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1962

Surface Water Records of Hawaii and other Pacific Areas

UNITED STATES DEPARTMENT OF THE INTERIOR-GEOLOGICAL SU

Prepared in cooperation with the State of Hawaii, the Governm
of Guam, the Government of American Samoa, and with
State, county, and Federal Agencies

United States Department of Interior
Geological Survey - Water Resources Division

SURFACE WATER RECORDS OF HAWAII AND OTHER PACIFIC AREAS

1962

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 Engineer, Surface Water Branch
U.S. Geological Survey
Room 330, First Insurance Bldg.
1100 Ward Avenue
Honolulu 14, Hawaii

CALENDAR FOR FISCAL YEAR 1962

JULY 1961

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JANUARY 1962

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MAY 1962

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JUNE 1962

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SURFACE WATER RECORDS OF HAWAII AND OTHER PACIFIC AREAS, 1962

INTRODUCTION

The surface-water records for the 1962 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 Howard S. Leak, district engineer, Surface Water Branch, succeeded by Mearle M. Miller.

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 with boundaries coinciding 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 are being 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. The records later will be published in Geological Survey water-supply papers at 5-year intervals. These 5-year water-supply papers will show daily discharge and will be compiled on the same geographical areas previously used for the annual series; however, some of the 14 parts of conterminous United States will be further subdivided.

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 5 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.; McBryde Sugar Co., Ltd.; Waiahole Water Co., Ltd.; East Maui Irrigation Co., Ltd.; Kohala Ditch 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 or 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 basins, 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 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 number for each station, such as 40-2290.00, includes the district number "40" and a six-digit station number. In this report, only the essential digits of the station number are shown. For example, the complete number 40-2290.00 would appear as 2290, 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 either from a water-stage recorder that gives a continuous chart of the fluctuations or from direct readings on a nonrecording gage. 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 relations 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, a skeleton rating table, 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 1962 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, 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, a crest-stage gage, or a nonrecording gage read at the time of the crest. 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."

Skeleton rating tables are published for all stations except those for which the daily discharge for the greater part of the period was

determined by the shifting-control method or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables are not published for canals, ditches, or springs.

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 stations equipped with nonrecording gages, the daily discharge corresponds to once-daily readings of the gage or to the mean of twice-daily readings; but for periods of rapidly changing stage the discharge is determined from a gage-height graph based on gage readings.

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

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 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").

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 time, for example 12:30 a.m. is 0030, 1:30 p.m. is 1330.

Footnotes to the table of daily discharge indicate periods for which discharge was computed or estimated by unusual or special methods because of no gage-height record or other conditions that reduce the degree of accuracy of the records. The footnotes are either reference footnotes, with corresponding symbols used in the table of daily discharge to indicate the days included, or general footnotes, introduced by the word "Note," in which the days included are stated. The method used in computing data for such footnoted periods have been explained in preceding paragraphs.

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 states the degree of accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

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.

SUPPLEMENTAL DATA

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.

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. Information on the availability of electronic computer analyses and unpublished data may generally be obtained from the district office.

100. Kawaikoi Stream near Waimea

Location.--Lat 22°08'00", long 159°37'15", 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 1962. 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.--46 years (1911-12, 1913-15, 1919-62), 22.1 mgd (34.2 cfs).

Extremes.--Maximum discharge during year, 1,840 mgd (2,850 cfs) Apr. 25 (gage height, 8.94 ft), from rating curve extended above 300 mgd as explained below; minimum, 2.19 mgd (3.39 cfs) Nov. 2, 3, 8.

1909-16, 1919-62: 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.

Rating table (gage height, in feet, and discharge, in million gallons a day)

2.0	1.57	3.4	55.5
2.1	2.45	3.7	97.0
2.3	5.05	4.0	155
2.5	8.50	4.5	255
2.8	17.1	5.0	355
3.1	31.5	5.5	475

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	24.1	30.7	3.91	2.27	15.4	40.2	5.21	16.4	29.1	11.2	15.1	113
2	10.2	14.6	3.77	2.19	11.5	21.2	5.05	15.1	37.5	9.94	13.2	80.9
3	7.94	7.02	4.83	2.36	8.98	15.1	4.90	12.9	24.6	9.46	11.8	13.2
4	7.02	6.83	7.83	5.03	7.94	13.8	4.76	11.2	14.5	8.74	10.4	8.13
5	7.02	26.6	7.88	5.40	168	98.3	7.16	9.94	23.3	8.31	9.46	6.65
6	6.33	12.4	4.85	3.27	31.3	107	365	9.22	17.2	7.76	8.74	6.01
7	5.85	*60.1	4.05	2.45	25.3	72.6	34.3	8.74	17.6	7.39	8.50	5.53
8	5.37	13.2	3.77	3.44	14.5	33.9	14.8	50.2	61.3	9.73	7.94	5.21
9	5.05	6.65	3.27	55.6	13.2	20.6	37.6	14.3	15.1	12.3	7.76	4.90
10	4.90	5.37	7.79	21.0	10.9	16.8	20.7	9.46	11.5	8.50	7.94	4.76
11	4.62	4.76	10.6	8.29	9.46	*14.5	11.5	8.31	10.2	7.20	7.02	4.76
12	4.76	4.34	8.13	4.19	7.94	14.1	9.22	7.57	*19.2	6.33	6.49	4.76
13	4.76	4.05	4.19	3.27	7.02	19.4	8.13	36.7	105	149	6.01	5.21
14	4.90	3.77	3.27	21.4	153	13.5	7.57	29.7	114	306	6.01	4.94
15	13.1	4.05	3.04	122	181	11.5	8.50	24.3	162	111	14.3	4.19
16	13.1	3.51	2.80	187	125	10.2	51.9	36.7	55.2	23.3	16.4	4.62
17	120	3.27	2.45	18.4	33.1	9.22	13.0	72.5	25.0	79.6	22.4	4.76
18	12.7	2.92	*2.36	9.94	44.6	8.74	11.8	26.0	23.0	38.6	21.9	4.90
19	8.98	5.51	9.22	7.57	133	8.13	9.94	66.9	32.9	18.3	13.8	4.34
20	6.49	25.5	52.6	6.83	81.3	8.13	16.8	30.8	24.0	24.0	7.20	6.62
21	5.53	10.3	6.89	7.02	60.0	7.76	125	16.8	16.4	15.5	5.85	8.13
22	5.37	5.05	6.17	6.01	53.3	7.39	*34.7	12.9	13.8	10.9	7.76	4.76
23	5.05	4.34	4.19	*5.69	237	7.02	16.4	75.4	15.6	*9.70	12.9	3.91
24	4.90	3.77	4.62	5.53	42.1	6.83	20.6	18.0	13.5	17.9	*7.94	3.51
25	5.85	3.39	3.51	13.1	32.2	6.49	13.5	13.5	35.4	*282	6.01	3.27
26	4.90	6.98	2.92	30.0	29.8	6.33	10.7	12.4	35.5	395	5.21	3.04
27	5.69	13.3	2.68	23.0	96.6	6.17	58.8	27.6	20.7	128	4.90	3.27
28	6.01	12.1	2.56	8.21	60.6	6.01	243	23.2	122	31.5	4.62	11.1
29	5.05	6.49	2.36	52.3	28.8	5.85	39.6	------	43.7	21.5	4.19	6.33
30	4.48	4.90	2.36	106	34.0	5.69	21.5	------	16.1	17.5	4.19	4.19
31	4.05	4.90	------	28.8	------	5.53	20.6	------	12.9	------	3.91	------
TOTAL	334.07	320.67	188.87	777.56	1,756.84	627.99	1,252.24	696.74	1,167.8	1,786.16	289.85	348.30
MEAN												
MGD	10.8	10.3	6.30	25.1	58.6	20.3	40.4	24.9	37.7	59.5	9.35	11.6
CFS	16.7	16.0	9.74	38.8	90.6	31.3	62.5	38.5	58.3	92.1	14.5	18.0
AC-FT	1,030	984	580	2,390	5,390	1,930	3,840	2,140	3,580	5,480	890	1,070

CALENDAR YEAR 1961 : MAX 341 MIN 2.19 MEAN MGD 23.0 MEAN CFS 35.6 AC-FT 25,750
FISCAL YEAR 1961-62: MAX 395 MIN 2.19 MEAN MGD 26.2 MEAN CFS 40.5 AC-FT 29,300

* Discharge measurement made on this day.

Peak discharge (base, 1,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-15	0100	8.11	1,440	2,230	4-25	0400	8.94	1,840	2,850

130. Mohihi Stream at altitude 3,500 ft, near Waimea

Location.--Lat 22°07'05", long 159°36'15", 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 1962. Published as "near Waimea" July 1947 to June 1952.

Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from topographic map).

Average discharge.--31 years (1920-26, 1937-62), 5.24 mgd (8.11 cfs).

Extremes.--Maximum discharge during year, 368 mgd (569 cfs) Apr. 25 (gage height, 4.71 ft), from rating curve extended above 79 mgd; minimum, 0.87 mgd (1.35 cfs) Aug. 18, 19.

1920-26, 1936-62: 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 good.

