supply bench mark). Prior to Apr. 21, 1964, graphic water-stage recorder at same site and datum.

Average discharge.--10 years, 0.978 mgd (1.51 cfs).

Extremes.--Maximum discharge during year, 118 mgd (183 cfs) Oct. 7 (gage height, 3.13 ft), from rating curve extended above 24 mgd by logarithmic plotting; no flow for many days.

1956-66: Maximum discharge, 325 mgd (503 cfs) Oct. 23, 1957 (gage height, 4.65 ft), from rating curve extended above 7.0 mgd by slope-conveyance study; no flow at times.

Remarks.--Records good. Diversion above station for livestock and domestic use.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.01	0.04		0	1.2	0.22	0.71	0.22	0.18	0.06	0.07	0.40
2	.01	.03		0	.18	5.2	2.7	.16	.18	.05	.40	.26
3	.01	.03		0	.07	.94	1.2	.13	.20	.06	.40	.31
4	.01	.03		0	.02	.55	.99	.10	.18	.07	.16	.26
5	.01	.02		0	.01	.51	.51	.11	.16	.43	.09	.13
6	.02	.02		0	0	10	.63	.09	.14	1.6	.07	.06
7	.02	.01		10	0	9.2	1.0	.31	.13	1.0	.08	.03
8	.01	.40		.84	0	1.6	.34	.99	.11	.79	.47	.02
9	.02	.75		.43	.16	.75	.22	.84	.10	.31	.59	.22
10	.16	.22		.22	.09	.63	.28	.22	.11	.18	.24	.22
11	1.8	.07		.11	.03	.79	.18	.16	.31	.13	.13	.08
12	.31	.20		.08	.02	.55	.14	.16	.24	.10	.09	.06
13	.10	.26		0	.01	.34	.11	.11	.20	.08	.07	.31
14	.09	.06		0	.75	.26	.10	.14	.99	.16	.06	4.4
15	.16	.07		0	5.9	.24	.09	2.4	5.5	1.9	.16	.79
16	.51	.03		0	1.9	.28	.09	3.8	.84	.51	.18	.26
17	1.8	.01		0	.59	.37	.08	3.1	.28	.55	.14	.22
18	.43	.01		0	.28	.63	.09	2.4	.94	.22	.08	.14
19	.16	.01		0	.37	.51	.09	.89	3.1	.14	.05	.14
20	.89	0		0	2.6	1.5	.10	.47	1.2	.11	.03	.55
21	1.3	0		0	1.4	4.5	.10	.94	.63	.09	.03	3.2
22	.40	0		0	1.9	.67	.34	.51	.28	.08	.02	1.2
23	.20	0		0	1.1	.31	.37	.31	.22	.07	.01	.71
24	.14	0		0	.37	.22	.11	.31	.20	.10	.01	.51
25	.10	.02		0	.20	.20	2.5	.31	.16	.07	.01	.51
26	.07	.01		0	.31	.18	1.0	.34	.14	.59	.02	6.8
27	.06	0		0	1.6	.13	.28	.31	.13	.63	.03	4.1
28	.18	0		0	1.6	.18	5.4	.22	.11	.22	.02	.84
29	.18	0		0	.40	1.2	5.9	----------	.10	.13	.02	2.1
30	.07	0		0	.22	1.3	.71	----------	.07	.09	.01	3.9
31	.05	0	----------	5.6	----------	.59	.31	----------	.09	----------	.26	----------
Total	9.28	2.30	0	17.28	23.28	44.55	26.67	20.05	17.22	10.52	4.00	32.73
Mean Mgd	0.299	0.074	0	0.557	0.776	1.44	0.860	0.716	0.555	0.351	0.129	1.09
Cfs	0.463	0.114	0	0.862	1.20	2.23	1.33	1.11	0.859	0.543	0.200	1.69
Ac-ft	28	7.1	0	53	71	137	82	62	53	32	12	100
Max	1.8	0.75	0	10	5.9	10	5.9	3.8	5.5	1.9	0.59	6.8
Min	0.01	0	0	0	0	0.13	0.08	0.09	0.07	0.05	0.01	0.02

Calendar Year 1965:	Max	11	Min	0	Mean (mgd)	0.491	Mean (cfs)	0.760	Ac-ft	550		
Fiscal Year 1965-66:	Max	10	Min	0	Mean (mgd)	0.570	Mean (cfs)	0.882	Ac-ft	638		

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
10-7	1745	3.13	118	183

40-7592. 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.

Records available.--April 1960 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,280 ft (from topographic map).

Average discharge.--6 years, 0.253 mgd (0.391 cfs).

Extremes.--Maximum discharge during year, 269 mgd (416 cfs) Aug. 14 (gage height, 5.16 ft), from rating curve extended above 0.87 mgd on basis of slope-area measurement at gage height 4.07 ft; no flow for many days.
1960-66: Maximum discharge, that of Aug. 14, 1965; no flow at times each year.

Remarks.--Records good. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.07	0.53	0.05	0.03	0.01	0.02	0.01	0	0.01	0	4.6	3.6
2	.08	.35	.03	.04	.01	.02	.01	0	.01	0	.20	.38
3	.62	.25	.03	.04	.01	.02	.01	0	.02	0	.09	.12
4	.59	.25	.03	.03	.01	.02	.01	0	.01	.01	.05	.06
5	.27	.15	.02	.02	.01	.02	.01	0	.01	.01	.03	.08
6	.27	.56	.02	.02	.01	.01	.01	0	.01	.19	.02	.10
7	.25	.18	.02	.01	.02	.01	0	.25	.01	.07	.01	.07
8	.13	.11	.01	.01	.02	.01	0	.10	0	.03	.01	.15
9	.10	.41	.59	.75	.43	.01	0	.05	0	.03	.01	.16
10	.45	.47	.10	3.3	2.5	.01	0	.02	0	.02	.01	.20
11	.12	.18	.05	4.7	.13	.01	0	.01	0	.01	.02	.11
12	.07	.12	.03	.31	.10	.01	0	.01	0	.01	.17	.08
13	.05	11	.03	.09	.16	.01	0	0	0	.01	.16	.10
14	.07	25	.06	1.4	.25	.01	0	.01	0	.01	.23	.09
15	.09	1.5	.05	.20	1.8	.01	0	.04	0	.01	.10	.11
16	.46	1.0	.05	.10	.40	.01	0	.04	0	.01	.32	.06
17	.13	.45	.05	.07	4.0	.01	0	.03	0	.02	.20	.04
18	.12	.23	.04	.07	.40	.01	0	.03	.02	.01	.06	.03
19	.13	.26	.03	.15	.20	.01	0	.01	.44	.01	.03	.03
20	.09	.20	2.3	.07	1.2	.01	.01	.01	.20	.01	.02	.02
21	.10	.13	.55	.05	.84	.01	0	.01	.10	0	.02	.02
22	.12	.10	.18	.03	.31	.01	0	.01	.06	0	.02	.05
23	.20	.08	4.5	.03	.15	.01	0	.01	.03	0	.02	.05
24	.27	.08	5.1	.02	.09	.01	0	.01	.02	0	.02	.04
25	.51	.07	2.8	.02	.06	.01	0	.01	.02	0	.02	.03
26	.27	.06	.27	.02	.05	.01	0	.03	.01	0	.01	.05
27	.36	.07	.12	.01	.05	.01	0	.04	.01	0	.02	.07
28	.33	.05	.08	.01	.05	.01	0	.01	.01	0	.05	.15
29	1.8	.05	.05	.01	.04	.01	0	----------	.01	0	.06	.05
30	.43	.04	.03	.01	.03	.01	0	----------	.01	.09	.16	.12
31	.15	.06	----------	.01	----------	.01	0	----------	.01	----------	.18	----------
Total	8.70	43.99	17.27	11.63	13.34	0.36	0.07	0.74	1.03	0.56	6.92	6.22
Mean												
Mgd	0.281	1.42	0.576	0.375	0.445	0.012	0.002	0.026	0.033	0.019	0.223	0.207
Cfs	0.435	2.20	0.891	0.580	0.689	0.019	0.003	0.040	0.051	0.029	0.345	0.320
Ac-ft	27	135	53	36	41	1.1	0.2	2.3	3.2	1.7	21	19
Max	1.8	25	5.1	4.7	4.0	0.02	0.01	0.25	0.44	0.19	4.6	3.6
Min	0.05	0.04	0.01	0.01	0.01	0.01	0	0	0	0	0.01	0.02

Calendar Year 1965:	Max	25	Min	0	Mean (mgd)	0.378	Mean (cfs)	0.585	Ac-ft	426	
Fiscal Year 1965-66:	Max	25	Min	0	Mean (mgd)	0.304	Mean (cfs)	0.470	Ac-ft	340	

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
8-14	1930	5.16	269	416	5-1	1700	3.90	98	152

40-7593. Waiaha Stream at Luawai, near Holualoa

Location.--Lat 19°38'12", long 155°55'45", on right bank at Luawai, 1.8 miles northeast of Holualoa School, and 4.2 miles southeast of Honokohau School.

Drainage area.--8.74 sq mi.

Records available.--April 1960 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 2,580 ft (from topographic map).

Average discharge.--6 years, 0.528 mgd (0.817 cfs).

Extremes.--Maximum discharge during year, 1,100 mgd (1,700 cfs) Aug. 14 (gage height, 6.37 ft), from rating curve extended above 20 mgd on basis of slope-area measurements at gage heights 4.34 and 4.51 ft; no flow for many days.
1960-66: Maximum discharge, that of Aug. 14, 1965; no flow at times each year.

Remarks.--Records good. Huebue Ranch diverts entire low flow of a tributary above station for domestic use.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.07	0.93	0.03	0.03	0	0.01		0	0		7.2	1.6
2	.04	.42	.02	.03	0	.01		0	0		.22	.34
3	.16	.38	.02	.04	0	.02		0	0		.02	.04
4	.67	.25	.01	.02	.02	0		0	0		0	.01
5	.42	.18	.01	.01	.02	0		0	0		0	.02
6	.18	.54	0	0	.02	0		0	0		0	.02
7	.13	.19	0	0	.01	0		0	0		0	.01
8	.06	.12	0	.04	.02	0		0	0		0	.12
9	.07	1.0	1.0	5.0	6.9	0		0	0		0	.12
10	.06	.68	.14	1.7	39	0		0	0		0	.20
11	.02	.20	.06	2.7	.13	0		0	0		0	.06
12	.01	.22	.02	.37	.07	0		0	0		.02	.03
13	.01	23	.09	.12	.13	0		0	0		.05	.03
14	.03	7.7	.27	.74	.22	0		0	0		.12	.03
15	.04	5.2	.07	.30	3.2	0		.02	0		.02	.02
16	.20	3.2	.06	.13	.48	0		.01	0		.33	.01
17	.07	1.2	.06	.06	9.4	0		0	0		.12	.01
18	.03	.28	.04	.25	.48	0		.01	0		.02	.01
19	.04	.67	.02	.25	.16	0		0	.01		.01	.01
20	.02	.28	6.9	.08	.44	0		0	.05		0	.01
21	.02	.14	1.0	.04	.60	0		0	.02		.01	.01
22	.06	.09	.22	.02	.22	0		0	.02		.01	.01
23	.23	.07	12	.02	.10	0		0	.01		.01	.01
24	.33	.06	14	.01	.06	0		0	.01		.01	.01
25	.78	.06	5.7	.01	.03	0		0	.01		0	.01
26	.32	.07	.42	.01	.02	0		.01	.01		0	.02
27	.51	.06	.19	.01	.02	0		.01	.01		0	.03
28	.28	.03	.08	0	.02	0		0	0		.01	.05
29	2.5	.02	.05	0	.01	0		---	0		.02	.02
30	.73	.03	.03	0	.01	0		---	0		.04	.02
31	.16	.05	---	0	---	0		---	0	---	.05	---
Total	8.25	116.62	42.51	11.99	61.79	0.04	0	0.06	0.15	0	8.29	2.89
Mean												
Mgd	0.266	3.76	1.42	0.387	2.06	0.001	0	0.002	0.005	0	0.267	0.096
Cfs	0.412	5.82	2.20	0.599	3.19	0.002	0	0.003	0.008	0	0.413	0.149
Ac-ft	25	358	130	37	190	0.1	0	0.2	0.5	0	25	8.9
Max	2.5	77	14	5.0	39	0.02	0	0.02	0.05	0	7.2	1.6
Min	0.01	0.02	0	0	0	0	0	0	0	0	0	0.01

Calendar Year 1965:	Max	77	Min	0	Mean (mgd)	0.914	Mean (cfs)	1.41	Ac-ft	1020
Fiscal Year 1965-66:	Max	77	Min	0	Mean (mgd)	0.692	Mean (cfs)	1.07	Ac-ft	775

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
8-14	2000	6.37	1,100	1,700	5-1	1730	3.72	123	190

40-7595. Waiaha Stream near Holualoa

Location.--Lat 19°38'12", long 155°56'40", on left bank 0.5 mile east of Waiaha, 1.2 miles north of Holualoa School, and 3.2 miles east of Kailua.

Drainage area.--9.35 sq mi.

Records available.--December 1957 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,910 ft (from topographic map).

Average discharge.--8 years (1958-66), 0.672 mgd (1.04 cfs).

Extremes.--Maximum discharge during year, 1,010 mgd (1,560 cfs) Aug. 14 (gage height, 4.17 ft), from rating curve extended above 160 mgd as explained below; no flow for many days.
1957-66: Maximum discharge, 1,560 mgd (2,410 cfs) Jan. 18, 1959 (gage height, 4.76 ft), from rating curve extended above 160 mgd on basis of 2 slope-area measurements at gage height 3.80 ft; no flow for many days each year.

Remarks.--Records good. Diversions by Huehue Ranch from Right Branch Waiaha Stream for domestic use and from Waiaha Stream 1 mile above station to off-stream reservoir for stock water. Diversion by Hawaii County Board of Water Supply from pool about 1/3 mile above station for domestic use in Kailua and Holualoa.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.01	1.6	1.0	0	0				0		5.1	1.0
2	.01	.23	.03	0	0				0		.03	.10
3	0	.10	.02	0	0				0		.01	.01
4	.03	.05	.01	0	.02				.01		0	0
5	.01	.03	.01	0	0				.01		0	0
6	.02	1.0	.01	0	0				0		0	0
7	.02	.07	.01	0	0				0		0	0
8	.01	.04	0	0	0				0		0	.03
9	.01	3.6	2.2	13	.03				0		0	.04
10	.02	.18	.04	5.0	5.5				0		0	.07
11	.01	.04	.02	1.2	.02				0		0	.02
12	0	.04	.01	.04	.01				0		0	.01
13	0	33	.06	.01	.01				0		0	.01
14	0	79	.07	.14	.02				0		.02	.01
15	.01	10	.02	.03	5.1				0		.02	.01
16	0	7.3	.02	.02	.39				0		.06	0
17	0	.98	.02	.01	15				0		.02	0
18	0	.09	.01	.11	.18				0		.01	0
19	0	.47	.01	.07	.02				0		.01	0
20	0	.12	14	.02	.03				0		0	0
21	0	.03	.59	.02	.43				0		0	0
22	0	.02	.03	.02	.06				0		0	0
23	.02	.02	22	.01	.01				0		0	0
24	.03	.02	28	.01	.01				0		0	0
25	.44	.11	7.1	.01	0				0		0	.02
26	.09	.05	.15	0	0				0		0	.02
27	.15	.03	.02	0	0				0		0	.01
28	.03	.02	.01	0	0				0		0	.01
29	3.9	.01	.01	0	0			----------	0		0	.01
30	.56	.02	0	0	0			----------	0		.01	.01
31	.02	.02	----------	0	----------			----------	0	----------	.02	----------
Total	5.40	138.29	75.48	19.72	26.84	0	0	0	0.02	0	5.31	1.39
Mean												
Mgd	0.174	4.46	2.52	0.636	0.895	0	0	0	0.0006	0	0.171	0.046
Cfs	0.269	6.90	3.90	0.984	1.38	0	0	0	0.0009	0	0.265	0.071
Ac-ft	17	424	232	61	82	0	0	0	0.1	0	16	4.3
Max	3.9	79	28	13	15	0	0	0	0.01	0	5.1	1.0
Min	0	0.01	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 79 Min 0 Mean (mgd) 1.02 Mean (cfs) 1.58 Ac-ft 1,140
Fiscal Year 1965-66: Max 79 Min 0 Mean (mgd) 0.746 Mean (cfs) 1.15 Ac-ft 836

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8-14	2000	4.17	1,010	1,560	10-9	1200	2.33	131	203
9-20	1800	2.17	100	155	11-17	0330	2.36	137	212
9-24	1900	2.40	145	224					

40-7598. Kilae 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.

Records available.--April 1958 to June 1966.

Gage.--Water-stage recorder. Datum of gage is 2,898 ft above mean sea level (by stadia traverse).

Average discharge.--8 years, 0.156 mgd (0.241 cfs).

Extremes.--Maximum discharge during year, 12 mgd (19 cfs) Oct. 22, Nov. 20, Feb. 7; maximum gage height, 1.50 ft Oct. 22; no flow for many days.

1958-66: Maximum discharge, 67 mgd (104 cfs) Jan. 13, 1959 (gage height, 2.32 ft), from rating curve extended above 3.7 mgd by logarithmic plotting; no flow at times each year.

Remarks.--Records good. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.18	0.07	0.04	0.02	0	0.01	0.04	0	0	0	0.28	0.35
2	.70	.38	.07	.01	0	.95	0	0	.13	0	.05	.06
3	1.4	.36	.17	.05	0	.09	0	0	.04	0	.02	.04
4	.30	.15	.04	.05	.02	.04	0	0	0	0	.08	.52
5	.66	.05	.01	.03	.53	.02	0	0	0	0	.03	.09
6	.18	.10	0	.02	.27	.08	0	0	0	.01	0	.02
7	.91	.04	.02	.01	.25	.03	0	2.0	0	.02	0	.02
8	.10	.02	.05	0	.02	.01	0	.31	0	.05	0	.47
9	.08	.50	.06	.04	.02	.01	0	.13	0	1.1	0	.19
10	.10	.08	.12	.46	.05	.01	0	.03	0	.10	0	.11
11	.04	.03	.08	.79	.04	0	0	.01	0	.04	0	.04
12	.02	.14	.43	.08	.04	0	0	.05	0	.01	.37	.02
13	.01	.97	.21	.01	.21	0	0	.21	0	.01	.47	.05
14	.06	.35	.45	.01	.64	0	0	.14	0	0	.95	.01
15	.60	.22	.16	.22	1.7	0	0	.06	0	0	.13	.05
16	.55	.31	.30	.03	1.3	0	0	.04	0	.01	1.3	.03
17	.09	.14	.08	.03	1.3	0	0	.02	0	.33	.09	.02
18	.42	.06	.04	.43	.22	0	0	.01	.83	.22	.02	.27
19	.21	.22	.02	.14	.34	0	.24	0	1.6	.05	0	.07
20	.09	.13	.04	.03	1.5	0	.99	.34	.85	.01	0	.03
21	.25	.04	.43	.01	.40	0	.02	.02	1.2	0	0	.04
22	.08	.05	.26	1.4	.12	0	.01	.01	.09	0	.01	.29
23	.07	.14	.47	.17	.04	0	0	.01	.04	0	.03	.08
24	.10	.07	1.1	.06	.07	0	.01	.01	.03	0	.01	.03
25	.13	.04	2.1	.02	.02	0	.02	.05	.02	0	0	.08
26	.11	.04	.17	.01	.04	0	.01	.25	.01	0	.02	.05
27	.14	.02	.07	.01	.10	0	0	.05	0	0	.04	.28
28	.15	.01	.06	.01	.06	0	0	.01	0	0	.14	.62
29	.29	0	.04	0	.04	0	0	----------	0	0	.06	.10
30	.08	.10	.02	0	.01	0	0	----------	0	.66	.14	.08
31	.02	.07	----------	0	----------	0	0	----------	0	----------	.06	----------
Total	8.12	4.90	7.11	4.15	9.35	1.25	1.34	3.76	4.84	2.62	4.30	4.11
Mean												
Mgd	0.262	0.158	0.237	0.134	0.312	0.040	0.043	0.134	0.156	0.087	0.139	0.137
Cfs	0.405	0.244	0.367	0.207	0.483	0.062	0.066	0.207	0.241	0.135	0.215	0.212
Ac-ft	25	15	22	13	29	3.8	4.1	12	15	8.0	13	13
Max	1.4	0.97	2.1	1.4	1.7	0.95	0.99	2.0	1.6	1.1	1.3	0.62
Min	0.01	0	0	0	0	0	0	0	0	0	0	0.01

Calendar Year 1965: Max 2.1 Min 0 Mean (mgd) 0.187 Mean (cfs) 0.289 Ac-ft 210
Fiscal Year 1965-66: Max 2.1 Min 0 Mean (mgd) 0.153 Mean (cfs) 0.237 Ac-ft 171

Peak discharge (base, 10 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
9-25	1530	1.48	11	17	2-7	0900	1.49	12	19
10-22	1800	1.50	12	19	4-9	1700	1.48	11	17
11-20	1500	1.49	12	19					

40-7640. Hilea Gulch tributary near Honuapo

Location.--lat 19°10'38", long 155°36'04", on right bank 0.5 mile upstream from mouth, 6.6 miles northwest of Honuapo, and 6.7 miles west of Punaluu.

Drainage area.--11.7 sq mi.

Records available.--February to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 3,000 ft (from topographic map).

Extremes.--Maximum discharge during period, 334 mgd (517 cfs) Feb. 6 (gage height, 4.72 ft), from rating curve extended above 49 mgd by logarithmic plotting; no flow Mar. 10-14.

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

Discharge, in million gallons a day, February to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1								0.02	0.04	0.03	8.9	39
2								.02	.06	.02	14	14
3								.02	.07	.02	16	19
4								.02	.05	.02	11	16
5								.02	.03	8.6	1.4	1.5
6								33	.02	29	.23	.45
7								32	.01	8.5	.16	.31
8								27	.01	10	.08	2.5
9								12	.01	3.5	.07	16
10								.50	0	22	.43	1.4
11								.26	0	.90	15	.70
12								.66	0	.12	16	.34
13								.90	0	.23	21	.22
14								.28	0	5.7	10	1.2
15								1.6	.08	5.5	3.4	.60
16								.31	1.3	6.5	1.1	.12
17								3.8	1.7	2.6	.18	.08
18								2.7	18	.80	.10	.07
19								1.8	11	.52	.07	.07
20								.45	20	.36	.07	.07
21								.17	19	.10	.06	6.9
22								.11	4.4	.06	.07	6.1
23								.08	17	.06	.07	1.9
24								.07	2.4	.05	.04	1.0
25								.07	.36	.04	8.1	.59
26								.06	.11	.03	9.3	.14
27								.06	.07	.03	8.3	.44
28								.04	.05	.16	1.9	.12
29								---	.04	7.5	2.1	2.8
30								---	.03	.80	17	6.1
31			---		---			---	.04	---	26	---
Total								118.02	95.88	113.75	192.13	139.72
Mean												
Mgd								4.22	3.09	3.79	6.20	4.66
Cfs								6.53	4.78	5.86	9.59	7.21
Ac-ft								362	294	349	590	429
Max								33	20	29	26	39
Min								0.02	0	0.02	0.04	0.07

Calendar Year		Max		Min		Mean (mgd)		Mean (cfs)		Ac-ft		
Fiscal Year 1965-66:		Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-	

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
2-6	2030	4.72	334	517

40-7650. Hilea Gulch tributary No. 2 near Honuapo

Location.--Lat 19°10'16", long 155°36'06", on right bank 0.5 mile upstream from mouth, 6.3 miles northwest of Honuapo, and 6.6 miles west of Punaluu.

Drainage area.--4.53 sq mi.

Records available.--February to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 2,860 ft (from topographic map).

Extremes.--Maximum discharge recorded during period, 46 mgd (71 cfs) May 13 (gage height, 3.76 ft); no flow most of the time.

Remarks.--Records poor. No diversion above station.

Discharge, in million gallons a day, February to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1								0	0	0	0.50	9.4
2								0	0	0	1.0	6.1
3								0	0	0	2.0	8.3
4								0	0	0	1.0	7.8
5								0	0	1.0	.05	.97
6								2.3	0	4.0	0	.02
7								.03	0	1.0	0	0
8								.27	0	1.0	0	.38
9								1.5	0	.10	0	5.8
10								0	0	3.0	0	.30
11								0	0	.10	3.6	.01
12								0	0	.01	3.8	0
13								0	0	0	3.1	0
14								0	0	1.0	.05	0
15								0	0	1.0	.02	.03
16								0	1.1	1.0	0	0
17								.01	.07	.10	0	0
18								0	1.3	.05	0	0
19								0	1.2	.01	0	0
20								0	1.8	0	0	0
21								0	.06	0	0	2.7
22								0	0	0	0	2.6
23								0	5.5	0	0	.48
24								0	.44	0	0	.49
25								0	.01	0	.81	.03
26								0	0	0	.92	0
27								0	0	0	.88	0
28								0	0	0	.66	0
29								----------	0	.50	.09	1.2
30								----------	0	.10	4.4	1.4
31			----------		----------			----------	0	----------	5.1	----------
Total								4.11	11.48	13.97	27.98	48.01
Mean												
Mgd								0.147	0.370	0.466	0.903	1.60
Cfs								0.227	0.572	0.721	1.40	2.48
Ac-ft								13	35	43	86	147
Max								2.3	5.5	4.0	5.1	9.4
Min								0	0	0	0	0

Calendar Year	Max		Min		Mean (mgd)		Mean (cfs)		Ac-ft	
Fiscal Year 1965-66:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-

Peak discharge (base, 150 mgd).--No peak above base.

40-7670. Ninole Gulch near Punaluu

Location.--Lat 19°10'47", long 155°33'42", 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.--14.0 sq mi.

Records available.--February to June 1966.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,190 ft (from topographic map).

Extremes.--Maximum discharge during period, 238 mgd (368 cfs) May 1 (gage height, 4.66 ft), from rating curve extended above 19 mgd; no flow most of the time.

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

Discharge, in million gallons a day, February to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1								-	0	0	14	20
2								-	0	0	5.0	5.6
3								-	0	0	8.3	7.1
4								-	0	0	5.1	4.8
5								-	0	.79	.38	.46
6								-	0	17	0	.02
7								-	0	5.5	0	0
8								-	0	6.0	0	0
9								-	0	2.6	0	.90
10								-	0	17	0	.10
11								-	0	.26	.35	0
12								-	0	0	3.1	0
13								-	0	.07	14	0
14								-	0	.38	3.6	.17
15								-	0	.07	.64	.05
16								-	0	.34	.07	0
17								-	.01	.19	0	0
18								-	12	.06	0	0
19								-	5.8	.01	0	0
20								-	16	0	0	0
21								-	8.4	0	0	0
22								-	.60	0	0	0
23								-	4.7	0	0	0
24								-	.57	0	0	0
25								0	.01	0	.17	0
26								0	0	0	.31	0
27								0	0	0	1.3	0
28								0	0	0	.12	0
29								---	0	.29	.06	.01
30								---	0	.04	.83	.03
31			---		---			---	0	---	2.0	---
Total								-	37.29	50.60	59.33	39.24
Mean												
Mgd								-	1.20	1.69	1.91	1.31
Cfs								-	1.86	2.61	2.96	2.03
Ac-ft								-	114	155	182	120
Max								-	16	17	14	20
Min								-	0	0	0	0

Calendar Year	Max		Min		Mean (mgd)		Mean (cfs)		Ac-ft		
Fiscal Year 1965-66:	Max	-	Min	-	Mean (mgd)	-	Mean (cfs)	-	Ac-ft	-	

Peak discharge (base, 650 mgd).--No peak above base.

40-7705. Paauau Gulch at Pahala

Location.--Lat 19°12'40", long 155°28'45", on right bank 100 ft downstream from bridge on Wood Valley Road and 0.7 mile north of Pahala.

Drainage area.--1.42 sq mi.

Records available.--May 1962 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 970 ft (from topographic map).

Extremes.--Maximum discharge during year, 300 mgd (464 cfs) Nov. 14 (gage height, 4.10 ft); maximum gage height, 5.45 ft Feb. 9 (backwater from fallen tree); no flow most of the time.
1962-66: Maximum discharge, 813 mgd (1,260 cfs) Oct. 18, 1962 (gage height, 4.87 ft, from floodmarks), from rating curve extended above 230 mgd on basis of slope-area measurement at gage height 4.40 ft; maximum gage height, that of Feb. 9, 1966; no flow most of the time each year.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		0.01	0	0.05	0	0.07	0.03	0	0	0	0.10	
2		0	0	.02	2.2	.04	.02	0	0	0	.01	
3		0	0	0	.26	.02	.01	0	0	0	0	
4		0	0	0	.01	0	0	0	0	0	0	
5		0	0	0	0	0	0	0	0	0	0	
6		0	0	0	0	.57	0	0	0	0	0	
7		0	0	0	0	.32	0	5.0	0	.05	0	
8		0	0	0	0	.20	0	3.0	0	0	0	
9		0	0	.63	4.8	0	.01	8.0	0	0	0	
10		0	0	.18	.08	.01	0	.07	0	3.4	0	
11		0	0	.31	0	0	0	.01	0	.16	0	
12		0	4.5	.12	.68	0	.03	0	0	0	0	
13		0	.76	.07	6.6	0	0	0	0	0	0	
14		0	.08	.01	9.1	2.0	0	0	0	0	0	
15		0	0	0	6.8	.02	0	0	0	0	.21	
16		0	.01	0	2.1	.02	0	0	0	0	0	
17		0	0	0	.84	.01	0	0	0	0	0	
18		0	0	0	.25	0	0	0	0	0	0	
19		0	0	.04	.34	0	0	0	.16	0	0	
20		0	.28	.02	.01	0	0	0	.11	0	0	
21		0	.01	.01	0	0	0	0	0	0	0	
22		0	0	0	0	0	0	0	0	0	0	
23		0	0	0	0	0	0	0	0	0	0	
24		0	.01	0	0	0	0	0	0	0	0	
25		0	.08	0	0	0	0	0	0	0	0	
26		0	0	0	0	0	0	0	0	0	0	
27		0	.02	0	.01	0	0	.20	0	0	0	
28		0	0	0	.03	0	0	0	0	0	0	
29		0	0	0	.01	0	0	----------	0	0	0	
30		0	.56	0	.08	0	0	----------	0	0	0	
31		0	----------	0	----------	0	0	----------	0	----------	0	----------
Total	0	0.01	6.31	1.46	34.20	3.28	0.10	16.28	0.27	3.61	0.32	0
Mean												
Mgd	0	0.0003	0.210	0.047	1.14	0.106	0.003	0.581	0.009	0.120	0.010	0
Cfs	0	0.0005	0.325	0.073	1.76	0.164	0.005	0.899	0.014	0.186	0.016	0
Ac-ft	0	0.03	19	4.5	105	10	0.3	50	0.8	11	1.0	0
Max	0	0.01	4.5	0.63	9.1	2.0	0.03	8.0	0.16	3.4	0.21	0
Min	0	0	0	0	0	0	0	0	0	0	0	0

Calendar Year 1965: Max 16 Min 0 Mean (mgd) 0.226 Mean (cfs) 0.350 Ac-ft 253
Fiscal Year 1965-66: Max 9.1 Min 0 Mean (mgd) 0.180 Mean (cfs) 0.279 Ac-ft 202

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-9	2130	3.84	196	303	2-9	1800	5.45	about 200	about 300
11-14	0300	4.10	300	464					

40-8083. Finile River at Agat

Location.--Lat 13°22'41" N., long 144°39'26" E., on right bank 0.4 mile upstream from estuary and 0.4 mile southeast of Agat School.

Drainage area.--0.26 sq mi.

Records available.--April 1960 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Average discharge.--6 years, 1.48 cfs.

Extremes.--Maximum discharge during year, 118 cfs Sept. 14 (gage height, 2.18 ft), from rating curve extended above 30 cfs as explained below; minimum, 0.09 cfs June 1, 3.
1960-66: Maximum discharge, 314 cfs June 6, 1963 (gage height, 3.77 ft), from rating curve extended above 30 cfs on basis of slope-area measurement at gage height 3.66 ft; minimum, that of June 1, 3, 1966.

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

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.26	2.0	0.70	3.4	0.95	1.0	0.50	0.30	0.30	0.44	0.16	0.13
2	.30	1.5	.56	4.0	1.0	.95	.50	.30	.26	.44	.16	.13
3	.50	1.2	.56	2.6	.95	1.0	.44	.30	.26	.34	.16	.13
4	1.1	1.6	.62	3.8	.95	.86	.44	.30	.26	.39	.26	.19
5	1.7	1.2	.50	2.6	1.0	.95	.50	.34	.26	.39	.16	.16
6	.50	1.0	.50	7.6	1.5	.86	.44	.30	.34	.39	.16	.16
7	.78	1.0	.50	2.9	2.4	.86	.44	.30	.30	.44	.16	.16
8	.50	1.0	.70	3.3	1.4	.86	.39	.30	.30	.39	.16	.16
9	.62	.95	.62	2.4	1.0	.78	.39	.34	.34	.39	.13	.16
10	.44	1.0	.56	2.2	1.0	.95	.39	.34	.30	.39	.16	.13
11	.50	1.0	.56	2.0	.95	.86	.62	.30	.34	.39	.16	.13
12	.50	.95	.62	1.9	.95	.86	.39	.34	.30	.34	.13	.13
13	.39	.86	6.1	1.8	.86	.86	.30	.34	.30	.34	.13	.26
14	.39	.86	12	2.4	1.2	.86	.30	.34	.30	.39	.13	.26
15	.50	.78	2.7	1.8	1.0	.78	.30	.34	.26	.34	.13	.16
16	.39	.86	2.2	1.6	.95	.78	.30	.30	.26	.30	.16	.13
17	.39	.86	1.6	1.5	.95	.78	.34	.34	.30	.26	.13	.16
18	.34	.78	1.4	1.4	.95	.78	.34	.30	.34	.26	.13	.13
19	.39	.78	1.2	1.4	.95	.70	.34	.30	.34	.22	.13	.13
20	.34	.70	2.2	1.4	1.0	.70	.34	.30	.34	.19	.13	.30
21	.44	.70	1.6	1.4	1.2	.70	.34	.30	.39	.19	.13	.19
22	3.0	.62	1.5	1.5	1.4	.70	.34	.30	.39	.19	.13	.44
23	3.5	.62	2.3	1.2	1.2	.62	.30	.39	.39	.19	.13	.44
24	1.6	.62	1.4	1.2	1.2	.62	.34	.34	.39	.19	.16	.39
25	1.0	.62	1.2	1.2	.95	.62	.30	.30	.26	.16	.16	.39
26	.78	.56	1.0	1.2	.95	.56	.30	.30	.26	.16	.13	.26
27	.95	.50	1.6	1.0	1.0	.56	.30	.34	.34	.16	.13	.22
28	5.7	.50	2.4	1.0	1.0	.50	.30	.30	.26	.13	.16	.16
29	1.8	.50	6.6	1.0	1.0	.50	.30	----------	.34	.13	.13	.16
30	2.0	.50	7.6	.95	1.0	.50	.30	----------	.34	.16	.13	.13
31	2.2	.50	----------	.95	----------	.50	.30	----------	.34	----------	.13	----------
Total	33.80	27.12	63.60	64.60	32.81	23.41	11.42	8.89	9.70	8.69	4.55	6.08
Mean	1.09	0.875	2.12	2.08	1.09	0.755	0.368	0.318	0.313	0.290	0.147	0.203
Ac-ft	67	54	126	128	65	46	23	18	19	17	9.0	12
Max	5.7	2.0	12	7.6	2.4	1.0	0.62	0.39	0.39	0.44	0.26	0.44
Min	0.26	0.50	0.50	0.95	0.86	0.50	0.30	0.30	0.26	0.13	0.13	0.13

Calendar year 1965:	Max	12	Min	0.26	Mean	1.02	Ac-ft	737
Fiscal year 1965-66:	Max	12	Min	0.13	Mean	0.807	Ac-ft	584

Peak discharge (base, 170 cfs).--No peak above base.