Rating tables (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Apr. 22-24)

July 1 to Oct. 15				Oct. 16 to June 30			
0.97	0.87	1.8	8.25	1.0	0.77	2.0	11.8
1.0	.96	2.0	12.8	1.1	1.15	2.3	21.1
1.2	1.88	2.5	31.5	1.3	2.26	2.6	35.9
1.4	3.40	3.0	62.5	1.5	3.86	3.0	68.5
1.6	5.50			1.7	6.15	3.6	141

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	8.41	5.50	1.31	1.00	7.21	7.70	1.60	8.27	5.16	2.62	4.90	20.4
2	3.25	5.67	1.72	.93	5.27	7.21	1.55	7.08	7.15	2.40	4.17	27.3
3	2.22	2.67	1.47	.96	3.59	4.70	1.50	5.77	6.15	2.26	3.68	6.92
4	1.88	2.01	2.65	2.25	2.76	4.08	1.50	4.69	3.50	2.07	3.33	3.24
5	1.88	3.40	3.70	3.76	31.2	10.4	1.96	4.27	3.42	1.95	2.98	2.69
6	1.67	4.48	3.06	1.85	8.03	20.7	71.6	3.68	3.77	1.83	2.76	2.19
7	1.47	*5.93	1.77	1.32	6.97	21.3	25.4	3.42	4.27	1.65	2.69	1.95
8	1.32	4.72	1.37	1.28	4.58	17.3	6.90	3.86	13.5	1.60	2.47	1.77
9	1.24	2.43	1.16	7.35	3.68	10.3	4.58	4.79	4.48	1.60	2.54	1.60
10	1.20	1.94	4.78	7.61	2.98	7.23	4.27	3.59	2.98	1.65	2.83	1.55
11	1.20	1.57	3.45	3.23	2.47	*5.65	3.68	2.98	2.62	1.50	2.33	1.55
12	1.20	1.37	3.12	1.96	2.13	5.15	2.98	2.69	*4.20	1.40	2.26	1.55
13	1.20	1.20	1.90	1.42	1.89	7.12	2.62	3.14	38.8	13.4	2.07	1.45
14	1.20	1.12	1.47	2.17	57.7	6.46	2.40	5.77	46.7	65.9	1.95	1.35
15	2.56	1.08	1.28	34.1	34.5	5.27	2.51	5.52	63.5	20.6	2.43	1.30
16	3.12	.96	1.32	50.0	23.8	4.38	11.0	7.25	26.0	7.09	1.39	1.30
17	19.5	.93	1.16	6.12	12.1	3.68	6.12	8.08	9.60	12.0	4.90	1.30
18	4.80	.87	*1.00	2.93	8.46	3.24	4.69	6.77	8.65	11.1	4.90	1.45
19	2.98	.99	1.20	2.01	12.6	2.90	4.27	6.02	12.1	6.15	4.17	1.45
20	2.08	2.86	13.2	1.71	16.9	2.76	3.86	8.08	9.03	4.48	2.62	2.42
21	1.67	2.08	3.53	1.71	12.5	2.62	10.1	7.23	6.15	3.80	2.01	2.76
22	1.57	1.57	2.50	1.77	13.2	2.40	*12.5	5.52	4.79	2.98	1.83	1.60
23	1.42	1.62	1.88	*1.55	21.7	2.26	6.77	*11.5	6.75	*2.83	2.62	1.35
24	1.37	1.52	1.57	1.40	13.5	2.13	4.79	5.84	4.58	6.29	*2.47	1.20
25	1.42	1.20	1.42	1.91	8.27	2.07	3.77	3.86	4.84	*100	1.95	1.15
26	1.28	1.24	1.24	8.62	6.61	2.01	3.15	3.24	6.57	136	1.71	1.11
27	1.16	2.01	1.20	7.10	12.0	1.95	4.95	3.77	5.39	54.5	1.60	1.11
28	1.16	2.81	1.16	2.88	13.2	1.89	60.9	3.77	13.2	13.4	1.45	1.65
29	1.16	2.71	1.12	24.5	7.23	1.83	16.0	------	9.63	8.08	1.35	2.01
30	1.20	1.77	1.04	59.3	6.15	1.77	10.3	------	4.27	5.90	1.30	1.71
31	1.20	1.42	------	14.4	------	1.69	11.1	------	3.06	------	1.25	------
TOTAL	78.99	71.65	68.75	259.30	364.18	180.18	309.32	150.45	344.81	496.73	84.91	100.38
MEAN												
MGD	2.55	2.31	2.29	8.36	12.1	5.81	9.98	5.37	11.1	16.6	2.74	3.35
CFS	3.94	3.88	3.55	12.9	18.8	8.99	15.4	8.31	17.2	25.6	4.24	5.18
AC-FT	242	220	211	796	1,120	553	949	462	1,060	1,520	261	308

CALENDAR YEAR 1961: MAX 76.7 MIN 0.87 MEAN MGD 5.41 MEAN CFS 8.37 AC-FT 6,060

FISCAL YEAR 1961-62: MAX 136 MIN 0.87 MEAN MGD 6.88 MEAN CFS 10.6 AC-FT 7,700

* Discharge measurement made on this day.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-16	0900	3.99	202	313	4-25	0430	4.71	368	569
11-14	1930	4.64	350	542					

140. 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 1962.

Gage.--Water-stage recorder and suppressed weir. Altitude of gage is 3,310 ft (by barometer).

Average discharge.--35 years (1927-62), 15.9 mgd (24.6 cfs).

Extremes.--1926-62: 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 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	28.8	20.2	5.64	3.90	27.5	32.5	10.9	20.3	21.2	23.9	20.8	23.5
2	15.6	19.4	5.47	3.66	20.3	15.6	10.5	20.0	17.8	22.8	16.1	43.3
3	12.0	9.94	5.72	3.66	16.8	15.4	10.3	12.2	16.3	22.3	12.8	27.8
4	10.7	8.99	9.88	6.06	14.2	22.5	10.1	9.75	15.8	21.3	14.6	20.8
5	10.1	15.2	9.04	7.54	42.8	35.4	13.4	16.3	26.1	20.5	17.5	18.8
6	9.18	17.5	10.6	5.16	38.1	30.1	27.4	26.9	26.4	19.3	21.0	17.3
7	8.26	21.2	6.32	4.04	32.5	16.3	26.5	25.2	24.7	18.5	26.7	16.3
8	7.54	19.0	5.64	3.78	25.5	21.5	37.4	23.8	31.1	18.7	24.9	15.1
9	7.18	*9.75	5.02	24.6	22.5	24.9	31.7	12.3	15.8	22.0	24.7	14.4
10	7.00	7.54	8.78	25.6	19.3	22.3	34.0	13.0	21.8	18.8	23.9	14.0
11	6.66	6.49	11.4	13.6	16.8	19.0	26.1	15.1	20.8	17.0	22.3	14.0
12	6.66	5.98	12.7	7.36	14.4	17.3	23.6	21.3	24.1	16.8	21.0	14.0
13	6.49	5.47	6.83	5.47	13.0	*27.3	15.7	28.6	18.0	32.4	20.0	14.2
14	6.49	5.16	5.30	17.1	31.0	27.2	14.4	30.1	*1.99	47.9	19.0	12.6
15	14.1	5.30	4.88	35.9	45.4	24.1	22.3	32.5	10.2	41.9	21.8	12.0
16	13.4	5.02	4.60	44.4	44.7	22.3	21.8	20.1	9.77	28.7	26.9	12.2
17	15.0	4.60	4.46	25.9	31.6	20.8	11.5	11.5	9.75	31.8	27.2	13.3
18	18.3	4.32	4.04	15.1	27.2	19.5	14.0	12.4	17.0	34.0	27.5	13.3
19	12.6	4.46	4.64	11.3	34.9	18.5	8.99	26.9	33.1	24.7	24.7	12.6
20	9.37	20.7	*31.7	10.1	30.0	18.3	12.3	18.9	24.1	25.2	18.8	14.8
21	7.72	15.5	12.3	10.5	16.7	17.3	24.5	10.3	17.0	23.3	17.0	18.3
22	7.36	7.72	9.75	9.18	20.8	16.3	17.8	15.3	18.8	19.3	18.3	13.3
23	7.00	6.32	7.18	8.08	26.7	15.6	17.5	19.9	18.0	18.3	21.0	11.8
24	6.66	5.47	7.36	7.72	19.5	14.6	26.0	11.6	26.0	24.6	*18.5	10.9
25	7.18	4.88	5.81	*7.96	14.0	14.2	18.5	16.8	34.0	34.2	15.8	10.3
26	6.49	7.02	4.88	27.0	16.2	13.5	14.6	24.4	37.0	28.4	14.4	9.94
27	7.00	13.4	4.60	25.9	43.0	13.0	20.9	20.3	22.8	14.2	13.5	9.94
28	7.36	15.3	4.32	12.4	41.6	12.6	26.4	20.4	23.7	10.1	12.6	15.2
29	6.66	9.94	4.04	16.0	31.9	12.2	11.6	------	21.8	15.4	12.2	14.2
30	6.15	7.00	3.90	48.9	32.5	11.8	16.8	------	13.5	23.9	11.8	11.1
31	5.64	6.83	------	40.9	------	11.3	14.9	------	21.1	------	11.3	------
TOTAL	320.65	315.60	226.80	488.77	811.4	603.2	592.39	536.15	639.51	719.2	598.6	469.28
MEAN												
MGD	10.3	10.2	7.56	15.8	27.0	19.5	19.1	19.1	20.6	24.0	19.3	15.6
CFS	16.0	15.7	11.7	24.4	41.8	30.1	29.6	29.6	31.9	37.1	29.9	24.2
AC-FT	984	969	696	1,500	2,490	1,850	1,820	1,650	1,960	2,210	1,840	1,440

CALENDAR YEAR 1961: MAX 48.9 MIN 3.66 MEAN MGD 17.0 MEAN CFS 26.3 AC-FT 19,060
FISCAL YEAR 1961-62: MAX 48.9 MIN 1.99 MEAN MGD 17.3 MEAN CFS 26.8 AC-FT 19,400

* Discharge measurement made on this day.

160. Waimea River at altitude 890 ft, near Waimea

Location.--Lat 22°04'45", 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 1962. Prior to July 1, 1952, published as Waiahulu Stream near Waimea.

Gage.--Water-stage recorder. Altitude of gage is 890 ft (by barometer). Prior to May 25, 1925, at datum 1.55 ft lower.

Average discharge.--34 years (1925-48, 1951-62), 32.3 mgd (50.0 cfs).

Extremes.--Maximum discharge during year, 2,720 mgd (4,210 cfs) Apr. 25 (gage height, 8.02 ft), from rating curve extended above 76 mgd on basis of slope-area measurement at gage height 11.45 ft; minimum, 8.00 mgd (12.4 cfs) Oct. 24, 25.

1916-18, 1925-62: 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 except those for periods of no gage-height record, which are poor. Kokee ditch (see previous page) diverts water above station for irrigation near Kekaha.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 15, 17-20, 25, 26, Apr. 5-13, Apr. 30 to May 1, May 10-31, June 3-30)

1.7	7.00	3.5	180
1.9	11.5	4.0	289
2.1	17.8	5.0	590
2.4	35.0	6.0	1,050
2.7	61.5	7.0	1,700
3.0	98.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	32.7	14.0	9.75	8.80	38.0	31.5	10.8	60	38.2	25	71.0	232
2	14.3	19.8	10.0	8.80	24.9	20.7	10.5	55	39.0	22	56	245
3	11.3	11.0	9.75	8.80	21.1	14.4	10.5	50	40.6	20	45	52.3
4	10.8	10.3	10.0	8.80	20.2	13.5	10.8	45	24.3	18	40	29.2
5	10.5	14.1	11.5	10.3	216	195	14.4	41	21.6	*17.5	35	22.0
6	10.3	16.9	11.5	9.75	58.3	381	844	38	23.1	17.1	31	18.7
7	10.3	39.7	10.5	9.00	29.2	282	140	35	23.1	16.4	28	17.1
8	10.0	19.0	10.0	8.80	21.6	124	56	43	69.2	17.1	25	16.1
9	10.0	10.8	10.0	32.2	17.5	53.2	70	50	24.9	19.2	22	15.1
10	10.0	10.0	11.6	29.0	16.1	33.7	45	30	18.3	17.1	*22.5	15.1
11	10.0	9.50	*13.2	11.3	15.1	24.9	35	28	17.1	16.1	21.1	15.1
12	10.0	9.25	12.7	*10.0	14.7	21.6	30	26	20.6	15.8	20.2	16.4
13	10.3	9.00	10.8	9.25	14.4	28.1	25	50	223	112	20.2	15.1
14	10.3	9.00	10.3	10.7	182	21.6	21	40	307	402	18.7	*14.4
15	10.3	9.00	10.0	142	277	18.3	*25.1	35	510	162	19.4	13.5
16	13.2	9.00	10.0	265	162	16.1	142	45	272	43.8	29.8	15.4
17	115	9.00	10.0	24.0	48.3	14.7	41.1	70	129	81.7	28.6	16.1
18	17.0	8.80	10.0	11.8	34.4	13.8	29.8	35	101	62.9	28.5	14.4
19	11.0	8.80	9.75	9.50	110	13.2	24.3	*83.1	109	32.4	28.3	14.4
20	10.0	12.7	56.7	9.00	130	12.7	39.3	75.0	76.8	32.5	18.3	18.9
21	9.25	12.5	13.0	9.00	55.4	12.4	269	38.2	62.6	27.1	16.1	24.4
22	9.25	10.0	10.3	8.60	57.5	12.1	269	27.3	54.5	21.6	15.4	15.4
23	9.00	9.50	9.50	8.40	286	12.1	149	155	53.5	20.2	16.8	14.1
24	9.00	9.50	10.7	8.20	55.1	11.8	108	49.0	51.5	31.5	16.8	13.5
25	*9.00	9.25	9.25	8.20	30.5	11.5	86.8	31.8	53.5	669	14.4	13.2
26	9.00	9.25	8.80	24.3	23.7	11.3	75.6	25.5	54.5	1,070	13.2	12.7
27	9.00	9.50	8.80	16.2	87.2	11.3	165	42.2	47.3	456	13.2	12.7
28	9.00	10.8	8.80	10.8	71.6	11.0	613	35.0	124	165	12.4	14.4
29	9.00	10.8	8.80	83.5	*26.7	11.0	150	------	62.6	104	12.1	15.4
30	9.00	10.0	8.80	292	23.7	11.0	90	------	40	81.6	12.1	13.5
31	9.00	10.0	------	86.8	------	10.8	70	------	30	------	12.1	------
TOTAL	446.80	370.75	354.80	1,192.80	2,168.2	1,460.3	3,670.0	1,338.1	2,721.8	3,796.6	763.2	965.6
MEAN												
MGD	14.4	12.0	11.8	38.5	72.3	47.1	118	47.8	93.9	127	24.6	32.2
CFS	22.3	18.5	18.3	59.5	112	72.9	183	74.0	145	196	38.1	49.8
AC-FT	1,370	1,140	1,090	3,660	6,650	4,480	11,260	4,110	8,350	11,650	2,340	2,960

CALENDAR YEAR 1961: MAX 430 MIN 7.40 MEAN MGD 30.1 MEAN CFS 46.6 AC-FT 33,750
FISCAL YEAR 1961-62: MAX 1,070 MIN 8.20 MEAN MGD 52.7 MEAN CFS 81.5 AC-FT 59,060

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 7-14, Jan. 29 to Feb. 18, Mar. 30 to Apr. 4, May 2-9.

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-14	2130	7.15	1,850	2,860	1-28	0400	7.78	2,480	3,840
1- 6	1030	7.61	2,310	3,570	3-13	1330	7.00	1,700	2,630
1-21	1400	6.65	1,410	2,180	4-25	0400	8.02	2,720	4,210

170. Koaie Stream at altitude 3,700 ft, near Waimea

Location.--Lat 22°06'40", long 159°34'00", 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 1962.

Gage.--Water-stage recorder. Altitude of gage is 3,700 ft (from topographic map).

Average discharge.--21 years, 17.5 mgd (27.1 cfs).

Extremes.--Maximum discharge during year, 1,970 mgd (3,050 cfs) Jan. 6 (gage height, 3.97 ft), from rating curve extended above 700 mgd; minimum, 0.98 mgd (1.52 cfs) June 25.

1919-32, 1954-62: 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.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.44	0.98	1.0	43.0
.5	1.69	1.2	85.0
.6	3.91	1.5	179
.7	8.50	1.8	318
.8	16.5	22.2	555
.9	28.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	20.8	70.3	25.0	2.37	18.0	28.0	1.69	8.66	6.30	3.91	3.08	61.5
2	6.30	15.3	7.25	2.17	10.5	10.5	1.69	6.81	10.5	3.62	2.83	76.0
3	6.96	5.37	6.54	3.93	5.82	7.35	1.56	4.58	8.50	3.34	2.37	7.91
4	11.1	4.23	8.50	9.77	4.58	9.12	1.56	3.62	5.37	2.83	2.17	4.23
5	8.50	28.4	6.30	4.96	82.8	177	13.0	3.08	24.9	2.59	2.17	2.83
6	5.37	11.0	4.58	3.34	14.5	116	529	2.59	17.7	2.37	1.99	2.37
7	3.91	38.4	3.34	10.7	14.0	94.0	28.5	2.37	18.1	2.17	2.37	1.99
8	2.83	*11.4	2.59	10.2	8.50	22.0	6.81	5.51	30.9	1.99	1.99	1.83
9	2.37	6.81	2.59	40.3	6.81	8.50	9.78	4.58	7.35	1.99	3.19	1.83
10	2.37	5.82	37.0	22.7	5.37	6.81	15.4	2.83	4.58	2.17	5.37	1.83
11	2.59	3.91	9.18	13.6	4.58	7.14	5.82	2.17	3.62	1.83	3.34	1.83
12	2.59	3.08	6.73	6.30	3.91	*18.4	3.91	1.99	10.3	1.56	21.7	1.69
13	2.59	2.59	3.91	3.91	3.34	43.5	3.08	10.9	*188	54.5	4.96	1.69
14	2.83	2.59	3.08	4.96	150	18.8	2.59	14.0	93.2	189	3.34	1.56
15	18.8	3.91	3.34	134	76.7	19.2	6.79	21.3	128	48.0	29.8	1.43
16	8.41	2.83	3.34	99.9	46.2	7.35	56.4	27.6	41.4	12.9	41.2	1.43
17	78.3	2.17	3.08	12.2	16.3	4.96	7.35	7.89	14.5	36.2	31.2	1.30
18	8.35	1.99	2.59	5.82	24.3	4.23	7.35	4.96	22.7	30.0	38.8	1.69
19	4.58	3.52	*11.0	3.91	53.0	3.91	4.96	8.36	52.7	28.1	14.5	1.99
20	3.34	15.9	57.4	4.23	41.2	3.91	10.4	12.8	52.0	15.6	9.77	1.83
21	2.59	3.91	9.40	24.5	106	4.23	140	6.64	42.3	6.30	6.81	1.69
22	2.59	5.96	5.82	10.1	30.0	3.91	28.8	3.91	26.9	4.23	7.35	1.43
23	2.17	14.4	3.91	11.7	98.4	3.34	*7.91	37.5	43.0	3.34	30.1	1.19
24	4.28	5.37	3.34	*6.30	20.0	3.08	4.96	6.30	9.12	*29.8	10.5	1.08
25	5.37	3.34	2.83	9.79	16.6	3.34	3.91	3.91	10.9	264	6.30	.98
26	2.83	3.08	3.34	26.0	9.77	3.34	3.34	3.62	19.5	221	11.2	1.08
27	2.17	12.7	3.08	61.6	46.6	2.59	103	8.46	12.8	78.7	7.35	2.17
28	3.34	30.4	3.34	9.77	14.5	2.37	326	7.35	26.4	9.68	3.91	23.9
29	3.62	8.93	2.83	85.3	12.0	1.99	16.2	------	22.7	4.96	3.08	8.85
30	8.01	4.96	2.59	179	16.5	1.99	11.2	------	6.81	3.91	3.08	28.0
31	3.91	3.62	------	41.0	------	1.83	25.7	------	5.82	------	2.83	------
TOTAL	243.77	336.19	247.82	855.33	960.78	642.69	1,388.66	234.29	966.87	1,070.59	318.65	249.13
MEAN												
MGD	7.86	10.8	8.26	27.6	32.0	20.7	44.8	8.37	31.2	35.7	10.3	8.30
CFS	12.2	16.8	12.8	42.7	49.5	32.1	69.3	12.9	48.3	55.2	15.9	12.8
AC-FT	748	1,030	761	2,620	2,950	1,970	4,260	719	2,970	3,290	978	765

CALENDAR YEAR 1961: MAX 236 MIN 1.69 MEAN MGD 16.8 MEAN CFS 26.0 AC-FT 18,770
FISCAL YEAR 1961-62: MAX 529 MIN 0.98 MEAN MGD 20.6 MEAN CFS 31.9 AC-FT 23,060

* Discharge measurement made on this day.

Peak discharge (base, 900 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 6	0930	3.97	1,970	3,050	4-25	0400	3.18	1,260	1,950
1-28	0300	3.95	1,950	3,020					

190. Waialae Stream at altitude 3,700 ft, near Waimea
(Formerly published as Waialae River at altitude 3,700 ft, near Waimea)

Location (revised).--Lat 22°05'05", long 159°34'10", on left bank 5.0 miles northeast of mouth and 10.6 miles northeast of Waimea.

Drainage area (revised).--2.5 sq mi, approximately.

Records available.--January 1920 to July 1932, June 1952 to June 1962. Prior to July 1954, published as Waialae River at altitude 3,700 ft, near Waimea. See also Note below.

Gage.--Water-stage recorder. Altitude of gage is 3,700 ft (from topographic map).

Average discharge.--22 years, 13.7 mgd (21.2 cfs).

Extremes.--Maximum and minimum discharges for the fiscal years 1955-62 are contained in the following table:

Fiscal year	Maximum				Minimum		
	Date	Discharge/		Gage height (feet)	Date	Discharge	
		Mgd	Cfs			Mgd	Cfs
1955	Nov. 28, 1954	944	1,460	4.77	Nov. 24, 1954	1.12	1.73
1956	Nov. 11, 1955	2,640	4,080	7.98	May 27, 1956	1.49	2.31
1957	Oct. 23, 1956	2,490	3,850	7.74	Sept.27-29, 1956	.82	1.27
1958	Dec. 1, 1957	1,940	3,000	6.81	Oct. 29, 1957, June 6-8,20-22, 1958	1.29	2.00
1959	Jan. 17, 1959	898	1,390	4.65	Apr. 28 to May 3, 1959	1.29	2.00
1960	Aug. 6, 1959	2,000	3,090	6.92	Oct. 22, 23, 1959	.82	1.27
1961	Dec. 4, 1960	871	1,350	4.58	July 25, 26, 1960	1.80	2.79
1962	Jan. 28, 1962	1,460	2,260	5.93	Feb. 12, 13, 1962	1.12	1.73

/ Maximum discharge determined from rating curve extended above 720 mgd as explained below.