40-8094. Cetti River near Umatac

Location.--Lat 13°18'58" N., long 144°39'21" E., on right bank 0.1 mile upstream from estuary and 1.3 miles northeast of Umatac School.

Drainage area.--0.72 sq mi.

Records available.--February 1960 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 10 ft (from topographic map).

Average discharge.--6 years, 4.12 cfs.

Extremes.--Maximum discharge during year, 563 cfs July 28 (gage height, 3.25 ft), from rating curve extended above 66 cfs as explained below; minimum, 0.09 cfs June 21, 28, 30.
1960-66: Maximum discharge, 1,420 cfs Oct. 19, 1960 (gage height, 6.19 ft), from rating curve extended above 66 cfs by slope-area measurements at gage heights 1.78 and 6.19 ft; minimum, 0.03 cfs May 11, 1965.

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

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.31	6.4	0.90	15	1.2	0.70	0.54	0.38	0.38	0.38	0.35	0.25
2	.90	4.9	.70	15	1.1	.62	.54	.38	.38	.31	.35	.25
3	2.8	3.9	.80	8.4	1.2	.62	.54	.38	.31	.26	.30	.25
4	6.3	4.2	.62	6.4	1.1	.62	.46	.38	.30	.26	.50	.25
5	8.8	3.0	.46	4.6	1.0	.62	.46	.35	.30	.22	.30	.30
6	3.0	2.6	.46	41	2.3	.62	.46	.35	.40	.38	.25	.25
7	5.8	2.4	.54	8.0	2.0	.54	.46	.35	.35	.70	.25	.30
8	3.3	2.2	3.0	6.4	1.6	.46	.38	.35	.35	.54	.25	.30
9	5.2	2.0	1.1	4.9	1.4	.46	.38	.35	.35	.54	.25	.35
10	3.0	3.8	.80	10	1.1	2.2	.46	.35	.30	.46	.25	.30
11	2.2	2.6	.80	6.0	.90	1.0	.38	.35	.50	.38	.26	.25
12	2.0	2.0	4.1	4.6	.90	.80	.46	.35	.40	.38	.26	.25
13	1.6	1.8	45	4.2	.70	.70	.38	.35	.35	.40	.26	.30
14	2.2	1.4	43	3.6	.70	4.5	.54	.35	.30	.40	.26	.50
15	4.9	1.2	11	3.3	.80	1.8	.46	.30	.30	.40	.22	.26
16	2.6	5.6	6.0	2.8	.62	1.2	.46	.30	.30	.40	.22	.26
17	2.4	4.6	4.2	2.8	.62	1.1	.54	.35	.25	.35	.22	.31
18	1.8	2.0	3.6	2.4	.62	1.0	.46	.30	.25	.35	.22	.26
19	3.1	1.6	3.0	2.2	.90	.70	.54	.30	.25	.35	.22	.18
20	2.0	1.4	2.8	2.0	.70	.70	.70	.35	.25	.35	.22	.22
21	2.2	1.2	15	2.0	.80	.70	.46	.40	.25	.35	.20	.14
22	14	1.1	4.6	2.0	1.4	.80	.54	.50	.25	.50	.20	.85
23	26	1.1	3.6	1.8	1.1	.80	.70	.70	.25	.40	.20	1.9
24	14	1.1	5.5	1.4	.90	.80	.54	.54	.35	.40	.20	1.1
25	7.2	1.0	3.0	1.2	.80	.70	.46	.54	.30	.35	.25	1.0
26	4.6	.90	2.8	1.4	.70	.70	.46	.54	.25	.35	.25	.46
27	5.2	.80	19	1.2	.70	.62	.46	.54	.50	.30	.25	.22
28	55	.80	6.8	1.2	.90	.54	.38	.54	.30	.35	.25	.11
29	8.0	.80	26	1.4	.70	.54	.38	----------	.30	.40	.30	.26
30	5.2	.70	32	1.1	1.0	.54	.38	----------	.25	.30	.25	.11
31	5.2	.62	----------	1.1	---------	.54	.38	----------	.20	---------	.25	---------
Total	210.81	69.72	251.18	169.4	30.46	28.24	14.74	11.22	9.77	11.51	8.01	11.74
Mean	6.80	2.25	8.37	5.46	1.02	0.911	0.475	0.401	0.315	0.384	0.258	0.391
Ac-ft	418	138	498	336	60	56	29	22	19	23	16	23
Max	55	6.4	45	41	2.3	4.5	0.70	0.70	0.50	0.70	0.50	1.9
Min	0.31	0.62	0.46	1.1	0.62	0.46	0.38	0.30	0.20	0.22	0.20	0.11

Calendar year 1965:	Max	55	Min	0.05	Mean	2.86	Ac-ft	2070		
Fiscal year 1965-66:	Max	55	Min	0.11	Mean	2.27	Ac-ft	1640		

Peak discharge (base, 800 cfs).--No peak above base.

40-8160. Umatac River at Umatac

Location.--Lat 13°17'45" N., long 144°39'50" E., on left bank 0.2 mile upstream from mouth, 0.3 mile southeast of Umatac, and 5.7 miles northwest of Inarajan.

Drainage area.--2.04 sq mi.

Records available.--September 1952 to June 1966.

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.--13 years (1953-66), 8.45 cfs.

Extremes.--Maximum discharge during year, 932 cfs Sept. 13 (gage height, 2.94 ft), from rating curve extended above 320 cfs as explained below; minimum, 0.21 cfs on several days.

1952-66: 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 good. Upstream diversion at Piga Spring for domestic use at Umatac. Continuous records of rainfall are obtained at station.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.94	22	5.0	34	4.3	2.4	1.5	0.94	1.1	0.94	0.64	0.30
2	1.2	12	4.0	45	3.2	2.4	1.5	1.1	.94	.94	.64	.30
3	3.7	8.5	5.0	21	3.2	2.2	1.5	.94	.84	.74	.56	.30
4	6.8	13	3.8	16	3.5	2.2	1.3	.94	.84	.74	.94	.30
5	10	8.0	3.0	15	3.5	2.2	1.3	.84	.84	.74	.56	.50
6	9.3	6.0	3.2	77	6.1	2.2	1.3	.84	1.1	.74	.49	.36
7	13	5.3	3.0	22	5.3	2.4	1.2	.84	.94	.94	.42	.49
8	7.2	4.6	12	16	5.3	2.0	1.2	.84	.94	.74	.42	.49
9	7.6	4.6	7.2	13	4.3	2.0	1.1	.84	.94	1.2	.42	.64
10	5.0	6.0	5.3	15	4.3	5.0	1.2	.84	.84	.84	.42	.49
11	3.8	5.0	4.6	10	3.5	3.8	1.1	.84	1.2	.74	.42	.42
12	4.0	4.0	30	19	3.2	2.8	1.1	.84	.94	.64	.42	.49
13	4.0	3.8	142	10	3.0	2.6	1.1	.84	.84	.64	.49	.74
14	3.2	3.2	95	9.0	3.0	9.2	1.1	.84	.84	.64	.49	1.5
15	13	3.2	31	7.6	2.8	4.6	1.1	.74	.84	.74	.36	.74
16	6.0	5.5	16	6.8	2.8	3.2	1.1	.74	.84	.74	.30	.56
17	5.3	8.0	12	6.8	2.8	2.7	1.1	.84	.74	.64	.36	.74
18	4.3	4.6	17	5.6	2.8	2.7	1.1	.74	.74	.64	.36	.74
19	10	3.8	10	5.6	3.2	2.4	1.2	.74	.74	.64	.30	.56
20	6.4	3.2	9.0	5.0	3.0	2.2	1.8	.84	.74	.64	.30	.64
21	6.4	3.2	17	4.6	3.5	2.2	1.2	.94	.74	.64	.25	.56
22	22	3.5	8.5	4.6	3.5	2.2	1.2	.94	.74	.94	.25	2.9
23	43	3.0	7.2	4.3	4.0	2.2	1.8	1.7	.74	.74	.25	3.6
24	35	2.8	12	4.0	3.2	2.0	2.0	1.2	.84	.74	.25	6.0
25	15	2.8	6.8	3.8	2.8	1.8	1.3	1.2	.84	.64	.30	3.8
26	9.5	2.8	6.4	3.5	2.6	1.8	1.2	1.1	.74	.64	.30	2.6
27	11	2.6	19	3.5	2.6	1.6	1.1	1.2	1.5	.56	.30	1.6
28	99	2.6	16	3.5	2.8	1.6	1.1	1.2	.94	.64	.36	1.2
29	19	3.5	62	3.5	2.6	1.5	.94	----------	.94	.74	.30	1.1
30	12	2.6	91	3.2	2.6	1.5	1.1	----------	.84	.56	.30	1.1
31	11	2.4	----------	3.2	----------	1.5	.94	----------	.74	----------	.30	----------
Total	407.64	166.1	664.0	401.1	103.3	81.1	38.78	26.44	27.38	22.10	12.47	35.76
Mean	13.1	5.36	22.1	12.9	3.44	2.62	1.25	0.944	0.883	0.737	0.402	1.19
Ac-ft	809	329	1320	796	205	161	77	52	54	44	25	71
Max	99	22	142	77	6.1	9.2	2.0	1.7	1.5	1.2	0.94	6.0
Min	0.94	2.4	3.0	3.2	2.6	1.5	0.94	0.74	0.74	0.56	0.25	0.30

Calendar year 1965:	Max	142	Min	0.56	Mean	6.74	Ac-ft	4,880
Fiscal year 1965-66:	Max	142	Min	0.25	Mean	5.44	Ac-ft	3,940

Peak discharge (base, 1,200 cfs).--No peak above base.

40-8210. Geus River near Merizo

Location.--Lat 13°16'15" N., long 144°40'40" 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.--0.95 sq mi.

Records available.--April 1953 to June 1966.

Gage.--Water-stage recorder and broad-crested weir. Altitude of gage is 60 ft (from topographic map).

Average discharge.--13 years, 3.22 cfs.

Extremes.--Maximum discharge during year, 240 cfs July 28 (gage height, 2.43 ft), from rating curve extended above 66 cfs as explained below; no flow for many days.
1953-66: 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 for many days in 1966.

Remarks.--Records good. Water is diverted half a mile upstream for domestic use and at station for irrigation.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.16	5.6	1.1	16	1.4	0.63	0.34	0.18	0.12	0.03	0.01	0
2	.23	3.0	1.3	18	1.0	.59	.34	.16	.09	.03	.03	0
3	1.4	1.6	3.1	5.2	.87	.59	.28	.23	.07	.03	.03	0
4	2.8	1.9	1.3	3.3	1.2	.59	.28	.16	.06	.03	.08	0
5	2.4	1.4	1.1	9.0	1.1	.59	.28	.14	.07	.02	.06	0
6	3.8	1.0	.87	26	6.3	.59	.23	.14	.16	.02	.03	0
7	7.7	.87	.82	7.2	2.6	.55	.25	.16	.10	.03	.03	0
8	2.6	.77	5.0	4.3	2.3	.51	.20	.14	.07	.03	.02	0
9	2.2	.68	3.0	3.0	1.5	.51	.16	.14	.05	.05	.01	0
10	1.4	.98	2.3	2.8	1.3	1.4	.23	.14	.04	.03	.03	0
11	.77	1.2	1.6	2.1	1.0	1.3	.14	.14	.14	.02	.03	0
12	.77	.87	10	4.5	.93	.87	.16	.14	.08	.02	.01	0
13	.55	.68	70	2.3	.82	.68	.16	.14	.04	.01	0	0
14	.43	.55	30	1.8	.82	3.3	.18	.09	.04	0	0	0
15	3.3	.55	10	1.5	.82	1.8	.18	.10	.03	0	0	0
16	1.4	.68	5.0	1.4	.82	1.0	.18	.12	.03	0	0	0
17	.98	1.5	2.4	1.3	.77	.77	.18	.12	.03	0	.01	0
18	.87	1.1	5.0	1.2	.82	.72	.16	.12	.03	0	.02	0
19	2.3	.72	3.0	1.2	.87	.68	.18	.12	.03	0	.02	0
20	1.5	.63	2.2	1.1	.82	.55	.39	.12	.02	.01	.02	0
21	1.2	.51	1.8	.98	.98	.51	.14	.18	.02	.01	.01	0
22	9.3	.51	1.4	.98	.87	.51	.12	.14	.02	.03	.01	.19
23	24	.43	1.2	.98	.87	.40	.31	.34	.02	.03	0	.74
24	21	.40	1.2	.87	.82	.43	.37	.16	.02	.03	0	3.2
25	3.3	.31	.98	.87	.72	.40	.31	.14	.05	.01	.01	.55
26	1.6	.40	.93	.82	.63	.40	.16	.10	.02	0	.02	.47
27	1.2	.40	1.2	.82	.63	.37	.16	.18	.09	0	.01	.20
28	41	.70	1.0	.77	.68	.34	.16	.16	.05	.01	.01	.10
29	4.3	1.5	20	.77	.72	.34	.18	----------	.03	.01	.01	.08
30	2.2	.63	40	.82	.68	.31	.16	----------	.03	.02	.01	.06
31	1.6	.47	----------	1.6	---------	.28	.12	----------	.03	---------	.01	---------
Total	148.26	32.54	228.80	123.48	35.66	22.51	6.69	4.20	1.68	0.51	0.54	5.59
Mean	4.78	1.05	7.63	3.98	1.19	0.726	0.216	0.150	0.054	0.017	0.017	0.186
Ac-ft	294	65	454	245	71	45	13	8.3	3.3	1.0	1.1	11
Max	41	5.6	70	26	6.3	3.3	0.39	0.34	0.16	0.05	0.08	3.2
Min	0.16	0.31	0.82	0.77	0.63	0.28	0.12	0.09	0.02	0	0	0

Calendar year 1965:	Max	70	Min	0.09	Mean	2.15	Ac-ft	1,560		
Fiscal year 1965-66:	Max	70	Min	0	Mean	1.67	Ac-ft	1,210		

Peak discharge (base, 350 cfs).--No peak above base.

40-8350. Inarajan River near Inarajan

Location.--Lat 13°16'40" N., long 144°44'15" E., on right bank 0.6 mile northwest of Inarajan and 4.9 miles east of Merizo.

Drainage area.--4.49 sq mi.

Records available.--September 1952 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

Average discharge.--13 years (1953-66), 16.9 cfs.

Extremes.--Maximum discharge during year, 1,310 cfs July 28 (gage height, 8.54 ft), from rating curve extended above 620 cfs on basis of velocity-area studies; minimum, 1.1 cfs June 3.
1952-66: Maximum gage height, 12.90 ft Oct. 11, 1963 (discharge not determined); minimum discharge, 0.99 cfs July 14, 1959.

Remarks.--Records good. 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.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.9	27	11	35	24	7.2	3.4	2.3	1.8	1.6	1.4	1.2
2	2.3	14	12	73	11	6.9	3.6	2.2	1.7	1.6	1.5	1.3
3	3.8	11	28	32	10	6.9	3.4	2.2	1.6	1.6	1.4	1.2
4	11	15	10	25	11	6.9	3.4	2.2	1.6	1.4	2.0	1.2
5	8.0	10	7.8	22	11	6.9	3.2	2.0	1.7	1.4	1.5	1.3
6	9.4	8.4	7.8	176	20	6.9	3.2	2.0	2.0	1.4	1.4	1.3
7	21	7.8	8.4	50	14	6.9	3.2	1.9	1.7	1.9	1.4	1.2
8	5.5	7.5	36	34	13	6.3	3.0	1.9	1.7	1.6	1.4	1.2
9	6.0	7.5	15	26	11	5.8	3.0	1.9	1.6	2.4	1.4	1.4
10	4.0	11	9.4	24	11	8.1	3.2	1.9	1.6	1.6	1.5	1.3
11	3.0	8.4	8.4	21	10	7.5	3.0	1.9	2.4	1.5	1.5	1.2
12	3.8	7.5	88	21	10	5.2	3.0	1.9	1.8	1.5	1.5	1.3
13	3.2	6.6	263	20	9.1	5.0	3.0	1.9	1.7	1.4	1.5	1.4
14	2.8	6.0	140	17	8.4	14	2.4	1.9	1.7	1.4	1.3	2.0
15	9.4	5.8	32	15	8.1	7.5	2.4	1.8	1.6	1.5	1.5	1.4
16	5.5	9.6	19	15	8.1	6.6	2.4	1.8	1.6	1.5	1.3	1.4
17	4.0	17	17	15	7.8	5.2	2.4	1.8	1.6	1.4	1.4	1.4
18	4.2	11	32	15	8.4	5.5	2.3	1.8	1.6	1.4	1.4	1.3
19	5.7	7.8	19	15	9.1	5.2	2.6	1.8	1.6	1.4	1.4	1.2
20	4.6	6.9	16	13	9.4	4.8	3.8	1.8	1.6	1.4	1.4	1.3
21	4.6	6.3	16	12	10	4.6	2.8	2.0	1.6	1.4	1.5	1.3
22	22	5.8	13	15	10	4.8	2.6	1.9	1.5	1.6	1.5	5.6
23	56	5.5	12	12	10	4.6	3.2	3.5	1.6	1.4	1.3	6.6
24	47	5.5	13	11	8.4	4.2	3.4	2.0	1.8	1.4	1.4	8.3
25	14	5.5	11	11	8.1	4.4	2.6	2.0	1.6	1.4	1.4	10
26	11	5.5	11	11	7.8	4.2	2.3	1.8	1.6	1.4	1.4	3.6
27	10	5.5	15	11	7.8	3.8	2.3	2.2	2.6	1.4	1.5	1.9
28	202	6.6	13	10	8.1	3.6	2.3	1.9	1.6	1.4	1.5	1.6
29	20	7.8	111	11	9.1	3.4	2.2	----------	1.6	1.5	1.4	1.5
30	14	6.0	247	10	7.8	3.4	2.2	----------	1.6	1.4	1.3	1.5
31	13	5.2	----------	10	--------	3.4	2.2	----------	1.5	--------	1.2	----------
Total	532.7	271.0	1,241.8	788	311.5	179.7	88.0	56.2	52.8	45.2	44.5	68.4
Mean	17.2	8.74	41.4	25.4	10.4	5.80	2.84	2.01	1.70	1.51	1.44	2.28
Ac-ft	1,060	538	2,460	1,560	618	356	175	111	105	90	88	136
Max	202	27	263	176	24	14	3.8	3.5	2.6	2.4	2.0	10
Min	1.9	5.2	7.8	10	7.8	3.4	2.2	1.8	1.5	1.4	1.2	1.2

Calendar year 1965:	Max	274	Min	1.5	Mean	13.3	Ac-ft	9,590				
Fiscal year 1965-66:	Max	263	Min	1.2	Mean	10.1	Ac-ft	7,300				

Peak discharge (base, 1,700 cfs).--No peak above base.

40-8400. Paulilue River near Inarajan

Location.--Lat 13°17'05" N., long 144°45'00" E., on right bank 0.3 mile upstream from mouth, 0.9 mile northeast of Inarajan, and 3.8 miles south of Talofofo.

Drainage area.--1.86 sq mi.

Records available.--October 1952 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

Average discharge.--13 years (1953-66), 5.83 cfs.

Extremes.--Maximum discharge during year, 408 cfs July 28 (gage height, 4.32 ft); minimum, 0.15 cfs May 16, 21-23, 29.
1952-66: Maximum discharge, 2,980 cfs Oct. 15, 1953 (gage height, 13.11 ft), from rating curve extended above 210 cfs by logarithmic plotting; minimum, that of May 16, 21-23, 29, 1966.

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

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.89	20	4.8	17	4.0	1.7	0.99	0.70	0.70	0.38	0.23	0.44
2	.83	6.8	6.1	25	5.0	1.7	1.0	.74	.66	.35	.23	.44
3	1.3	5.0	8.0	12	4.0	1.7	.99	.74	.54	.32	.23	.41
4	4.9	8.8	3.2	8.9	3.5	1.6	.93	.74	.50	.29	.50	.50
5	4.2	5.0	2.7	7.7	3.2	1.6	.93	.74	.50	.32	.32	.58
6	2.7	3.6	2.7	70	4.5	1.6	.93	.74	.58	.50	.27	.50
7	9.7	3.4	4.2	20	4.8	1.5	.88	.74	.50	.58	.25	.50
8	2.5	3.0	9.5	15	5.6	1.5	.83	.74	.54	.50	.25	.54
9	3.4	3.0	6.4	9.7	3.4	1.5	.78	.74	.54	.70	.25	.47
10	2.2	5.4	3.4	8.1	3.4	2.2	.83	.74	.54	.66	.23	.25
11	1.7	4.7	3.0	7.3	3.0	2.1	.78	.66	.70	.41	.27	.25
12	1.7	3.4	18	7.3	2.8	1.7	.74	.62	.54	.27	.41	.25
13	2.4	2.8	66	7.3	2.6	1.6	.74	.62	.54	.27	.38	.35
14	1.5	2.5	41	5.5	2.5	2.9	.74	.62	.54	.25	.25	.47
15	4.2	2.4	14	5.2	2.4	2.6	.74	.62	.47	.25	.17	.35
16	2.5	7.8	8.4	4.9	2.2	2.0	.74	.62	.47	.23	.17	.32
17	2.0	6.7	8.8	4.9	2.2	1.8	.74	.58	.41	.23	.17	.35
18	1.9	3.2	7.6	4.3	2.4	1.9	.70	.58	.41	.21	.17	.54
19	2.8	2.7	5.4	4.3	2.6	1.7	.74	.54	.38	.21	.19	.66
20	2.1	2.5	5.0	4.1	2.6	1.5	1.1	.58	.38	.21	.21	.66
21	2.4	2.3	4.7	6.9	2.9	1.4	.93	.58	.38	.21	.17	.58
22	7.3	2.3	4.4	5.0	2.6	1.4	.83	.58	.35	.23	.16	1.5
23	20	2.1	4.4	4.5	2.9	1.4	1.0	.93	.38	.21	.16	2.3
24	21	2.3	6.7	4.0	2.5	1.3	1.2	.78	.80	.21	.35	5.5
25	6.0	2.2	3.8	3.8	2.2	1.2	.99	.74	.40	.21	.25	2.6
26	4.7	4.1	3.4	3.6	2.0	1.2	.88	.66	.35	.21	.21	2.5
27	4.4	3.8	7.7	3.5	1.9	1.2	.78	.78	1.0	.21	.19	1.0
28	82	2.7	17	3.4	2.1	1.1	.74	.74	.50	.25	.17	.70
29	10	4.4	49	5.0	1.9	1.0	.74	----------	.40	.21	.17	.54
30	7.2	2.5	118	3.5	1.8	1.0	.74	----------	.35	.21	.23	.47
31	6.8	2.3	----------	3.4	---------	.99	.66	----------	.35	---------	.38	---------
Total	227.22	133.7	447.3	295.1	89.5	49.59	26.34	19.19	15.70	9.30	7.59	26.52
Mean	7.33	4.31	14.9	9.52	2.98	1.60	0.850	0.685	0.506	0.310	0.245	0.884
Ac-ft	451	265	887	585	178	98	52	38	31	18	15	53
Max	82	20	118	70	5.6	2.9	1.2	0.93	1.0	0.70	0.50	5.5
Min	0.83	2.1	2.7	3.4	1.8	0.99	0.66	0.54	0.35	0.21	0.16	0.25

Calendar year 1965:	Max	118	Min	0.43	Mean	4.62	Ac-ft	3,340
Fiscal year 1965-66:	Max	118	Min	0.16	Mean	3.69	Ac-ft	2,670

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge
7-28	0600	4.32	408

40-8470. Imong River near Agat

Location.--Lat 13°20'14" N., long 144°41'55" E., on left bank 500 ft upstream from Fena Valley Reservoir, 1.4 miles southwest of Fena Dam spillway, and 4.3 miles southeast of Agat School.

Drainage area.--1.93 sq mi.

Records available.--March 1960 to June 1966.

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

Average discharge.--6 years, 10.1 cfs.

Extremes.--Maximum discharge during year, 781 cfs Oct. 6 (gage height, 4.26 ft), from rating curve extended above 110 cfs as explained below; minimum, 0.37 cfs May 21, 22, 26.

1960-66: 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, that of May 21, 22, 26, 1966.

Remarks.--Records good. No diversion above station. Continuous records of rainfall are obtained at station.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.2	17	3.8	24	6.3	3.8	2.4	1.8	1.5	1.4	0.84	0.48
2	2.0	10	3.5	32	6.7	3.2	2.4	1.8	1.4	1.1	.84	.42
3	3.5	7.5	3.5	17	6.3	3.5	2.2	1.8	1.4	1.1	.64	.48
4	11	10	3.5	13	5.6	3.2	2.2	1.8	1.4	1.0	1.0	.94
5	16	7.1	3.2	11	5.2	3.2	2.2	1.6	1.4	1.0	.74	.74
6	6.0	5.9	3.2	71	10	3.2	2.2	1.6	1.6	1.0	.74	.74
7	10	4.9	3.5	21	15	3.2	2.2	1.5	1.4	1.4	.64	.64
8	7.1	4.6	6.0	17	9.5	3.0	2.0	1.4	1.4	1.1	.64	.64
9	10	4.6	5.2	13	8.5	3.0	2.0	1.6	1.6	1.2	.64	.84
10	6.3	10	4.0	16	6.3	6.8	2.2	1.5	1.4	1.0	.55	.64
11	4.6	9.5	4.0	13	5.2	3.5	2.0	1.5	1.6	1.0	.55	.55
12	3.8	6.3	5.6	13	5.2	3.2	2.0	1.5	1.4	1.0	.55	.64
13	3.0	5.2	51	11	4.6	3.2	2.0	1.5	1.4	1.0	.55	1.1
14	3.2	4.6	83	10	4.3	9.4	2.0	1.5	1.4	1.0	.55	1.2
15	8.6	4.3	25	9.5	4.3	4.9	1.8	1.4	1.4	1.0	.55	.84
16	4.9	5.8	11	9.0	4.3	4.0	1.8	1.4	1.4	1.0	.55	.64
17	4.0	18	8.5	8.5	4.0	3.2	2.0	1.5	1.2	1.0	.74	.74
18	3.2	9.0	7.5	8.0	4.0	3.2	1.8	1.4	1.2	1.0	.55	.94
19	4.3	5.9	6.3	8.0	5.2	3.2	2.2	1.4	1.2	1.0	.55	.64
20	3.5	6.7	11	7.5	4.6	3.0	3.0	1.5	1.4	.94	.48	.84
21	3.2	5.6	16	7.1	5.6	2.8	2.0	1.8	1.2	.94	.42	.55
22	14	4.6	11	7.5	6.7	3.0	2.2	1.5	1.2	1.2	.42	2.8
23	44	4.3	8.0	6.7	4.9	2.6	2.6	3.0	1.4	.94	.42	4.1
24	37	4.0	10	6.7	4.3	2.6	2.8	1.6	1.8	.84	.55	5.8
25	12	3.8	7.1	6.3	3.8	2.6	2.0	1.6	1.2	.74	.55	5.0
26	7.1	3.8	5.9	6.3	3.8	2.6	2.0	1.6	1.1	.94	.48	2.8
27	7.5	3.5	33	5.9	3.5	2.6	1.8	1.8	2.2	.74	.48	1.5
28	82	3.8	19	5.9	4.3	2.4	1.8	1.6	1.2	.84	.48	1.2
29	15	3.8	52	6.7	3.8	2.4	1.8	----------	1.2	.74	.74	1.5
30	10	3.2	65	5.6	4.9	2.4	1.8	----------	1.2	.74	.48	1.0
31	9.0	3.2	----------	5.6	----------	2.4	1.8	----------	1.2	----------	.48	----------
Total	357.0	200.5	479.3	402.8	170.7	105.3	65.2	45.5	43.0	29.90	18.39	40.94
Mean	11.5	6.47	16.0	13.0	5.69	3.40	2.10	1.62	1.39	0.997	0.593	1.36
Ac-ft	708	398	951	799	339	209	129	90	85	59	36	81
Max	82	18	83	71	15	9.4	3.0	3.0	2.2	1.4	1.0	5.8
Min	1.2	3.2	3.2	5.6	3.5	2.4	1.8	1.4	1.1	0.74	0.42	0.42

Calendar year 1965:	Max	83	Min	1.0	Mean	6.59	Ac-ft	4,770
Fiscal year 1965-66:	Max	83	Min	0.42	Mean	5.37	Ac-ft	3,880

Peak discharge (base, 1,400 cfs).--No peak above base.

40-8480. Almagosa Springs near Agat

Location.--Lat 13°20'45" N., long 144°40'45" E., on left bank 3.5 miles southeast of Agat and 3.5 miles northeast of Umatac.

Drainage area.--0.74 sq mi, hydrologic drainage boundary uncertain owing to ground-water exchange.

Records available.--September 1951 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 640 ft (from topographic map).

Average discharge.--14 years (1952-66), 3.61 cfs.

Extremes.--Maximum discharge during year, 93 cfs Sept. 14 (gage height, 2.29 ft); no flow May 13 to June 4.
1951-66: 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 good. Up to 3.9 cfs diverted above station for municipal use.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.10	7.9	0.14	7.0	0.20	0.48	0.12	0.08	0.06	0.03	0.02	0
2	.10	6.2	.14	10	.23	.40	.12	.08	.07	.02	.02	0
3	.20	4.0	.14	5.0	.40	.36	.12	.08	.07	.02	.06	0
4	.96	4.0	.18	3.5	.23	.32	.10	.08	.07	.02	.06	0
5	7.4	3.2	.16	3.0	.32	.32	.10	.08	.07	.02	.02	.02
6	2.8	2.5	.14	40	.73	.32	.10	.08	.08	.02	.02	.02
7	2.7	1.6	.14	5.0	.83	.29	.12	.08	.08	.03	.02	.02
8	2.8	1.1	.23	4.0	5.6	.20	.10	.08	.08	.03	.02	.01
9	3.5	.92	.26	3.5	2.0	.20	.10	.08	.08	.04	.01	.01
10	3.1	3.0	.23	4.5	1.1	.29	.10	.08	.08	.04	.01	.01
11	1.6	2.5	.23	4.0	.52	.29	.10	.08	.08	.04	.01	.01
12	1.1	2.0	1.0	3.5	.50	.23	.10	.08	.08	.04	.01	.01
13	.57	1.5	16	3.0	.20	.23	.10	.08	.08	.04	0	.02
14	.40	.92	56	2.9	.16	.52	.10	.08	.08	.04	0	.02
15	2.0	.52	37	2.5	.16	.40	.10	.08	.08	.04	0	.02
16	1.5	.36	13	2.0	.20	.57	.10	.07	.08	.03	0	.01
17	.73	.79	7.6	2.0	.29	.40	.10	.07	.07	.03	0	.01
18	.36	.26	4.2	1.5	.40	.40	.09	.07	.05	.03	0	.01
19	.36	.23	2.9	1.2	.40	.40	.10	.07	.05	.03	0	.01
20	.40	.36	4.4	.99	.48	.29	.10	.07	.05	.03	0	.02
21	.48	.57	7.0	.79	.26	.26	.09	.08	.05	.03	0	.01
22	2.3	.20	7.6	.67	.40	.26	.09	.08	.05	.05	0	.03
23	26	.29	4.4	.44	.18	.18	.09	.08	.05	.18	0	.07
24	26	.44	3.5	.29	.23	.16	.09	.08	.05	.20	0	.12
25	13	.40	2.5	.18	.36	.16	.09	.07	.04	.23	0	.07
26	6.3	.40	2.0	.16	.40	.16	.09	.07	.04	.40	0	.09
27	3.5	.40	9.9	.16	.48	.16	.09	.07	.05	.79	0	.03
28	35	.40	6.0	.16	.36	.16	.09	.06	.03	.79	0	.02
29	17	.36	20	.18	.48	.14	.08	---------	.03	.42	0	.02
30	9.9	.29	30	.20	.32	.14	.08	---------	.03	.02	0	.02
31	8.2	.18	---------	.20	---------	.14	.08	---------	.03	---------	0	---------
Total	180.36	47.79	236.99	112.52	18.42	8.83	3.03	2.14	1.89	3.73	0.28	0.71
Mean	5.82	1.54	7.90	3.63	0.614	0.285	0.098	0.076	0.061	0.124	0.009	0.024
Ac-ft	358	95	470	223	37	18	6.0	4.2	3.7	7.4	0.6	1.4
Max	35	7.9	56	40	5.6	0.57	0.12	0.08	0.08	0.79	0.06	0.12
Min	0.10	0.18	0.14	0.16	0.16	0.14	0.08	0.06	0.03	0.02	0	0

Calendar year 1965:	Max	56	Min	0.08	Mean	2.01	Ac-ft	1450
Fiscal year 1965-66:	Max	56	Min	0	Mean	1.69	Ac-ft	1220

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge
9-14	2130	2.29	93

40-8490. Fena Dam spillway near Agat

Location.--Lat 13°21'30" N., long 144°42'10" E., on left bank 4.0 miles southeast of Agat and 5.5 miles southwest of Yona.

Drainage area.--5.81 sq mi.

Records available.--September 1951 to July 1952, November 1952 to June 1966.

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.--13 years (1953-66), 18.2 cfs.