1920-32, 1952-62: Maximum discharge, 2,930 mgd (4,530 cfs) revised, 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, 0.7 mgd (1.1 cfs) Mar. 18-20, 1925, June 14, 15, 1931.

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

Note.--Published records for high-water periods in the fiscal year 1954 and figures of maximum discharge for the fiscal years 1921-32, 1953-54 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1954 TO JUNE 1955

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	25.3	4.96	2.70	2.03	7.14	13.8	30.4	3.03	4.70	24.5	6.00	8.0
2	11.0	4.70	2.56	1.80	3.59	115	22.8	11.4	4.14	8.94	5.74	6.0
3	17.4	3.59	3.59	1.91	2.56	26.3	36.0	40.3	9.34	6.00	22.3	9.0
4	31.4	3.40	5.24	2.85	2.15	73.2	25.2	34.7	33.1	3.96	7.04	7.0
5	9.82	50.4	5.22	3.77	1.91	102	8.12	6.52	14.0	3.82	6.26	4.5
6	4.96	11.2	5.74	3.77	1.80	174	6.00	76.9	6.52	2.85	7.0	3.5
7	3.96	5.22	4.96	5.22	1.49	86.6	4.70	56.9	6.77	2.56	6.0	3.0
8	3.40	7.40	3.59	18.7	1.39	149	3.96	16.5	82.0	2.42	5.0	2.8
9	3.40	6.00	7.40	7.45	1.39	23.1	3.40	7.04	20.0	2.28	4.5	2.7
10	25.8	4.33	3.96	20.9	1.39	17.5	3.03	5.74	11.3	2.15	5.0	2.6
11	116	4.13	2.85	44.7	1.29	12.9	7.13	5.74	24.3	2.03	6.0	2.5
12	45.7	7.60	2.70	25.8	1.20	28.5	121	39.8	69.6	1.91	7.0	2.4
13	124	4.14	4.33	6.73	1.20	12.0	15.2	13.6	14.5	2.03	6.0	2.5
14	13.2	3.59	4.28	4.33	1.29	35.5	13.2	8.53	7.30	7.43	5.0	3.0
15	7.30	3.96	2.85	3.22	1.91	31.1	12.6	9.76	31.5	33.8	5.0	4.5
16	6.52	4.51	3.22	2.70	2.56	53.4	7.30	6.26	11.0	35.6	4.0	7.0
17	7.43	3.96	8.62	2.70	1.80	10.6	10.4	10.0	7.30	*73.5	3.5	5.0
18	43.9	20.0	7.71	6.26	*1.49	6.52	13.1	18.7	6.52	9.33	4.5	20
19	9.09	*8.53	6.52	3.77	1.29	5.22	6.52	11.5	5.48	12.6	10	50
20	8.36	6.52	3.40	2.70	1.29	4.33	*23.4	9.76	4.33	6.00	20	40
21	7.04	36.9	2.56	3.03	1.29	3.77	162	6.00	4.14	8.63	9.0	*9.0
22	10.4	13.5	2.15	4.40	1.20	93.2	9.41	58.5	23.5	20.5	5.0	5.22
23	7.04	6.52	2.03	12.7	1.39	18.3	6.26	71.6	10.5	13.8	6.0	16.9
24	6.78	9.30	1.91	3.96	1.20	6.26	4.96	18.0	7.04	31.0	8.0	16.6
25	4.70	5.74	4.60	3.22	1.39	4.51	4.33	47.9	5.22	21.4	45	5.74
26	6.00	4.14	3.40	2.70	1.58	3.77	7.85	13.8	4.33	6.52	40	4.52
27	3.77	3.96	2.70	2.28	86.9	3.22	8.41	7.71	3.77	6.00	25	3.56
28	3.59	6.28	2.56	2.03	341	16.8	4.51	6.00	*3.77	11.8	8.0	3.59
29	5.22	6.00	2.56	3.26	29.9	45.3	3.77	------	3.59	71.4	7.0	3.56
30	6.52	4.33	*2.56	4.54	68.7	31.3	3.22	------	3.40	8.23	5.0	4.70
31	5.74	3.40	------	20.2	------	166	3.22	------	9.43	------	6.0	-------
TOTAL	584.74	268.21	118.47	233.63	574.68	1,373.00	593.40	622.19	452.39	442.41	309.84	260.19
MEAN												
MGD	18.9	8.65	3.95	7.54	19.2	44.3	19.1	22.2	14.6	14.7	9.99	8.67
CFS	29.2	13.4	6.11	11.7	29.6	68.5	29.6	34.4	22.6	22.8	15.5	13.4
AC-FT	1,790	823	364	717	1,760	4,210	1,820	1,910	1,390	1,360	951	798

CALENDAR YEAR 1954 :	MAX	341	MIN	1.20	MEAN MGD	15.4	MEAN CFS	23.8	AC-FT	17,280
FISCAL YEAR 1954-55:	MAX	341	MIN	1.20	MEAN MGD	16.0	MEAN CFS	24.8	AC-FT	17,890

* Discharge measurement made on this day.
Note.--No gage-height record May 6 to June 21.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge		Date	Time	Gage height	Discharge	
			Mgd	Cfs				Mgd	Cfs
11-28	0700	4.77	944	1,460	12-22	1900	4.62	887	1,370

190. Waialae Stream at altitude 3,700 ft, near Waimea--Continued

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1955 TO JUNE 1956

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.40	5.39	6.78	2.56	3.59	*3.03	5.74	5.22	60.3	13.9	2.28	4.70
2	5.70	3.96	9.35	22.6	3.03	23.8	4.70	4.33	11.0	4.51	2.03	4.33
3	7.44	50.8	5.22	16.8	2.56	13.2	4.33	3.77	8.94	3.59	1.91	6.69
4	3.77	6.37	5.22	26.2	2.42	4.96	4.51	3.40	5.74	3.22	1.80	17.3
5	3.22	4.33	4.51	7.04	2.42	3.77	4.14	3.59	4.70	2.85	1.80	10.7
6	2.85	12.4	3.77	6.78	2.56	3.59	3.96	11.8	5.22	2.70	2.15	8.12
7	2.56	4.51	3.22	6.52	2.15	3.77	3.40	6.00	4.51	2.70	7.96	8.53
8	2.42	6.90	2.70	7.71	148	3.77	2.85	5.22	14.1	2.56	5.48	5.48
9	2.03	10.8	2.70	5.22	123	3.59	2.70	3.59	10.7	20.6	5.55	4.51
10	1.91	8.83	2.56	4.14	31.1	3.59	2.42	13.6	6.00	6.52	3.22	18.2
11	2.03	8.65	2.42	3.77	215	3.59	170	7.05	4.33	4.33	20.7	18.8
12	2.33	4.14	2.42	*3.22	338	3.03	230	91.5	3.77	4.70	4.14	14.4
13	6.88	4.34	3.22	2.85	29.0	2.85	84.7	56.8	3.22	5.74	2.85	11.7
14	21.2	22.3	3.22	3.03	20.2	2.56	15.3	82.6	2.85	3.59	3.40	25.2
15	63.8	24.7	2.85	2.70	24.5	2.42	73.8	107	3.03	4.98	6.46	14.5
16	36.1	8.53	4.88	37.3	30.4	2.28	23.4	465	5.88	4.51	3.77	33.0
17	15.7	6.63	3.40	18.1	175	2.03	6.78	465	14.2	2.85	2.42	8.53
18	29.7	*16.0	2.56	4.51	70.3	2.03	4.70	218	4.51	2.42	1.91	*6.52
19	6.26	10.9	2.15	3.59	33.1	212	3.77	43.9	3.40	6.73	1.80	4.51
20	5.48	8.48	2.28	3.22	32.9	169	3.22	14.5	3.22	6.88	2.56	3.77
21	4.14	5.74	2.39	2.85	71.0	256	3.03	10.2	4.39	4.51	2.42	5.84
22	3.40	3.96	5.32	2.70	29.4	62.7	3.03	6.52	6.78	3.59	3.59	7.71
23	3.22	3.22	5.48	2.56	19.2	10.3	*2.70	58.3	4.14	2.56	3.40	12.4
24	3.40	16.9	14.6	2.56	7.30	6.78	2.70	273	19.8	*2.28	2.42	9.35
25	3.40	71.6	4.59	3.22	4.96	5.48	116	345	7.09	2.03	1.91	5.74
26	7.53	9.80	3.03	4.33	3.96	4.51	124	397	*27.3	1.91	1.58	4.33
27	24.5	9.89	2.85	3.40	3.59	4.33	64.2	136	19.1	23.7	1.58	3.96
28	35.8	15.7	2.70	3.77	3.40	4.33	8.68	46.8	6.39	8.86	25.4	3.77
29	17.0	15.6	2.56	7.30	3.22	4.14	10.8	14.6	4.14	3.77	29.8	3.03
30	8.01	7.04	2.28	31.0	2.85	44.7	48.5	------	7.15	2.70	5.74	2.85
31	12.1	7.30	------	4.70	------	8.99	8.36	------	10.9	------	12.2	------
TOTAL	347.28	395.71	121.23	256.25	1,438.11	881.12	1,046.42	2,899.29	296.80	165.79	174.23	285.47
MEAN												
MGD	11.2	12.8	4.04	8.27	47.9	28.4	33.8	100	9.57	5.53	5.62	9.52
CFS	17.3	19.7	6.25	12.8	74.2	44.0	52.2	155	14.8	8.55	8.69	14.7
AC-FT	1,070	1,210	372	786	4,410	2,700	3,210	8,900	911	509	535	876

CALENDAR YEAR	1955:	MAX	338	MIN	1.91	MEAN MGD	16.8	MEAN CFS	26.0	AC-FT	18,780
FISCAL YEAR	1955-56:	MAX	465	MIN	1.58	MEAN MGD	22.7	MEAN CFS	35.1	AC-FT	25,490

* Discharge measurement made on this day.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-11	2200	7.98	2,640	4,080	2-16	1500	6.13	1,560	2,410
12-19	1700	4.83	967	1,500	2-25	2250	6.33	1,660	2,570
1-11	2200	4.70	917	1,420					