Extremes.--Maximum discharge during year, 435 cfs Sept. 14 (gage height, 0.87 ft), from rating curve extended above 130 cfs on basis of broad-crested weir formula; no flow most of the time.
1951-66: 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. About 10 cfs is diverted from Fena Valley Reservoir and tributary springs for military and civilian use. Records represent only flow over spillway. Continuous records of rainfall are obtained at station.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			0	89	9.9	2.8						
2			0	94	9.9	.54						
3			0	52	12	0						
4			0	34	7.9	0						
5			0	25	7.9	0						
6			0	173	25	0						
7			0	59	38	0						
8			0	44	48	0						
9			0	34	17	0						
10			0	28	9.9	0						
11			0	25	7.9	0						
12			0	25	6.0	0						
13			20	22	6.0	0						
14			257	17	4.3	1.5						
15			112	17	2.8	6.0						
16			31	17	2.8	.54						
17			14	17	1.5	0						
18			7.9	14	0	0						
19			4.3	14	0	0						
20			17	14	1.5	0						
21			25	14	7.9	0						
22			20	25	28	0						
23			14	17	17	0						
24			7.9	9.9	9.9	0						
25			4.3	9.9	4.3	0						
26			4.3	9.9	1.5	0						
27			58	7.9	1.5	0						
28			63	7.9	6.0	0						
29			117	7.9	6.0	0		----------				
30			224	6.0	6.0	0		----------				
31			----------	7.9	----------	0		----------		----------		----------
Total	0	0	1,000.7	937.3	306.4	11.38	0	0	0	0	0	0
Mean	0	0	33.4	30.2	10.2	0.367	0	0	0	0	0	0
Ac-ft	0	0	1,980	1,860	608	23	0	0	0	0	0	0
Max	0	0	257	173	48	6.0	0	0	0	0	0	0
Min	0	0	0	6.0	0	0	0	0	0	0	0	0

Calendar year 1965:	Max	257	Min	0	Mean	8.57	Ac-ft	6,200
Fiscal year 1965-66:	Max	257	Min	0	Mean	6.18	Ac-ft	4,470

40-8550. Ugum River near Talofofo

Location.--Lat 13°20'00" N., long 144°44'55" E., on left bank 0.3 mile upstream from confluence with Talofofo River, 1.3 miles south of Talofofo, and 4.2 miles north of Inarajan.

Drainage area.--6.96 sq mi.

Records available.--June 1952 to June 1966.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3.23 ft above mean sea level.

Average discharge.--14 years, 28.8 cfs.

Extremes.--Maximum discharge during year, 913 cfs July 28 (gage height, 7.38 ft), from rating curve extended above 910 cfs as explained below; minimum, 1.1 cfs July 18.

1952-66: Maximum discharge, 7,660 cfs Dec. 4, 1963 (gage height, 12.06 ft), from rating curve extended above 910 cfs on basis of slope-area measurements at gage heights 11.30, 11.36, 11.87 and 11.90 ft; minimum, 1.1 cfs July 18, 1965.

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

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.1	46	24	87	30	15	8.4	7.0	5.1	4.5	3.2	3.0
2	5.6	31	18	126	22	13	8.4	7.0	5.1	4.5	3.0	2.8
3	10	23	26	68	21	13	8.4	6.6	4.8	4.3	3.0	2.8
4	26	30	19	57	21	13	8.0	6.6	4.8	4.3	4.1	2.6
5	34	23	19	53	21	13	8.0	6.2	4.8	4.1	4.1	2.6
6	16	18	16	243	28	13	8.0	6.2	5.3	4.1	3.6	2.6
7	30	17	19	78	37	14	8.0	5.9	5.1	4.3	3.4	2.6
8	15	17	31	65	32	13	7.6	5.9	4.8	4.5	3.4	2.6
9	16	16	33	51	24	12	7.6	5.9	5.1	4.8	3.2	2.6
10	13	24	21	50	23	18	8.0	5.6	4.8	4.5	3.2	2.6
11	10	23	19	46	21	16	7.3	5.6	5.6	4.3	3.2	2.6
12	8.4	18	46	44	19	13	7.3	5.6	5.3	3.8	3.0	2.6
13	9.2	16	205	41	18	12	7.3	5.3	4.8	3.8	2.8	2.6
14	7.6	16	215	38	18	21	7.3	5.1	4.8	3.6	2.8	3.8
15	21	15	83	35	18	20	7.3	5.1	4.5	3.6	2.8	3.8
16	13	21	49	32	17	15	7.3	5.1	4.5	3.6	2.8	3.6
17	10	54	40	31	17	14	7.3	4.8	4.5	3.6	2.8	3.4
18	8.0	33	43	30	17	13	7.3	4.8	4.5	3.6	2.8	3.0
19	13	23	36	30	19	13	7.3	4.8	4.5	3.6	2.8	2.8
20	11	18	50	29	18	12	11	5.1	4.5	3.4	2.8	4.9
21	12	18	34	29	20	12	7.6	5.6	4.3	3.4	2.8	3.8
22	27	18	31	35	19	12	7.3	5.6	4.3	3.4	2.6	9.7
23	97	16	26	28	19	11	10	7.3	4.3	3.4	2.6	9.6
24	105	17	41	26	18	11	10	6.6	4.5	3.4	3.8	19
25	32	16	27	25	16	11	8.0	5.6	4.8	3.4	3.8	12
26	21	18	26	23	15	11	7.6	5.9	4.5	3.2	3.6	13
27	18	16	72	23	15	10	7.3	5.6	7.0	3.2	3.6	6.2
28	198	15	51	23	16	9.2	7.0	5.3	5.3	3.2	3.4	5.1
29	41	19	127	23	16	8.8	6.6	----------	4.5	3.2	3.4	4.5
30	27	16	243	22	16	8.8	6.6	----------	4.5	3.2	3.2	4.5
31	23	13	----------	23	----------	8.4	6.6	----------	4.5	----------	3.0	----------
Total	882.9	664	1,690	1,514	611	399.2	241.7	161.7	149.7	113.8	98.6	147.3
Mean	28.5	21.4	56.3	48.8	20.4	12.9	7.80	5.78	4.83	3.79	3.18	4.91
Ac-ft	1,750	1,320	3,350	3,000	1,210	792	479	321	297	226	196	292
Max	198	54	243	243	37	21	11	7.3	7.0	4.8	4.1	19
Min	5.1	13	16	22	15	8.4	6.6	4.8	4.3	3.2	2.6	2.6

Calendar year 1965:	Max	243	Min	4.5	Mean	22.7	Ac-ft	16,450
Fiscal year 1965-66:	Max	243	Min	2.6	Mean	18.3	Ac-ft	13,240

Peak discharge (base, 1,100 cfs, revised).--No peak above base.

40-8580. Ylig River near Yona

Location.--Lat 13°23'20" N., long 144°45'00" E., on right bank 2 miles upstream from mouth, 2.1 miles southwest of Yona, and 5.8 miles south of Agana.

Drainage area.--6.58 sq mi.

Records available.--June 1952 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Average discharge.--14 years, 27.2 cfs.

Extremes.--Maximum discharge during year, 2,430 cfs Sept. 14 (gage height, 12.62 ft), from rating curve extended above 620 cfs as explained below; minimum, not determined; minimum daily, 0.10 cfs May 15 to June 14, June 16-20.

1962-66: Maximum discharge, 4,500 cfs Sept. 9, 1963 (gage height, 18.77 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 good except those for periods of no gage-height record, which are fair. No diversion above station.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.6	50	11	98	11	8.0	3.6	1.8	1.3	0.50	0.40	0.10
2	1.6	38	11	120	9.9	7.5	3.6	2.0	.94	.50	.24	.10
3	17	32	8.6	64	10	7.8	3.6	1.8	.87	.50	.21	.10
4	44	56	8.0	180	9.3	8.3	3.4	1.7	.73	.50	.32	.10
5	66	31	7.8	141	9.3	8.0	3.4	1.6	.70	.50	.32	.10
6	20	25	7.5	229	19	7.5	3.4	1.5	.70	.60	.28	.10
7	61	21	7.2	81	50	7.2	3.4	1.4	.70	.70	.21	.10
8	19	30	13	69	30	6.5	3.2	1.3	.70	.90	.24	.10
9	29	29	22	50	17	6.0	2.9	1.4	.70	1.0	.21	.10
10	17	35	12	40	9.9	7.8	3.1	1.6	.70	.50	.13	.10
11	13	31	11	35	13	7.2	3.1	1.6	.80	.40	.11	.10
12	13	24	12	57	11	6.5	2.8	1.4	.80	.32	.11	.10
13	10	20	260	32	10	6.5	2.5	1.3	.80	.28	.11	.10
14	8.6	18	495	55	9.9	6.0	2.4	1.2	.80	.24	.13	.10
15	14	16	104	29	13	6.5	2.4	1.2	.80	.24	.10	.30
16	17	17	55	23	9.9	5.5	2.2	1.1	.50	.24	.10	.10
17	14	16	42	23	9.0	5.5	2.2	1.1	.50	.24	.10	.10
18	13	20	48	19	8.0	5.5	2.1	1.1	.50	.24	.10	.10
19	19	23	34	18	7.8	5.5	2.1	1.0	.50	.21	.10	.10
20	18	17	64	17	8.0	5.1	2.6	1.0	.50	.21	.10	.10
21	18	14	34	16	9.6	4.9	2.5	1.0	.50	.28	.10	.40
22	78	13	33	29	18	5.3	2.1	1.1	.50	.24	.10	1.0
23	292	11	26	17	13	5.1	2.6	1.1	.80	.21	.10	2.9
24	187	10	23	15	12	4.5	2.8	1.1	1.2	.21	.10	2.8
25	55	9.9	20	14	11	4.3	2.4	1.1	.60	.18	.10	2.4
26	38	13	19	13	9.0	4.5	2.1	1.0	.50	.18	.10	1.8
27	34	11	44	13	8.6	4.1	1.9	1.2	1.5	.18	.10	1.2
28	244	9.6	87	12	9.6	3.8	1.9	1.6	.50	.18	.10	.80
29	61	9.6	253	11	8.6	3.8	1.8	----------	.50	.15	.10	.50
30	53	9.0	370	9.9	8.3	3.6	1.7	----------	.50	.21	.10	.40
31	62	7.8	----------	9.6	----------	3.6	1.7	----------	.50	----------	.10	----------
Total	1,537.8	666.9	2,142.1	1,539.5	382.7	181.9	81.5	37.3	22.14	10.84	4.72	16.40
Mean	49.6	21.5	71.4	49.7	12.8	5.87	2.63	1.33	0.714	0.361	0.152	0.547
Ac-ft	3,050	1,320	4,250	3,050	759	361	162	74	44	22	9.4	33
Max	292	56	495	229	50	8.3	3.6	2.0	1.5	1.0	0.40	2.9
Min	1.6	7.8	7.2	9.6	7.8	3.6	1.7	1.0	0.50	0.15	0.10	0.10

Calendar year 1965: Max 495 Min 0.50 Mean 22.6 Ac-ft 16,360
Fiscal year 1965-66: Max 495 Min 0.10 Mean 18.1 Ac-ft 13,140

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge
9-14	1200	12.62	2,430

Note.--No gage-height record Mar. 5 to Apr. 11, May 15 to June 22.

40-8650. Pago River near Ordot

Location.--Lat 13°26'10" N., long 144°45'15" E., on left bank 0.8 mile south of Ordot, 2.5 miles south of Agana, and 3.6 miles southeast of Asan.

Drainage area.--6.17 sq mi (revised).

Records available.--September 1951 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 25 ft (from topographic map).

Average discharge.--14 years (1952-66), 25.2 cfs.

Extremes.--Maximum discharge during year, 2,250 cfs Sept. 13 (gage height, 9.21 ft), from rating curve extended above 320 cfs as explained below; no flow Apr. 29 to June 13, June 17-19.
1951-66: 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 June 5-7, 10-23, 1959, Apr. 29 to June 13, June 17-19, 1966.

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

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.50	68	18	100	7.9	4.0	1.9	1.0	0.68	0.23		0
2	.70	48	17	120	7.0	4.0	1.9	1.0	.49	.23		0
3	11	30	10	70	7.0	4.6	1.7	.90	.42	.18		0
4	40	43	8.4	180	7.0	5.7	1.7	.90	.42	.18		0
5	16	25	7.9	140	7.4	4.3	1.7	.90	.35	.14		0
6	5.7	21	7.4	200	24	4.3	1.5	.78	.49	.10		0
7	53	20	7.4	80	49	4.0	1.5	.78	.78	.10		0
8	9.4	25	59	70	26	4.0	1.5	.90	.49	.18		0
9	27	27	30	50	12	4.0	1.5	1.0	.49	.23		0
10	12	28	14	40	8.9	4.3	1.3	1.0	.49	.18		0
11	7.4	30	13	35	7.4	4.0	1.3	1.0	.42	.14		0
12	6.1	25	19	55	7.0	4.0	1.3	1.0	.49	.10		0
13	7.0	20	277	35	6.6	4.0	1.3	.90	.42	.07		0
14	5.3	15	386	50	6.6	4.0	1.3	.78	.35	.04		.04
15	5.7	15	93	24	7.0	3.6	1.1	.78	.29	.07		.29
16	5.7	15	46	19	6.1	3.6	1.1	.78	.29	.04		.07
17	6.1	15	33	16	5.7	3.3	1.1	.78	.23	.07		0
18	5.3	18	28	14	5.3	3.1	1.1	.78	.23	.04		0
19	14	20	22	14	5.3	3.1	1.1	.58	.18	.04		0
20	11	15	124	12	5.3	3.1	1.7	.58	.18	.04		.18
21	8.9	13	35	12	6.6	2.8	1.3	.58	.18	.02		.10
22	49	10	30	42	5.3	2.8	1.0	.58	.18	.02		3.0
23	189	10	25	13	5.7	2.8	1.7	.58	.18	.02		1.3
24	136	9.0	20	12	5.7	2.6	1.3	.78	.29	.02		1.3
25	42	9.0	18	10	4.6	2.6	1.0	.68	.49	.02		.90
26	28	12	17	8.9	4.3	2.6	1.0	.68	.35	.01		.49
27	23	10	60	7.9	4.3	2.3	.90	.78	.90	.01		.29
28	161	9.0	100	7.9	4.3	2.3	.90	.90	1.0	.01		.18
29	50	9.0	150	7.4	4.3	2.1	.90	---------	.49	0		.10
30	94	8.0	300	7.4	4.3	2.1	.90	---------	.35	0		.07
31	79	7.0	---------	7.4	---------	2.1	.90	---------	.23	---------		---------
Total	1,108.80	629.0	1,975.1	1,459.9	267.9	106.1	40.40	22.68	12.82	2.53	0	8.31
Mean	35.8	20.3	65.8	47.1	8.93	3.42	1.30	0.810	0.414	0.084	0	0.277
Ac-ft	2,200	1,250	3,920	2,900	531	210	80	45	25	5.0	0	16
Max	189	68	386	200	49	5.7	1.9	1.0	1.0	0.23	0	3.0
Min	0.50	7.0	7.4	7.4	4.3	2.1	0.90	0.58	0.18	0	0	0

Calendar year 1965:	Max	386	Min	0.18	Mean	18.6	Ac-ft	13,440
Fiscal year 1965-66:	Max	386	Min	0	Mean	15.4	Ac-ft	11,170

Peak discharge (base, 2,700 cfs).--No peak above base.

Note.--No gage-height record Dec. 15 to Jan. 19.

40-8752. Benoki-gawa at Benoki

Location.--Lat 26°47'06" N., long 128°14'59" E., on left bank 0.9 mile southeast of Benoki and 1.6 miles east of Sate.

Drainage area.--3.8 sq mi, approximately.

Records available.--December 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 220 ft (from topographic map).

Extremes.--Maximum discharge during year, 6,700 cfs May 12 (gage height, 10.45 ft), from rating curve extended above 2,400 cfs by logarithmic plotting; minimum, 3.5 cfs Jan. 14-16.
1963-66: Maximum discharge, that of May 12, 1966; minimum, that of Jan. 14-16, 1966.
Minimum discharge known, 3.20 cfs Oct. 30, 1963, result of discharge measurement.

Remarks.--Records good except those above 5,000 cfs, which are fair. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	27	6.6	6.0	8.4	4.6	4.6	4.4	16	13	25	242	38
2	25	6.8	5.7	7.7	4.4	4.8	4.1	14	13	14	57	30
3	23	7.2	5.6	7.4	4.3	4.6	4.5	13	11	12	34	39
4	23	18	5.4	7.0	4.2	4.5	5.2	17	21	14	27	35
5	20	444	5.3	6.6	4.2	4.5	4.1	17	14	13	23	33
6	19	29	5.1	6.5	4.2	6.0	4.0	14	12	24	86	29
7	18	20	5.2	7.1	4.0	4.8	3.9	12	11	18	474	26
8	17	20	4.9	6.3	4.0	5.3	3.8	11	11	15	56	329
9	16	15	5.3	5.8	11	5.0	3.8	11	9.9	14	37	107
10	16	13	5.0	5.6	6.7	4.4	4.1	10	9.5	13	30	55
11	14	12	4.9	5.4	5.0	6.1	4.8	10	10	12	26	43
12	14	11	4.5	5.4	4.5	6.7	3.9	9.6	10	12	720	678
13	13	11	14	8.3	9.6	4.5	3.8	12	22	11	60	138
14	13	9.9	77	8.0	193	4.3	3.6	17	12	12	40	88
15	12	9.3	13	5.9	16	5.0	3.6	10	11	11	32	60
16	12	8.9	12	5.2	11	6.9	20	10	10	9.9	27	47
17	11	8.8	14	5.0	9.2	5.1	9.2	15	9.9	9.5	25	39
18	10	9.2	8.5	5.2	8.6	4.5	113	10	14	9.3	23	33
19	10	8.1	7.2	4.9	8.1	4.3	14	9.3	11	10	110	29
20	11	10	6.8	4.8	7.4	5.2	9.6	8.9	9.6	9.2	51	26
21	9.6	8.1	6.2	4.6	6.9	5.7	7.9	8.6	9.2	14	261	24
22	9.2	7.4	7.0	4.5	6.3	4.8	7.2	8.9	9.3	17	106	22
23	8.8	7.2	11	4.5	6.1	6.0	7.5	10	10	24	57	21
24	8.5	6.9	10	4.5	6.6	12	7.2	8.4	8.6	13	43	19
25	9.3	6.8	43	5.0	5.9	6.2	116	8.0	8.2	11	35	18
26	8.2	6.6	44	7.9	5.4	5.1	23	8.1	58	9.9	31	17
27	8.1	6.4	18	4.9	5.2	5.8	17	107	21	13	26	17
28	7.6	6.3	12	5.0	5.1	4.9	14	15	14	55	24	15
29	7.4	9.0	10	12	5.3	4.6	17	---------	13	19	32	14
30	7.1	6.4	9.2	5.3	5.0	4.6	29	---------	12	107	23	14
31	6.9	6.5	---------	5.1	---------	4.5	19	---------	11	---------	104	---------
Total	414.7	755.4	385.8	189.8	381.8	165.3	492.2	420.8	419.2	550.8	2922	2083
Mean	13.4	24.4	12.9	6.12	12.7	5.33	15.9	15.0	13.5	18.4	94.3	69.4
Ac-ft	823	1,500	765	376	757	328	976	835	831	1,090	5,800	4,130
Max	27	444	77	12	193	12	116	107	58	107	720	678
Min	6.9	6.3	4.5	4.5	4.0	4.3	3.6	8.0	8.2	9.2	23	14

Calendar year 1965:	Max	444	Min	4.0	Mean	20.3	Ac-ft	14,670
Fiscal year 1965-66:	Max	720	Min	3.6	Mean	25.2	Ac-ft	18,210

Peak discharge (base, 1,300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0800	7.13	1,930	5-12	0730	10.45	6,700
5- 1	1100	6.95	1,780	6- 8	1630	7.62	2,420
5- 7	0700	7.90	2,700	6-12	1000	8.13	2,980

40-8755. Yona-gawa at Yona

Location.--Lat 26°45'10" N., long 128°13'18" E., on left bank 0.9 mile southeast of Yona and 2.7 miles east of Hentona School.

Drainage area.--1.7 sq mi, approximately.

Records available.--December 1963 to June 1966.

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

Extremes.--Maximum discharge during year, 1,550 cfs May 12 (gage height, 5.27 ft), from rating curve extended above 350 cfs; minimum, 2.2 cfs Jan. 14-16.
1963-66: Maximum discharge, that of May 12, 1966; minimum, 2.0 cfs on several days in 1964.

Remarks.--Records good except those above 700 cfs, which are fair. No diversion above station. Daily sediment samples and continuous records of rainfall are obtained at station. Records of chemical analyses, water temperatures, and suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13	3.2	3.4	5.3	3.0	3.0	2.8	9.1	6.5	17	117	21
2	12	3.2	3.0	4.7	2.8	3.0	2.7	8.3	6.2	7.9	34	17
3	11	3.6	3.0	4.2	2.8	3.0	3.2	7.2	5.6	6.8	20	33
4	10	38	3.0	4.0	2.7	2.8	3.2	11	9.4	8.8	14	24
5	9.1	216	2.8	3.8	2.6	2.8	2.7	10	6.8	7.5	11	20
6	8.3	19	2.8	3.8	2.7	3.0	2.6	8.3	5.6	10	37	17
7	7.9	15	3.0	3.8	2.6	2.8	2.6	6.8	5.3	9.1	173	15
8	7.5	16	2.7	3.4	2.6	3.2	2.4	6.5	5.3	7.9	26	131
9	6.8	10	2.7	3.4	10	3.0	2.4	5.9	4.7	7.2	18	58
10	6.5	8.3	2.7	3.2	4.4	2.8	2.8	5.6	4.4	6.5	14	30
11	6.2	7.2	2.6	3.0	3.4	3.5	3.0	5.9	5.6	6.2	12	22
12	6.2	6.5	2.6	3.0	3.0	4.0	2.7	5.3	5.6	5.9	221	156
13	5.9	5.9	5.4	11	4.9	3.0	2.4	6.6	13	5.6	33	48
14	5.6	5.6	24	5.0	89	2.7	2.4	7.9	7.2	6.9	21	35
15	5.3	5.3	7.9	3.6	13	3.0	2.2	5.3	6.8	5.3	20	24
16	5.3	5.0	6.8	3.2	8.7	4.5	27	5.3	6.2	5.0	15	20
17	5.0	4.7	5.9	3.0	6.8	3.0	6.5	6.2	5.9	5.0	12	16
18	4.7	6.4	4.0	3.6	6.2	2.8	47	4.7	6.8	4.7	11	14
19	4.4	6.2	3.6	3.0	5.6	2.7	8.7	4.2	5.6	5.0	43	13
20	4.2	4.2	3.4	2.8	5.0	3.2	6.2	4.0	5.3	4.4	27	12
21	4.2	4.0	3.2	2.8	4.7	3.5	5.0	4.0	5.0	9.0	140	10
22	4.0	3.8	3.6	2.7	4.2	3.0	4.4	4.2	5.0	8.3	61	9.5
23	3.8	3.6	4.7	2.7	4.0	6.0	4.4	4.4	5.3	16	30	8.7
24	3.6	3.6	4.2	2.7	4.0	10	4.2	3.8	4.4	7.5	21	7.9
25	3.8	3.4	25	2.8	3.8	4.0	45	3.8	4.2	5.9	18	7.5
26	3.6	3.4	43	4.2	3.6	3.0	13	4.0	22	5.6	16	7.2
27	3.6	3.4	13	2.8	3.4	3.5	9.5	45	9.5	7.2	13	7.5
28	3.6	3.4	8.3	3.3	3.4	3.0	7.9	7.9	6.8	35	12	6.5
29	3.4	5.2	6.5	9.6	3.4	2.9	10	---------	5.9	12	19	6.2
30	3.4	3.6	5.9	3.4	3.2	2.8	14	---------	5.6	36	12	5.9
31	3.2	4.0	---------	3.6	---------	2.8	10	---------	5.6	---------	50	---------
Total	185.1	430.7	212.7	121.4	219.5	106.3	262.9	211.2	207.1	285.2	1,271	802.9
Mean	5.97	13.9	7.09	3.92	7.32	3.43	8.48	7.54	6.68	9.51	41.0	26.8
Ac-ft	367	854	422	241	435	211	521	419	411	566	2,520	1,590
Max	13	216	43	11	89	10	47	45	22	36	221	156
Min	3.2	3.2	2.6	2.7	2.6	2.7	2.2	3.8	4.2	4.4	11	5.9

Calendar year 1965:	Max	216	Min	2.1	Mean	9.95	Ac-ft	7,210
Fiscal year 1965-66:	Max	221	Min	2.2	Mean	11.8	Ac-ft	8,560

Peak discharge (base, 700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-5	0700	3.84	720	5-12	0730	5.27	1,550
5-1	1000	4.24	922	6-8	1600	4.69	1,180
5-7	0700	4.45	1,040				

40-8762. Takazato-gawa near Hama

Location.--Lat 26°41'10" N., long 128°10'48" E., on right bank 2.3 miles southeast of Hama and 3.0 miles south of Okuma.

Drainage area.--0.9 sq mi, approximately.

Records available.--December 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 400 ft (from topographic map).

Extremes.--Maximum discharge during year, 870 cfs May 7 (gage height, 5.45 ft), from rating curve extended above 18 cfs on basis of slope-area measurement of peak flow; minimum, 0.97 cfs Jan. 13-16.
1963-66: Maximum discharge, 1,150 cfs June 16, 1964 (gage height, 6.10 ft), from rating curve extended above 44 cfs on basis of slope-area measurement at gage height 5.45 ft; minimum, 0.76 cfs Dec. 2, 4-8, 1964.

Remarks.--Records fair. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	1.2	2.4	2.1	1.4	1.8	1.2	5.3	4.6	7.3	24	13
2	7.0	1.2	1.8	2.1	1.2	1.8	1.2	4.9	4.9	4.3	14	11
3	6.3	1.6	1.6	1.8	1.2	1.8	1.4	4.3	4.0	3.7	11	9.6
4	6.0	7.3	1.4	1.6	1.2	1.6	1.2	5.6	5.8	4.3	8.5	11
5	5.3	67	1.4	1.6	1.2	1.6	1.2	5.3	4.6	3.7	7.4	10
6	4.9	13	1.2	1.8	1.2	1.8	1.2	4.6	3.7	4.0	9.6	10
7	4.6	10	1.4	2.1	1.2	1.6	1.2	4.3	3.4	3.7	64	9.2
8	4.0	10	1.2	1.6	1.2	1.8	1.2	4.0	3.4	3.4	17	40
9	3.7	7.7	1.2	1.4	5.0	1.6	1.2	3.7	3.2	3.4	13	25
10	3.7	6.3	1.2	1.4	2.6	1.4	1.4	3.4	2.9	3.2	10	17
11	3.4	5.6	1.2	1.4	1.8	2.1	1.4	3.7	3.4	2.9	8.8	13
12	3.2	4.9	1.2	1.4	1.6	1.8	1.2	3.2	3.2	2.9	96	37
13	2.9	4.6	4.2	5.3	2.8	1.4	.97	3.4	13	2.6	20	23
14	2.6	4.3	7.2	3.2	23	1.4	.97	4.0	6.3	2.9	15	19
15	2.6	4.0	3.7	2.1	7.7	2.1	.97	2.9	6.0	2.6	13	14
16	2.4	3.7	3.7	1.6	5.6	2.4	5.8	3.4	4.9	2.4	11	13
17	2.4	3.4	2.6	1.6	4.9	1.6	2.3	3.7	4.6	2.1	9.6	14
18	2.1	3.7	1.8	1.6	4.0	1.4	18	2.9	4.6	2.1	8.8	11
19	2.1	4.0	1.6	1.4	3.4	1.2	4.6	2.6	4.0	2.4	18	9.6
20	2.1	3.2	1.4	1.2	3.4	1.8	3.4	2.4	3.7	2.1	15	8.5
21	1.8	2.9	1.2	1.2	3.2	1.6	2.9	2.1	3.4	3.0	38	8.1
22	2.1	2.6	1.2	1.2	2.6	1.4	2.4	2.4	3.4	2.6	24	7.4
23	1.8	2.4	1.8	1.2	2.6	1.8	2.4	2.6	3.4	7.2	16	7.0
24	1.6	2.1	1.4	1.2	2.4	4.3	2.4	2.4	2.9	2.9	12	6.6
25	1.6	2.1	5.2	1.4	2.4	2.1	16	2.1	2.6	2.4	11	6.3
26	1.6	2.1	11	2.1	2.1	1.8	8.1	2.4	7.8	2.1	9.2	6.3
27	1.4	1.8	5.3	1.2	1.8	2.6	6.3	16	4.6	3.6	8.1	6.6
28	1.4	1.8	3.4	1.8	1.8	1.8	4.9	5.3	4.0	8.4	7.7	6.0
29	1.4	2.1	2.9	4.0	2.1	1.4	5.6	---------	3.4	5.3	14	6.0
30	1.4	1.8	2.4	1.6	1.8	1.4	7.0	---------	3.2	13	9.2	5.6
31	1.4	1.8	---------	1.6	---------	1.2	6.0	---------	3.2	---------	18	---------
Total	96.2	190.2	79.2	56.8	98.4	55.4	116.01	112.9	136.1	116.5	560.9	383.8
Mean	3.10	6.14	2.64	1.83	3.28	1.79	3.74	4.03	4.39	3.88	18.1	12.8
Ac-ft	191	377	157	113	195	110	230	224	270	231	1,110	761
Max	7.4	67	11	5.3	23	4.3	18	16	13	13	96	40
Min	1.4	1.2	1.2	1.2	1.2	1.2	0.97	2.1	2.6	2.1	7.4	5.6

Calendar year 1965: Max 67 Min 0.88 Mean 4.04 Ac-ft 2930
Fiscal year 1965-66: Max 96 Min 0.97 Mean 5.49 Ac-ft 3970

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-5	0630	5.25	790	5-12	0730	5.20	770
5-7	0700	5.45	870	6-8	1530	4.99	696

40-8770. Right Branch of South Fork Henan-gawa near Tsuha

Location.--Lat 26°37'42" N., long 128°05'52" E., on right bank 1.6 miles upstream from Henan-gawa bridge at Highway 1 and 1.6 miles south of Tsuha.

Drainage area.--0.7 sq mi, approximately.

Records available.--November 1963 to June 1966.

Gage.--Water-stage recorder and since May 14, 1965, concrete control. Altitude of gage is 50 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,520 cfs Aug. 5 (gage height, 5.46 ft), from rating curve extended above 150 cfs on basis of slope-area measurement of peak flow; minimum, 0.60 cfs Jan. 2-10, 13-16.
1963-66: Maximum discharge, 1,600 cfs June 16, 1964 (gage height, 6.47 ft), from rating curve extended above 38 cfs; minimum, 0.35 cfs Dec. 1, 1963.

Remarks.--Records good. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	1.2	1.6	0.88	0.78	0.78	0.65	2.0	1.6	5.5	46	7.9
2	4.0	1.2	1.3	.88	.73	.78	.60	1.8	1.6	2.0	9.1	7.4
3	3.8	1.3	1.2	.88	.73	.78	.69	1.6	1.4	1.8	5.0	4.8
4	3.7	11	1.2	.88	.73	.78	.69	2.2	2.4	2.3	3.8	5.3
5	3.2	115	1.2	.88	.73	.73	.60	1.9	1.7	2.2	3.2	5.3
6	3.0	5.6	1.2	.88	.73	.78	.60	1.6	1.5	2.4	5.7	4.6
7	2.9	4.2	1.2	1.1	.73	.73	.60	1.5	1.3	2.2	56	3.8
8	2.8	3.4	1.1	.88	.69	.73	.60	1.4	1.2	1.8	7.1	46
9	2.6	2.8	1.2	.88	2.3	.73	.60	1.3	1.2	1.7	4.8	14
10	2.5	2.5	1.2	.88	1.2	.69	.65	1.2	1.1	1.6	4.0	7.4
11	2.4	2.3	1.1	.88	.88	.73	.73	1.5	1.2	1.6	3.2	5.9
12	2.4	2.2	1.0	.83	.78	.78	.65	1.3	1.3	1.5	97	49
13	2.3	2.1	1.4	1.8	1.2	.65	.60	1.4	7.4	1.5	10	15
14	2.2	2.0	2.2	1.1	38	.65	.60	1.5	1.9	1.5	6.5	11
15	2.0	1.8	1.6	.93	2.3	.73	.60	1.2	2.3	1.4	5.9	7.4
16	1.9	1.7	1.8	.88	1.6	.78	16	1.2	1.8	1.3	4.4	5.9
17	1.8	2.0	1.4	.83	1.3	.69	1.8	1.6	1.6	1.2	3.7	5.3
18	1.8	2.2	1.1	.83	1.2	.65	32	1.2	1.6	1.2	3.2	4.4
19	1.7	2.0	1.0	.83	1.2	.65	2.4	1.1	1.5	1.4	21	3.8
20	1.7	1.7	.99	.83	1.2	.83	1.7	1.1	1.4	1.2	10	3.7
21	1.6	1.6	.99	.83	1.2	.78	1.4	1.1	1.3	1.7	57	3.4
22	1.6	1.6	1.1	.83	1.0	.73	1.3	1.0	1.4	1.6	20	3.0
23	1.5	1.6	1.1	.83	.99	.99	1.4	1.0	1.5	7.0	9.2	2.9
24	1.5	1.5	.99	.83	.99	1.6	1.2	.99	1.3	1.7	6.5	2.8
25	1.6	1.4	.99	.83	.93	.78	20	.99	1.2	1.4	5.0	2.6
26	1.5	1.4	5.0	.93	.88	.73	3.4	1.0	8.0	1.3	4.2	2.6
27	1.4	1.4	1.4	.78	.83	.99	2.3	17	2.4	1.8	3.7	2.6
28	1.3	1.4	1.1	1.6	.83	.78	1.9	1.8	1.8	12	3.4	2.4
29	1.3	1.7	.99	3.0	.83	.73	2.0	----------	1.6	2.8	6.8	2.4
30	1.3	1.4	.93	.93	.83	.69	5.0	----------	1.5	26	3.7	2.3
31	1.3	1.5	----------	.88	----------	.65	2.6	----------	1.5	----------	2.5	----------
Total	69.0	184.7	40.58	31.03	68.32	24.10	105.86	54.48	60.5	94.6	431.6	244.9
Mean	2.23	5.96	1.35	1.00	2.28	0.777	3.41	1.95	1.95	3.15	13.9	8.16
Ac-ft	137	366	80	62	136	48	210	108	120	188	856	486
Max	4.4	115	5.0	3.0	38	1.6	32	17	8.0	26	97	49
Min	1.3	1.2	0.93	0.78	0.69	0.65	0.60	0.99	1.1	1.2	2.5	2.3

Calendar year 1965:	Max	115	Min	0.54	Mean	3.03	Ac-ft	2190
Fiscal year 1965-66:	Max	115	Min	0.60	Mean	3.86	Ac-ft	2800

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0600	5.46	1,520	5- 7	0630	4.95	1,180
1-16	1500	3.20	320	5-12	0730	4.74	1,050
1-18	0530	3.26	341	6- 8	1530	4.27	794
5- 1	1200	3.30	355				

40-8775. Genka-kawa near Genka

Location.--Lat 26°36'43" N., long 128°03'47" E., on right bank 1.2 miles south of Genka and 2.1 miles southeast of Nakaoshi.

Drainage area.--3.9 sq mi, approximately.

Records available.--November 1963 to June 1966 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 90 ft (from topographic map).

Extremes.--Maximum discharge during year, 5,180 cfs Aug. 5 (gage height, 12.90 ft), from rating curve extended above 490 cfs on basis of slope-area measurement of peak flow; minimum, 3.0 cfs Oct. 18-24, Nov. 6-9.
1963-66: Maximum discharge, that of Aug. 5, 1965; minimum, 2.3 cfs Dec. 1, 1963.
Minimum discharge known, 1.89 cfs Oct. 21, 1963, result of discharge measurement.

Remarks.--Records fair. No diversion above station. Daily sediment samples and continuous records of rainfall are obtained at station. Records of chemical analyses, water temperatures, and suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	27	7.4	6.7	4.8	3.8	4.8	4.8	14	12	23	309	50
2	25	7.4	6.2	4.8	3.8	4.8	4.8	13	12	12	65	45
3	22	8.7	6.2	4.8	3.4	4.2	5.7	12	11	10	34	40
4	20	42	5.7	4.2	3.4	4.2	6.7	13	24	15	25	50
5	18	705	5.7	4.2	3.4	4.8	4.8	12	12	14	22	40
6	17	41	5.7	4.2	3.0	5.7	4.2	10	9.7	16	22	29
7	16	30	5.7	7.0	3.0	4.8	3.8	9.7	9.0	14	291	26
8	16	23	5.2	4.2	3.0	4.8	3.8	9.7	9.0	12	47	200
9	14	19	6.2	3.8	15	4.8	3.8	9.0	8.4	11	31	60
10	14	16	5.7	3.4	6.7	4.2	3.8	8.4	8.4	11	25	45
11	12	14	5.2	3.4	4.2	4.8	5.7	9.0	9.9	10	21	36
12	12	12	5.2	3.4	3.4	6.2	4.2	9.0	9.7	9.7	450	260
13	12	12	7.4	5.7	6.2	4.8	4.2	9.0	18	9.0	70	110
14	11	11	14	4.8	251	4.2	3.8	9.7	10	9.0	44	80
15	11	11	7.8	3.8	19	4.8	3.8	8.4	17	8.4	35	55
16	11	10	9.0	3.8	12	6.2	27	8.4	13	7.8	28	40
17	11	10	7.3	3.4	9.7	4.8	15	11	10	7.8	23	35
18	11	11	5.7	3.4	9.0	4.2	198	8.4	9.7	7.8	21	31
19	10	10	5.2	3.0	7.8	3.8	17	7.8	9.7	8.4	80	28
20	10	9.0	5.2	3.0	13	5.7	12	7.3	9.0	7.8	45	25
21	9.3	8.4	4.8	3.0	12	6.2	9.7	7.3	9.0	9.9	300	22
22	9.0	7.8	5.7	3.0	9.0	4.8	9.0	7.3	9.0	10	130	19
23	8.7	7.8	6.2	3.0	8.4	7.3	9.7	7.8	9.0	30	60	17
24	8.7	7.3	5.2	3.0	6.7	15	9.0	7.3	8.4	11	44	16
25	9.0	7.3	5.7	3.8	6.7	6.7	126	6.7	7.8	9.7	34	15
26	8.4	7.3	27	5.2	6.2	5.7	33	7.8	31	9.0	27	14
27	8.7	6.7	7.8	3.8	5.7	12	19	96	15	13	22	14
28	8.0	6.7	5.7	7.7	5.7	7.3	15	14	10	152	20	13
29	10	12	5.2	18	5.2	6.2	16	----------	9.0	33	40	12
30	8.0	7.3	4.8	5.2	4.8	5.7	31	----------	8.4	141	22	11
31	7.7	7.3	----------	4.2	----------	5.7	18	----------	8.4	----------	140	----------
Total	395.5	1,095.4	209.1	143.0	454.2	179.2	632.3	353.0	356.5	642.3	2,527	1,438
Mean	12.8	35.3	6.97	4.61	15.1	5.78	20.4	12.6	11.5	21.4	81.5	47.9
Ac-ft	784	2,170	415	284	901	355	1,250	700	707	1,270	5,010	2,850
Max	27	705	27	18	251	15	198	96	31	152	450	260
Min	7.7	6.7	4.8	3.0	3.0	3.8	3.8	6.7	7.8	7.8	20	11

Calendar year 1965: Max 705 Min 3.0 Mean 18.4 Ac-ft 13,330
Fiscal year 1965-66: Max 705 Min 3.0 Mean 23.1 Ac-ft 16,710

Peak discharge (base, 1,200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0630	12.90	5,180	5- 1	1200	8.30	2,020
11-14	0430	7.68	1,590	5- 7	0700	9.37	2,760
1-18	0600	7.58	1,520	5-12	about 0800	11.4	4,130
4-28	1430	7.95	1,780				

40-8782. Hanechi-okawa at Kawakami

Location.--Lat 26°36'28" N., long 128°01'16" E., on left bank 0.4 mile south of Kawakami, 0.7 mile southeast of Taira School, and 1.0 mile southwest of Nakaoshi.

Drainage area.--4.4 sq mi, approximately.

Records available.--November 1963 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 50 ft (from topographic map). Prior to May 3, 1965, at datum 1.00 ft lower.

Extremes.--Maximum discharge during year, 3,150 cfs Aug. 5 (gage height, 4.30 ft), from rating curve extended above 950 cfs by logarithmic plotting; minimum, not determined; minimum daily, 2.9 cfs Oct. 22-24.
1963-66: Maximum discharge, 7,840 cfs June 16, 1964 (gage height, 6.03 ft, present datum), from rating curve extended above 190 cfs; minimum, not determined; minimum daily, 1.8 cfs Nov. 30, Dec. 1, 1963.
Minimum discharge known, 0.40 cfs Oct. 21, 1963, result of discharge measurement.

Remarks.--Records fair. No diversion above station. Records include small diversion from gage pool for irrigation below station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	5.7	6.2	5.2	4.0	4.2	4.2	18	16	21	334	141
2	21	5.6	5.6	4.8	3.6	4.3	4.1	16	16	14	106	87
3	18	5.5	5.4	4.5	3.4	4.2	4.3	14	13	12	58	46
4	18	40	5.2	4.3	3.3	4.2	5.2	15	33	19	42	48
5	16	597	4.9	4.1	3.2	4.1	3.8	15	24	20	33	46
6	15	59	4.8	4.5	3.1	5.0	3.7	13	15	24	38	37
7	14	42	5.2	4.0	3.0	4.1	3.6	12	13	20	312	31
8	13	30	4.4	3.8	3.0	5.3	3.5	10	12	15	71	214
9	12	24	4.9	3.6	13	5.0	3.5	10	11	12	48	123
10	12	21	4.8	3.5	5.6	4.1	4.0	9.2	10	12	37	54
11	11	17	4.1	3.3	4.0	4.6	4.6	10	12	11	33	42
12	10	14	4.0	3.3	3.5	5.1	3.7	9.7	12	10	486	194
13	9.8	14	5.9	10	4.0	4.0	3.5	9.7	23	9.4	150	94
14	9.3	14	37	6.0	180	3.8	3.3	12	14	9.2	73	88
15	8.8	13	9.1	4.0	20	4.7	3.2	9.2	16	8.4	55	58
16	8.5	13	11	3.6	13	5.6	20	8.7	18	7.6	42	46
17	8.1	14	8.4	3.3	10	4.6	10	12	13	7.1	33	40
18	7.8	15	5.3	3.1	8.0	4.1	138	9.4	12	7.1	27	33
19	7.5	12	4.5	3.0	7.8	3.8	24	8.2	11	8.0	98	31
20	7.3	11	4.1	3.0	7.6	4.5	13	7.8	10	7.2	63	27
21	7.1	10	3.9	3.0	7.1	5.0	11	7.6	9.7	8.4	713	24
22	7.0	8.9	7.7	2.9	6.2	4.2	9.0	7.2	9.4	10	374	22
23	6.9	8.1	7.0	2.9	5.7	7.3	10	7.2	10	21	152	20
24	6.9	7.3	6.6	2.9	5.7	12	9.4	6.7	8.4	10	84	16
25	7.4	7.0	6.8	3.3	5.6	6.7	111	6.3	7.8	8.2	53	15
26	6.9	6.8	30	3.8	5.0	5.2	42	7.1	29	7.6	37	14
27	6.5	6.8	11	3.6	4.8	9.4	27	95	16	11	32	14
28	6.1	6.2	7.7	6.0	4.7	6.7	20	24	12	137	27	13
29	6.0	20	6.8	18	5.0	5.6	18	----------	10	45	35	12
30	5.9	9.1	5.9	8.0	4.4	4.8	33	----------	9.2	144	35	11
31	5.8	6.8	----------	5.0	----------	4.3	29	----------	9.0	----------	160	----------
Total	323.6	1,063.8	238.2	144.3	357.3	160.5	582.6	390.0	434.5	656.2	3,841	1,641
Mean	10.4	34.3	7.94	4.65	11.9	5.18	18.8	13.9	14.0	21.9	124	54.7
Ac-ft	642	2,110	472	286	709	318	1,160	774	862	1,300	7,620	3,250
Max	24	597	37	18	180	12	138	95	33	144	713	214
Min	5.8	5.5	4.1	2.9	3.0	3.8	3.2	6.3	7.8	7.1	27	11

Calendar year 1965:	Max	597	Min	2.9	Mean	18.8	Ac-ft	13,590
Fiscal year 1965-66:	Max	713	Min	2.9	Mean	26.9	Ac-ft	19,500

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-5	0800	4.30	3,150	5-1	1400	3.47	1,680
11-14	0500	2.90	925	5-7	0730	3.60	1,880
4-28	1530	3.05	1,090	5-12	1130	3.70	2,040

40-8785. Oi-kawa at Jingusuku

Location.--Lat 26°39'07" N., long 127°57'24" E., on left bank 0.1 mile west of Jingusuku, 0.8 mile west of Gogayama, and 2.5 miles east of Manna.

Drainage area.--3.1 sq mi, approximately.

Records available.--March 1964 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 180 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,480 cfs May 7 (gage height, 10.30 ft), from rating curve extended above 160 cfs on basis of slope-area measurements at gage heights 7.40 and 8.50 ft; no flow Nov. 4-8, Jan. 14, 15.
1964-66: Maximum discharge, that of May 7, 1966; no flow at times each year.

Remarks.--Records good. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	1.2	2.2	0.96	0.03	0.28	0.17	4.4	2.8	7.4	102	16
2	6.5	1.0	2.1	.88	.01	.20	.11	3.7	2.2	4.1	27	13
3	5.6	.96	2.0	.80	.01	.17	.17	2.9	1.8	3.3	13	11
4	5.1	13	2.0	.66	0	.17	.20	3.7	6.4	4.8	11	12
5	4.8	342	1.7	.59	0	.14	.09	3.5	3.9	4.1	8.9	12
6	4.6	21	1.6	.59	0	.17	.09	2.8	2.8	7.1	19	11
7	4.4	23	1.4	.88	0	.09	.07	2.4	2.1	6.5	264	9.3
8	3.9	13	1.4	.59	0	.17	.04	2.2	1.8	4.6	23	109
9	3.7	9.7	1.4	.53	.31	.24	.02	2.0	1.6	3.9	14	45
10	3.5	7.7	1.4	.47	.24	.14	.01	1.7	1.4	3.5	12	21
11	3.3	6.8	1.2	.42	.09	.20	.04	1.7	1.7	3.3	10	14
12	2.9	5.6	1.2	.42	.02	.47	.03	1.4	1.8	2.9	358	115
13	2.8	5.4	1.4	.53	.12	.24	.01	3.1	17	2.8	28	36
14	2.6	4.6	2.1	.66	144	.17	0	1.8	5.4	3.5	16	29
15	2.9	4.1	3.8	.42	8.5	.20	0	1.4	8.3	3.1	13	18
16	8.1	3.9	4.4	.32	5.1	.28	15	1.6	6.5	2.6	11	14
17	3.7	3.5	3.9	.28	3.5	.20	3.8	2.3	4.4	2.2	9.3	12
18	2.6	3.5	2.6	.28	2.4	.20	61	1.4	3.5	2.0	8.1	11
19	2.2	3.3	2.1	.17	1.8	.20	7.1	1.2	2.4	1.8	44	9.3
20	2.1	8.7	1.8	.11	1.4	.28	3.9	1.0	1.8	1.8	28	8.9
21	2.0	4.4	1.7	.07	1.0	.20	2.8	.96	1.6	2.0	130	8.1
22	1.7	3.3	1.6	.05	.88	.17	2.0	.88	1.7	1.7	45	7.4
23	2.2	2.9	1.6	.05	.66	.80	1.8	.96	2.2	14	22	7.1
24	2.0	2.8	1.4	.04	.53	2.9	1.4	.72	1.8	3.7	15	7.1
25	1.7	2.6	1.4	.05	.53	1.2	27	.66	1.6	2.8	12	6.5
26	1.6	2.4	1.6	.09	.47	.72	6.8	.66	15	2.2	11	6.2
27	1.4	2.4	1.4	.04	.37	.72	4.4	27	8.5	5.6	9.3	5.9
28	1.4	6.2	1.2	.35	.32	.53	3.5	3.9	4.8	76	8.5	5.6
29	3.3	24	1.0	.88	.53	.42	3.7	----------	3.5	9.4	11	5.4
30	1.8	3.3	.96	.14	.37	.32	8.0	----------	2.9	30	8.1	4.8
31	1.4	2.6	----------	.14	----------	.20	5.6	----------	2.8	----------	36	----------
Total	103.2	538.86	55.56	12.46	173.19	12.39	158.85	81.94	126.0	222.7	1327.2	590.6
Mean	3.33	17.4	1.85	0.402	5.77	0.400	5.12	2.93	4.06	7.42	42.8	19.7
Ac-ft	205	1070	110	25	344	25	315	163	250	442	2630	1170
Max	7.4	342	4.4	0.96	144	2.9	61	27	17	76	358	115
Min	1.4	0.96	0.96	0.04	0	0.09	0	0.66	1.4	1.7	8.1	4.8

Calendar year 1965:	Max	342	Min	0	Mean	5.44	Ac-ft	3,940
Fiscal year 1965-66:	Max	358	Min	0	Mean	9.32	Ac-ft	6,750

Peak discharge (base, 750 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0630	8.50	2,080	5- 7	0600	10.30	2,480
11-14	0630	4.26	754	5-12	0700	8.05	1,990
4-28	1330	4.67	918	6- 8	1630	4.26	754

40-8809. Machinato-gava near Ojana

Location.--Lat 26°14'43" N., long 127°44'16" E., on right bank on upstream side of bridge on dirt road, 1.4 miles south of Ojana, and 2.4 miles northeast of Shuri.

Drainage area.--1.7 sq mi, approximately.

Records available.--April 1965 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 180 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,040 cfs Aug. 5 (gage height, 12.90 ft), from rating curve extended above 500 cfs by logarithmic plotting; no flow for many days.
1965-66: Maximum discharge, that of Aug. 5, 1965; no flow for many days in 1965.

Remarks.--Records good. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.1	0	0.33	0.08	0.30	0	1.4	6.2	3.2	7.2	122	165
2	1.4	0	.18	.02	.18	0	1.0	3.8	23	5.3	15	76
3	.92	0	.14	0	.12	0	.98	3.2	7.8	3.0	5.6	16
4	.75	51	.12	0	.08	0	2.6	5.5	10	4.8	3.6	57
5	.55	437	.09	0	.05	0	1.4	6.5	11	4.8	2.4	25
6	.37	14	.06	0	.02	0	1.0	4.0	5.6	5.7	2.4	13
7	.30	57	.01	0	0	0	.75	2.6	3.2	5.6	57	6.5
8	.24	13	0	0	0	.11	.55	2.0	2.3	3.2	8.2	92
9	.16	5.0	0	0	0	.18	.50	1.4	2.1	2.1	3.8	42
10	.10	2.8	0	0	0	.12	.93	1.1	2.0	1.7	2.4	12
11	.08	1.6	0	0	0	.10	1.4	3.8	1.4	1.4	1.8	14
12	.05	.92	0	0	0	.45	1.0	5.0	1.4	1.1	115	50
13	.01	.55	0	0	.02	.24	1.0	3.2	1.3	.92	35	11
14	0	.37	0	0	71	.16	1.2	4.0	1.3	.75	9.7	14
15	0	.30	0	0	6.2	.14	.83	2.8	1.1	.55	38	7.1
16	0	.27	.02	0	2.6	.12	5.9	2.0	2.0	.50	12	4.2
17	0	.21	.12	0	1.4	.10	10	5.0	1.2	.33	4.2	2.8
18	0	.24	.09	0	.85	.08	58	3.2	1.1	.30	2.8	2.1
19	0	.18	.09	0	.61	.06	7.8	2.1	1.1	.83	74	1.4
20	0	.12	.04	0	.45	.07	4.0	1.6	.92	1.3	105	1.0
21	0	.08	.01	0	.33	.09	2.6	1.2	.75	2.1	162	.75
22	0	.03	0	0	.27	.09	2.0	1.1	.61	1.1	38	.55
23	0	0	0	0	.21	.27	5.6	1.1	3.5	13	7.1	.41
24	0	0	0	0	.18	2.7	5.6	1.0	2.6	5.6	3.8	.33
25	0	0	0	0	.21	1.4	193	.83	1.6	2.8	2.3	.21
26	0	0	.43	0	.16	.85	15	.68	54	2.3	1.6	.18
27	0	0	1.3	0	.09	12	6.5	34	13	12	1.1	.14
28	0	3.3	.68	.03	.05	5.3	5.3	6.2	5.3	23	.83	.12
29	0	2.9	.30	.77	.01	3.6	8.9	----------	3.0	11	9.3	.05
30	0	.85	.14	1.2	0	2.4	21	----------	2.0	62	9.5	.01
31	0	.45	----------	.45	---------	2.0	13	----------	1.4	---------	129	----------
Total	7.03	592.17	4.15	2.55	85.39	32.63	380.74	115.11	170.78	186.28	984.43	614.85
Mean	0.227	19.1	0.138	0.082	2.85	1.05	12.3	4.11	5.51	6.21	31.8	20.5
Ac-ft	14	1,170	8.2	5.1	169	65	755	228	339	369	1,950	1,220
Max	2.1	437	1.3	1.2	71	12	193	34	54	62	162	165
Min	0	0	0	0	0	0	0.50	0.68	0.61	0.30	0.83	0.01

Calendar year 1965:	Max	-	Min	-	Mean	-	Ac-ft	-		
Fiscal year 1965-66:	Max	437	Min	0	Mean	8.70	Ac-ft	6,300		

Peak discharge (base, 650 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-5	0500	12.90	2,040	5-31	1900	8.00	920
1-25	0830	7.18	767	6-1	1800	8.10	940

40-8828. Kanna-gawa near Kanna

Location.--Lat 26°29'20" N., long 127°56'46" E., on left bank 1.6 miles northwest of Kanna-shogakko (elementary school), 1.7 miles upstream from bridge at mouth, and 2.6 miles northeast of Kin.

Drainage area.--0.9 sq mi, approximately.

Records available.--June 1963 to June 1966.

Gage.--Water-stage recorder and combination of sharp-crested weir and concrete control. Altitude of gage is 70 ft (from topographic map). Prior to Nov. 14, 1963, at datum 0.40 ft higher.

Extremes.--Maximum discharge during year, 1,390 cfs Aug. 5 (gage height, 6.80 ft, from floodmarks), from rating curve extended above 43 cfs on basis of theoretical rating for the artificial control; minimum, 0.74 cfs Jan. 14, 15.
1963-66: Maximum discharge, that of Aug. 5, 1965; minimum, 0.12 cfs July 24, 26, 27, 1963.

Remarks.--Records good. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this raport.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	2.0	1.9	1.4	1.2	0.98	0.90	1.9	1.6	5.2	62	15
2	4.4	2.0	1.8	1.3	1.1	1.0	.87	1.8	1.8	1.9	8.5	10
3	4.1	2.9	1.7	1.3	1.1	1.0	1.0	1.6	1.5	1.6	5.0	10
4	4.0	28	1.9	1.2	1.0	1.0	1.1	2.1	1.8	3.0	4.0	13
5	3.7	110	1.8	1.6	1.1	.94	.87	1.8	1.6	2.6	3.4	9.4
6	3.5	4.7	1.8	1.4	1.1	.98	.87	1.5	1.4	10	4.2	7.5
7	3.4	23	2.1	1.4	1.0	.94	.87	1.4	1.4	3.1	18	6.8
8	3.3	5.7	1.6	1.2	1.0	1.1	.80	1.3	1.3	2.3	4.8	42
9	3.3	4.2	1.8	1.2	2.6	.98	.84	1.3	1.3	2.0	3.9	15
10	3.2	3.8	1.7	1.1	1.4	.94	.90	1.3	1.3	2.0	3.4	9.4
11	3.1	3.4	1.6	1.1	1.2	1.3	.90	2.2	1.6	1.8	3.2	8.2
12	3.0	3.1	1.5	1.1	1.1	1.2	.84	1.5	1.5	1.8	45	32
13	2.9	2.9	2.0	2.1	1.6	.90	.80	1.5	1.8	1.6	9.0	14
14	2.8	2.9	3.2	1.5	32	.94	.77	1.7	1.4	1.6	5.5	15
15	2.7	2.6	1.9	2.2	3.4	.98	.77	1.3	2.1	1.5	5.8	9.8
16	2.6	2.6	4.1	1.1	3.1	1.0	2.4	1.3	1.7	1.4	4.6	8.2
17	2.6	2.6	2.1	1.1	1.8	.90	1.3	2.0	1.4	1.4	4.0	7.5
18	2.5	2.9	1.6	1.0	1.6	.90	28	1.4	1.4	1.4	3.9	6.8
19	2.4	2.6	1.5	1.0	1.4	.90	1.8	1.2	1.4	1.9	46	6.5
20	2.4	2.4	1.5	1.0	1.3	1.1	1.4	1.2	1.2	1.5	16	6.1
21	2.3	2.3	1.4	1.0	1.3	1.0	1.2	1.2	1.2	1.8	98	5.4
22	2.2	2.2	2.4	.98	1.2	1.0	1.1	1.2	1.2	1.6	22	5.1
23	2.2	2.1	3.0	1.0	1.2	1.4	1.7	1.3	1.4	2.6	10	5.0
24	2.2	2.1	1.8	1.0	1.2	2.7	1.5	1.2	1.4	1.6	8.5	4.7
25	2.4	2.0	1.9	.98	1.2	1.1	27	1.2	1.1	1.4	7.1	4.6
26	2.1	2.1	2.6	1.2	1.1	.98	3.2	1.2	4.3	1.4	6.5	4.4
27	2.0	2.0	1.8	1.0	1.0	3.0	2.0	14	2.0	2.7	5.4	4.2
28	1.9	2.0	1.5	56	1.1	1.2	1.8	2.0	1.5	15	5.2	3.8
29	2.0	2.2	1.4	4.8	1.1	1.0	2.0	----------	1.3	5.0	6.5	4.3
30	3.8	1.9	1.4	1.4	1.0	.98	4.7	----------	1.2	30	5.0	3.8
31	2.2	2.3	----------	1.3	----------	.90	2.5	----------	1.3	----------	37	----------
Total	89.9	237.5	58.3	96.96	72.5	35.24	96.70	54.6	48.4	112.7	471.4	297.5
Mean	2.90	7.66	1.94	3.13	2.42	1.14	3.12	1.95	1.56	3.76	15.2	9.92
Ac-ft	178	471	116	192	144	70	192	108	96	224	935	590
Max	4.7	110	4.1	56	32	3.0	28	14	4.3	30	98	42
Min	1.9	1.9	1.4	0.98	1.0	0.90	0.77	1.2	1.1	1.4	3.2	3.8

Calendar year 1965:	Max	110	Min	0.60	Mean	3.66	Ac-ft	2650
Fiscal year 1965-66:	Max	110	Min	0.77	Mean	4.58	Ac-ft	3320

Note.--No gage-height record Aug. 4, 5.

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	about 0500	6.80	1,390	5-21	0200	4.57	441
5- 1	1200	5.38	722	5-31	1700	4.48	414
5-12	about 0900	5.60	810	6- 8	1600	4.67	471

40-8830. Ufu-kawa near Ginoza

Location.--Lat 26°29'36" N., long 127°58'08" E., on left bank 1.1 miles northwest of Ginoza and 1.4 miles northeast of Kanna.

Drainage area.--1.3 sq mi, approximately.

Records available.--June 1963 to June 1966.

Gage.--Water-stage recorder and combination of sharp-crested weir and concrete control. Altitude of gage is 120 ft (from topographic map). Prior to Nov. 14, 1963, at datum 0.50 ft higher.

Extremes.--Maximum discharge during year, 703 cfs Aug. 5 (gage height, 7.05 ft), from rating curve extended above 44 cfs on basis of theoretical rating for the artificial control; minimum, 0.47 cfs Jan. 14-16.
1963-66: Maximum discharge, that of Aug. 5, 1965; minimum, 0.05 cfs July 29, 1963.

Remarks.--Records good. Some regulation by two reservoirs above station. Diversion from reservoirs for irrigation of 262 acres of rice fields below station. Small diversion from reservoir on Left Fork for domestic use in Ginoza.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	3.0	4.4	3.8	2.2	1.1	0.63	1.6	2.6	4.2	44	16
2	4.3	2.9	4.0	3.8	2.0	1.1	.60	1.5	3.1	2.4	6.9	13
3	4.2	3.7	3.9	3.7	1.9	1.1	.67	1.4	2.6	2.2	4.6	12
4	4.3	13	4.2	3.6	1.9	1.1	.69	1.6	2.7	2.9	4.2	15
5	4.2	109	4.1	3.7	1.8	1.0	.56	1.4	2.5	2.7	4.1	12
6	4.1	10	4.2	4.0	1.6	.94	.53	1.3	2.4	5.8	4.8	10
7	4.0	25	4.4	3.4	1.6	.86	.53	1.2	2.4	3.0	25	9.4
8	3.9	8.7	4.2	3.3	1.5	.80	.53	1.3	2.4	2.7	4.7	44
9	4.2	5.7	4.4	3.1	2.6	.76	.56	1.4	2.4	2.5	5.9	17
10	4.6	4.4	4.2	3.1	1.4	.74	.56	1.4	2.2	2.5	5.8	11
11	4.2	4.3	4.1	3.0	1.1	.70	.56	1.9	2.2	2.5	5.6	10
12	3.9	4.2	4.1	3.0	.81	.72	.51	1.7	2.2	2.5	60	40
13	3.9	4.1	4.9	3.4	1.2	.63	.49	1.7	2.4	2.7	25	18
14	3.8	4.1	5.5	3.1	25	.60	.47	1.8	2.2	2.7	12	18
15	3.9	4.0	4.6	2.9	3.4	.63	.47	1.8	2.7	2.6	9.0	12
16	3.9	4.0	6.1	2.9	2.8	.66	1.4	1.9	2.4	2.5	8.5	11
17	3.9	4.0	4.3	2.8	2.2	.58	.84	2.0	2.1	2.5	8.5	10
18	4.0	4.0	3.9	2.8	1.8	.56	23	1.7	2.2	2.5	8.5	9.8
19	3.9	3.9	3.8	2.7	1.7	.56	1.1	1.7	2.0	2.8	45	9.6
20	3.9	3.9	3.8	2.7	1.6	.67	.89	1.7	1.9	2.8	19	9.4
21	3.8	3.9	3.8	2.5	1.6	.89	.66	1.8	1.9	3.2	77	9.4
22	3.8	3.9	3.8	2.5	1.5	1.0	.60	1.7	2.0	2.7	21	9.2
23	3.8	3.9	4.1	2.5	1.5	1.2	.94	1.7	2.1	3.7	11	9.0
24	3.8	3.9	3.8	2.4	1.6	1.7	.74	1.6	2.0	1.5	9.6	9.0
25	4.1	3.9	3.9	2.4	1.6	.92	19	1.7	2.0	1.8	8.7	8.7
26	3.9	3.9	4.6	2.4	1.4	.88	2.0	1.8	4.1	1.6	8.5	8.7
27	3.8	3.9	3.9	2.3	1.3	1.8	1.4	11	2.5	2.4	8.3	8.7
28	3.5	4.1	3.9	4.6	1.2	.88	1.2	2.7	2.2	12	8.1	8.5
29	3.2	4.0	3.9	4.7	1.2	.74	1.4	---------	2.2	3.5	9.4	8.7
30	3.2	4.0	3.9	2.4	1.2	.71	2.9	---------	2.1	50	8.5	8.5
31	3.2	4.4	---------	2.3	---------	.69	1.9	---------	2.2	---------	32	---------
Total	121.7	269.7	126.7	95.8	74.21	27.22	68.33	56.0	72.9	139.4	513.2	395.6
Mean	3.93	8.70	4.22	3.09	2.47	0.878	2.20	2.00	2.35	4.65	16.6	13.2
Ac-ft	241	535	251	190	147	54	136	111	145	276	1.020	785
Max	4.6	109	6.1	4.7	25	1.8	23	11	4.1	50	77	44
Min	3.2	2.9	3.8	2.3	0.81	0.56	0.47	1.2	1.9	1.5	4.1	8.5

Calendar year 1965:	Max	109	Min	0.56	Mean	4.05	Ac-ft	2.930
Fiscal year 1965-66:	Max	109	Min	0.47	Mean	5.37	Ac-ft	3.890

40-8833. Left Fork O-kawa near Kushi

Location.--Lat 26°31'18" N., long 127°59'50" E., on left bank 1.1 miles northwest of Kushi and 1.1 miles north of Kataburu.

Drainage area.--0.3 sq mi, approximately.

Records available.--June 1963 to June 1966.

Gage.--Water-stage recorder and combination of sharp-crested weir and concrete control. Altitude of gage is 60 ft (from topographic map). Prior to Nov. 20, 1963, at datum 0.40 ft higher.

Extremes.--Maximum discharge during year, 438 cfs Aug. 5 (gage height, 5.19 ft), from rating curve extended above 23 cfs on basis of theoretical rating for the artificial control; minimum, 0.18 cfs Jan. 14, 15.
1963-66: Maximum discharge, that of Aug. 5, 1965; minimum, 0.05 cfs July 17-27, 29, 1963.

Remarks.--Records good. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.3	0.47	0.47	0.30	0.27	0.21	0.20	0.58	0.37	1.1	15	3.0
2	1.2	.47	.43	.28	.25	.22	.20	.53	.51	.48	2.9	2.9
3	1.2	.66	.41	.28	.25	.22	.26	.47	.37	.39	1.6	2.4
4	1.1	3.0	.41	.27	.24	.22	.24	.53	.52	.60	1.2	3.5
5	1.1	40	.39	.30	.24	.22	.20	.49	.44	.63	1.0	2.7
6	1.0	4.6	.39	.32	.24	.22	.20	.43	.33	1.1	1.6	2.2
7	.97	6.6	.41	.39	.24	.21	.20	.39	.32	.68	6.1	1.9
8	.94	1.3	.35	.28	.24	.22	.20	.37	.32	.53	1.4	11
9	.88	1.0	.47	.29	.85	.21	.20	.37	.30	.47	1.1	4.9
10	.85	.97	.39	.27	.33	.21	.21	.35	.30	.45	1.0	2.8
11	.80	.82	.35	.27	.28	.28	.21	.50	.33	.43	.97	2.3
12	.77	.72	.33	.27	.25	.25	.20	.41	.35	.41	17	12
13	.74	.66	.81	.52	.43	.22	.20	.40	.46	.39	3.0	4.3
14	.71	.63	.83	.35	.74	.22	.18	.40	.33	.39	1.8	3.7
15	.68	.60	.51	.28	.89	.22	.18	.33	.45	.37	1.7	2.7
16	.65	.58	.67	.27	.71	.25	.51	.33	.38	.33	1.3	2.2
17	.65	.55	.43	.25	.41	.21	.31	.43	.32	.32	1.1	2.0
18	.63	.64	.35	.25	.35	.21	.7.8	.32	.38	.32	1.1	1.8
19	.63	.53	.33	.24	.32	.21	.48	.30	.33	.41	11	1.6
20	.60	.77	.33	.24	.30	.25	.32	.28	.28	.33	5.1	1.5
21	.58	.53	.33	.24	.28	.24	.27	.28	.28	.44	21	1.4
22	.55	.51	.37	.24	.27	.24	.31	.28	.28	.43	6.5	1.3
23	.53	.49	.53	.24	.27	.32	.37	.32	.33	.95	3.3	1.2
24	.53	.49	.37	.24	.27	.56	.34	.27	.28	.41	2.4	1.2
25	.58	.47	.45	.27	.27	.22	5.2	.25	.25	.35	2.0	1.1
26	.51	.47	1.0	.30	.24	.22	2.8	.25	1.2	.33	1.7	1.1
27	.49	.45	.39	.24	.22	1.2	.51	3.4	.55	.68	1.4	1.1
28	.47	.47	.33	1.1	.24	.28	.43	.46	.39	.53	1.4	1.0
29	.47	.47	.32	1.5	.25	.24	.47	---------	.33	1.3	1.6	.97
30	.47	.45	.32	.31	.22	.22	1.2	---------	.30	14	1.3	.97
31	.47	.49	---------	.30	---------	.21	.67	---------	.30	---------	7.7	---------
Total	23.05	70.86	13.47	10.90	10.36	8.43	25.07	13.72	11.88	29.55	127.27	82.74
Mean	0.744	2.29	0.449	0.352	0.345	0.272	0.809	0.490	0.383	0.985	4.11	2.76
Ac-ft	46	141	27	22	21	17	50	27	24	59	252	164
Max	1.3	40	1.0	1.5	0.89	1.2	7.8	3.4	1.2	14	21	12
Min	0.47	0.45	0.32	0.24	0.22	0.21	0.18	0.25	0.25	0.32	0.97	0.97

Calendar year 1965:	Max	40	Min	0.14	Mean	0.944	Ac-ft	683
Fiscal year 1965-66:	Max	40	Min	0.18	Mean	1.17	Ac-ft	848

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0600	5.19	438	6- 8	1500	3.06	82
5- 1	1130	3.59	145	6-12	0500	3.12	88
5-12	1000	3.64	152				

40-8841. Fukuji-gawa near Yubaru

Location.--Lat 26°38'32" N., long 128°13'00" E., on left bank 1.1 miles north of Yubaru and 2.4 miles northeast of Miyaji.