190. Waialae Stream at altitude 3,700 ft, near Waimea--Continued

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1956 TO JUNE 1957

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.42	1.39	4.23	1.12	5.48	103	1.80	10.6	2.70	1.20	12.6	1.39
2	2.15	1.29	2.28	1.29	3.96	30.6	1.80	36.4	2.56	1.77	7.04	2.34
3	2.15	1.50	2.28	1.58	3.22	14.1	1.69	170	2.42	2.15	5.48	2.03
4	2.03	19.1	1.80	27.7	17.2	6.78	1.58	249	2.28	8.92	4.51	1.49
5	1.80	3.87	2.15	7.41	9.65	4.96	1.49	113	2.56	3.22	3.96	1.39
6	1.80	2.28	4.00	3.40	4.33	80.6	18.2	44.4	2.15	2.42	3.96	1.39
7	2.03	*2.28	2.56	3.22	3.40	14.2	25.9	37.2	2.15	4.88	3.59	1.29
8	2.15	2.40	1.69	3.03	2.70	17.3	106	39.2	2.03	8.45	3.03	1.20
9	3.04	3.03	1.39	3.96	2.42	22.1	24.4	16.9	2.03	3.59	*2.85	1.20
10	4.86	4.23	1.20	3.40	2.03	47.4	7.86	18.2	2.03	2.15	2.70	1.20
11	4.63	2.85	1.12	2.85	2.03	10.2	31.6	44.8	2.42	1.80	2.85	*1.12
12	2.56	1.91	1.04	3.40	3.33	6.00	8.26	*18.6	4.68	1.58	3.40	1.04
13	12.5	1.58	1.04	3.12	3.22	4.70	5.48	12.8	4.96	1.49	3.59	1.04
14	5.74	1.80	1.04	27.9	3.03	4.14	11.9	11.6	8.92	1.58	8.86	1.04
15	4.14	4.57	6.28	15.1	45.2	8.40	83.9	7.71	6.13	1.80	7.18	1.29
16	8.20	2.56	3.96	34.1	12.4	8.53	7.06	6.00	4.14	10.1	3.77	1.91
17	5.04	3.52	2.15	54.5	8.79	7.71	200	5.48	16.3	13.9	2.86	3.22
18	3.40	13.0	1.49	11.4	5.74	4.96	197	6.52	7.95	6.19	2.42	3.77
19	3.40	3.87	1.20	6.26	6.52	3.59	26.2	5.22	4.14	83.9	2.28	12.3
20	2.70	2.15	1.12	4.96	5.05	3.03	41.4	5.74	2.85	35.2	2.15	9.01
21	2.28	1.69	1.04	30.4	7.81	*2.56	197	6.00	2.42	5.74	2.15	7.30
22	2.28	1.49	1.04	*33.1	4.14	2.42	36.9	4.51	2.03	3.77	2.28	3.77
23	2.28	1.39	.96	226	3.03	2.28	34.3	4.96	1.91	39.2	2.15	2.42
24	1.91	1.69	1.04	31.5	2.56	2.15	51.4	5.22	1.69	46.2	2.15	1.91
25	1.69	1.58	1.04	6.52	2.28	2.03	16.1	4.70	1.58	30.6	2.03	1.69
26	1.49	1.39	.96	6.71	2.56	1.91	7.71	3.77	*1.58	15.7	1.80	1.69
27	3.19	1.29	*.96	5.22	3.22	2.03	6.26	3.40	1.58	12.6	1.58	1.69
28	2.70	1.29	.89	4.14	3.96	2.56	5.22	2.85	1.49	20.3	1.49	1.58
29	1.91	1.20	.96	4.33	3.77	3.22	118	------	1.29	17.6	1.49	1.49
30	1.69	1.20	1.12	55.1	120	2.42	120	------	1.29	23.4	1.39	1.69
31	1.49	4.98	------	21.3	------	2.03	10.2	------	1.29	------	1.39	------
TOTAL	99.65	98.37	54.03	644.02	303.03	427.91	1,404.61	894.78	103.55	411.40	108.97	75.89
MEAN												
MGD	3.21	3.17	1.80	20.8	10.1	13.8	45.3	32.0	3.34	13.7	3.52	2.53
CFS	4.97	4.91	2.79	32.1	15.6	21.4	70.1	49.4	5.17	21.2	5.44	3.91
AC-FT	306	302	166	1,980	930	1,310	4,310	2,750	318	1,260	334	233

CALENDAR YEAR 1956: MAX 465 MIN 0.89 MEAN MGD 17.7 MEAN CFS 27.4 AC-FT 19,940
FISCAL YEAR 1956-57: MAX 249 MIN 0.89 MEAN MGD 12.7 MEAN CFS 19.6 AC-FT 14,200

* Discharge measurement made on this day.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-23	0800	7.74	2,490	3,850	1-29	2230	5.56	1,280	1,980
1-18	0400	5.42	1,210	1,870					

190. Waialae Stream at altitude 3,700 ft, near Waimea--Continued

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1957 TO JUNE 1958

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	6.65	5.74	18.2	2.70	6.69	928	17.3	8.53	11.4	2.85	2.15	1.69
2	26.5	3.96	6.00	2.28	3.22	379	9.35	5.22	12.1	2.28	4.70	1.58
3	5.65	65.3	35.5	2.03	2.15	87.4	7.30	4.14	6.00	2.28	4.51	1.49
4	3.22	35.2	9.26	1.69	1.58	49.6	7.04	3.77	4.70	5.77	2.85	1.49
5	2.42	7.30	4.96	1.58	1.49	14.3	7.04	3.22	7.37	4.33	2.85	*1.58
6	2.70	71.4	3.96	4.90	1.58	26.3	6.00	2.70	5.74	3.03	3.03	1.39
7	3.40	96.7	3.40	4.93	1.80	24.1	5.22	2.28	3.96	2.28	3.59	1.29
8	3.22	29.9	2.85	2.85	3.22	15.0	4.70	2.03	3.40	1.91	13.0	1.69
9	2.70	9.08	2.56	2.15	2.56	29.0	4.51	2.03	9.38	1.80	19.7	2.28
10	13.0	6.00	2.42	1.91	2.28	20.9	4.33	1.91	13.2	1.58	14.0	2.56
11	35.8	4.70	2.42	1.49	5.38	29.4	4.14	1.69	8.86	1.69	8.20	7.30
12	5.74	4.14	2.42	1.39	4.14	23.9	3.77	1.69	4.85	1.91	8.81	15.7
13	3.40	23.7	2.28	1.39	3.40	27.5	3.59	1.69	5.74	6.85	9.13	3.96
14	3.03	*9.14	2.03	1.39	2.28	26.5	*3.22	5.73	3.96	9.06	4.14	2.42
15	2.28	8.04	1.91	1.69	2.03	43.2	2.70	4.96	3.22	5.74	6.88	1.91
16	2.70	5.74	1.91	*1.58	2.15	14.8	2.56	2.70	2.85	3.77	19.6	1.69
17	2.56	5.22	2.03	5.28	2.42	19.4	2.15	3.40	2.56	3.40	7.27	1.58
18	4.77	7.34	2.56	4.51	1.91	49.8	2.03	2.03	2.56	4.51	4.51	1.69
19	4.51	5.74	2.56	3.03	1.58	37.0	2.03	*3.65	2.28	2.70	3.59	1.39
20	6.72	4.33	2.42	2.42	94.2	20.3	2.03	26.1	2.15	3.52	2.70	1.39
21	4.51	3.77	1.91	2.03	18.3	16.9	2.48	5.39	2.15	4.14	2.42	1.29
22	3.03	3.40	1.80	1.80	5.48	12.0	15.9	12.3	2.28	2.70	2.42	1.29
23	2.42	3.03	1.58	1.58	3.59	14.4	6.13	9.51	2.03	*2.15	2.28	1.80
24	3.22	7.37	2.60	1.49	3.03	11.0	3.59	6.78	2.03	1.80	2.03	2.28
25	2.70	15.5	20.8	1.58	3.22	22.8	2.56	4.96	2.15	1.69	2.03	3.40
26	2.42	13.6	7.71	1.49	*6.00	55.8	2.15	3.40	2.70	1.58	2.28	6.56
27	8.21	5.74	5.22	1.49	6.52	16.6	1.80	9.32	18.2	1.58	2.15	5.11
28	14.3	6.26	6.57	1.39	6.26	27.5	15.7	72.8	14.4	1.49	1.91	29.9
29	7.30	11.3	4.33	1.39	43.7	25.9	40.3	------	5.48	1.39	1.80	19.7
30	11.7	7.35	3.03	1.58	189	14.5	92.4	------	5.74	1.49	1.69	4.28
31	19.4	38.4	------	3.08	------	18.2	22.5	------	3.77	------	1.69	------
TOTAL	220.18	524.39	167.20	70.09	431.16	2,101.0	306.52	213.93	177.21	91.27	167.91	131.68
MEAN												
MGD	7.10	16.9	5.57	2.26	14.4	67.8	9.89	7.64	5.72	3.04	5.42	4.39
CFS	11.0	26.2	8.62	3.50	22.2	105	15.3	11.8	8.84	4.71	8.38	6.79
AC-FT	676	1,610	513	215	1,320	6,450	941	657	544	280	515	404

CALENDAR YEAR	1957:	MAX	928	MIN	1.04	MEAN MGD	17.8	MEAN CFS	27.5	AC-FT	19,990
FISCAL YEAR	1957-58:	MAX	928	MIN	1.29	MEAN MGD	12.6	MEAN CFS	19.5	AC-FT	14,120

* Discharge measurement made on this day.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
12-1	1730	6.81	1,940	3,000