Drainage area.--5.8 sq mi, approximately.

Records available.--January 1964 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

Extremes.--Maximum discharge during year, 10,400 cfs Aug. 5 (gage height, 17.20 ft), from rating curve extended above 590 cfs on basis of slope-area measurement of peak flow; minimum, 5.0 cfs Jan. 6-10, 12-16.
1964-66: Maximum discharge, that of Aug. 5, 1965; minimum, 3.4 cfs Apr. 19-21, 25, May 3-5, 1964.

Remarks.--Records fair. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32	8.2	7.6	8.2	6.7	6.1	5.3	14	13	47	360	89
2	28	8.2	8.6	7.6	6.1	6.1	5.3	13	32	14	62	71
3	26	9.8	7.6	7.6	5.8	6.1	5.3	12	14	12	30	68
4	24	38	7.6	7.0	5.8	6.1	5.8	13	87	16	22	67
5	23	1,990	7.3	7.0	5.8	6.1	5.3	13	21	14	18	66
6	22	80	7.0	7.6	5.5	6.1	5.0	11	13	19	19	44
7	20	54	7.3	7.9	5.5	6.1	5.0	9.8	12	15	533	35
8	20	50	7.0	7.0	5.3	6.7	5.0	9.4	11	13	41	487
9	19	30	7.3	6.4	46	6.7	5.0	9.0	11	13	28	135
10	18	25	7.3	6.1	9.0	5.8	5.3	9.0	11	12	25	61
11	17	20	6.7	5.8	7.0	6.1	5.8	9.4	11	12	23	47
12	16	17	6.4	5.8	6.1	6.7	5.3	9.0	13	12	1,230	705
13	15	15	8.3	29	26	5.8	5.0	8.2	78	11	60	193
14	14	14	30	12	519	5.8	5.0	9.0	14	12	39	134
15	14	13	12	7.3	18	6.1	5.0	7.6	19	11	36	76
16	13	12	16	6.4	70	6.7	123	7.9	17	11	28	52
17	13	13	17	6.1	14	6.7	32	11	14	11	25	126
18	12	21	7.3	6.1	12	6.1	357	7.6	16	11	24	60
19	13	19	6.7	5.8	9.8	5.8	18	7.0	12	11	325	41
20	14	13	7.0	5.5	9.0	6.1	12	6.7	11	11	109	36
21	12	11	6.7	5.5	8.6	6.7	9.4	6.7	11	12	559	32
22	12	10	6.7	5.5	8.2	5.8	8.6	6.7	10	13	208	28
23	11	9.6	9.4	5.5	7.9	7.0	9.4	7.3	10	169	59	25
24	11	9.4	8.2	5.5	7.9	12	8.6	6.4	9.4	18	41	23
25	12	9.2	74	6.1	8.2	6.7	232	6.1	9.0	14	34	22
26	10	11	204	8.6	7.9	5.8	27	6.4	118	13	29	21
27	9.8	9.4	95	6.4	7.0	10	16	169	23	50	26	25
28	9.8	9.0	15	8.1	6.7	6.4	13	16	13	147	24	22
29	9.0	8.6	11	50	7.0	6.1	15	----------	12	27	141	20
30	9.0	8.4	8.6	8.2	6.7	6.1	49	----------	12	319	42	19
31	8.6	8.0	----------	7.0	----------	6.1	22	----------	11	----------	281	----------
Total	487.2	2,553.8	630.6	278.6	868.5	202.5	1,030.4	421.2	668.4	1,070	4,481	2,830
Mean	15.7	82.4	21.0	8.99	29.0	6.53	33.2	15.0	21.6	35.7	145	94.3
Ac-ft	966	5,070	1,250	553	1,720	402	2,040	835	1,330	2,120	8,890	5,610
Max	32	1,990	204	50	519	12	357	169	118	319	1,230	705
Min	8.6	8.0	6.4	5.5	5.3	5.8	5.0	6.1	9.0	11	18	19

Calendar year 1965:	Max	1,990	Min	4.6	Mean	31.8	Ac-ft	23,030
Fiscal year 1965-66:	Max	1,990	Min	5.0	Mean	42.5	Ac-ft	30,790

Peak discharge (base, 2,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0730	17.20	10,400	5-31	2000	6.98	2,680
5- 7	0700	9.36	4,340	6- 8	1700	7.36	2,940
5-12	0800	14.60	8,380	6-12	0900	7.61	3,120

40-8842. Fukuji-gawa at Fukuji

Location.--Lat 26°38'16" N., long 128°10'13" E., on left bank at Fukuji, 0.9 mile north of Kawata, and 1.3 miles northeast of Taira.

Drainage area.--12 sq mi, approximately.

Records available.--January 1964 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 10 ft (from topographic map).

Extremes.--Maximum discharge during year, 18,300 cfs Aug. 5 (gage height, 15.97 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurements at gage heights 8.37, 10.48, and 15.97 ft; minimum, 9.1 cfs on several days in January.
1964-66: Maximum discharge, that of Aug. 5, 1965; minimum, 6.0 cfs Apr. 23-25, 1964.
Minimum discharge known, 2.57 cfs Oct. 22, 1963, result of discharge measurement.

Remarks.--Records fair. No diversion above station. Daily sediment samples are obtained at station. Records of chemical analyses, water temperatures and suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	76	16	17	18	12	13	9.5	38	24	70	667	195
2	68	15	18	17	11	13	9.1	35	52	36	165	126
3	62	17	16	16	11	12	9.5	32	32	29	98	102
4	58	51	16	15	10	12	11	35	130	36	78	108
5	54	3,670	15	14	10	12	9.1	34	61	35	67	106
6	51	136	14	15	10	12	9.1	28	34	37	62	87
7	46	99	14	16	10	11	9.1	26	30	38	963	67
8	44	87	14	14	9.5	11	9.1	24	28	32	141	845
9	41	45	14	13	70	11	9.1	23	28	31	106	252
10	40	36	14	12	20	11	10	22	26	29	95	108
11	37	32	13	12	14	11	12	23	26	28	89	82
12	35	31	12	11	11	13	10	21	30	27	2,490	1,310
13	34	29	12	36	19	11	9.5	21	127	26	220	334
14	32	28	37	23	986	11	9.1	24	46	29	121	287
15	32	27	21	14	57	12	9.1	20	44	26	104	150
16	31	25	22	12	88	14	207	19	47	24	75	110
17	30	28	24	11	30	13	52	24	38	23	58	235
18	27	40	14	10	28	11	634	17	47	23	53	126
19	27	37	12	10	23	10	50	15	35	26	499	87
20	26	26	12	10	20	11	37	15	30	23	221	77
21	24	23	12	11	18	12	29	15	29	24	1,010	67
22	22	22	11	11	16	11	26	15	28	31	396	60
23	21	21	13	11	15	16	26	16	28	246	136	55
24	20	20	14	11	15	32	26	15	27	51	95	51
25	20	19	110	12	15	15	323	14	26	40	77	49
26	18	21	289	17	15	12	72	13	151	38	64	48
27	18	19	108	13	14	20	44	289	54	67	51	55
28	18	18	30	12	14	13	35	34	34	227	45	49
29	16	18	22	67	15	11	38	----------	30	82	246	45
30	16	17	19	17	14	10	82	----------	27	434	92	40
31	16	17	---------	14	---------	9.8	57	----------	26	---------	582	---------
Total	1,060	4,690	959	495	1,600.5	396.8	1,882.3	907	1,375	1,868	9,166	5,313
Mean	34.2	151	32.0	16.0	53.3	12.8	60.7	32.4	44.4	62.3	296	177
Ac-ft	2,100	9,300	1,900	982	3,170	787	3,730	1,800	2,730	3,710	18,180	10,540
Max	76	3,670	289	67	986	32	634	289	151	434	2,490	1,310
Min	16	15	11	10	9.5	9.8	9.1	13	24	23	45	40

Calendar year 1965:	Max	3,670	Min	9.2	Mean	62.5	Ac-ft	45,280
Fiscal year 1965-66:	Max	3,670	Min	9.1	Mean	81.4	Ac-ft	58,930

Peak discharge (base, 4,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0730	15.97	18,300	5-31	2030	7.80	4,960
11-14	0530	7.50	4,170	6- 8	1800	7.95	5,140
5- 7	0800	9.44	7,020	6-12	0830	8.67	6,000
5-12	0900	14.10	15,200				

40-8846. Aha-gawa at Aha

Location.--Lat 26°42'41" N., long 128°16'55" E., on right bank 0.3 mile southwest of Aha School and 1.4 miles upstream from mouth.

Drainage area.--9.5 sq mi, approximately.

Records available.--December 1963 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 10 ft (from topographic map).

Extremes.--Maximum discharge during year, 11,000 cfs May 12 (gage height, 10.75 ft), from rating curve extended above 1,100 cfs as explained below; minimum, 6.8 cfs Jan. 16.

1963-66: Maximum discharge, 12,700 cfs June 16, 1964 (gage height, 11.60 ft), from rating curve extended above 1,100 cfs on basis of slope-area measurements at gage heights 9.35 and 10.5 ft; minimum, 6.8 cfs Nov. 25-28, 1964, Jan. 16, 1966.

Minimum discharge known, 5.08 cfs Oct. 22, 1963, result of discharge measurement.

Remarks.--Records fair. No diversion above station. Sediment samples for high flows and continuous records of rainfall are obtained at station. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	81	14	13	22	12	11	12	43	27	87	683	162
2	72	14	12	20	11	11	11	38	32	38	153	100
3	62	18	11	18	10	10	12	32	24	31	90	130
4	62	38	11	16	9.8	10	18	42	91	39	66	138
5	53	1,950	9.8	15	10	10	9.8	38	40	36	54	122
6	49	120	9.0	16	14	11	9.0	31	28	60	92	98
7	46	102	10	16	12	9.8	9.0	27	25	47	1,080	86
8	42	145	9.0	14	12	13	8.2	26	25	38	131	864
9	39	80	9.8	12	77	13	9.0	24	22	34	95	243
10	36	60	9.0	11	28	10	11	22	20	31	86	115
11	35	45	8.2	11	20	15	15	22	26	30	79	92
12	31	35	7.5	11	18	21	10	22	32	28	1,480	1,630
13	30	30	14	52	56	10	9.0	22	105	26	158	284
14	28	26	119	26	692	9.8	8.2	31	40	45	112	196
15	27	23	30	16	54	14	7.5	20	35	25	106	115
16	26	21	30	12	35	22	172	18	34	22	88	92
17	25	20	34	11	25	16	41	24	46	22	75	165
18	24	30	16	11	22	11	397	18	56	20	70	82
19	22	30	12	10	22	10	42	16	38	25	389	66
20	22	20	10	9.8	20	12	27	16	31	20	169	64
21	20	20	9.8	9.8	20	20	20	16	28	29	744	53
22	20	18	10	9.0	16	11	16	16	27	55	300	48
23	20	16	26	9.0	16	26	18	20	28	203	146	45
24	18	15	20	9.0	18	63	16	15	24	43	110	42
25	18	15	251	11	18	22	381	15	22	28	94	39
26	18	14	359	25	16	16	70	15	171	25	86	39
27	18	13	73	11	14	29	43	253	61	96	76	43
28	16	13	39	14	13	18	35	34	39	270	70	37
29	16	22	29	86	14	16	47	----------	34	89	311	36
30	15	14	25	18	12	15	102	----------	30	335	110	35
31	14	15	----------	15	----------	13	59	----------	28	----------	475	----------
Total	1,005	2,996	1,226.1	546.6	1,316.8	498.6	1,644.7	916	1,269	1,877	7,778	5,261
Mean	32.4	96.6	40.9	17.6	43.9	16.1	53.1	32.7	40.9	62.6	251	175
Ac-ft	1,990	5,940	2,430	1,080	2,610	989	3,260	1,820	2,520	3,730	15,430	10,440
Max	81	1,950	359	86	692	63	397	253	171	335	1,480	1,630
Min	14	13	7.5	9.0	9.8	9.8	7.5	15	20	20	54	35

Calendar year 1965:	Max	1,950	Min	7.5	Mean	57.8	Ac-ft	41,860			
Fiscal year 1965-66:	Max	1,950	Min	7.5	Mean	72.2	Ac-ft	52,230			

Peak discharge (base, 4,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0700	10.50	10,600	6- 8	1630	7.97	6,100
5- 7	0700	9.59	8,860	6-12	0830	9.45	8,610
5-12	0800	10.75	11,000				

40-8848. Fun-gawa near Aha

Location.--Lat 26°44'33" N., long 128°16'53" E., on right bank 50 ft downstream from bridge, 2.0 miles north of Aha School, and 2.2 miles west of Ada.

Drainage area.--3.3 sq mi, approximately.

Records available.--February 1964 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 380 ft (from topographic map).

Extremes.--Maximum discharge during year, 5,860 cfs May 12 (gage height, 17.91 ft), from rating curve extended above 1,300 cfs on basis of slope-area measurement at gage height 18.1 ft; minimum, 3.3 cfs Jan. 15, 16.

1964-66: Maximum discharge, that of May 12, 1966; minimum, that of Jan. 15, 16, 1966.

Flood of Oct. 25, 1963, reached a stage of 18.1 ft, from floodmarks, and that of Dec. 2, 1963, a stage of 21.5 ft, from floodmarks (discharge, 5,950 and 7,650 cfs, respectively, from rating curve extended above 1,300 cfs on basis of slope-area measurement at gage height 18.1 ft). Minimum discharge known, 2.50 cfs Oct. 22, 1963, result of discharge measurement.

Remarks.--Records good except those for period of no gage-height record, which are fair. No diversion above station. Sediment samples are being obtained during high flows. Records of suspended sediment loads for the fiscal year 1966 are published in Part 2 of this report.

Discharge, in cubic feet per second, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	5.4	5.2	6.3	4.2	4.4	4.2	14	9.2	26	234	41
2	21	5.6	4.8	5.8	4.0	4.2	4.0	13	13	12	49	31
3	19	6.2	4.7	5.8	3.8	4.2	4.6	11	9.2	11	30	81
4	19	17	4.6	5.4	3.8	4.0	5.0	16	24	14	24	46
5	17	578	4.5	5.0	3.8	4.0	3.8	15	13	13	20	41
6	16	19	4.4	5.2	4.0	5.0	3.6	12	10	29	82	33
7	14	17	4.3	5.4	3.8	4.0	3.5	10	9.5	17	387	29
8	13	22	4.3	5.0	3.6	5.0	3.5	9.5	9.2	14	35	395
9	13	15	4.7	4.4	19	4.5	3.5	8.9	8.7	13	26	70
10	12	12	4.3	4.2	6.3	4.0	3.6	8.7	8.1	12	22	44
11	11	10	4.1	4.2	4.8	6.0	4.0	8.7	10	11	19	36
12	11	9.2	4.0	4.2	4.4	6.4	3.6	8.1	9.2	10	611	932
13	10	9.0	13	7.0	19	4.3	3.5	9.2	21	9.8	39	107
14	10	8.4	45	7.0	233	4.0	3.5	12	11	24	28	66
15	9.6	8.0	15	4.6	15	4.5	3.3	7.8	10	11	32	43
16	9.6	7.6	11	4.2	10	6.4	50	8.1	9.5	10	23	34
17	9.0	7.4	15	4.0	8.4	4.5	12	9.9	17	9.8	19	31
18	8.2	8.0	9.0	4.0	7.5	4.1	135	7.5	16	9.8	18	26
19	8.2	7.0	6.2	3.8	7.3	4.0	13	7.3	11	11	142	23
20	8.4	9.0	5.4	3.6	6.5	5.0	9.2	6.8	9.8	9.5	46	21
21	8.0	7.0	5.0	3.6	6.3	5.2	7.5	6.8	9.2	17	250	18
22	7.4	6.4	6.2	3.6	5.6	4.4	6.5	6.8	9.2	18	73	17
23	7.2	6.0	11	3.5	5.6	6.0	7.0	7.8	9.5	36	38	16
24	7.0	5.8	9.0	3.5	5.8	15	6.8	6.5	8.1	14	30	15
25	8.0	5.8	64	3.8	5.4	6.0	133	6.1	7.8	12	26	14
26	6.8	5.6	54	7.9	5.2	5.0	24	6.4	64	11	26	14
27	6.6	5.4	14	4.0	4.8	6.6	17	104	19	25	20	14
28	6.4	5.4	9.5	4.6	4.8	5.4	15	11	13	58	18	13
29	6.0	8.0	7.8	16	4.8	4.8	18	----------	11	21	89	12
30	5.8	5.6	6.8	5.0	4.4	4.6	38	----------	10	128	26	11
31	5.6	5.8	----------	4.4	---------	4.4	18	----------	9.8	---------	164	---------
Total	337.8	847.6	360.8	159.0	424.9	159.9	567.2	358.9	409.0	616.9	2,646	2,274
Mean	10.9	27.3	12.0	5.13	14.2	5.16	18.3	12.8	13.2	20.6	85.4	75.8
Ac-ft	670	1,680	716	315	843	317	1,130	712	811	1,220	5,250	4,510
Max	24	578	64	16	233	15	135	104	64	128	611	932
Min	5.6	5.4	4.0	3.5	3.6	4.0	3.3	6.1	7.8	9.5	18	11

Calendar year 1965:	Max	578	Min	3.5	Mean	19.4	Ac-ft	14,070
Fiscal year 1965-66:	Max	932	Min	3.3	Mean	25.1	Ac-ft	18,170

Note.--No gage-height record Aug. 9 to Sept. 13.

Peak discharge (base, 1,700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 5	0730	11.76	2,890	5-31	1830	8.99	1,750
5- 1	1100	9.42	1,920	6- 8	1630	11.45	2,750
5- 7	0630	13.13	3,510	6-12	0900	15.18	4,490
5-12	0700	17.91	5,860				

40-9060. Vaitolu Stream at Aoa

Location.--Lat 14°16'19" S., long 170°35'32" W., on left bank 0.5 mile upstream from mouth and 0.7 mile southwest of Aoa.

Drainage area.--0.16 sq mi.

Records available.--March 1958 to June 1966. Prior to July 1960, published as "near Aoa."

Gage.--Water-stage recorder. Altitude of gage is 190 ft (from topographic map).

Average discharge.--8 years, 0.302 mgd (0.467 cfs).

Extremes.--Maximum discharge during year, 50 mgd (77 cfs) Jan. 29 (gage height, 3.86 ft), from rating curve extended above 2.1 mgd as explained below; no flow for many days.
1958-66: Maximum discharge, 154 mgd (238 cfs) Dec. 19, 1962 (gage height, 6.16 ft), from rating curve extended above 2.1 mgd by logarithmic plotting; no flow at times in 1964-66.

Remarks.--Records good. Small diversion above station for domestic use since Sept. 14, 1964.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.04	0.01	0.03	0.01	0.01	0	0	0.12	0.10	0.03	0.01	0.02
2	.03	.01	.01	.01	.01	.01	0	.06	.08	.02	.01	.02
3	.04	.16	.01	.01	.01	.03	0	.10	.08	.03	.01	.56
4	.04	.89	.01	0	.01	.03	0	.06	.07	.03	.02	.03
5	.05	.06	.01	0	.01	.05	0	.05	.08	.02	.02	.02
6	.05	.02	0	0	.01	.13	.01	.04	.06	.02	.02	.02
7	.05	.02	0	0	.01	.05	.01	.05	.09	.02	.03	.02
8	.05	.02	.01	0	.01	.02	.03	.06	.03	.02	.04	.02
9	.05	.02	.02	0	0	.01	.25	.07	.02	.02	.03	.03
10	.04	.02	0	0	0	.01	.02	.08	.03	.02	.03	.02
11	.04	.02	0	0	0	0	.07	.06	.03	.03	.04	.01
12	.04	.02	0	0	0	0	.06	.05	.03	.06	.04	.01
13	.05	.03	0	0	0	0	.03	.06	.03	.07	.03	.02
14	.06	.03	0	0	0	0	.05	.05	.03	.04	.02	.03
15	.04	.03	0	0	0	.01	.03	.06	.03	.02	.03	.03
16	.01	.03	0	0	0	.01	.03	.05	.02	.02	.03	.02
17	.01	.03	.01	0	0	.01	.02	.06	.02	.03	.03	.03
18	.01	.05	.01	0	0	0	.04	.06	.02	.03	.03	1.2
19	.01	.01	0	.18	0	.01	.05	.08	.02	.48	.03	.35
20	.01	.02	0	.02	0	.01	.03	2.6	.03	.84	.07	.05
21	.01	.02	0	.02	0	.01	.08	.64	.03	.10	.05	.08
22	.01	.02	0	.09	0	.01	.05	.12	.03	2.6	1.2	.04
23	.01	.02	0	2.2	0	.01	.17	.06	.17	1.0	.19	.03
24	.01	.02	0	1.5	0	0	.05	.05	.02	.71	.04	.87
25	.01	.02	0	.73	0	0	.02	.05	.02	.06	.02	.72
26	.01	.03	0	.05	0	0	.25	.06	.02	.01	.02	.08
27	.01	.01	.01	.32	.01	.03	.10	.07	.06	.01	.02	.03
28	.01	.01	0	.06	0	.01	.49	.07	.03	.01	.03	.03
29	.01	.01	0	.03	0	.01	5.4	---	.02	.01	.03	.03
30	.01	.02	0	.02	0	0	4.2	---	.05	.01	.02	.03
31	.01	.01	---	.02	---	0	.60	---	.03	---	.05	---
Total	0.83	1.69	0.13	5.27	0.09	0.47	12.14	4.94	1.38	6.37	2.24	4.45
Mean												
Mgd	0.027	0.055	0.004	0.170	0.003	0.015	0.392	0.176	0.045	0.212	0.072	0.148
Cfs	0.042	0.085	0.006	0.263	0.005	0.023	0.607	0.272	0.070	0.328	0.111	0.229
Ac-ft	2.5	5.2	0.4	16	0.3	1.4	37	15	4.2	20	6.9	14
Max	0.06	0.89	0.03	2.2	0.01	0.13	5.4	2.6	0.17	2.6	1.2	1.2
Min	0.01	0.01	0	0	0	0	0	0.04	0.02	0.01	0.01	0.01

Calendar Year 1965: Max 5.0 Min 0 Mean (mgd) 0.174 Mean (cfs) 0.269 Ac-ft 195
Fiscal Year 1965-66: Max 5.4 Min 0 Mean (mgd) 0.110 Mean (cfs) 0.170 Ac-ft 123

Peak discharge (base, 40 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-29	0900	3.86	50	77

40-9120. 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.

Records available.--October 1958 to June 1966. 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.--7 years (1959-66), 2.13 mgd (3.30 cfs).

Extremes.--Maximum discharge during year, 245 mgd (379 cfs) Oct. 24 (gage height, 3.94 ft), from rating curve extended above 14 mgd as explained below; minimum, 0.23 mgd (0.36 cfs) Oct. 15, 16.
1958-66: Maximum discharge, 490 mgd (758 cfs) May 9, 1964 (gage height, 4.70 ft), from rating curve extended above 14 mgd by logarithmic plotting; minimum, 0.16 mgd (0.25 cfs) Sept. 30, 1961.

Remarks.--Records good. About 0.04 mgd diverted above station for domestic use in Afono.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.86	0.40	2.0	0.99	1.9	0.40	0.48	3.5	0.86	0.52	0.99	3.0
2	.80	.40	1.3	.86	1.5	.48	.44	2.3	.86	.48	1.1	2.1
3	.80	.93	1.1	.74	1.3	2.6	.61	1.9	.74	.62	.86	2.9
4	.74	9.3	1.1	.52	1.1	2.9	.48	1.5	.74	.99	.74	2.0
5	.74	1.7	.99	.44	1.1	3.0	.52	1.3	.86	.68	.68	1.4
6	.74	.92	.99	.40	.99	7.1	.79	1.1	.74	.52	.62	1.2
7	.74	.68	.92	.36	.92	6.6	1.2	1.1	.74	.48	.62	1.1
8	.74	.57	.92	.36	.86	3.0	3.5	.92	.68	.44	.68	.99
9	.68	.52	1.2	.32	.86	1.6	14	.86	.62	.40	.57	1.1
10	.68	.52	.99	.29	.86	1.1	3.3	.86	.62	.80	.57	1.2
11	.68	.44	.92	.29	.74	.92	2.0	.80	.57	1.2	.57	1.1
12	.74	.44	.99	.32	.68	.80	2.4	.74	.57	.74	.52	.86
13	.86	.44	1.1	.32	.62	.74	1.6	.86	.57	.52	.57	.74
14	.92	.48	1.8	.32	.57	.80	1.3	.74	.57	.48	.57	.68
15	1.3	.44	1.8	.29	.57	1.8	1.1	.68	.57	.40	.52	.68
16	1.3	.44	1.1	.29	.57	.99	1.6	.62	.52	.40	.80	.62
17	.86	.44	1.1	.90	.52	.74	1.3	.68	.52	.36	.62	.74
18	.74	.80	.86	.99	.44	.62	1.4	.80	.52	.66	.62	5.6
19	.62	.62	.68	10	.44	.52	1.9	.87	.48	1.3	2.0	5.2
20	.62	.48	.40	2.8	.44	.52	1.2	16	.62	5.8	1.4	2.1
21	.57	.44	.36	2.0	.52	.48	.99	5.1	.52	4.9	1.4	2.0
22	.52	.57	.44	1.2	.44	.48	.86	2.2	.44	31	6.6	2.2
23	.52	.92	.44	21	.44	.52	.99	1.6	1.2	5.1	7.7	1.5
24	.68	.92	.44	34	.52	.48	.86	1.3	.80	7.2	2.1	2.8
25	.52	.92	.40	9.8	.44	.44	.74	1.2	.62	2.9	1.5	4.8
26	.52	.92	.36	3.2	.44	.40	3.2	1.1	.57	2.1	1.2	2.1
27	.52	.92	.44	6.5	.57	1.9	2.7	.92	1.1	1.8	2.6	1.5
28	.44	.92	.52	3.9	.44	1.5	4.6	.86	.99	1.5	3.3	1.3
29	.44	.92	.40	2.9	.36	.99	27	----------	.68	1.3	5.2	1.4
30	.44	1.1	.44	3.5	.36	.62	25	----------	.68	1.1	2.2	1.1
31	.44	1.2	----------	3.2	----------	.52	6.2	----------	.57	----------	2.3	----------
Total	21.77	30.71	26.50	113.00	21.51	45.56	114.26	52.41	21.14	76.69	51.72	56.01
Mean Mgd	0.702	0.991	0.883	3.65	0.717	1.47	3.69	1.87	0.682	2.56	1.67	1.87
Cfs	1.09	1.53	1.42	5.65	1.11	2.27	5.71	2.89	1.06	3.96	2.58	2.89
Ac-ft	67	94	81	347	66	140	351	161	65	235	159	172
Max	1.3	9.3	2.0	34	1.9	7.1	27	16	1.2	31	7.7	5.6
Min	0.44	0.40	0.36	0.29	0.36	0.40	0.44	0.62	0.44	0.36	0.52	0.62

Calendar Year 1965:	Max	34	Min	0.29	Mean (mgd)	1.88	Mean (cfs)	2.91	Ac-ft	2,100
Fiscal Year 1965-66:	Max	34	Min	0.29	Mean (mgd)	1.73	Mean (cfs)	2.68	Ac-ft	1,940

Peak discharge (base, 130 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-24	1900	3.94	245	379	4-22	0030	3.55	153	237

40-9205. 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.

Records available.--October 1958 to June 1966.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 5 ft (by hand levels from high-tide mark).

Average discharge.--7 years (1959-66), 4.06 mgd (6.28 cfs).

Extremes.--Maximum discharge during year, 183 mgd (283 cfs) Apr. 21 (gage height, 3.59 ft), from rating curve extended above 12 mgd as explained below; minimum, 0.72 mgd (1.1 cfs) Aug. 15, 27-30.
1958-66: Maximum discharge, 415 mgd (642 cfs) Aug. 10, 1962 (gage height, 4.72 ft), from rating curve extended above 12 mgd by logarithmic plotting; minimum, 0.32 mgd (0.50 cfs) Sept. 29 to Oct. 1, 1961.

Remarks.--Records good. Small diversion above station for domestic use. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	0.95	3.1	3.8	6.9	1.1	0.95	12	1.6	1.4	4.0	9.9
2	3.5	.95	1.7	2.6	6.2	1.6	.88	9.0	1.6	1.2	5.8	7.5
3	3.1	1.2	1.1	2.6	5.2	12	1.0	7.5	1.4	1.4	5.0	7.2
4	2.8	5.6	1.0	2.1	4.8	6.9	.95	6.2	1.3	1.3	3.6	5.7
5	2.8	1.8	.88	1.7	4.3	6.6	1.1	5.2	1.4	1.2	3.1	5.9
6	2.4	1.2	.88	1.6	4.0	10	1.5	4.6	1.7	1.2	2.8	5.2
7	2.2	1.1	.88	1.4	3.6	10	1.1	4.0	1.6	1.1	2.9	4.6
8	2.1	.95	.82	1.3	3.3	7.8	3.5	3.6	1.3	1.1	2.4	4.0
9	2.0	.88	.82	1.2	2.9	6.2	16	3.3	1.2	1.0	2.4	3.6
10	2.0	.88	.88	1.2	2.6	5.5	4.2	2.8	1.1	1.1	2.3	4.0
11	2.2	.82	.82	1.6	2.4	5.0	3.1	2.4	1.0	1.0	2.1	3.3
12	2.2	.82	.95	1.2	2.2	4.3	3.1	2.2	.95	1.0	2.0	2.8
13	2.8	.82	4.2	1.1	2.1	3.8	2.4	2.3	1.6	.95	2.8	2.4
14	4.1	.82	21	1.0	2.1	3.6	2.4	2.1	1.2	1.0	2.1	2.3
15	4.6	.82	13	.95	1.8	3.1	2.1	1.6	1.0	.95	1.8	2.2
16	3.3	.82	8.1	1.0	1.7	3.1	2.0	1.4	.95	.88	10	2.1
17	2.3	1.5	6.4	22	1.6	2.6	2.0	1.7	.88	.82	5.4	2.3
18	2.2	2.7	5.5	8.1	1.4	2.2	2.1	2.4	.95	3.7	4.8	8.0
19	1.8	1.7	4.8	37	1.3	2.1	2.2	2.2	.88	2.1	9.4	6.9
20	1.6	1.3	4.2	15	1.2	1.8	1.8	4.8	1.0	4.8	5.5	6.4
21	1.6	1.1	3.8	11	1.3	1.8	1.7	4.0	.95	13	5.7	6.2
22	1.4	1.1	3.5	9.6	1.2	1.7	1.7	4.2	.95	25	14	5.5
23	1.4	.95	3.1	26	1.1	2.4	3.0	2.9	2.3	11	12	4.8
24	1.8	.88	2.6	29	1.6	1.7	2.0	2.2	3.5	11	7.5	6.8
25	1.3	.82	2.3	21	1.1	1.6	1.7	2.1	2.1	7.5	6.2	9.0
26	1.2	.77	2.2	13	1.1	1.3	4.8	1.8	1.7	5.9	5.7	5.5
27	1.2	.77	2.2	12	1.6	1.2	3.6	1.6	2.8	5.2	6.6	4.8
28	1.1	.77	2.2	12	1.0	1.6	8.5	1.6	2.3	4.6	7.3	4.6
29	1.0	.72	1.8	13	.95	1.2	32	----------	2.0	4.2	15	4.2
30	1.0	.77	2.0	10	.88	1.1	41	----------	2.1	4.2	9.6	3.6
31	1.0	1.6	----------	8.1	----------	1.0	17	----------	1.6	----------	7.5	----------
Total	67.8	37.88	106.73	273.15	73.43	115.9	171.38	101.7	46.91	120.80	177.3	151.3
Mean												
Mgd	2.19	1.22	3.56	8.81	2.45	3.74	5.53	3.63	1.51	4.03	5.72	5.04
Cfs	3.39	1.89	5.51	13.6	3.79	5.79	8.56	5.62	2.34	6.24	8.85	7.80
Ac-ft	208	116	328	838	225	356	526	312	144	371	544	464
Max	4.6	5.6	21	37	6.9	12	41	12	3.5	25	15	9.9
Min	1.0	0.72	0.82	0.95	0.88	1.0	0.88	1.4	0.88	0.82	1.8	2.1

Calendar Year 1965:	Max	37	Min	0.72	Mean (mgd)	4.10	Mean (cfs)	6.34	Ac-ft	4590
Fiscal Year 1965-66:	Max	41	Min	0.72	Mean (mgd)	3.96	Mean (cfs)	6.13	Ac-ft	4430

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-19	1130	3.44	156	241	4-21	2130	3.59	183	283
1-30	0900	3.44	156	241					

40-9310. Ataulona 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.

Records available.--October 1958 to June 1966.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (by hand levels from high-tide mark).

Average discharge.--7 years (1959-66), 0.926 mgd (1.43 cfs).

Extremes.--Maximum discharge during year, 118 mgd (183 cfs) Jan. 29 (gage height, 2.72 ft), from rating curve extended above 5.3 mgd as explained below; minimum, 0.14 mgd (0.22 cfs) Sept. 8, 9, 29, Oct. 15.
1958-66: Maximum discharge, 253 mgd (391 cfs) Aug. 12, 1962 (gage height, 3.48 ft), from rating curve extended above 5.3 mgd by logarithmic plotting; minimum, 0.04 mgd (0.06 cfs) Oct. 21, 1963.

Remarks.--Records good. Diversion above station for use at Ataulona School averages 10,400 gallons per day. Continuous records of rainfall are obtained at station.