190. Waialae Stream at altitude 3,700 ft, near Waimea--Continued

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1958 TO JUNE 1959

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	4.47	2.15	4.70	2.70	3.59	2.56	8.75	4.70	3.59	46.1	1.29	1.91
2	4.14	86.1	8.40	2.56	3.22	2.42	6.00	4.70	3.40	13.1	1.29	1.80
3	3.77	57.8	6.00	2.42	3.40	*2.15	26.6	4.33	3.59	7.04	1.29	1.69
4	7.91	6.39	3.77	2.42	3.03	2.15	9.16	5.87	3.59	5.48	1.39	1.69
5	6.13	*21.0	3.03	2.28	2.85	4.30	6.26	5.48	2.85	7.20	1.39	1.58
6	3.40	32.1	2.85	2.03	2.56	17.4	5.22	3.96	2.56	10.1	6.59	1.80
7	23.8	6.52	76.0	2.03	2.42	3.96	4.70	3.22	2.42	6.34	9.05	1.80
8	32.6	217	17.8	1.91	2.85	2.85	4.70	2.85	2.42	10.3	17.0	1.91
9	7.04	57.4	4.70	1.80	3.96	2.42	4.14	2.85	2.85	62.0	21.4	19.0
10	9.35	9.56	3.77	1.91	102	8.18	3.77	26.5	*2.85	37.3	8.25	5.18
11	10.2	6.00	3.03	6.06	29.8	6.57	3.22	18.8	2.85	5.83	6.00	3.40
12	10.0	4.70	2.70	3.78	7.30	3.40	39.9	18.2	4.43	5.57	4.51	6.99
13	5.48	4.70	2.70	2.56	5.22	2.56	158	40.7	6.26	4.33	5.74	4.70
14	5.22	4.33	2.85	*2.59	10.6	2.15	12.6	6.26	3.96	3.22	4.14	3.96
15	7.30	4.33	7.72	35.7	5.22	2.03	8.53	6.26	3.03	2.56	7.62	2.85
16	8.10	5.83	15.8	13.2	3.96	1.91	6.26	5.22	2.56	2.28	53.7	2.28
17	4.23	4.70	8.53	29.0	3.59	1.91	116	5.74	2.28	1.91	19.7	1.91
18	103	3.59	15.1	15.0	3.22	13.2	56.5	23.0	2.15	1.80	33.1	1.80
19	19.1	3.03	17.9	7.30	20.1	4.87	15.4	7.88	2.03	1.69	5.26	1.69
20	116	2.85	26.5	6.78	7.15	3.03	*8.53	6.26	1.91	1.69	3.96	1.58
21	12.2	31.1	47.8	14.6	8.39	2.42	6.52	65.7	1.69	*1.58	8.19	1.49
22	12.8	8.12	9.16	22.8	9.46	2.28	5.74	20.3	1.58	1.58	5.13	1.49
23	16.0	4.51	6.00	333	17.5	2.56	5.22	11.0	1.58	1.49	3.59	1.39
24	11.7	3.40	4.96	53.5	5.48	2.42	4.51	6.26	1.49	1.39	3.03	1.39
25	8.49	3.59	4.51	11.1	4.14	2.15	4.14	6.52	1.91	1.39	2.70	1.39
26	4.96	10.4	5.20	6.26	3.59	1.91	3.59	7.04	2.28	1.39	2.42	1.91
27	3.77	6.00	5.53	4.96	3.03	1.80	3.40	4.96	2.15	1.39	2.42	1.91
28	3.03	4.14	3.96	7.42	2.85	24.4	3.22	4.14	1.80	1.29	2.56	1.69
29	2.70	3.22	3.40	6.26	2.56	146	3.03	------	1.91	1.29	2.15	1.58
30	2.42	4.72	2.85	4.96	2.42	27.7	2.85	------	2.03	1.29	2.03	1.69
31	2.15	4.96	------	4.33	------	34.3	3.77	------	2.15	------	1.91	------
TOTAL	471.46	624.24	327.22	613.22	285.46	337.96	550.23	328.70	82.15	249.92	248.80	85.45
MEAN												
MGD	15.2	20.1	10.9	19.8	9.52	10.9	17.7	11.7	2.65	8.33	8.03	2.85
CFS	23.5	31.2	16.9	30.6	14.7	16.9	27.5	18.2	4.10	12.9	12.4	4.41
AC-FT	1,450	1,920	1,000	1,880	876	1,040	1,690	1,010	252	767	764	262

CALENDAR YEAR 1958: MAX 333 MIN 1.29 MEAN MGD 10.3 MEAN CFS 15.9 AC-FT 11,510
FISCAL YEAR 1958-59: MAX 333 MIN 1.29 MEAN MGD 11.5 MEAN CFS 17.8 AC-FT 12,910

* Discharge measurement made on this day.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-17	1600	4.65	898	1,390

190. Waialae Stream at altitude 3,700 ft, near Waimea--Continued

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1959 TO JUNE 1960

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.21	2.56	*2.56	2.56	40.8	1.80	3.59	2.28	22.7	2.56	1.91	2.28
2	47.9	2.70	2.28	1.91	107	*1.91	3.22	2.28	33.7	2.15	1.80	2.03
3	54.4	6.37	2.15	1.69	8.28	1.91	2.70	2.15	44.6	2.15	2.97	2.03
4	16.9	26.2	2.28	1.80	4.14	1.69	4.03	2.15	13.2	3.40	4.63	1.91
5	65.4	33.7	30.5	1.49	7.85	2.40	6.69	2.03	6.78	3.40	2.70	1.80
6	54.4	424	8.50	1.29	7.30	4.48	6.26	1.80	18.3	4.05	2.15	1.80
7	23.4	160	3.40	1.20	3.40	3.59	19.1	1.69	146	6.00	1.91	1.69
8	*10.2	45.6	2.42	1.20	85.2	3.77	6.00	1.49	9.95	21.9	1.69	1.58
9	12.4	29.4	1.91	1.12	22.1	11.0	59.8	1.49	5.74	34.1	1.69	1.49
10	6.78	56.5	1.80	1.04	7.30	5.35	40.5	1.49	*4.33	16.3	2.42	1.49
11	5.22	13.1	2.15	1.04	4.70	3.40	22.8	1.69	4.70	5.22	2.28	1.49
12	4.51	8.12	3.84	1.12	3.40	3.09	29.2	4.15	3.77	4.14	3.41	1.58
13	3.96	7.04	3.77	1.49	2.85	6.73	45.0	5.48	3.59	4.33	16.3	1.69
14	3.77	6.52	3.22	1.29	2.28	42.2	24.3	3.96	3.22	89.0	130	3.55
15	4.14	6.00	2.56	1.29	2.03	44.7	9.46	3.26	2.70	*9.62	17.9	8.52
16	8.02	5.22	6.59	1.20	1.91	131	7.70	103	2.42	15.1	6.08	4.63
17	6.00	5.22	3.59	1.12	1.69	59.8	4.96	16.9	2.56	80.5	4.96	2.85
18	4.51	15.9	2.42	1.04	1.58	8.12	3.96	33.6	3.02	30.1	3.77	2.15
19	3.96	A8.0	1.91	.96	1.58	22.8	3.22	75.9	4.43	8.07	52.8	2.03
20	3.59	A4.0	1.69	.89	1.58	15.1	3.03	8.10	2.85	4.96	53.5	6.42
21	3.77	A3.5	1.80	.89	1.49	50.6	2.56	4.70	2.42	5.22	34.6	31.9
22	3.59	A3.0	1.58	.89	1.39	32.8	2.42	3.91	2.15	4.51	18.3	56.7
23	3.03	A2.5	1.80	.89	1.69	6.52	2.15	7.67	2.85	3.96	*8.78	6.73
24	2.85	A2.0	3.40	1.04	1.69	5.74	2.03	3.96	3.22	4.70	5.48	4.33
25	2.70	A2.3	5.14	1.12	2.42	6.46	*1.91	3.03	5.22	3.96	4.51	4.91
26	2.56	A2.6	2.56	*1.69	4.59	60.6	1.91	2.56	26.3	3.03	3.96	4.64
27	2.56	A3.0	2.03	3.97	2.85	9.26	2.57	2.28	15.5	2.56	3.59	28.3
28	2.42	A3.7	1.80	4.71	2.15	5.48	5.01	2.43	12.9	2.28	3.22	88.6
29	2.42	A2.5	1.58	2.15	1.80	4.14	3.59	150	4.70	2.03	2.85	9.50
30	2.42	A3.0	2.03	1.49	1.69	4.14	3.77	------	3.77	1.91	2.42	6.78
31	2.42	A4.3	------	7.31	------	4.70	2.85	------	3.22	------	2.42	------
TOTAL	372.41	898.55	113.26	52.89	338.73	567.28	336.29	455.43	420.81	381.21	407.00	292.00
MEAN												
MGD	12.0	29.0	3.78	1.71	11.3	18.3	10.8	15.7	13.6	12.7	13.1	9.73
CFS	18.6	44.9	5.84	2.64	17.5	28.3	16.8	24.3	21.0	19.7	20.3	15.1
AC-FT	1,140	2,760	348	162	1,040	1,740	1,030	1,400	1,290	1,170	1,250	896

CALENDAR YEAR 1959: MAX 424 MIN 0.89 MEAN MGD 10.7 MEAN CFS 16.6 AC-FT 11,940
FISCAL YEAR 1959-60: MAX 424 MIN 0.89 MEAN MGD 12.7 MEAN CFS 19.6 AC-FT 14,230

* Discharge measurement made on this day.
A No gage-height record.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
8-6	2000	6.92	2,000	3,090