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.51	0.21	0.40	0.42	1.1	0.19	0.17	1.9	0.55	0.60	0.60	3.2
2	.48	.21	.21	.28	.83	.28	.17	1.0	.48	.50	2.8	1.7
3	.48	.23	.17	.28	.68	3.7	.26	.78	.40	.60	1.9	1.6
4	.44	1.9	.15	.23	.64	1.4	.19	.73	.37	.50	.89	1.1
5	.40	.40	.15	.21	.60	.89	.80	.64	.40	.45	.68	.94
6	.40	.31	.17	.19	.51	.83	.28	.60	.40	.40	.55	.89
7	.37	.28	.19	.19	.48	4.1	.26	.60	.37	.35	.60	.73
8	.37	.26	.15	.19	.44	1.5	1.8	.60	.34	.30	.55	.68
9	.34	.23	.17	.19	.40	.83	5.7	.55	.37	.30	.87	.68
10	.37	.23	.26	.19	.37	.60	1.1	.51	.34	.35	.73	.78
11	.48	.21	.34	.21	.37	.51	1.2	.51	.31	.30	.64	.60
12	.34	.21	.55	.19	.34	.48	1.2	.48	.31	.30	.72	.55
13	.37	.21	.72	.26	.31	.37	.68	.48	.31	.30	.73	.51
14	.68	.26	2.7	.19	.31	.40	.60	.51	.28	.30	.55	.51
15	.77	.29	1.2	.17	.31	.34	.48	.40	.31	.30	.51	.51
16	.51	.28	.44	.25	.31	.85	.40	.40	.34	.25	.92	.48
17	.40	.31	.31	8.0	.28	.31	.37	.55	.28	.25	2.2	.51
18	.34	.48	.28	1.7	.26	.28	.44	.86	.26	.25	2.1	2.0
19	.31	.26	.21	10	.31	.26	.34	1.3	.28	.23	4.1	1.5
20	.31	.31	.19	2.2	.26	.23	.31	2.8	.54	.67	3.0	1.7
21	.28	.23	.17	1.5	.26	.21	.28	1.7	.44	3.8	2.2	1.5
22	.26	.21	.19	1.6	.23	.21	.42	1.9	.34	8.0	6.8	1.3
23	.28	.21	.17	8.4	.26	.28	.59	1.1	.51	2.3	3.7	.94
24	.31	.19	.17	7.2	.31	.19	.40	.78	1.5	2.4	1.7	3.7
25	.26	.19	.15	3.5	.21	.19	.40	.73	1.0	1.3	1.5	3.2
26	.23	.19	.15	1.7	.21	.17	3.5	.60	.70	.83	1.5	1.3
27	.23	.17	.19	1.7	.34	.21	1.4	.55	1.0	.73	1.5	.94
28	.23	.15	.15	2.1	.21	.28	4.5	.51	.80	.60	1.4	.94
29	.21	.19	.14	2.3	.21	.21	12	---------	.70	.55	1.4	.83
30	.21	.21	.19	1.6	.19	.19	16	---------	.80	.64	1.2	.68
31	.21	.26	---------	1.1	---------	.17	3.1	---------	.70	---------	1.1	---------
Total	11.38	9.28	10.63	58.24	11.54	20.66	59.34	24.07	15.73	28.65	49.64	36.50
Mean												
Mgd	0.367	0.299	0.354	1.88	0.385	0.666	1.91	0.860	0.507	0.955	1.60	1.22
Cfs	0.568	0.463	0.548	2.91	0.596	1.03	2.96	1.33	0.784	1.48	2.48	1.89
Ac-ft	35	28	33	179	35	63	182	74	48	88	152	112
Max	0.77	1.9	2.7	10	1.1	4.1	16	2.8	1.5	8.0	6.8	3.7
Min	0.21	0.15	0.14	0.17	0.19	0.17	0.17	0.40	0.26	0.23	0.51	0.48

Calendar Year 1965:	Max	21	Min	0.14	Mean (mgd)	0.833	Mean (cfs)	1.29	Ac-ft	933		
Fiscal Year 1965-66:	Max	16	Min	0.14	Mean (mgd)	0.920	Mean (cfs)	1.42	Ac-ft	1,030		

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
1-29	0600	2.72	118	183	6-24	2100	2.57	98	152

40-9480. Afuelo Stream at Matuu

Location.--Lat 14°18'07" S., long 170°41'07" W., on left bank 0.2 mile northwest of Matuu and 0.3 mile upstream from mouth.

Drainage area.--0.25 sq mi.

Records available.--March 1958 to June 1966. 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.--8 years, 0.952 mgd (1.47 cfs).

Extremes.--Maximum discharge during year, 181 mgd (280 cfs) Oct. 19 (gage height, 3.27 ft), from rating curve extended above 5.4 mgd as explained below; minimum, 0.06 mgd (0.09 cfs) Oct. 14, 15.
1958-66: Maximum discharge, 262 mgd (405 cfs) May 17, 1962 (gage height, 3.70 ft), from rating curve extended above 5.4 mgd by logarithmic plotting; minimum, that of Oct. 14, 15, 1965.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.34	0.14	0.48	1.0	0.56	0.10	0.21	0.91	0.27	0.27	0.44	1.2
2	.31	.16	.21	.42	.44	.30	.19	.64	.29	.29	1.1	.82
3	.34	.30	.16	.34	.36	2.9	.31	.56	.23	.39	1.0	.86
4	.29	1.1	.14	.23	.31	1.5	.23	.44	.21	.42	.44	.54
5	.27	.29	.12	.16	.27	.96	.21	.39	.23	.27	.34	.64
6	.27	.19	.12	.14	.27	4.0	1.2	.31	.21	.25	.29	.54
7	.27	.16	.12	.12	.25	1.7	.84	.29	.23	.25	.36	.42
8	.25	.14	.11	.11	.21	.86	4.8	.27	.33	.23	.50	.34
9	.25	.14	.11	.11	.19	.48	11	.27	.36	.21	.39	.36
10	.25	.12	.12	.10	.17	.34	1.3	.25	.25	.35	.29	.68
11	.25	.12	.11	.10	.16	.27	1.0	.23	.23	.39	.27	.44
12	.56	.11	.11	.12	.16	.23	1.1	.21	.21	.34	.29	.34
13	.56	.11	.27	.10	.16	.21	.60	.29	.53	.27	.34	.29
14	.68	.12	3.0	.08	.16	.25	.48	.25	.29	.25	.27	.27
15	.86	.12	.98	.08	.14	.89	.39	.21	.23	.21	.37	.25
16	.56	.14	.36	.10	.14	.29	.36	.19	.21	.19	3.1	.23
17	.36	.37	.23	.20	.12	.21	.31	.23	.19	.77	.64	.23
18	.36	.57	.19	.60	.12	.17	.36	.23	.19	1.6	.50	1.7
19	.25	.27	.16	10	.11	.16	.42	.57	.19	.96	1.5	1.2
20	.23	.19	.14	2.0	.11	.16	.27	3.1	.29	1.5	.91	1.0
21	.21	.17	.12	1.0	.11	.17	.23	1.2	.23	2.0	.73	1.0
22	.20	.16	.14	.64	.11	.16	.19	.78	.21	10	7.1	.91
23	.20	.14	.12	10	.11	.32	.55	.50	.54	1.8	3.5	.50
24	.25	.12	.12	16	.14	.17	.37	.36	.31	3.2	.96	2.1
25	.20	.12	.11	3.3	.14	.17	.23	.31	.25	.93	.64	2.3
26	.20	.11	.11	1.0	.11	.16	1.5	.29	.34	.56	.50	.68
27	.16	.11	.25	1.5	.35	1.8	.96	.27	1.4	.48	.44	.48
28	.16	.11	.27	1.3	.14	1.5	3.4	.27	.56	.36	1.6	.42
29	.17	.11	.16	1.2	.11	.50	9.2	----------	.29	.36	4.0	.77
30	.16	.14	.17	1.2	.10	.29	13	----------	.56	.42	1.3	.39
31	.16	.19	----------	.86	----------	.25	1.7	----------	.39	----------	.96	----------
Total	9.58	6.34	8.81	54.11	5.83	21.47	56.91	13.82	10.25	29.52	35.07	21.90
Mean												
Mgd	0.309	0.205	0.294	1.75	0.194	0.693	1.84	0.494	0.331	0.984	1.13	0.730
Cfs	0.478	0.317	0.455	2.71	0.300	1.07	2.85	0.764	0.512	1.52	1.75	1.13
Ac-ft	29	19	27	166	18	66	175	42	31	91	108	67
Max	0.86	1.1	3.0	16	0.56	4.0	13	3.1	1.4	10	7.1	2.3
Min	0.16	0.11	0.11	0.08	0.10	0.10	0.19	0.21	0.19	0.19	0.27	0.23

Calendar Year 1965:	Max	16	Min	0.08	Mean (mgd)	0.883	Mean (cfs)	1.37	Ac-ft	989		
Fiscal Year 1965-66:	Max	16	Min	0.08	Mean (mgd)	0.750	Mean (cfs)	1.16	Ac-ft	840		

Peak discharge (base, 80 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-19	about 1100	3.27	181	280	1-30	0800	2.75	102	158
10-24	1700	3.03	141	218					

40-9600. Alega Stream at Alega

Location.--Lat 14°16'58" S., long 170°38'19" W., on left bank 0.2 mile northwest of Alega and 0.3 mile upstream from mouth.

Drainage area.--0.19 sq mi.

Records available.--March 1958 to June 1966. 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.--8 years, 0.798 mgd (1.23 cfs).

Extremes.--Maximum discharge during year, 28 mgd (43 cfs) Jan. 30, Apr. 21 (gage height, 2.51 ft), from rating curve extended above 3.5 mgd as explained below; minimum, 0.25 mgd (0.39 cfs) Jan. 5, 6.
1958-66: Maximum discharge, 73 mgd (113 cfs) July 24, 1962 (gage height, 3.47 ft), from rating curve extended above 3.5 mgd by logarithmic plotting; minimum, 0.20 mgd (0.31 cfs) July 11, 12, 1959.

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

Discharge, in million gallons a day, fiscal year July 1965 to June 1966

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.62	0.30	0.38	0.41	0.62	0.28	0.30	1.7	0.55	0.32	0.66	0.99
2	.62	.30	.32	.35	.55	.30	.28	1.3	.55	.35	.66	.84
3	.62	.41	.32	.35	.51	.62	.30	1.1	.51	.35	.55	1.1
4	.58	1.3	.30	.35	.51	.55	.28	.89	.51	.35	.55	.79
5	.58	.41	.30	.35	.51	.48	.28	.74	.55	.32	.55	.70
6	.58	.38	.30	.32	.48	1.2	.48	.66	.48	.32	.51	.66
7	.55	.38	.30	.32	.44	.84	.35	.62	.48	.32	.51	.62
8	.55	.38	.28	.32	.41	.58	.64	.58	.48	.32	.58	.58
9	.51	.38	.32	.32	.38	.48	2.5	.55	.44	.32	.51	.58
10	.51	.38	.30	.32	.38	.41	1.1	.55	.44	.51	.48	.62
11	.51	.38	.32	.32	.35	.38	.90	.51	.41	.48	.51	.51
12	.51	.38	.35	.32	.35	.38	.80	.51	.41	.38	.48	.51
13	.51	.38	.38	.32	.32	.35	.70	.55	.38	.35	.55	.51
14	.51	.41	.41	.32	.32	.35	.60	.51	.38	.35	.51	.51
15	.55	.38	.41	.32	.32	.55	.55	.48	.41	.32	.78	.51
16	.55	.38	.41	.32	.32	.38	.66	.48	.38	.30	.84	.48
17	.51	.35	.38	.38	.30	.35	.55	.48	.38	.32	.55	.51
18	.55	.44	.38	.44	.28	.32	.55	.44	.38	.62	.51	1.6
19	.51	.38	.38	1.7	.28	.32	.55	.85	.35	.58	1.4	1.4
20	.48	.38	.35	.48	.28	.32	.48	4.8	.40	1.1	1.7	.79
21	.44	.35	.28	.38	.30	.32	.44	1.8	.40	1.2	1.1	.84
22	.44	.35	.30	.44	.30	.32	.44	1.1	.35	9.6	2.5	.74
23	.48	.35	.30	4.3	.30	.32	.55	.84	.44	2.2	1.9	.55
24	.48	.38	.30	5.2	.32	.30	.48	.70	.38	2.2	1.1	1.7
25	.48	.38	.30	2.6	.30	.30	.44	.66	.35	1.3	.89	1.7
26	.44	.35	.30	1.1	.30	.30	1.3	.62	.35	.99	.79	.99
27	.44	.35	.32	1.7	.32	.45	1.0	.58	.58	.79	.86	.74
28	.41	.32	.32	1.2	.30	.44	1.8	.55	.48	.74	1.1	.70
29	.38	.32	.32	.89	.30	.35	7.0	----------	.38	.70	1.8	.66
30	.35	.32	.35	.79	.28	.32	7.5	----------	.38	.70	.94	.58
31	.32	.35	----------	.74	----------	.30	2.8	----------	.35	----------	.99	----------
Total	15.57	12.30	9.98	27.67	10.93	13.16	36.60	25.15	13.31	28.70	27.36	24.01
Mean												
Mgd	0.502	0.397	0.333	0.893	0.364	0.425	1.18	0.898	0.429	0.957	0.883	0.800
Cfs	0.777	0.614	0.515	1.38	0.563	0.658	1.83	1.39	0.664	1.48	1.37	1.24
Ac-ft	48	38	31	85	34	40	112	77	41	88	84	74
Max	0.62	1.3	0.41	5.2	0.62	1.2	7.5	4.8	0.58	9.6	2.5	1.7
Min	0.32	0.30	0.28	0.32	0.28	0.28	0.28	0.44	0.35	0.30	0.48	0.48

Calendar Year 1965:	Max	5.2	Min	0.28	Mean (mgd)	0.749	Mean (cfs)	1.16	Ac-ft	839
Fiscal Year 1965-66:	Max	9.6	Min	0.28	Mean (mgd)	0.671	Mean (cfs)	1.04	Ac-ft	751

Peak discharge (base, 25 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-24	1730	2.45	26	40	4-21	2400	2.51	28	43
1-30	0930	2.51	28	43					

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of 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 fiscal years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during fiscal year 1966

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Kauai					
40-0110	Waiakoali Stream near Waimea	Lat 22°07'25", long 159°37'25", 0.3 mile above mouth and 12 miles northeast of Waimea.	1.7	1909-13≠, 1914-18, 1920-25≠, 1961-64, 1966	10- 5-65 5-16-66	0.81 .74	1.25 1.14
40-0120	Kauaikinana Stream near Waimea	Lat 22°07'45", long 159°38'05", 0.6 mile above mouth and 12 miles northeast of Waimea.	1.17	1912-13, 1915-17, 1920-25≠, 1961-64, 1966	10- 5-65 5-16-66	.28 .38	.43 .59
40-0295	Mokihana Stream near Waimea	Lat 21°59'35", long 159°40'03", 500 ft above mouth and 2.5 miles north of Waimea.	4.77	1962-64, 1966	9-13-65 4-12-66	.54 .39	.84 .60
		Island of Oahu					
40-2010	Right Branch of North Fork Kaukonahua Stream near Wahiawa	Lat 21°31'15", long 157°56'55", 200 ft above intake of Wahiawa Water Co. tunnel and confluence of Right and Left Branches, and 5 miles east of Wahiawa.	1.20	1913-53≠, 1960-62, 1966	4-20-66	.34	.53
*40-2605	Maunawili Stream at Kailua Road, near Kailua	Lat 21°22'49", long 157°45'48", at bridge on old highway, 400 ft above Kailua Road, and 1.7 miles southwest of Kailua Post Office.	5.34	1922, 1957-62, 1965-66	5-18-66	5.83	9.02
40-2641	Kahanaiki Stream at Kailua Road, near Kailua	Lat 21°22'49", long 157°46'06", at Kailua Road and 1.9 miles southwest of Kailua Post Office.	1.45	1957-63, 1965-66	5-18-66	1.28	1.98
40-2709	Luluku Stream at altitude 220 ft, near Kaneohe	Lat 21°23'42", long 157°48'46", 1.4 miles southwest of Castle High School and 2.1 miles south of St. Ann's School in Kaneohe.	.45	1960-63, 1965-66	5-18-66	1.03	1.59
*40-2744.99	Keaahala Stream at Kamehameha Highway, at Kaneohe	Lat 21°25'12", long 157°48'15", 35 ft above bridge on Kamehameha Highway in Kaneohe.	.62	1961-63, 1965-66	5-18-66	2.77	4.29
*40-2825	Ahuimanu Stream near Kahaluu	Lat 21°27'04", long 157°50'13", at bridge on Ahuimanu Road and 0.8 mile south of Kahaluu.	2.31	1962-63, 1965-66	5-18-66	1.56	2.41
40-2834	Kahaluu Stream near Kahaluu	Lat 21°27'14", long 157°50'17", 600 ft above Ahuimanu Stream and 0.6 mile south of Kahaluu.	1.29	1962-63, 1966	5-18-66	1.89	2.92
40-2845	Waihee Stream at Kahaluu	Lat 21°27'31", long 157°50'26", 300 ft above mouth and 0.1 mile southwest of Kahaluu.	2.26	1958, 1961-63, 1965-66	5-18-66	8.73	13.5
40-2931	Waianu Stream at Waiahole	Lat 21°28'59", long 157°51'49", 0.6 mile southwest of Waiahole School and 2.3 miles northwest of Kahaluu.	1.65	1961-63, 1965-66	4-19-66	1.43	2.21
40-2959.95	Kahana Stream at mauka trail crossing, near Kahana	Lat 21°32'17", long 157°53'29", 1.8 miles above main bridge on Kamehameha Highway and 2.8 miles southwest of Kasava School.	3.18	1961-62, 1966	4-19-66	12.2	18.9
40-2970	Kawa Stream near Kahana	Lat 21°32'33", long 157°53'00", 0.1 mile above mouth and 1.0 mile south of Kahana.	2.11	1914-17≠, 1958, 1961-62, 1966	4-18-66	2.26	3.50

* Also a crest-stage partial-record station.
≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during fiscal year 1966--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Maui					
40-5320	Haipuaena Stream at Haiku-uka boundary, near Kailiili	Lat 20°49'26", long 156°12'30", 340 ft below Haiku-uka trail and 4.5 miles southeast of Kailiili.	0.61	1919-27≠, 1933-34≠, 1963-66	9- 2-65	0.47	0.73
					10-12-65	.38	.59
					11-23-65	2.31	3.57
					1-10-66	1.17	1.81
					3- 2-66	.90	1.39
					4-19-66	1.20	1.86
					6- 7-66	.38	.59
40-5420	East Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili	Lat 20°49'36", long 156°12'39", 200 ft below Haiku-uka trail and 4.3 miles east of Kailiili.	.14	1920-27≠, 1933≠, 1963-66	9- 2-65	.13	.20
					10-12-65	.12	.19
					11-23-65	.85	1.32
					1-10-66	.36	.56
					3- 2-66	.39	.60
					4-19-66	.64	.99
					6- 7-66	.14	.22
40-5440	West Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili	Lat 20°49'51", long 156°13'03", 150 ft below Haiku-uka trail and 3.8 miles southeast of Kailiili.	.45	1919-28≠, 1933-35≠, 1963-66	9- 2-65	.27	.42
					10- 2-65	.12	.19
					1-10-66	1.06	1.64
					3- 2-66	.70	1.08
					6- 7-66	.12	.19
40-5540	Waikamoi Stream at Haiku-uka boundary, near Kailiili	Lat 20°49'55", long 156°13'23", at Haiku-uka trail and 3.4 miles east of Kailiili.	3.46	1918-28≠, 1933-35≠, 1963-66	10- 2-65	.23	.36
					6- 6-66	.07	.11
40-5545	East Branch Waikamoi Stream at Haiku-uka boundary, near Kailiili	Lat 20°49'53", long 156°13'21", 150 ft above Haiku-uka trail and 3.4 miles southeast of Kailiili.	.07	1918-28≠, 1933≠, 1963-66	9- 2-65	.28	.43
					10-12-65	.12	.19
					1-11-66	.31	.48
					4-19-66	.45	.70
					6- 7-66	.14	.22
40-5691	Nailiilihaele Stream near Kailiili	Lat 20°50'27", long 156°13'38", 0.6 mile below Haiku-uka trail and 3.0 miles east of Kailiili.	.11	1963-66	7-20-65	.07	.11
					10-11-65	.01	.02
					11-22-65	1.03	1.59
					1-11-66	.01	.02
					6- 6-66	.01	.02
40-5762	East Branch Kailua Stream near Kailiili	Lat 20°50'25", long 156°14'07", 0.4 mile below Haiku-uka trail and 2.5 miles east of Kailiili.	.35	1963-66	7-20-65	.82	1.27
					9- 3-65	.20	.31
					10-11-65	.15	.23
					1-11-66	.52	.80
					4-18-66	.44	.68
					6- 6-66	.16	.25
		Island of Guam, Mariana Islands					
40-8073	Fonte River at dam, near Nimitz Hill	Lat 13°27'25" N., long 144°43'34" E., at old diversion dam, 0.4 mile south of Force Headquarters building on Nimitz Hill, and 1.2 miles southeast of Asan.	.60	1961-66	3-22-66		.07
					4-29-66		.05
					5-27-66		.05
40-8075	Asan Spring at Asan	Lat 13°28'11" N., long 144°43'04" E., on hillside 200 ft above upper street in Asan, 0.2 mile southeast of Marine Drive, and 0.8 mile southwest of Coontz Junction.	-	1962, 1964-66	3-22-66		.23
					4-22-66		.16
40-8080	Santa Rita Spring at Santa Rita	Lat 13°23'04" N., long 144°40'23" E., 0.1 mile southeast of Santa Rita Catholic Church and 1.1 miles southeast of junction of Santa Rita Road and Marine Drive.	-	1962, 1964-66	3-22-66		.10
					4-29-66		.08
					5-27-66		.08
40-8082	Faata Spring near Agat	Lat 13°22'25" N., long 144°39'58" E., 0.4 mile southwest of Alifan Mountain and 1.0 mile southeast of Agat.	-	1963-66	3-22-66		.09
					4-29-66		.08
					5-27-66		.11
40-8085	Taleyfac River near Agat	Lat 13°21'40" N., long 144°39'00" E., 800 ft above bridge on Agat-Umatac Road and 1.7 miles southwest of Agat School.	1.77	1960-66	3-22-66		.10
					5-27-66		.11
40-8092	Right Branch Catti River near Umatac	Lat 13°18'58" N., long 144°39'21" E., at confluence wtih Left Branch, 50 ft above gaging station on Cetti River, and 1.3 miles northwest of Umatac School.	.37	1961-62, 1964-66	5-10-66		.13
					6-15-66		.11

≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during fiscal year 1966--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Guam, Mariana Islands--Continued					
40-8096	La Sa Fua River near Umatac	Lat 13°18'25" N., long 144°39'45" E., 0.6 mile northeast of Umatac and 3.1 miles north of Merizo.	1.10	1953-61≠, 1962-63, 1966	3-30-66 5-26-66		0.42 .20
40-8100	Right Branch Umatac River at Umatac	Lat 13°17'50" N., long 144°39'50" E., 50 ft above confluence with Left Branch and 0.3 mile southeast of Umatac Catholic Church.	.95	1960-66	3-31-66 4-27-66 5-25-66		.36 .19 .23
40-8120	Left Fork of Left Branch Umatac River near Umatac	Lat 13°17'25" N., long 144°39'50" E., 0.4 mile above confluence with Right Fork and 1.2 miles southeast of Umatac Catholic Church.	.35	1960-66	3-31-66 5-25-66		.14 .10
40-8140	Right Fork of Left Branch Umatac River at Umatac	Lat 13°17'40" N., long 144°40'20" E., 50 ft above confluence with Left Fork and 0.9 mile southeast of Umatac Catholic Church.	.36	1960-66	3-31-66 4-27-66 5-25-66		.10 .07 0
40-8170	Toguan River near Umatac	Lat 13°17'05" N., long 144°39'35" E., at highway bridge on Route 4 and 1.0 mile south of Umatac Catholic Church.	.48	1952, 1960-66	3-31-66		.02
40-8200	Geus River above Siligin Spring tributary, near Merizo	Lat 13°16'45" N., long 144°49'55" E., above pipeline diversion to village of Merizo and 2.0 miles northeast of Merizo School.	.50	1960-66	3-31-66 4-27-66 5-25-66		.06 .08 .08
40-8205	Siligin Spring near Merizo	Lat 13°16'44" N., long 144°40'55" E., 0.2 mile above Geus River diversion dam and 1.6 miles northeast of Merizo School.	-	1954, 1961-66	3-31-66 4-27-66 5-25-66		.04 .04 .04
40-8207	Geus River below Siligin Spring tributary, near Merizo	Lat 13°16'41" N., long 144°40'55" E., 1.6 miles northeast of Merizo School and 2.0 miles southeast of Umatac School.	.60	1962-66	3-31-66 4-27-66 5-25-66		.12 .19 .25
40-8250	Ajayan River near Inarajan	Lat 13°15'16" N., long 144°42'56" E., 2.4 miles southwest of Inarajan School and 3.8 miles southeast of Merizo School.	1.08	1962-66	3-29-66 4-26-66		.09 .05
40-8300	Right Fork of Right Branch Inarajan River near Inarajan	Lat 13°17'00" N., long 144°43'25" E., above confluence with Left Fork and 1.6 miles northwest of Inarajan Catholic Church.	1.40	1960-66	3-29-66 4-26-66 6- 7-66		.81 .60 .43
40-8310	Left Fork of Right Branch Inarajan River near Inarajan	Lat 13°17'00" N., long 144°43'25" E., above confluence with Right Fork and 1.6 miles northwest of Inarajan Catholic Church.	.97	1960-66	3-29-66 4-26-66 6- 7-66		.60 .61 .59
40-8330	Right Fork of Left Branch Inarajan River near Inarajan	Lat 13°17'25" N., long 144°43'45" E., 1.6 miles northwest of Inarajan Catholic Church and 4.9 miles southwest of Talofofo School.	.84	1960-66	3-29-66 4-26-66		.54 .58
40-8340	Left Fork of Left Branch Inarajan River near Inarajan	Lat 13°17'10" N., long 144°44'10" E., above confluence with Right Fork and 1.0 mile northwest of Inarajan Catholic Church.	.39	1960-66	3-29-66 4-26-66		.09 .10
40-8420	Asalonso River near Talofofo	Lat 13°19'41" N., long 144°45'34" E., 300 ft below highway bridge on Route 4 and 1.8 miles south of Talofofo School.	1.50	1952, 1961-66	3-30-66		.27
40-8450	Tolaeyuus River near Agat	Lat 13°21'55" N., long 144°42'40" E., 3.7 miles southeast of Agat and 4.8 miles southwest of Yona.	6.54	1952-61≠, 1962-66	3-22-66 5- 2-66 5-23-66		.81 .28 .32
40-8460	Tolaeyuus River at mouth, near Agat	Lat 13°21'30" N., long 144°42'30" E., above confluence with Fena River, 0.4 mile east of Fena Dam spillway, and 4.0 miles southeast of Agat School.	7.42	1962-66	3-22-66 5- 2-66 5-23-66		.94 .49 .44
40-8540	Left Branch Ugum River near Talofofo	Lat 13°19'10" N., long 144°43'45" E., 50 ft above confluence with Right Branch and 2.9 miles southwest of Talofofo School.	2.96	1961-66	3-30-66 5- 5-66 6- 6-66		4.98 3.08 2.79
40-8545	Right Branch Ugum River near Talofofo	Lat 13°19'10" N., long 144°43'45" E., above confluence with Left Branch and 2.9 miles southwest of Talofofo School.	2.70	1961-66	3-30-66 5- 5-66 6-16-66		3.33 1.70 1.76

≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during fiscal year 1966--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Guam, Mariana Islands--Continued					
40-8590	Laft Branch Ylig River above pumping station, near Yona	Lat 13°24'05" N., long 144°45'05" E., 0.3 mile above Ylig River and 1.7 miles southwest of Yona Catholic Church.	1.98	1960-62, 1964-66	5- 2-66		0.08
40-8680	Santa Rosa Spring near Yigo	Lat 13°31'49" N., long 144°54'43" E., 0.3 mile south of radar station at Mt. Santa Rosa and 1.4 miles east of Yigo.	-	1962, 1964-66	5- 2-66		.03
40-8690	Chunge Spring near Yigo	Lat 13°32'07" N., long 144°54'52" E., 300 ft northeast of intersection of Mt. Santa Rosa Road and access road to FAA radar station and 1.6 miles east of Yigo School.	-	1962, 1964-66	5- 2-66		0
		Island of Okinawa, Ryukyu Islands					
40-8757	Hiji-gawa at Hiji	Lat 26°43'12" N., long 128°10'40" E., at Hiji, 0.4 mile above Taihoza-gawa, and 1.1 miles east of Hama.	3.3	1964-66	4-13-66 6-23-66		9.54 13.5
40-8758	Taihoza-gawa at Hiji	Lat 26°43'21" N., long 128°10'55" E., 0.2 mile east of Hiji, 0.6 mile above mouth, and 1.4 miles northeast of Hama.	2.3	1964-66	4-13-66 6-23-66		6.62 10.5
40-8765	Taiho-okawa at Taiho	Lat 26°39'01" N., long 128°08'37" E., 1.0 mile east of Taiho and 1.7 miles north of Taira.	5.2	1964-66	9-24-65 10-12-65 12-21-65 1-19-66 2- 4-66 3-24-66 5-31-66 6-23-66		7.59 6.85 7.10 14.0 45.9 13.7 28.7 25.3
40-8772	North Fork Henan-gawa at Tsuha	Lat 26°38'28" N., long 128°05'47" E., 0.4 mile above confluence with South Fork and 0.8 mile south of Tsuha.	1.4	1964-66	11-10-65 12-10-65 1- 6-66 4-25-66		2.91 1.32 1.08 2.56
40-8777	Genka-kawa at Genka	Lat 26°36'48" N., long 128°03'38" E., 0.9 mile southwest of Genka and 1.9 miles southeast of Nakaoshi.	5.5	1964, 1966	11-30-65 12-15-65 4-15-66 6-21-66		7.26 6.14 14.0 31.0
40-8780	Makiya-okawa at Makiya	Lat 26°37'10" N., long 128°02'18" E., 0.3 mile south of Makiya, 0.5 mile east of Nakaoshi, and 0.6 mile above mouth.	1.7	1964-66	10-20-65 11- 4-65 11-30-65 12-22-65 4-14-66 6-20-66		.99 1.19 2.00 1.77 3.69 8.23
40-8790	Manna-gawa at Manna	Lat 26°39'12" N., long 127°55'06" E., at Manna, 0.5 mile east of Inoha-shogakko (elementary school), and 1.4 miles above highway bridge at mouth.	2.2	1964-66	10-20-65 12-14-65 1-21-66 3-23-66 5- 9-66 6-22-66		4.50 2.98 5.46 6.30 27.9 22.5
40-8794	Yofuke-gawa at Yofuke	Lat 26°34'02" N., long 127°59'43" E., 0.6 mile southeast of Yofuke and 0.6 mile northeast of Sukuta.	1.2	1964-66	10-18-65 12- 3-65 3-31-66 6-20-66		.83 1.08 1.82 4.88
40-8795	Sukuta-kawa at Sukuta	Lat 26°33'33" N., long 127°59'23" E., 0.4 mile southeast of Sukuta, 0.6 mile above mouth, and 0.8 mile south of Yofuke.	1.1	1964-66	10-18-65 12- 3-65 3-31-66 6-20-66		.29 .70 1.28 3.82
40-8796	Fukuchi-gawa at Kyoda	Lat 26°32'37" N., long 127°58'40" E., 0.7 mile northeast of Kyoda and 1.5 miles southwest of Sukuta.	1.1	1964-66	10-18-65 12- 3-65 3-31-66 6-20-66		.37 .60 .95 4.07
40-8832	O-kawa at Kushi	Lat 26°30'50" N., long 127°59'50" E., 0.7 mile north of junction of Highways 13 and 108 and 0.7 mile west of Kushi.	1.3	1964-66	10-15-65 12- 6-65 1-15-66		1.13 .85 .73

Discharge measurements made at low-flow partial-record stations during fiscal year 1966--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Okinawa, Ryukyu Islands--Continued					
40-8835	Suginda-gawa at Suginda	Lat 26°32'41" N., long 128°01'56" E., 0.1 mile west of Suginda and 0.4 mile south of Futami.	0.9	1964-66	10-15-65		1.04
					12- 6-65		1.33
					1- 4-66		.75
					1-13-66		.59
					3- 4-66		4.70
					3-30-66		.91
					6-21-66		5.00
40-8836	Oura-gawa at Oura	Lat 26°33'32" N., long 128°02'35" E., 0.5 mile north of Oura and 1.0 mile northwest of Sedake.	3.1	1964-66	10-15-65		3.80
					12- 6-65		3.43
					1- 4-66		3.32
					1-13-66		2.75
					3- 4-66		7.76
					3-30-66		6.20
40-8838	Teema-gawa at Mihara	Lat 26°33'11" N., long 128°04'48" E., below Mihara-gawa, 0.1 mile southeast of Mihara-shochugakko (school), and 0.9 mile east of Teema.	3.2	1964-66	10-15-65		4.33
					12- 6-65		4.14
					1- 4-66		4.30
					1-13-66		3.31
					3- 4-66		6.04
					3-30-66		5.34
					6-21-66		17.8

Jan. 13 1969

Crest-stage partial-record stations

Crest-stage partial-record stations 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 discharges 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 fiscal year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent fiscal years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Island of Okinawa, Ryukyu Islands					
40-8808	Hiya-gawa at Ojana	lat 26°15'35" N., long 127°44'08" E., 0.1 mile south of Ojana and 0.6 mile above mouth.	2.2	1964-66	8-5-65	4.2	(f)
40-8812	Kanegusuku-gawa at Kanegusuku	lat 26°11'31" N., long 127°43'36" E., 0.2 mile northwest of Kanegusuku and 1.3 miles east of Kokubu.	3.0	1964-66	8-5-65	9.5	(f)
40-8815	Mukue-gawa near Itomancho	lat 26°07'58" N., long 127°41'22" E., at highway bridge, 0.6 mile west of Yoza, and 0.9 mile northeast of Itomancho.	6.4	1964-66	8-5-65	10.9	(f)

f Discharge not determined.

Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table.

Discharge measurements made at miscellaneous sites during fiscal year 1966

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
Island of Kauai						
Kawaikoi Stream tributary	Kawaikoi Stream	Lat 22°08'05", long 159°37'29", at mouth, 100 ft below Kawaikoi Stream gaging station, and 12.5 miles north of Waimea.	1963, 1965	8-25-65	0.08	0.12
				10- 5-65	.07	.11
				11-17-65	.36	.56
				1-24-66	.11	.17
				3-21-66	.14	.22
				5-16-66	.09	.14
Island of Oahu						
Unnamed stream	Pacific Ocean	Lat 21°28'07", long 158°12'07", 0.6 mile northeast of intersection of Farrington Highway and Makaha Valley Road and 1.9 miles southwest of Kaneaki Heiau.		11-13-65	/283	/438
Waimanalo Stream	Pacific Ocean	Lat 21°21'09", long 157°44'00", 0.2 mile above Kalanianaole Highway and 1.0 mile west of Waimanalo School.	1963	11-13-65	/1,510	/2,340
Heeia Stream	Pacific Ocean	Lat 21°25'15", long 157°49'02", at Kahekili Highway, 700 ft downstream from Iolekaa Stream, and 0.8 mile southwest of Heeia.		11-14-65	/1,530	/2,370
Island of Molokai						
Honouliwai Stream	Pacific Ocean	Lat 21°06'51", long 156°44'54", 100 ft above Highway 45 and 3.2 miles south of Halawa School.		3-11-66	2.21	3.42
Honoulimaloo Stream	Pacific Ocean	Lat 21°07'29", long 156°44'58", 50 ft above unnamed tributary and 1.8 miles southwest of Puu O Hoku Ranch.		1-22-66	.65	1.01
				3-12-66	.76	1.18
Honoulimaloo Spring	Honoulimaloo Stream	Lat 21°07'29", long 156°45'05", 700 ft above mouth of unnamed tributary and 1.8 miles southwest of Puu O Hoku Ranch.		1-22-66	.02	.03
				3-12-66	.02	.03
Honoulimaloo Stream tributary	Honoulimaloo Stream	Lat 21°07'29", long 156°44'59", 100 ft above mouth and 1.8 miles southwest of Puu O Hoku Ranch.		1-22-66	.06	.09
				3-12-66	.25	.39
Honoulimaloo Stream	Pacific Ocean	Lat 21°07'03", long 156°44'38", 120 ft above Highway 45 and 2.1 miles south of Puu O Hoku Ranch.		3-11-66	.89	1.38
Island of Maui						
Nailiilihaele Stream tributary	Nailiilihaele Stream	Lat 20°50'27", long 156°14'00", at Lower Kula pipeline crossing, 2.6 miles east of Kailiili, and 4.6 miles south of Huelo.		10-11-65	.11	.17
				6- 6-66	.08	.12
Island of Hawaii						
Wailuku River	Pacific Ocean	Lat 19°42'59", long 155°18'28", 5.3 miles southeast of Pua Akala and 11.0 miles west of Piihonua.		9-15-65	.06	.09
				12- 7-65	1.51	2.34
				1-25-66	.23	.36
				3-10-66	.04	.06
				4-14-66	.04	.06
				5-18-66	.24	.37
				6-14-66	.02	.03
Wailuku River	Pacific Ocean	Lat 19°42'57", long 155°17'51", 5.6 miles southeast of Pua Akala and 10.3 miles west of Piihonua.		9-15-65	.10	.16
				9-30-65	.03	.05
				10- 6-65	.01	.02
Wailuku River	Pacific Ocean	Lat 19°43'01", long 155°17'34", 5.7 miles southeast of Pua Akala and 10.0 miles west of Piihonua.		9-15-65	.11	.17
				12- 7-65	2.15	3.33
				1-25-66	.32	.50
				3-10-66	.07	.11
				5-18-66	.48	.74
				6-14-66	.05	.08

/ Peak flow.

Discharge measurements made at miscellaneous sites during fiscal year 1966--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
		Island of Hawaii--Continued				
Wailuku River	Pacific Ocean	Lat 19°43'05", long 155°17'20", 5.8 miles southeast of Pua Akala and 9.7 miles west of Piihonua.		9-15-65	0.20	0.31
				9-30-65	.10	.16
				10- 6-65	.04	.06
Wailuku River	Pacific Ocean	Lat 19°43'00", long 155°17'10", 5.9 miles southeast of Pua Akala and 9.5 miles west of Piihonua.		9-15-65	.20	.31
Wailuku River	Pacific Ocean	Lat 19°43'05", long 155°16'55", 6.0 miles southeast of Pua Akala and 9.3 miles west of Piihonua.	1964	9-15-65	.44	.68
				9-30-65	.38	.59
				10- 6-65	.09	.14
Wailuku River	Pacific Ocean	Lat 19°43'08", long 155°16'41", 6.1 miles southeast of Pua Akala and 9.1 miles west of Piihonua.		11- 4-65	5.10	7.89
				11-10-65	.37	.57
				12- 7-65	5.71	8.83
				1-25-66	1.36	2.10
				3-10-66	.25	.39
				4-14-66	.73	1.13
				5-18-66	1.82	2.82
				6-14-66	.38	.59
Wailuku River tributary	Wailuku River	Lat 19°43'18", long 155°16'53", 5.8 miles southeast of Pua Akala and 9.3 miles west of Piihonua.		10-22-65	.10	.16
Wailuku River tributary	Wailuku River	Lat 19°43'09", long 155°16'41", 100 ft above mouth, 6.1 miles southeast of Pua Akala, and 9.1 miles west of Piihonua.		10- 6-65	.09	.14
				10-22-65	.12	.19
				11- 4-65	1.67	2.58
				11-10-65	.22	.34
				12- 7-65	3.80	5.88
				1-25-66	.53	.82
				3-10-66	.29	.45
				4-14-66	.25	.39
				5-18-66	.68	1.05
				6-14-66	.27	.42
Wailuku River	Pacific Ocean	Lat 19°43'08", long 155°16'25", 6.3 miles southeast of Pua Akala and 8.8 miles west of Piihonua.		9-16-65	.54	.84
				9-22-65	.42	.65
				9-30-65	.78	1.21
				10- 6-65	.18	.28
				11- 4-65	3.26	5.04
				11-10-65	.64	.99
				3-10-66	.52	.80
				4-14-66	1.36	2.10
Wailuku River	Pacific Ocean	Lat 19°43'15", long 155°16'10", 6.4 miles southeast of Pua Akala and 8.5 miles west of Piihonua.		9-23-65	.37	.57
				9-30-65	.59	.91
				10- 6-65	.16	.25
				10-21-65	.45	.70
				11- 4-65	4.71	7.29
				11-10-65	.69	1.07
Waipahoehoe Gulch	Wailuku River	Lat 19°43'34", long 155°16'18", 0.6 mile above mouth, 6.0 miles southeast of Pua Akala, and 8.7 miles west of Piihonua.		10-20-65	.24	.37
				11- 4-65	.88	1.36
				11-10-65	.20	.31
				3-10-66	.06	.09
				4-14-66	.17	.26
Waipahoehoe Gulch tributary	Waipahoehoe Gulch	Lat 19°43'42", long 155°16'35", 0.4 mile above mouth, 5.7 miles southeast of Pua Akala, and 9.0 miles west of Piihonua.		10-20-65	.05	.08
Waipahoehoe Gulch tributary	Waipahoehoe Gulch	Lat 19°43'34", long 155°16'17", 50 ft above mouth, 6.0 miles southeast of Pua Akala, and 8.7 miles west of Piihonua.		10-20-65	.09	.14
				11- 4-65	.54	.84
				11-10-65	.11	.17
				3-10-66	.07	.11
				4-14-66	.17	.26
Waipahoehoe Gulch	Wailuku River	Lat 19°43'30", long 155°16'13", 0.4 mile above mouth, 6.1 miles southeast of Pua Akala, and 8.6 miles west of Piihonua.		9-23-65	.09	.14

Discharge measurements made at miscellaneous sites during fiscal year 1966--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
		Island of Hawaii--Continued				
Waipahoehoe Gulch	Wailuku River	Lat 19°43'22", long 155°16'06", 0.2 mile above mouth, 6.3 miles southeast of Pua Akala, and 8.5 miles west of Piihonua.		9-23-65	0.10	0.16
				10-20-65	.46	.71
				11- 4-65	1.10	1.70
				11-10-65	.26	.40
				3-10-66	.09	.14
				4-14-66	.40	.62
Waipahoehoe Gulch tributary No. 2	Waipahoehoe Gulch	Lat 19°43'18", long 155°16'34", 0.6 mile above mouth, 6.1 miles southeast of Pua Akala, and 8.9 miles west of Piihonua.		10-21-65	.05	.08
Waipahoehoe Gulch tributary No. 2	Waipahoehoe Gulch	Lat 19°43'21", long 155°16'25", 0.4 mile above mouth, 6.1 miles southeast of Pua Akala, and 8.8 miles west of Piihonua.		10-21-65	.10	.16
				11- 4-65	.83	1.28
				11-10-65	.15	.23
				3-10-66	.04	.06
				4-14-66	.17	.26
Waipahoehoe Gulch tributary No. 2	Waipahoehoe Gulch	Lat 19°43'23", long 155°16'16", 0.2 mile above mouth, 6.2 miles southeast of Pua Akala, and 8.6 miles west of Piihonua.		10-21-65	.10	.16
Waipahoehoe Gulch tributary No. 2	Waipahoehoe Gulch	Lat 19°43'22", long 155°16'07", 50 ft above mouth, 6.3 miles southeast of Pua Akala, and 8.5 miles west of Piihonua.		10-21-65	.12	.19
				11- 4-65	.90	1.39
				11-10-65	.18	.28
				3-10-66	.10	.16
				4-14-66	.25	.39
Waipahoehoe Gulch	Wailuku River	Lat 19°43'23", long 155°16'02", 900 ft above mouth, 6.4 miles southeast of Pua Akala, and 8.4 miles west of Piihonua.		10- 6-65	.09	.14
				10-21-65	.15	.23
Waipahoehoe Gulch	Wailuku River	(a) Lat 19°43'21", long 155°15'58", 200 ft above mouth, 6.5 miles southeast of Pua Akala, and 8.3 miles west of Piihonua.	1964	9-23-65	.03	.05
Wailuku River tributary No. 2	Wailuku River	Lat 19°43'45", long 155°16'15", 6.0 miles southeast of Pua Akala and 8.7 miles west of Piihonua.		11- 4-65	.79	1.22
				11-10-65	.02	.03
				3-10-66	0	0
				4-14-66	.06	.09
Wailuku River tributary No. 3	Wailuku River	Lat 19°43'36", long 155°16'15", 5.9 miles southeast of Pua Akala and 8.7 miles west of Piihonua.		11-10-65	.07	.11
				3-10-66	.04	.06
				4-14-66	.05	.08
Wailuku River tributary No. 2	Wailuku River	Lat 19°43'21", long 155°15'32", 100 ft above mouth, 6.8 miles southeast of Pua Akala, and 7.8 miles west of Piihonua.		9-16-65	.02	.03
Wailuku River	Pacific Ocean	Lat 19°43'20", long 155°15'31", 6.8 miles southeast of Pua Akala and 7.8 miles west of Piihonua.		9-16-65	.23	.36
Wailuku River	Pacific Ocean	Lat 19°43'02", long 155°15'14", 7.3 miles southeast of Pua Akala and 7.4 miles west of Piihonua.	1964	9-16-65	.14	.22
Wailuku River tributary No. 4	Wailuku River	Lat 19°42'36", long 155°16'22", 6.8 miles southeast of Pua Akala and 8.7 miles west of Piihonua.	1965	9-16-65	.02	.03
				11- 4-65	.15	.23
				11-10-65	.17	.26
				4-14-66	.01	.02
				5-18-66	.10	.16
Kolekole Stream	Pacific Ocean	Lat 19°52'50", long 155°07'30", 0.5 mile above mouth and 0.7 mile northwest of Honomu.		9- 7-65	1.65	2.55
Manowaiopae Stream	Pacific Ocean	Lat 19°58'32", long 155°14'45", 1.2 miles above mouth and 1.5 miles south of Laupahoehoe Point.		7- 1-65	.45	.70
				7-26-65	.16	.25
				8- 4-65	.14	.22
				8-24-65	.15	.23
				9- 3-65	.10	.16
				9- 7-65	.08	.12
				9-10-65	.08	.12
				9-28-65	.05	.08
				10-27-65	.06	.09

a Revised.

Discharge measurements made at miscellaneous sites during fiscal year 1966--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
		Island of Hawaii--Continued				
Manowaiopae Stream	Pacific Ocean	Lat 19°58'33", long 155°14'45", 1.2 miles above mouth and 1.5 miles south of Laupahoehoe Point.		7- 1-65	0.60	0.93
				7-26-65	.34	.53
				8- 4-65	.24	.37
				9- 3-65	.10	.16
				9- 7-65	.11	.17
				9-10-65	.08	.12
				9-14-65	.08	.12
Manowaiopae Stream	Pacific Ocean	Lat 19°58'34", long 155°14'45", 1.1 miles above mouth and 1.5 miles south of Laupahoehoe Point.		7- 1-65	.69	1.07
				7-26-65	.35	.54
				8- 4-65	.34	.53
				8-24-65	.24	.37
				9- 3-65	.15	.23
				9- 7-65	.14	.22
				9-10-65	.12	.19
				9-14-65	.14	.22
				9-28-65	.08	.12
Manowaiopae Stream	Pacific Ocean	Lat 19°59'07", long 155°14'06", 0.2 mile above mouth and 1.0 mile southeast of Laupahoehoe Point.		7- 1-65	.93	1.44
				7-26-65	.36	.56
				8- 4-65	.26	.40
				8-24-65	.11	.17
				9- 3-65	.05	.08
				9- 7-65	.09	.14
				9-10-65	.07	.11
Waima Stream	Wailoa Stream	Lat 20°04'06", long 155°37'36", 70 ft below Lower Hamakua ditch, 0.7 mile above confluence with Waipio Stream, and 4.2 miles northeast of Kamuela.		9-27-65	.99	1.53
Waima Spring	Waima Stream	Lat 20°04'06", long 155°37'35", 30 ft to right of Waima Stream at point 0.7 mile above confluence with Waipio Stream and 4.2 miles northeast of Kamuela.		9-27-65	1.79	2.77
Waima Stream	Wailoa Stream	Lat 20°04'09", long 155°37'34", 0.7 mile above confluence with Waipio Stream and 4.3 miles northeast of Kamuela.		9-27-65	4.55	7.04
Waima Stream	Wailoa Stream	Lat 20°04'20", long 155°37'28", 0.4 mile above confluence with Waipio Stream and 4.6 miles southwest of Kukuihaele.		2- 1-66	6.29	9.73
Waima Stream	Wailoa Stream	Lat 20°04'21", long 155°37'27", 0.4 mile above confluence with Waipio Stream and 4.6 miles southwest of Kukuihaele.		2- 1-66	6.79	10.5
Waima Stream	Wailoa Stream	Lat 20°04'22", long 155°37'27", 0.4 mile above confluence with Waipio Stream and 4.5 miles southwest of Kukuihaele.		2- 1-66	7.57	11.7
Waima Stream	Wailoa Stream	Lat 20°04'43", long 155°37'22", 150 ft above confluence with Waipio Stream and 4.2 miles southwest of Kukuihaele.		9-27-65	11.8	18.3
West Branch Honokane Iki Stream	Honokane Iki Stream	(a) Lat 20°09'47", long 155°43'25", 30 ft below trail crossing, 1.8 miles above confluence with East Branch, and 4.5 miles south of Niulii.	1961-65	7-30-65	.04	.06
				9-22-65	0	0
				11-18-65	.43	.66
				1-12-66	.24	.37
				3- 4-66	1.50	2.32
				4-20-66	.24	.37
				6- 8-66	.03	.05
East Branch Honokane Nui Stream	Honokane Nui Stream	(a) Lat 20°08'58", long 155°43'59", at trail crossing, 0.2 mile above confluence with West Branch, and 5.3 miles south of Niulii.	1964-65	7-27-65	3.08	4.77
				9-21-65	1.55	2.40
				11-17-65	2.62	4.05
				1-11-66	2.37	3.67
				3- 1-66	1.87	2.89
				4-19-66	1.54	2.38
				6- 7-66	.13	.20
Kohakohau Stream	Pacific Ocean	Lat 20°01'50", long 155°41'23", 0.8 mile east of Waiaka and 1.3 miles northwest of Kamuela.		5- 4-66	1.91	2.96

a Revised.

Discharge measurements made at miscellaneous sites during fiscal year 1966--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
		Island of Hawaii--Continued				
Kawa Springs	Pacific Ocean	(a) Lat 19°06'51", long 155°31'47", 0.2 mile southwest of Keeku Keiau and 2.0 miles northeast of sugar mill at Honuapo.	1964-65	3- 8-66 5- 4-66 6- 3-66	7.30 6.59 6.59	11.3 10.2 10.2
Ninole Springs	Pacific Ocean	(a) Lat 19°07'57", long 155°30'54", 0.7 mile southwest of Punaluu and 3.6 miles northeast of Honuapo.	1964-65	3- 8-66 5- 4-66 6- 3-66	22.1 19.5 24.0	34.2 30.2 37.1
		Island of Tutuila, Samoa Islands				
Fagaalu Stream	Pacific Ocean	Lat 14°17'47" S., long 170°41'00" W., 450 ft above mouth at Fagaalu.		6-19-66	3.44	5.32
Fagaalu Stream	Pacific Ocean	Lat 14°17'47" S., long 170°40'59" W., 350 ft above mouth at Fagaalu.		6-19-66	2.93	4.53
Fagaalu Stream	Pacific Ocean	Lat 14°17'47" S., long 170°40'57" W., 200 ft above mouth at Fagaalu.		6-19-66	3.16	4.89

a Revised.

United States Department of the Interior
Geological Survey-Water Resources Division

WATER RESOURCES DATA FOR HAWAII AND OTHER PACIFIC AREAS

1966

Part 2. Water Quality Records

Prepared in cooperation with

Corps of Engineers, U.S. Army

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
Room 330, First Insurance Bldg.
1100 Ward Avenue
Honolulu, Hawaii 96814

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Part 2. Water Quality Records

[*Symbols after station name designate type of data: c, chemical; t, water temperature; s, sediment*]

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WATER RESOURCES DATA FOR HAWAII AND OTHER PACIFIC AREAS, 1966

Part 2. Water Quality Records

INTRODUCTION

The water quality records for the period July 1965 to June 1966 for daily sampling stations and partial-record sites in Okinawa are given in this report. Some additional data are available in files of the district office. The data were collected and computed by the Water Resources Division of the U.S. Geological Survey, under the direction of Mearle M. Miller, district chief.

Distribution of this report is limited and it is primarily for local and immediate use. The records will be published in the Geological Survey water supply papers at 5-year intervals.

Water quality information is presented for chemical quality, fluvial, sediment, and water temperatures. The chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, specific conductance, and pH. Fluvial sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material. Water temperature data represent once-daily observations.

COOPERATION

The work was done by the U.S. Geological Survey with assistance in the form of funds given by the Corps of Engineers, U.S. Army.

DEFINITION OF TERMS AND ABBREVIATIONS

A number of terms commonly used in relation to hydrologic data are defined in Part 1 of this report. Other terms related especially to water quality data are as follows:

Color in water analysis refers to the appearance of water that is free from suspended solids. Many turbid waters that appear yellow, red, or brown when viewed in the stream show very little color after the suspended matter has been removed. The yellow-to-brown color of some waters is usually caused by organic matter extracted from leaves, roots, and other organic substances in the ground. A color less than 10 units generally passes unnoticed. Some swamp waters have natural color of 200 to 300 units or more.

Cubic feet per second (cfs) is a unit expressing rates of discharge. One cubic foot per second is equal to the discharge of a stream of rectangular cross section, 1 foot wide and 1 foot deep, flowing water at an average velocity of 1 foot per second.

Discharge in its simplest concept, means outflow; therefore, the use of this term is not restricted as to course or location, and it can be applied to describe the flow of water from a pipe or from a drainage basin. It is also correct to speak of the discharge of a canal or stream into a lake, a stream, or an ocean.

Daily mean discharge is the mean discharge for one day.

Mean daily discharge is the arithmetic mean discharge for the same day during a specific period of years.

Mean discharge is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge (at time of sampling) If the discharge value at the time of sampling is

reported instead of daily mean value, the heading of the discharge column will be given as "Discharge (cfs)."

Drainage area is that area, in a specified location, measured in a horizontal plane, which is enclosed by a drainage divide.

Equivalents per million (epm) is a unit for expressing the concentration of chemical constituents in solution in terms of the interreacting values of the electrically charged particles, or ions. One equivalent per million of a positively charged ion will react with one equivalent per million of a negatively charged ion. Parts per million is converted to equivalents per million by multiplying by the reciprocal of the combining weight of the ion. (See table, p. 240)

Hardness of water is the property of water attributable to the presence of alkaline earths and is expressed as equivalent calcium carbonate ($CaCO_3$). Hardness is a physical-chemical characteristic, not a substance.

Particle size is the diameter, in millimeters (mm) of suspended sediment or bed material determined by sieve and sedimentation methods.

Particle-size classification agrees closely with recommendations made by the American Geophysical Union Subcommittee on sediment terminology (Lane and others, 1947, p. 937). The classification is as follows:

Clay: Smaller than 0.004 mm.
Silt: Between 0.004 and 0.062 mm.
Sand: Between 0.062 and 2.0 mm.
Gravel: Between 2.0 and 64.0 mm.

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

Conversion factors: Parts per million to equivalents per million

Ion	Multiply by
Aluminum (Al^{+3})	0.11119
Barium (Ba^{+2})	.01456
Bicarbonate (HCO_3^{-1})	.01639
Bromide (Br^{-1})	.01251
Calcium (Ca^{+2})	.04990
Carbonate (CO_3^{-2})	.03333
Chloride (Cl^{-1})	.02821
Chromium (Cr^{+6})	.11539
Cobalt (Co^{+2})	.03394
Copper (Cu^{+2})	.03148
Fluoride (F^{-1})	.05264
Hydrogen (H^{+1})	.99209
Hydroxide (OH^{-1})	.05880
Iodide (I^{-1})	.00788
Iron (Fe^{+3})	.05372
Lead (Pb^{+2})	.00965
Lithium (Li^{+1})	.14411
Magnesium (Mg^{+2})	.08226
Manganese (Mn^{+2})	.03640
Nickel (Ni^{+2})	.03406
Nitrate (NO_3^{-1})	.01613
Nitrite (NO_2^{-1})	.02174
Phosphate (PO_4^{-3})	.03159
Potassium (K^{+1})	.02557
Sodium (Na^{+1})	.04350
Strontium (Sr^{+2})	.02283
Sulfate (SO_4^{-2})	.02083
Zinc (Zn^{+2})	.03060

Parts per million (ppm) is a unit for expressing the concentration of chemical constituents by weight, usually as grams of constituents per million grams of solution. In the laboratory the results are expressed in weights of solutes in a given volume of water. To express the results in parts per million, the data must be converted. For most waters, this conversion is made by assuming that a liter of water weighs 1 kilogram; thus milligrams per liter is equivalent to parts per million. Parts per million, for suspended sediment, is computed as 1 million times the ratio of the weight of sediment to the weight of the mixture of water and sediment.

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.

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.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks and 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. The following general relations are applicable:

Specific conductance x (0.65 ± 0.05) = ppm dissolved solids;

$$\frac{\text{Specific conductance}}{100} = \frac{\text{total epm}}{2}$$

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.

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in parts per million 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 period.

COLLECTION AND EXAMINATION OF SAMPLES

Water samples for analyses usually are collected at or near points on streams where gaging stations are maintained by the U.S. Geological Survey for measurement of water discharge. These discharge records are published in Part 1 of this report.

Some of these records are used in conjunction with the computations of the chemical constituents and sediment loads in this report.

Data on the quality of surface waters were collected infrequently at several stations.

Solutes

Data for chemical-quality sites include the chemical characteristics of water collected at a single point in the stream. The methods of collecting and analyzing water samples for determining the kinds and concentrations of solutes are described by Rainwater and Thatcher (1960). 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.

Temperature

Water temperatures were measured at most of the water-quality stations. For daily stations, the water temperatures were taken at about the same time each day in order that the data would be relatively unaffected by diurnal variations in temperature. The thermometers used for determining the water temperature were accurate to plus or minus 0.5°F.

Sediment

At some stations, suspended-sediment samples were collected daily with depth-integrating cable-suspended samplers from fixed sampling points at three or more

verticals in the cross section. A hand sampler was used at many stations during periods of low flow. Depth-integrated samples were collected periodically at many verticals in the cross section to determine the ratio of the cross sectional distribution of the concentration of suspended sediment to the daily sampling verticals. During periods of high or rapidly changing flow, samples were taken twice or more often throughout the day at most stations. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

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

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

40-8755. YONA-GAWA AT YONA, OKINAWA

LOCATION.--At gaging station 0.9 mile southeast of Yona, and 2.7 miles east of Hontona School.
DRAINAGE AREA.--1.7 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: May 1964 to June 1966.
Sediment records: May 1964 to June 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 83°F Aug. 23; minimum, 53°F Jan. 6.
Sediment concentrations: Maximum daily, 540 ppm May 12; minimum daily, 1 ppm on many days.
Sediment loads: Maximum daily, 1,500 tons May 12; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1964-66.--Water temperatures: Maximum, 83°F July 15, Aug. 10, 1964, Aug. 23, 1965; minimum, 51°F Jan. 16, 1965.
Sediment concentrations: Maximum daily, 540 ppm May 12, 1966; minimum daily, 1 ppm on many days each year.
Sediment loads: Maximum daily, 1,500 tons May 12, 1966; minimum daily, less than 0.05 ton on many days each year.

Chemical analyses, in parts per million, fiscal year July 1965 to June 1966

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (calculated): Parts per million	Dissolved solids (calculated): Tons per acre-foot	Dissolved solids (calculated): Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
June 1, 1966.....	20	16	0.20	4.0	2.1	15	1.0	18	0	6.5	22	0.1	0.0		71	0.10		15	3		95	7.3	40
June 8.....	54	11	.30	2.8	1.0	10	1.0	12	0	4.8	15	.2	.0		50	.07		10	1		95	7.2	60
June 24.....	7.2	15	.06	4.4	2.7	15	.7	21	0	6.7	24	.1	.0		86	.12		17	5		100	7.2	5

Temperature (°F) of water, fiscal year July 1965 to June 1966

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
July.....	76	70	75	76	76	75	76	74	74	76	79	75	75	76	77	78	79	76	76	76	77	78	76	76	80	77	78	77	77	76	77	76
August.....	81	76	76	76	75	75	75	73	74	74	74	75	78	78	76	75	77	76	76	78	75	78	83	78	75	79	79	79	76	75	77	77
September....	76	75	76	77	80	80	79	77	77	76	76	75	--	--	75	75	74	73	74	73	77	--	75	74	75	--	--	--	--	--	--	--
October.....	--	--	--	--	--	72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
November.....	--	--	--	--	69	69	70	70	71	67	69	67	66	69	67	71	68	67	68	68	68	66	67	69	69	63	63	65	64	64	--	67
December.....	61	59	63	62	64	63	63	63	62	60	64	62	59	59	60	60	56	57	57	61	63	65	65	62	59	62	62	59	61	60	56	61
January.....	55	56	55	55	54	53	55	54	59	60	63	63	68	64	60	62	62	63	59	57	56	56	58	58	60	59	58	58	58	58	59	59
February.....	57	61	60	61	58	55	57	56	55	58	63	60	58	56	60	63	61	60	62	60	63	65	59	57	58	65	62	60	--	--	--	60
March.....	63	63	65	67	65	69	68	65	61	62	64	64	66	64	65	65	64	67	59	58	60	69	66	65	64	60	61	62	61	60	61	64
April.....	63	62	62	67	64	63	66	65	73	68	69	67	69	68	71	65	63	64	63	68	67	69	68	71	72	73	73	67	72	70	--	67
May.....	68	72	66	65	66	68	70	67	69	74	70	68	69	70	71	73	67	67	68	71	68	71	71	69	66	65	68	70	72	70	71	69
June.....	72	71	72	70	67	70	66	68	69	70	71	70	69	69	68	69	71	70	71	69	70	68	68	72	76	79	78	75	78	76	--	71

40-8755. YONA-GAWA AT YONA, OKINAWA--Continued

Suspended sediment, fiscal year July 1965 to June 1966

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	13	3	0.1	3.2	1	T	3.4	2	T
2..	12	3	.1	3.2	1	T	3.0	1	T
3..	11	3	.1	3.6	3	T	3.0	1	T
4..	10	5	.1	38	129	S 94	3.0	1	T
5..	9.1	3	.1	216	290	K 320	2.8	1	T
6..	8.3	3	.1	19	3	.2	2.8	1	T
7..	7.9	2	T	15	5	.2	3.0	2	T
8..	7.5	2	T	16	13	.6	2.7	2	T
9..	6.8	2	T	10	4	.1	2.7	1	T
10..	6.5	2	T	8.3	4	.1	2.7	1	T
11..	6.2	2	T	7.2	4	.1	2.6	1	T
12..	6.2	2	T	6.5	4	.1	2.6	1	T
13..	5.9	2	T	5.9	4	.1	5.4	8	0.1
14..	5.6	2	T	5.6	4	.1	24	11	S 1.2
15..	5.3	2	T	5.3	4	.1	7.9	5	.1
16..	5.3	2	T	5.0	3	T	6.8	4	.1
17..	5.0	2	T	4.7	3	T	5.9	4	.1
18..	4.7	1	T	6.4	6	.1	4.0	3	T
19..	4.4	1	T	6.2	5	.1	3.6	3	T
20..	4.2	1	T	4.2	2	T	3.4	3	T
21..	4.2	1	T	4.0	2	T	3.2	3	T
22..	4.0	1	T	3.8	1	T	3.6	3	T
23..	3.8	1	T	3.6	1	T	4.7	5	.1
24..	3.6	1	T	3.6	1	T	4.2	4	T
25..	3.8	1	T	3.4	1	T	25	145	S 34
26..	3.6	1	T	3.4	1	T	43	180	K 50
27..	3.6	1	T	3.4	1	T	13	8	.3
28..	3.6	1	T	3.4	1	T	8.3	6	.1
29..	3.4	1	T	5.2	6	.1	6.5	5	.1
30..	3.4	1	T	3.6	2	T	5.9	4	.1
31..	3.2	1	T	4.0	3	T	--	--	--
Total	185.1	--	1.1	430.7	--	416.3	212.7	--	86.6
	OCTOBER			NOVEMBER			DECEMBER		
1..	5.3	3	T	3.0	4	T	3.0	2	T
2..	4.7	3	T	2.8	3	T	3.0	2	T
3..	4.2	3	T	2.8	2	T	3.0	2	T
4..	4.0	3	T	2.7	2	T	2.8	2	T
5..	3.8	2	T	2.6	2	T	2.8	2	T
6..	3.8	2	T	2.7	3	T	3.0	7	0.1
7..	3.8	2	T	2.6	2	T	2.8	4	T
8..	3.4	2	T	2.6	2	T	3.2	3	T
9..	3.4	2	T	10	41	S 1.9	3.0	3	T
10..	3.2	2	T	4.4	5	.1	2.8	3	T
11..	3.0	2	T	3.4	4	T	3.5	3	T
12..	3.0	2	T	3.0	3	T	4.0	5	.1
13..	11	14	S 0.8	4.9	12	.2	3.0	3	T
14..	5.0	9	.1	89	96	S 46	2.7	2	T
15..	3.6	5	T	13	6	.2	3.0	3	T
16..	3.2	4	T	8.7	5	.1	4.5	3	T
17..	3.0	3	T	6.8	4	.1	3.0	2	T
18..	3.6	5	T	6.2	4	.1	2.8	2	T
19..	3.0	3	T	5.6	3	T	2.7	2	T
20..	2.8	3	T	5.0	3	T	3.2	2	T
21..	2.8	2	T	4.7	3	T	3.5	2	T
22..	2.7	2	T	4.2	3	T	3.0	2	T
23..	2.7	2	T	4.0	3	T	6.0	6	.1
24..	2.7	2	T	4.0	3	T	10	12	S .3
25..	2.8	3	T	3.8	4	T	4.0	4	T
26..	4.2	5	.1	3.6	3	T	3.0	3	T
27..	2.8	4	T	3.4	2	T	3.5	3	T
28..	3.3	7	.1	3.4	2	T	3.0	3	T
29..	9.6	16	S .6	3.4	2	T	2.9	3	T
30..	3.4	6	.1	3.2	2	T	2.8	3	T
31..	3.6	6	.1	--	--	--	2.8	3	T
Total	121.4	--	2.5	219.5	--	49.3	106.3	--	1.2

S Computed by subdividing day.
T Less than 0.05 ton.
K Computed from estimated-concentration graph and subdividing day.

40-8755. YONA-GAWA AT YONA, OKINAWA--Continued

Suspended sediment, fiscal year July 1965 to June 1966--Continued

Day	JANUARY Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Suspended sediment Tons per day	FEBRUARY Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Suspended sediment Tons per day	MARCH Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Suspended sediment Tons per day
1..	2.8	2	T	9.1	3	0.1	6.5	4	0.1
2..	2.7	2	T	8.3	2	T	6.2	5	.1
3..	3.2	4	T	7.2	2	T	5.6	4	.1
4..	3.2	3	T	11	7	.2	9.4	9	S .3
5..	2.7	2	T	10	4	.1	6.8	4	.1
6..	2.6	2	T	8.3	3	.1	5.6	3	T
7..	2.6	2	T	6.8	2	T	5.3	3	T
8..	2.4	2	T	6.5	2	T	5.3	3	T
9..	2.4	2	T	5.9	2	T	4.7	2	T
10..	2.8	3	T	5.6	2	T	4.4	2	T
11..	3.0	3	T	5.9	1	T	5.6	7	.1
12..	2.7	3	T	5.3	1	T	5.6	4	.1
13..	2.4	3	T	6.6	7	.1	13	10	S .6
14..	2.4	2	T	7.9	6	.1	7.2	4	.1
15..	2.2	2	T	5.3	4	.1	6.8	3	.1
16..	27	114	S 29	5.3	4	.1	6.2	4	.1
17..	6.5	6	0.1	6.2	4	.1	5.9	4	.1
18..	47	58	S 21	4.7	3	T	6.8	5	.1
19..	8.7	3	.1	4.2	3	T	5.6	4	.1
20..	6.2	2	T	4.0	2	T	5.3	3	T
21..	5.0	2	T	4.0	2	T	5.0	2	T
22..	4.4	2	T	4.2	3	T	5.0	3	T
23..	4.4	2	T	4.4	3	T	5.3	3	T
24..	4.2	2	T	3.8	3	T	4.4	3	T
25..	45	40	S 6.7	3.8	3	T	4.2	3	T
26..	13	4	.1	4.0	5	.1	22	14	S 1.1
27..	9.5	3	.1	45	122	S 72	9.5	3	.1
28..	7.9	2	T	7.9	5	.1	6.8	2	T
29..	10	5	.1	--	--	--	5.9	2	T
30..	14	8	S .7	--	--	--	5.6	2	T
31..	10	4	.1	--	--	--	5.6	2	T
Total	262.9	--	58.4	211.2	--	73.7	207.1	--	3.8

Day	APRIL Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Suspended sediment Tons per day	MAY Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Suspended sediment Tons per day	JUNE Mean discharge (cfs)	Suspended sediment Mean concentration (ppm)	Suspended sediment Tons per day
1..	17	11	S 0.9	117	140	K 140	21	4	0.2
2..	7.9	3	.1	34	4	.4	17	5	.2
3..	6.8	2	T	20	3	.2	33	25	S 6.0
4..	8.8	5	.1	14	3	.1	24	5	.3
5..	7.5	2	T	11	3	.1	20	4	.2
6..	10	3	.1	37	70	K 50	17	3	.1
7..	9.1	2	T	173	230	K 290	15	3	.1
8..	7.9	2	T	26	4	.3	131	123	S 120
9..	7.2	2	T	18	4	.2	58	8	1.3
10..	6.5	2	T	14	3	.1	30	3	.2
11..	6.2	2	T	12	3	.1	22	3	.2
12..	5.9	2	T	221	540	K 1500	156	136	S 113
13..	5.6	2	T	33	6	.5	48	8	S 1.4
14..	6.9	7	S .2	21	4	.2	35	10	.9
15..	5.3	3	T	20	12	S .7	24	3	.2
16..	5.0	2	T	15	3	.1	20	3	.2
17..	5.0	2	T	12	3	.1	16	3	.1
18..	4.7	2	T	11	3	.1	14	3	.1
19..	5.0	2	T	43	37	S 6.8	13	2	.1
20..	4.4	2	T	27	12	.9	12	2	.1
21..	9.0	22	S 2.3	140	100	K 50	10	2	.1
22..	8.3	20	.4	61	5	.8	9.5	2	.1
23..	16	37	S 4.5	30	4	.3	8.7	2	T
24..	7.5	5	.1	21	3	.2	7.9	2	T
25..	5.9	3	T	18	3	.1	7.5	2	T
26..	5.6	3	T	16	2	.1	7.2	2	T
27..	7.2	5	.1	13	2	.1	7.5	2	T
28..	35	44	S 15	12	2	.1	6.5	2	T
29..	12	3	.1	19	34	S 2.8	6.2	2	T
30..	36	38	S 8.3	12	3	.1	5.9	2	T
31..	--	--	--	50	50	S 27	--	--	--
Total	285.2	--	32.8	1271	--	2072.5	802.9	--	245.4

Total discharge for year (cfs-days)..... 4,318.0
Total load for year (tons)..... 3,049.6

S Computed by subdividing day.
T Less than 0.05 ton.
K Computed from estimated-concentration graph and subdividing day.