190. Waialae Stream at altitude 3,700 ft, near Waimea--Continued

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1960 TO JUNE 1961

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	6.52	4.70	3.48	22.3	6.67	4.33	9.18	4.33	3.59	6.00	66.5	2.56
2	32.4	4.14	4.70	137	6.52	7.08	12.3	3.40	5.77	10.1	6.86	2.42
3	14.5	3.96	3.40	10.4	6.00	5.52	6.26	2.85	14.8	6.17	4.51	2.28
4	11.4	24.7	2.70	7.30	3.96	*226	4.33	2.42	13.2	3.59	4.14	2.28
5	6.26	9.97	2.28	5.48	3.22	17.3	3.22	2.15	6.00	2.85	3.59	2.28
6	4.70	5.55	6.15	4.70	2.85	6.26	2.56	2.03	4.33	2.42	3.03	2.28
7	3.96	3.96	*5.74	5.38	2.56	4.70	2.28	1.91	12.3	2.15	2.85	14.9
8	3.59	3.40	5.36	15.6	2.42	3.59	2.15	1.91	10.3	2.28	2.70	28.3
9	3.03	*5.22	3.40	6.26	2.42	3.40	2.03	3.61	5.22	2.03	2.42	15.1
10	2.85	4.70	3.23	5.22	18.1	3.22	2.78	17.3	3.77	94.7	2.28	6.40
11	2.70	3.22	2.85	18.7	300	3.03	3.22	7.84	3.03	*96.8	2.56	5.74
12	5.95	3.59	15.0	6.52	135	7.50	3.96	4.14	2.56	10.8	2.56	5.74
13	24.9	3.03	17.7	*11.7	25.9	6.54	3.40	*128	2.28	5.48	2.42	3.96
14	6.37	2.42	4.70	6.26	7.04	8.24	2.56	87.0	*2.28	4.33	13.0	3.22
15	3.96	2.28	3.96	4.96	5.22	6.97	2.15	14.7	2.42	7.22	4.81	2.70
16	3.22	2.15	6.35	4.14	*5.48	3.59	3.19	7.30	2.42	6.78	*3.22	3.03
17	2.70	3.03	3.96	4.14	5.74	2.70	32.0	5.74	2.28	4.70	6.54	3.96
18	2.56	3.22	3.59	3.59	7.75	24.6	7.98	5.22	2.15	3.96	6.26	3.96
19	2.42	3.59	3.96	4.14	5.48	7.11	3.77	3.96	2.03	4.51	4.96	3.22
20	2.28	5.74	3.22	6.26	12.1	*4.96	2.85	3.40	10.3	3.77	4.33	*17.1
21	2.28	3.59	5.76	5.22	22.4	4.33	2.42	24.3	118	3.22	37.1	6.15
22	2.15	2.85	24.0	3.96	7.04	4.90	2.28	13.6	61.6	2.70	50.7	3.59
23	2.03	5.72	16.1	3.40	16.4	5.22	2.56	14.8	7.94	4.13	13.1	3.22
24	2.03	6.00	8.90	3.03	5.72	3.77	*7.33	11.0	5.22	4.42	5.22	3.40
25	1.91	4.33	4.70	3.03	3.96	3.03	*151	12.1	4.33	7.55	3.77	3.03
26	1.91	3.98	3.77	12.0	3.59	2.70	7.75	6.26	11.0	74.7	6.12	6.98
27	7.95	9.49	3.29	8.15	3.03	2.42	4.70	5.22	10.5	24.7	4.96	10.5
28	22.3	9.30	18.7	4.96	2.92	2.15	3.59	3.96	12.3	32.9	3.77	10.8
29	7.45	8.28	3.48	3.96	18.6	2.15	3.03	------	6.90	6.56	3.22	17.9
30	13.8	9.40	34.1	4.14	4.33	2.15	21.0	------	3.96	4.51	2.70	29.9
31	16.3	12.2	------	4.51	------	2.03	8.89	------	3.40	------	2.56	------
TOTAL	226.38	177.71	232.53	346.41	652.42	391.49	326.72	400.45	356.18	446.03	284.76	226.90
MEAN												
MGD	7.30	5.73	7.75	11.2	21.7	12.6	10.5	14.3	11.5	14.9	9.19	7.56
CFS	11.3	8.87	12.0	17.3	33.6	19.5	16.3	22.1	17.8	23.0	14.2	11.7
AC-FT	695	545	714	1,060	2,000	1,200	1,000	1,230	1,090	1,370	874	696

CALENDAR YEAR 1960:	MAX	300	MIN	1.49	MEAN MGD	11.8	MEAN CFS	18.3	AC-FT	13,250
FISCAL YEAR 1960-61:	MAX	300	MIN	1.91	MEAN MGD	11.1	MEAN CFS	17.2	AC-FT	12,470

* Discharge measurement made on this day.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
12-4	1100	4.58	871	1,350

190. Waialae Stream at altitude 3,700 ft, near Wainea--Continued

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	12.8	45.7	14.8	2.15	17.5	14.9	2.42	8.94	3.40	3.59	4.14	79.5
2	5.22	9.94	4.37	2.03	11.0	8.20	2.28	9.02	3.96	3.40	3.59	79.4
3	4.96	4.70	3.96	2.28	7.30	7.04	2.28	5.74	3.77	2.85	3.22	7.67
4	7.53	3.96	4.33	3.59	5.74	10.0	2.28	4.70	2.85	2.70	2.85	4.51
5	5.74	18.1	3.96	3.03	50.8	215	18.3	3.96	8.94	2.56	2.56	3.40
6	4.33	8.35	3.22	2.28	9.97	160	431	3.40	7.30	2.42	2.28	2.85
7	3.59	23.3	2.42	4.45	8.94	117	28.9	3.03	16.2	2.42	2.42	2.70
8	2.85	*8.44	2.15	5.55	7.04	26.5	8.12	3.40	13.8	2.42	2.15	2.42
9	2.70	6.63	1.80	24.6	6.00	11.0	7.70	3.40	5.00	2.28	3.12	2.28
10	2.70	6.00	21.9	11.9	5.22	7.71	9.86	2.70	3.40	2.15	3.99	2.28
11	2.85	4.14	4.75	7.71	4.70	9.48	5.74	2.28	2.70	2.15	2.70	2.28
12	2.70	3.22	3.59	4.33	4.14	*14.3	4.14	2.15	6.30	1.91	8.52	2.28
13	2.70	2.85	2.56	3.22	3.96	38.1	3.40	3.22	*137	18.2	3.40	2.03
14	2.85	3.03	2.28	3.03	70.2	21.1	3.03	3.77	125	116	2.56	1.91
15	12.4	2.85	2.03	75.2	57.0	16.5	15.6	7.63	148	25.3	15.7	1.80
16	8.72	2.70	1.80	61.9	32.7	7.71	69.9	21.4	44.6	7.04	24.4	1.91
17	71.5	2.42	1.80	6.98	12.1	6.26	7.73	5.68	16.9	18.5	22.5	1.91
18	7.65	2.28	1.69	4.33	19.6	5.48	8.48	4.14	28.9	18.3	36.3	3.60
19	4.70	2.44	*4.82	3.40	51.9	4.70	5.74	5.84	49.2	25.7	9.34	2.56
20	3.77	8.79	47.6	4.77	36.9	4.96	18.0	11.1	52.2	9.52	6.26	2.28
21	3.22	3.59	5.22	26.6	104	4.96	125	5.57	25.7	5.22	4.51	2.15
22	2.85	3.49	4.14	6.94	25.2	4.33	27.4	3.59	20.3	3.96	4.14	1.91
23	2.70	8.53	2.85	5.74	89.6	3.96	*8.53	41.6	33.9	3.59	19.6	1.69
24	3.47	4.14	2.42	*4.14	16.9	3.77	6.26	5.72	8.53	*39.3	6.26	1.69
25	4.33	3.03	2.42	6.89	12.0	4.14	5.22	3.96	7.71	249	4.33	1.49
26	3.22	2.70	3.78	19.3	9.12	3.77	4.51	3.22	10.6	238	9.02	1.49
27	2.85	6.02	3.59	44.6	40.7	3.22	120	3.96	7.71	100	5.22	2.58
28	3.40	18.7	3.59	8.01	11.4	3.03	277	4.14	8.71	13.3	3.40	17.3
29	3.59	5.83	2.85	96.9	9.76	2.85	18.4	------	10.5	6.78	2.85	12.2
30	5.22	3.59	2.28	209	11.0	2.70	18.2	------	5.48	5.22	2.56	19.9
31	3.96	2.85	------	45.7	------	2.56	30.6	------	4.33	------	2.28	------
TOTAL	211.07	232.31	168.97	710.55	752.39	745.23	1,296.02	187.26	822.89	929.78	226.17	271.97
MEAN												
MGD	6.81	7.49	5.63	22.9	25.1	24.0	41.8	6.69	26.5	31.0	7.30	9.07
CFS	10.5	11.6	8.71	35.5	38.8	37.2	64.7	10.3	41.1	47.9	11.3	14.0
AC-FT	648	713	519	2,180	2,310	2,290	3,980	575	2,530	2,850	694	835

CALENDAR YEAR 1961: MAX 215 MIN 1.69 MEAN MGD 13.3 MEAN CFS 20.6 AC-FT 14,920
FISCAL YEAR 1961-62: MAX 431 MIN 1.49 MEAN MGD 18.0 MEAN CFS 27.9 AC-FT 20,120

* Discharge measurement made on this day.

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 6	0900	5.81	1,400	2,170	4-25	0330	5.22	1,120	1,730
1-28	0230	5.93	1,460	2,260					

220. 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 1962. 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.--49 years (1910-15, 1916-17, 1918-24, 1925-62), 36.7 mgd (56.8 cfs).

Extremes.--1908-62: 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. Ditch diverts water from Waimea River 1 mile downstream from Waialae Stream for irrigation in vicinity of Kekaha.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	47.5	39.5	37.8	24.2	34.9	43.6	32.1	31.6	40.6	36.5	31.4	37.5
2	47.5	48.4	38.8	23.5	33.9	36.0	31.4	32.1	39.5	39.5	30.7	30.1
3	37.4	39.2	29.1	23.1	34.9	38.8	30.9	32.1	37.4	39.7	31.9	34.5
4	41.8	32.3	34.6	29.3	34.9	46.4	30.9	31.6	37.8	26.1	31.4	48.4
5	43.1	34.6	35.3	32.6	36.2	40.6	36.0	31.6	40.6	25.6	31.6	48.4
6	34.4	46.8	33.0	27.0	37.8	36.0	29.3	31.9	43.6	25.2	32.6	48.7
7	30.7	42.0	28.9	27.3	38.5	27.3	33.0	31.6	45.4	36.2	45.9	48.7
8	28.2	47.5	26.6	32.3	38.5	23.3	33.2	32.1	45.2	36.0	48.2	42.7
9	26.8	37.6	24.6	42.9	39.0	22.8	39.9	31.4	42.2	5.75	48.7	31.9
10	26.1	37.2	31.9	47.0	39.2	22.4	37.8	32.6	36.7	A0	*48.9	34.4
11	26.1	30.5	*43.4	46.6	39.0	22.4	39.0	23.6	38.8	A0	44.3	46.8
12	26.6	27.7	38.5	*37.8	36.2	22.4	38.8	A0	44.1	A0	35.5	46.6
13	25.9	25.9	29.6	28.6	33.5	4.67	38.5	17.9	36.3	20.0	37.8	46.6
14	26.1	25.5	25.9	26.8	39.5	A0	28.7	36.0	34.2	36.0	48.7	42.9
15	28.9	26.1	25.0	44.1	44.3	A0	*27.5	39.9	36.2	36.2	48.9	*38.8
16	43.8	25.9	24.8	44.3	46.1	A0	36.0	33.9	36.7	37.4	48.4	32.8
17	46.6	24.6	24.2	46.4	43.1	A0	36.2	32.1	36.7	7.17	48.7	34.4
18	45.3	23.5	23.3	43.4	35.3	A0	35.8	31.4	35.3	1.22	43.8	45.0
19	39.8	23.5	23.5	34.9	38.3	A0	36.0	*34.9	32.8	40.8	36.0	47.9
20	32.1	40.1	45.9	31.6	46.1	A0	36.0	36.5	29.6	36.5	38.8	37.8
21	28.6	35.5	45.0	42.9	46.4	9.62	30.7	36.5	27.5	35.5	48.7	36.5
22	27.3	27.5	37.6	44.1	42.4	33.7	32.8	36.5	27.0	38.1	48.7	34.4
23	26.6	40.6	30.0	39.9	35.5	33.0	35.5	36.9	21.7	48.0	48.7	30.7
24	26.4	33.2	31.4	36.0	35.1	33.0	35.8	36.7	22.0	48.0	48.7	30.3
25	*30.9	27.0	26.4	30.5	36.0	33.2	36.7	37.6	22.2	35.0	42.4	36.5
26	27.5	25.3	25.7	44.5	38.5	33.2	36.2	36.7	20.5	34.2	32.8	36.9
27	25.5	31.4	32.6	46.8	46.8	33.0	34.2	36.9	36.5	33.0	34.4	37.4
28	25.9	47.7	29.3	45.9	46.4	33.0	24.8	40.1	37.2	31.9	47.3	44.7
29	27.5	43.4	28.2	37.5	*46.6	32.6	28.2	------	36.5	31.9	44.1	44.1
30	31.9	32.3	25.5	32.9	47.0	32.6	30.5	------	36.7	31.4	42.2	38.3
31	31.2	27.5	------	35.5	------	32.6	32.6	------	36.5	------	41.3	------
TOTAL	1,014.0	1,049.8	936.4	1,130.4	1,189.9	726.19	1,045.0	902.7	1,094.0	852.84	1,291.5	1,193.8
MEAN												
MGD	32.7	33.9	31.2	36.5	39.7	23.4	33.7	32.2	35.3	28.4	41.7	39.8
CFS	50.6	52.4	48.3	56.4	61.4	36.2	52.1	49.9	54.6	44.0	64.5	61.6
AC-FT	3,110	3,220	2,870	3,470	3,650	2,230	3,210	2,770	3,360	2,620	3,960	3,660