40-8755. YONA-GAWA AT YONA, OKINAWA--Continued

Particle-size analyses of bed material, fiscal year July 1965 to June 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material: Percent finer than size indicated, in millimeters											Method of analysis
							0.062	0.125	0.250	0.500	1.000	2.00	4.00	8.00	16.0	32.0	64.0	
Mar. 9, 1966.....	1400		3	4.7				2	4	8	18	34	54	67	78	96	100	S

40-8775. GENKA-KAWA NEAR GENKA, OKINAWA

LOCATION.--At gaging station 1.2 miles south of Genka, and 2.1 miles southeast of Nakaoshi.
DRAINAGE AREA.--3.9 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: May 1964 to June 1966 (discontinued).
Sediment records: May 1964 to June 1966 (discontinued).
EXTREMES, 1965-66.--Water temperatures: Maximum, 82°F July 18, 23, Sept. 5; minimum, 53°F Jan. 17.
Sediment concentrations: Maximum daily, 2,700 ppm Aug. 5; minimum daily, 1 ppm on many days.
Sediment loads: Maximum daily, 13,000 tons Aug. 5; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1964-66.--Water temperatures: Maximum, 84°F Sept. 2, 9, 1964; minimum, 52°F Jan. 26, 27, 1965.
Sediment concentrations: Maximum daily, 3,180 ppm Feb. 20, 1965; minimum daily, 1 ppm on many days each year.
Sediment loads: Maximum daily, 13,000 tons Aug. 5, 1965; minimum daily, less than 0.05 ton on many days each year.

Chemical analyses, in parts per million, fiscal year July 1965 to June 1966

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (calculated): Parts per million	Dissolved solids (calculated): Tons per acre-foot	Dissolved solids (calculated): Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
June 9, 1966	50	9.8	0.70	3.0	1.7	15	1.0	12	0	4.8	22	0.2	0.0		63	0.09		10	4		100	7.0	40
June 14	45	9.6	.02	3.2	2.2	12	.7	12	0	5.7	20	.2	.0		76	.10		10	7		80	6.5	25
June 21	22	11	.03	3.6	2.3	16	1.2	13	0	6.0	27	.1	.0		76	.10		11	8		95	7.4	10

Temperature (°F) of water, fiscal year July 1965 to June 1966

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
July	80	76	76	81	77	77	76	76	79	77	77	78	78	79	78	77	78	82	78	78	79	78	82	79	79	80	79	81	78	77	80	78
August	78	78	80	78	75	76	76	77	78	79	80	80	80	77	78	78	78	78	77	77	78	78	80	77	78	79	77	78	79	77	78	78
September	79	79	78	80	82	78	79	79	79	78	77	77	76	76	76	—	76	76	75	75	75	76	79	76	75	76	75	74	74	74	—	77
October	74	74	75	72	71	73	73	72	73	72	72	72	73	73	71	71	70	69	68	69	69	72	69	68	69	68	68	70	69	72	70	71
November	70	71	71	74	72	74	71	74	73	71	72	70	70	71	73	70	71	70	71	70	67	67	71	70	69	67	69	69	65	65	—	70
December	64	63	63	64	65	63	63	63	63	62	63	62	63	61	63	59	59	60	60	60	64	60	60	61	61	62	62	62	62	61	57	62
January	57	61	57	61	57	57	57	58	58	59	57	60	61	60	61	60	53	64	61	59	60	61	60	60	62	61	59	59	59	59	60	59
February	60	63	61	62	60	60	60	60	60	61	62	61	60	60	60	60	61	60	62	62	63	65	57	59	59	63	64	64	—	—	—	61
March	64	64	64	67	67	66	65	64	63	64	65	65	66	64	67	67	67	69	69	64	63	66	66	67	65	61	63	63	64	63	64	65
April	63	67	64	64	64	64	69	71	71	69	69	69	71	74	74	66	66	64	64	70	70	70	69	70	72	70	73	69	68	69	—	68
May	68	67	67	—	—	68	69	69	69	71	72	70	70	71	69	70	73	70	69	70	69	69	70	—	68	67	69	69	72	71	72	70
June	71	72	69	70	70	71	70	71	71	70	71	70	70	71	76	—	—	—	—	—	77	77	76	76	76	77	76	77	77	77	—	73

40-8775. GENKA-KAWA NEAR GENKA, OKINAWA--Continued

Suspended sediment, fiscal year July 1965 to June 1966

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment		Mean discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day		Mean concentration (ppm)	Tons per day
1..	27	4	0.3	7.4	2	T	6.7	2	T
2..	25	4	.3	7.4	2	T	6.2	2	T
3..	22	3	.2	8.7	3	.1	6.2	1	T
4..	20	3	.2	42	207	S 137	5.7	1	T
5..	18	3	.1	705	2700	K 13000	5.7	1	T
6..	17	3	.1	41	14	1.5	5.7	1	T
7..	16	3	.1	30	11	.9	5.7	1	T
8..	16	3	.1	23	4	.2	5.2	1	T
9..	14	2	.1	19	2	.1	6.2	1	T
10..	14	2	.1	16	1	T	5.7	1	T
11..	12	2	.1	14	1	T	5.2	1	T
12..	12	2	.1	12	1	T	5.2	1	T
13..	12	2	.1	12	1	T	7.4	12	0.2
14..	11	2	.1	11	1	T	14	11	.4
15..	11	2	.1	11	1	T	7.8	5	.1
16..	11	2	.1	10	1	T	9.0	5	.1
17..	11	2	.1	10	3	.1	7.3	4	.1
18..	11	2	.1	11	5	.1	5.7	3	T
19..	10	2	.1	10	3	.1	5.2	2	T
20..	10	2	.1	9.0	2	T	5.2	2	T
21..	9.3	2	.1	8.4	2	T	4.8	2	T
22..	9.0	2	T	7.8	2	T	5.7	3	T
23..	8.7	2	T	7.8	2	T	6.2	4	.1
24..	8.7	2	T	7.3	2	T	5.2	3	T
25..	9.0	3	.1	7.3	2	T	5.7	3	T
26..	8.4	3	.1	7.3	2	T	27	15	S 2.2
27..	8.7	3	.1	6.7	2	T	7.8	3	.1
28..	8.0	2	T	6.7	2	T	5.7	3	T
29..	10	4	.1	12	8	.3	5.2	2	T
30..	8.0	3	.1	7.3	2	T	4.8	2	T
31..	7.7	2	T	7.3	2	T	--	--	--
Total	395.5	--	3.4	1095.4	--	13141.2	209.1	--	3.9

Day	OCTOBER			NOVEMBER			DECEMBER		
1..	4.8	2	T	3.8	2	T	4.8	3	T
2..	4.8	2	T	3.8	2	T	4.8	2	T
3..	4.8	1	T	3.4	2	T	4.2	2	T
4..	4.2	1	T	3.4	1	T	4.2	2	T
5..	4.2	1	T	3.4	1	T	4.8	2	T
6..	4.2	1	T	3.0	1	T	5.7	2	T
7..	7.0	4	.1	3.0	1	T	4.8	2	T
8..	4.2	2	T	3.0	1	T	4.8	2	T
9..	3.8	2	T	15	17	S 1.3	4.8	2	T
10..	3.4	2	T	6.7	8	.1	4.2	2	T
11..	3.4	2	T	4.2	3	T	4.8	3	T
12..	3.4	2	T	3.4	2	T	6.2	3	.1
13..	5.7	5	.1	6.2	5	.1	4.8	2	T
14..	4.8	3	T	251	2000	K 2800	4.2	2	T
15..	3.8	2	T	19	4	.2	4.8	3	T
16..	3.8	2	T	12	3	.1	6.2	3	.1
17..	3.4	2	T	9.7	2	.1	4.8	2	T
18..	3.4	2	T	9.0	2	T	4.2	2	T
19..	3.0	1	T	7.8	2	T	3.8	2	T
20..	3.0	1	T	13	8	.3	5.7	3	T
21..	3.0	2	T	12	4	.1	6.2	3	.1
22..	3.0	2	T	9.0	3	.1	4.8	2	T
23..	3.0	2	T	8.4	3	.1	7.3	5	.1
24..	3.0	2	T	6.7	3	.1	15	9	.4
25..	3.8	2	T	6.7	3	.1	6.7	3	.1
26..	5.2	3	T	6.2	3	.1	5.7	2	T
27..	3.8	2	T	5.7	3	T	12	9	.3
28..	7.7	4	S .2	5.7	3	T	7.3	3	.1
29..	18	19	S 1.6	5.2	3	T	6.2	2	T
30..	5.2	3	T	4.8	3	T	5.7	2	T
31..	4.2	2	T	--	--	--	5.7	2	T
Total	143.0	--	2.6	454.2	--	2803.2	179.2	--	2.0

S Computed by subdividing day.
T Less than 0.05 ton.
K Computed from estimated-concentration graph and subdividing day.

40-8775. GENKA-KAWA NEAR GENKA, OKINAWA--Continued

Suspended sediment, fiscal year July 1965 to June 1966--Continued

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	4.8	2	T	14	2	0.1	12	2	0.1
2	4.8	2	T	13	2	.1	12	2	.1
3	5.7	3	T	12	2	.1	11	2	.1
4	6.7	3	.1	13	2	.1	24	29	S 4.8
5	4.8	2	T	12	2	.1	12	5	.2
6	4.2	1	T	10	1	T	9.7	3	.1
7	3.8	1	T	9.7	1	T	9.0	2	T
8	3.8	1	T	9.7	1	T	9.0	2	T
9	3.8	1	T	9.0	1	T	8.4	2	T
10	3.8	2	T	8.4	1	T	8.4	2	T
11	5.7	4	.1	9.0	2	T	9.9	8	.2
12	4.2	3	T	9.0	2	T	9.7	5	.1
13	4.2	2	T	9.0	3	.1	18	11	S .9
14	3.8	2	T	9.7	2	.1	10	3	.1
15	3.8	2	T	8.4	2	T	17	8	S .7
16	27	57	S 16	8.4	2	T	13	3	.2
17	15	9	.4	11	4	.1	10	3	.1
18	198	1400	K 2900	8.4	2	T	9.7	3	.1
19	17	6	.3	7.8	2	T	9.7	3	.1
20	12	4	.1	7.3	2	T	9.0	2	T
21	9.7	4	.1	7.3	2	T	9.0	3	.1
22	9.0	3	.1	7.3	1	T	9.0	4	.1
23	9.7	3	.1	7.8	1	T	9.0	4	.1
24	9.0	3	.1	7.3	1	T	8.4	3	.1
25	126	455	S 313	6.7	1	T	7.8	3	.1
26	33	6	.5	7.8	1	T	31	17	S 2.2
27	19	3	.2	96	580	S 644	15	4	.2
28	15	3	.1	14	2	.1	10	3	.1
29	16	3	.1	--	--	--	9.0	3	.1
30	31	14	1.8	--	--	--	8.4	3	.1
31	18	4	.2	--	--	--	8.4	3	.1
Total	632.3	--	3233.6	353.0	--	645.5	356.5	--	11.4

Day	APRIL			MAY			JUNE		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	23	13	S 1.4	309	1000	K 2600	50	--	1.0
2	12	4	.1	65	15	2.6	45	--	1.2
3	10	3	.1	34	5	.5	40	3	.3
4	15	8	.3	25	4	.3	50	3	.4
5	14	4	.2	22	3	.2	40	4	.4
6	16	5	.2	22	7	.4	29	3	.2
7	14	4	.2	291	1500	K 6500	26	3	.2
8	12	3	.1	47	4	.5	200	--	1200
9	11	3	.1	31	3	.3	60	--	2.0
10	11	2	.1	25	3	.2	45	4	.5
11	10	2	.1	21	3	.2	36	3	.3
12	9.7	2	.1	450	--	9500	260	--	1500
13	9.0	2	T	70	--	1.2	110	--	400
14	9.0	2	T	44	4	.5	80	--	5.0
15	8.4	2	T	35	3	.3	55	6	.9
16	7.8	2	T	28	3	.2	40	4	B .4
17	7.8	2	T	23	3	.2	35	4	B .4
18	7.8	2	T	21	2	.1	31	3	B .3
19	8.4	2	T	80	--	80	28	3	B .2
20	7.8	2	T	45	--	1.0	25	3	B .2
21	9.9	8	.2	300	--	150	22	3	.2
22	10	5	.1	130	--	2.1	19	3	.2
23	30	37	S 8.0	60	3	B .5	17	3	.1
24	11	4	.1	44	3	B .4	16	3	.1
25	9.7	3	.1	34	2	.2	15	2	.1
26	9.0	3	.1	27	2	.1	14	2	.1
27	13	9	.3	22	2	.1	14	2	.1
28	152	1150	S 1930	20	2	.1	13	2	.1
29	33	10	.9	40	5	.5	12	2	.1
30	141	185	S 137	22	3	.2	11	2	.1
31	--	--	--	140	--	100	--	--	--
Total	642.3	--	2080.2	2527	--	18942.9	1438	--	3115.1

Total discharge for year (cfs-days) 8,425.5
Total load for year (tons) 43,985.0

S Computed by subdividing day.
T Less than 0.05 ton.
B Computed from estimated-concentration graph.
K Computed from estimated-concentration graph and subdividing day.

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40-8775. GENKA-KAWA NEAR GENKA, OKINAWA--Continued

Particle-size analyses of bed material, fiscal year July 1965 to June 1966
(Methods of analysis: B, bottom withdrawal tube; C, chemically dispersed; D, decantation; N, in native water; P, pipet; S, sieve; V, visual accumulation tube; W, in distilled water)

Date of collection	Time (24 hour)	Water temperature (°F)	Sampling point	Discharge (cfs)	Sediment concentration (ppm)	Sediment discharge (tons per day)	Bed material											Method of analysis
							Percent finer than size indicated, in millimeters											
							0.062	0.125	0.250	0.500	1.000	2.00	4.00	8.00	16.0	32.0	64.0	
Mar. 11, 1966.....	1030		3	7.8				1	2	7	16	31	52	63	75	94	100	S

40-8842. FUKUJI-GAWA AT FUKUJI, OKINAWA

LOCATION.--At gaging station at Fukuji, 0.9 mile north of Kawata, and 1.3 miles northeast of Taira.
DRAINAGE AREA.--12 square miles, approximately.
RECORDS AVAILABLE.--Water temperatures: May 1964 to June 1966.
Sediment records: May 1964 to June 1966.
EXTREMES, 1965-66.--Water temperatures: Maximum, 83°F July 28, 29; minimum, 54°F Jan. 6, 8.
Sediment concentrations: Maximum daily, 3,600 ppm Aug. 5; minimum daily, 1 ppm on many days.
Sediment loads: Maximum daily, 64,000 tons Aug. 5; minimum daily, less than 0.05 ton on many days.
EXTREMES, 1964-66.--Water temperatures: Maximum, 83°F July 13-16, 1964, July 28, 29, 1965; minimum, 51°F Jan. 16, 1965.
Sediment concentrations: Maximum daily, 4,500 ppm June 23, 1965; minimum daily, 1 ppm on many days each year.
Sediment loads: Maximum daily, 64,000 tons Aug. 5, 1965; minimum daily, less than 0.05 ton on many days each year.

Chemical analyses, in parts per million, fiscal year July 1965 to June 1966

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (calculated): Parts per million	Dissolved solids (calculated): Tons per acre-foot	Dissolved solids (calculated): Tons per day	Hardness as $CaCO_3$: Calcium, Magnesium	Hardness as $CaCO_3$: Noncarbonate	Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH	Color
June 17, 1966....	92	13	0.08	3.4	2.6	17	1.0	14	0	8.6	27	0.2	0.0		100	0.14		11	7		105	6.9	15
June 27.....	58	14	.10	4.0	2.4	15	1.0	16	0	3.8	28	.1	.0		84	.11		14	6		110	7.2	10
June 30.....	40	17	.03	4.0	2.9	15	1.0	16	0	3.8	28	.1	.0		90	.12		13	9		120	7.5	5

Temperature (°F) of water, fiscal year July 1965 to June 1966

Month	Day 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Average
July.....	76	76	79	78	78	79	78	78	78	78	80	80	80	81	81	80	79	79	80	81	81	82	82	82	82	82	82	83	83	82	82	80
August.....	80	81	80	79	70	76	77	77	78	78	79	80	80	80	81	80	80	78	78	78	80	80	81	82	80	80	78	79	80	79	79	79
September....	80	80	80	81	81	81	81	79	80	79	78	77	78	77	78	77	76	75	75	75	75	77	78	78	78	75	74	73	73	72	--	77
October.....	72	71	73	72	74	75	73	73	72	70	71	71	72	71	69	70	69	69	67	67	68	67	68	68	68	68	68	69	70	70	75	70
November.....	70	69	69	69	71	71	73	72	74	70	69	69	69	70	69	70	70	70	70	70	70	69	69	70	71	66	66	63	64	65	--	69
December.....	63	62	62	62	64	63	60	62	62	61	65	63	61	60	61	61	58	57	57	62	63	62	66	65	59	59	62	62	62	62	58	61
January.....	57	56	57	56	57	54	56	54	57	60	62	62	64	64	64	63	62	64	61	59	57	56	58	59	59	62	58	58	57	58	55	59
February.....	58	60	60	61	59	57	57	57	57	59	62	61	60	59	56	59	62	62	59	61	65	66	61	59	57	62	63	61	--	--	--	60
March.....	61	65	66	68	66	66	69	68	65	63	63	64	68	64	67	65	64	69	61	60	61	67	66	61	60	61	60	61	61	60	61	64
April.....	63	60	64	66	65	67	65	65	70	70	69	68	69	72	72	69	67	64	65	65	68	69	70	68	70	74	74	70	68	69	--	68
May.....	68	67	65	65	64	68	70	68	67	69	73	70	69	71	71	70	70	70	68	69	68	67	69	67	67	67	67	69	72	70	72	69
June.....	71	71	71	71	70	69	69	68	71	70	69	70	70	70	71	73	75	73	76	76	76	76	78	76	76	78	73	76	75	77	--	73

40-8842. FUKUJI-GAWA AT FUKUJI, OKINAWA--Continued

Suspended sediment, fiscal year July 1965 to June 1966

Day	JULY			AUGUST			SEPTEMBER		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1	76	3	0.6	16	2	0.1	17	3	0.1
2	68	3	.6	15	2	.1	18	6	.3
3	62	3	.5	17	2	.1	16	4	.2
4	58	3	.5	51	92	S 141	16	3	.1
5	54	3	.4	3670	3600	K 64000	15	3	.1
6	51	3	.4	136	19	S 8.3	14	3	.1
7	46	2	.2	99	13	S 3.7	14	3	.1
8	44	2	.2	87	13	S 3.1	14	2	.1
9	41	2	.2	45	4	.5	14	2	.1
10	40	2	.2	36	3	.3	14	2	.1
11	37	2	.2	32	3	.3	13	2	.1
12	35	2	.2	31	2	.2	12	2	.1
13	34	2	.2	29	2	.2	12	3	.1
14	32	2	.2	28	2	.2	37	7	S .8
15	32	2	.2	27	1	.1	21	3	.2
16	31	2	.2	25	1	.1	22	2	.1
17	30	2	.2	28	4	.3	24	4	.3
18	27	2	.1	40	8	.9	14	2	.1
19	27	2	.1	37	6	.6	12	2	.1
20	26	2	.1	26	3	.2	12	1	T
21	24	2	.1	23	3	.2	12	1	T
22	22	2	.1	22	3	.2	11	1	T
23	21	2	.1	21	3	.2	13	3	.1
24	20	2	.1	20	2	.1	14	1	T
25	20	2	.1	19	2	.1	110	182	S 90
26	18	2	.1	21	5	.3	289	238	S 343
27	18	2	.1	19	4	.2	108	59	S 33
28	17	2	.1	18	3	.1	30	6	.5
29	16	2	.1	18	3	.1	22	3	.2
30	16	2	.1	17	3	.1	19	3	.2
31	16	2	.1	17	3	.1	--	--	--
Total	1060	--	6.6	4690	--	64162.0	959	--	470.3

Day	OCTOBER			NOVEMBER			DECEMBER		
1	18	3	0.1	12	2	0.1	13	1	T
2	17	2	.1	11	2	.1	13	1	T
3	16	2	.1	11	2	.1	12	1	T
4	15	2	.1	10	2	.1	12	1	T
5	14	2	.1	10	1	T	12	1	T
6	15	3	.1	10	1	T	12	1	T
7	16	6	.3	10	1	T	11	1	T
8	14	3	.1	9.5	1	T	11	1	T
9	13	2	.1	70	128	S 48	11	1	T
10	12	2	.1	20	7	.4	11	1	T
11	12	2	.1	14	4	.2	11	3	.1
12	11	2	.1	11	3	.1	13	2	.1
13	36	29	S 5.0	19	8	.4	11	1	T
14	23	13	.8	986	1000	K 5800	11	1	T
15	14	5	.2	57	7	1.1	12	2	.1
16	12	4	.1	88	42	S 24	14	1	T
17	11	3	.1	30	7	.6	13	1	T
18	10	3	.1	28	5	.4	11	1	T
19	10	3	.1	23	3	.2	10	1	T
20	10	2	.1	20	3	.2	11	1	T
21	11	2	.1	18	2	.1	12	1	T
22	11	2	.1	16	2	.1	11	1	T
23	11	2	.1	15	2	.1	16	5	.2
24	11	2	.1	15	2	.1	32	10	.9
25	12	2	.1	15	1	T	15	4	.2
26	17	3	.1	15	1	T	12	2	.1
27	13	2	.1	14	1	T	20	8	.4
28	12	4	.1	14	1	T	13	2	.1
29	67	24	S 6.9	15	2	.1	11	2	.1
30	17	4	.2	14	1	T	10	1	T
31	14	2	.1	--	--	--	9.8	1	T
Total	495	--	15.9	1600.5	--	5876.8	396.8	--	3.0

S Computed by subdividing day.
T Less than 0.05 ton.
K Computed from estimated-concentration graph and subdividing day.

40-8842. FUKUJI-GAWA AT FUKUJI, OKINAWA--Continued

Suspended sediment, fiscal year July 1965 to June 1966--Continued

Day	JANUARY			FEBRUARY			MARCH		
	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day	Mean discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Tons per day
1..	9.5	1	T	38	3	0.3	24	6	0.4
2..	9.1	1	T	35	2	.2	52	19	S 4.5
3..	9.5	1	T	32	2	.2	32	7	.6
4..	11	1	T	35	3	.3	130	98	S 105
5..	9.1	1	T	34	2	.2	61	18	3.0
6..	9.1	1	T	28	2	.2	34	5	.5
7..	9.1	1	T	26	2	.1	30	3	.2
8..	9.1	1	T	24	2	.1	28	3	.2
9..	9.1	1	T	23	2	.1	28	2	.2
10..	10	1	T	22	2	.1	26	2	.1
11..	12	1	T	23	2	.1	26	4	.3
12..	10	1	T	21	2	.1	30	5	.4
13..	9.5	1	T	21	2	.1	127	130	S 142
14..	9.1	1	T	24	2	.1	46	8	1.0
15..	9.1	1	T	20	2	.1	44	10	S 1.7
16..	207	548	S 1630	19	2	.1	47	8	1.0
17..	52	21	S 3.9	24	8	.5	38	12	1.2
18..	634	959	S 4980	17	3	.1	47	9	1.1
19..	50	5	.7	15	2	.1	35	4	.4
20..	37	3	.3	15	2	.1	30	3	.2
21..	29	2	.2	15	2	.1	29	2	.2
22..	26	2	.1	15	2	.1	28	2	.2
23..	26	3	.2	16	2	.1	28	2	.2
24..	26	2	.1	15	1	T	27	2	.1
25..	323	100	S 185	14	1	T	26	2	.1
26..	72	6	1.2	13	2	.1	151	90	S 65
27..	44	3	.4	289	464	S 1170	54	5	.7
28..	35	3	.3	34	9	.8	34	3	.3
29..	38	4	.4	--	--	--	30	2	.2
30..	82	9	S 3.3	--	--	--	27	2	.1
31..	57	6	.9	--	--	--	26	2	.1
Total	1882.3	--	6807.4	907	--	1174.5	1375	--	331.2

Day	APRIL			MAY			JUNE		
1..	70	17	S 5.0	667	403	S 1750	195	20	11
2..	36	5	.5	165	9	4.0	126	20	6.8
3..	29	3	.2	98	4	1.1	102	14	3.9
4..	36	6	.6	78	3	.6	108	12	3.5
5..	35	4	.4	67	2	.4	106	11	3.1
6..	37	5	.5	62	4	.7	87	5	1.2
7..	38	4	.4	963	1300	K 8900	67	3	.5
8..	32	3	.3	141	6	2.3	845	606	S 2970
9..	31	2	.2	106	4	1.1	252	34	S 32
10..	29	2	.2	95	2	.5	108	5	1.5
11..	28	1	.1	89	2	.5	88	3	.7
12..	27	1	.1	2490	1300	K 18000	1310	702	S 6030
13..	26	1	.1	220	12	7.1	334	184	S 701
14..	29	2	.2	121	4	1.3	287	67	S 127
15..	26	1	.1	104	5	1.4	150	10	4.0
16..	24	1	.1	75	3	.6	110	4	1.2
17..	23	1	.1	58	2	.3	235	55	S 96
18..	23	1	.1	53	2	.3	126	6	2.0
19..	26	2	.1	499	203	S 611	87	3	.7
20..	23	1	.1	221	35	21	77	2	.4
21..	24	2	.1	1010	620	K 2800	67	2	.4
22..	31	3	.3	396	58	S 104	60	2	.3
23..	246	550	S 1490	136	5	1.8	55	2	.3
24..	51	10	1.4	95	4	1.0	51	2	.3
25..	40	3	.3	77	3	.6	49	1	.1
26..	38	2	.2	64	3	.5	48	1	.1
27..	67	25	S 13	51	2	.3	55	1	.1
28..	227	155	S 195	45	2	.2	49	1	.1
29..	82	10	2.2	246	118	S 157	45	1	.1
30..	434	419	S 1050	92	9	2.2	40	1	.1
31..	--	--	--	582	438	S 2850	--	--	--
Total	1868	--	2761.9	9166	--	35221.8	5313	--	10000.0

Total discharge for year (cfs-days)..... 29,712.6
Total load for year (tons)..... 126,831.4

S Computed by subdividing day.
T Less than 0.05 ton.
K Computed from estimated-concentration graph and subdividing day.

MISCELLANEOUS ANALYSES OF STREAMS IN OKINAWA

Chemical analyses, in parts per million, fiscal year July 1965 to June 1966

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (calculated)			Hardness as $CaCO_3$		Sodium adsorption ratio	Specific conductance (micromhos at 25°C)	pH
															Parts per million	Tons per acre-foot	Tons per day	Calcium, Magnesium	Noncarbonate			
40-8782. HANECHI-OKAWA AT KAWAKAMI																						
June 8, 1966.....	72	14	0.05	5.0	3.1	15	1.0	28	0	7.5	25	0.1	0.0		70	0.10		11	7		100	7.3
June 27.....	13	12	.03	6.0	3.8	14	.8	26	0	7.7	27	.1	.0		80	.11		21	9		120	7.4
June 30.....	10	14	.08	6.0	3.9	14	1.0	24	0	6.7	26	.1	.0		80	.11		20	11		120	7.5
40-8835.5. OURA-GAWA AT OKAWA																						
June 21, 1966....	8.0	11	0.00	3.6	2.7	15	1.0	13	0	5.0	27	0.0	0.0		76	0.10		11	9		100	7.0
40-8846. AHA-GAWA AT AHA																						
June 24, 1966....	42	14	0.05	2.8	2.2	16	1.0	15	0	5.8	25	0.1	0.0		72	0.10		12	4		90	7.3

MISCELLANEOUS ANALYSES OF STREAMS IN OKINAWA--Continued

Periodic determinations of suspended-sediment discharge, fiscal year July 1965 to June 1966

Date	Time (24 hr)	Water temperature (°F)	Discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Discharge (tons per day)
40-8752. BENOKI-GAWA AT BENOKI					
May 19, 1966	1220	66	226	35	21
May 19	1235	66	208	31	17
May 19	1345	66	167	20	9.0
June 8	1525	70	128	11	3.8
June 8	1610	70	1580	521	2220
June 8	1800	70	740	89	178
40-8770. RIGHT BRANCH OF SOUTH FORK HENAN-GAWA NEAR TSUHA					
June 8, 1966	1155	70	15	12	0.5
June 23	1500		2.8	1	T
40-8782. HANECHI-OKAWA AT KAWAKAMI					
Nov. 14, 1965	0440	--	334	G 9000	8120
Apr. 28, 1966	1430	--	334	G 4630	4180
May 1	1130	--	334	G 5920	5340
May 7	0630	--	334	G 5800	5230
May 12	1320	69	562	1060	1610
May 12	1405	69	455	752	924
May 12	1450	69	413	621	692
May 12	1545	69	342	534	493
May 12	1650	69	280	433	327
May 12	1720	69	261	392	276
June 13	1320	71	71	17	3.3
40-8809. MACHINATO-GAWA NEAR OJANA					
Jan. 18, 1966	0930		87	134	31
Jan. 18	1020		69	116	22
Jan. 18	1120		57	105	16
Jan. 18	1240		46	100	14
Jan. 25	0930		616	915	1520
Jan. 25	1030		396	572	612
Jan. 25	1130		396	565	604
Jan. 25	1500		152	298	122
40-8828. KANNA-GAWA NEAR KANNA					
Aug. 7, 1965	1430	81	26	20	1.4
Apr. 30, 1966	0955	69	22	25	1.5
May 21	1115	68	38	20	2.1
June 4	1135	69	18	20	1.0
40-8830. UFU-KAWA NEAR GINOZA					
Aug. 7, 1965	1305	82	42	121	14
Apr. 30, 1966	1220	72	11	49	1.5
May 21	1400	--	38	243	25
June 4	1340	--	18	85	4.1
40-8833. LEFT FORK O-KAWA NEAR KUSHI					
Apr. 30, 1966	1450		3.3	11	0.1
May 21	1610		22	27	1.6
June 4	1510		41	9	1.0
40-8841. FUKUJI-GAWA NEAR YUBARU					
May 2, 1966	1225	71	56	4	0.6

T Less than 0.05 ton.
G Samples collected with single-stage sampler.

MISCELLANEOUS ANALYSES OF STREAMS IN OKINAWA--Continued

Periodic determinations of suspended-sediment discharge, fiscal year July 1965 to June 1966--Continued

Date	Time (24 hr)	Water temperature (°F)	Discharge (cfs)	Suspended sediment: Mean concentration (ppm)	Suspended sediment: Discharge (tons per day)
40-8846. AHA-GAWA AT AHA					
Aug. 4, 1965	2330	--	495	G 1815	2430
Aug. 4	2400	--	1440	G 3100	12100
Aug. 5	0330	--	2860	G 2860	22100
Aug. 5	0430	--	4700	G 2680	34000
Sept. 25	0805	--	495	G 469	627
Sept. 25	1110	--	1440	G 832	3230
Nov. 14	0300	--	495	G 718	960
Nov. 14	0400	--	1440	G 922	3580
Jan. 16, 1966	1520	--	495	G 788	1050
Jan. 16	1530	--	1440	G 1720	6690
Jan. 26	1320	61	62	5	.8
Feb. 27	0220	--	495	G 1430	1910
Feb. 27	0225	--	1440	G 984	3830
Mar. 13	1335	--	495	G 125	167
Apr. 13	1300	72	25	3	.2
Apr. 23	1005	--	495	G 4070	5440
Apr. 30	0610	--	1440	G 535	2080
May 1	1100	--	2860	G 848	6550
May 6	2300	--	520	G 930	1310
May 6	2355	--	1440	G 1740	6770
May 7	0005	--	2860	G 2370	18300
May 7	0640	--	4700	G 3070	39000
May 19	1740	69	890	65	156
May 21	2000	--	1440	G 294	1140
May 21	2020	--	2860	G 508	3920
June 2	1105	71	105	3	.9
June 8	0945	--	520	G 1580	2220
June 8	1610	--	1440	G 1600	6220
June 8	1620	--	2860	G 3910	30200
June 8	1625	--	4700	G 968	12300
June 9	1220	69	226	8	4.9
June 12	0425	--	520	G 538	755
June 12	0510	--	1440	G 1180	4590
June 12	0550	--	2860	G 8760	67600
June 12	0830	--	4700	G 1110	14100
40-8848. FUN-GAWA NEAR AHA					
Apr. 13, 1966	1430	69	9.8	3	0.1

G Samples collected with single-stage sampler.

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