CALENDAR YEAR	1961:	MAX	48.9	MIN	0	MEAN MGD	35.5	MEAN CFS	54.9	AC-FT	39,710
FISCAL YEAR 1961-62:		MAX	48.9	MIN	0	MEAN MGD	34.0	MEAN CFS	52.6	AC-FT	38,130

* Discharge measurement made on this day.
A No gage-height record.

291. Waimea ditch below wasteway, near Waimea

Location.--Lat 21°59'05", long 159°39'55", 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 1962.

Gage.--Water-stage recorder and Parshall flume.

Extremes.--1960-62: Maximum daily discharge, 8.50 mgd (13.2 cfs) Nov. 12, 13, 1960, Jan. 26, 1961; no flow at times.

Remarks.--Records good. Water used for irrigation of sugar cane.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.06	3.87	3.40	2.62	0.57	5.92	1.06	0.02	0.29	0	0.29	3.19
2	1.08	6.80	5.53	2.99	.46	5.84	2.96	.02	1.58	1.42	.14	2.97
3	3.69	5.46	3.55	2.90	.43	5.60	2.84	.02	.53	1.90	.32	.58
4	3.61	3.61	3.35	3.35	.35	5.46	2.84	.02	.35	2.87	.46	3.16
5	4.55	2.78	3.94	4.83	2.52	3.38	3.89	.02	4.92	3.55	.46	3.61
6	3.68	5.78	4.41	4.69	4.34	.92	5.78	.02	7.29	2.85	.32	3.09
7	2.84	4.92	3.61	3.87	1.74	.21	1.07	.02	6.00	1.85	.92	3.35
8	2.48	6.72	2.96	5.11	1.63	.08	.64	.02	3.99	1.85	1.32	2.50
9	2.30	4.82	2.78	5.68	1.53	.02	.32	.02	1.79	2.94	1.02	4.41
10	2.18	3.74	3.57	7.29	1.32	.01	.27	.02	1.02	4.90	.61	4.07
11	2.13	3.16	6.32	6.88	.73	.01	.21	.01	.97	6.48	.53	1.56
12	2.18	2.54	5.39	6.24	.53	.01	.32	*.04	.97	6.56	.43	1.48
13	2.18	2.24	3.94	4.48	1.68	.01	.27	.21	1.17	6.64	.18	2.39
14	2.18	2.18	2.84	3.68	2.73	.01	.21	.32	.67	4.94	.50	1.32
15	2.18	2.13	2.94	5.18	4.26	.01	.46	.53	.15	1.22	.43	2.30
16	5.63	2.18	2.36	7.12	2.35	.01	.26	.35	0	4.69	.53	4.41
17	*6.16	2.13	2.30	7.20	1.24	2.87	.10	.21	0	6.72	.50	5.18
18	7.04	2.02	2.24	6.32	.65	6.24	.10	.18	0	6.80	.46	4.20
19	5.32	1.96	2.13	5.11	1.96	6.24	.10	.14	0	4.18	.29	4.62
20	3.61	3.25	4.57	4.48	5.00	6.16	.12	.10	0	*1.12	.21	4.07
21	2.78	4.62	5.84	3.44	*6.00	4.00	.26	.10	0	1.07	2.35	5.53
22	2.48	3.03	4.83	1.90	6.00	.97	.16	.08	0	1.02	3.29	5.25
23	2.24	3.36	3.61	3.87	6.08	.97	.14	.03	*.07	3.93	3.29	2.74
24	2.30	4.16	3.03	5.32	4.09	.82	.10	.03	.18	5.39	4.88	1.27
25	2.54	2.86	*3.57	4.62	1.87	.77	.10	.02	.14	1.48	*5.92	3.14
26	2.72	2.30	2.42	*5.43	.50	*.77	.18	.23	.08	.01	6.24	2.78
27	2.18	2.24	3.21	4.88	4.06	.65	.44	.43	0	.02	6.48	2.72
28	2.02	*4.63	3.48	2.13	6.08	.61	1.22	.39	0	.01	4.20	3.68
29	2.18	6.08	3.68	1.74	5.92	.53	*.81	------	0	0	2.72	5.76
30	2.36	4.41	2.84	1.07	5.84	.46	.46	------	0	.33	1.90	5.84
31	3.35	3.16	------	.87	------	.43	.08	------	0	------	1.53	------
TOTAL	95.23	113.14	108.24	135.29	83.46	59.99	27.77	3.60	32.16	86.74	52.72	101.17
MEAN												
MGD	3.07	3.65	3.61	4.36	2.78	1.94	0.895	0.129	1.04	2.89	1.70	3.37
CFS	4.75	5.65	5.58	6.75	4.30	2.99	1.39	0.199	1.60	4.47	2.63	5.22
AC-FT	292	347	332	415	256	184	85	11	99	266	162	310

CALENDAR YEAR 1961 :	MAX	8.50	MIN	0.01	MEAN MGD	3.59	MEAN CFS	5.55	AC-FT	4,020
FISCAL YEAR 1961-62:	MAX	7.29	MIN	0	MEAN MGD	2.46	MEAN CFS	3.81	AC-FT	2,760

* Discharge measurement made on this day.

310. Waimea River near Waimea

Location.--Lat 21°58'55", long 159°39'50", 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 1962.

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.--25 years (1911-18, 1944-62), 86.4 mgd (134 cfs).

Extremes.--Maximum discharge during year, 11,600 mgd (17,900 cfs) Jan. 28 (gage height, 13.81 ft), from rating curve extended above 3,400 mgd as explained below; minimum, 0.45 mgd (0.70 cfs) Oct. 14, 15.

1910-19, 1943-62: 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, 13.6, and 18.7 ft; practically no flow occasionally owing to upstream diversions.

Remarks.--Records good except those for period of no gage-height record, which are poor. Several upstream diversions for power and irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 7-27, Jan. 29 to Mar. 14, Mar. 16 to Apr. 25)

3.0	0.45	5.0	160
3.2	1.40	5.5	320
3.4	3.60	6.0	560
3.6	7.50	7.0	1,320
3.8	14.2	8.0	2,310
4.0	25.0	9.0	3,550
4.5	70.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	112	37.8	4.22	1.22	119	50.0	5.43	188	54.1	49.3	200	341
2	21.5	61.9	10.5	1.10	64.0	48.2	2.82	165	48.1	42.5	160	655
3	8.19	7.47	1.82	.98	40.0	21.6	2.69	114	65.4	37.5	130	96.8
4	1.58	1.74	1.04	.86	24.4	11.8	2.69	96.8	43.3	44.2	110	44.2
5	2.66	.98	1.76	1.56	379	791	7.25	82.6	30.3	41.1	90	27.6
6	1.85	39.4	2.21	1.27	94.1	1,560	3,430	70.0	52.7	39.6	74	19.2
7	1.22	28.1	1.04	.86	43.1	1,210	710	62.8	48.4	28.3	60	13.0
8	.98	54.5	.73	1.69	39.0	478	*177	70.2	132	27.0	52	10.6
9	.86	5.23	.80	*5.34	20.9	180	111	65.7	55.2	48.7	46	14.2
10	.80	1.58	16.3	85.2	14.2	120	110	49.3	37.5	58.0	44	13.8
11	.80	1.16	27.6	14.0	9.66	93.6	74.2	47.5	28.3	55.1	50	10.2
12	.76	.73	3.81	6.26	7.28	92.0	56.1	*65.2	26.4	53.2	30	10.2
13	.76	.62	1.74	1.13	*4.92	149	49.3	59.1	585	92.1	35	12.6
14	.62	.62	.80	.52	310	95.2	44.8	66.3	853	705	28	8.04
15	.59	.55	.69	172	611	*107	80.5	73.2	1,170	256	40	5.30
16	13.1	.59	.62	*594	216	77.0	506	156	743	80.1	80.4	6.62
17	*198	.62	.55	61.6	102	61.6	157	131	311	98.3	56.5	11.4
18	41.9	.55	.59	11.5	76.5	54.1	111	84.0	262	142	69.3	6.84
19	4.76	.52	.52	2.67	119	51.2	85.6	95.3	322	80.7	67.6	8.58
20	1.76	4.30	100	1.34	277	48.3	109	136	273	*66.7	38.3	5.96
21	1.16	5.18	25.9	4.26	*196	48.6	786	85.5	194	53.2	21.0	22.1
22	.98	1.34	3.19	73.4	155	20.2	446	58.0	138	35.8	14.7	8.58
23	.86	1.23	1.40	6.53	466	18.7	173	290	*161	18.5	28.4	9.93
24	.76	3.86	.92	3.60	120	15.7	149	112	109	25.1	28.5	9.93
25	.98	1.07	*1.87	1.73	59.2	13.0	130	70.0	89.6	1,950	*12.6	6.18
26	1.16	.59	.86	*33.2	55.1	*12.6	113	54.1	115	2,470	16.2	3.08
27	.80	.59	1.26	91.5	122	11.0	494	57.9	98.4	1,390	27.0	2.69
28	.73	*11.2	2.10	33.3	94.9	9.39	3,040	61.6	*127	800	8.58	10.4
29	.76	20.9	3.11	164	42.1	8.31	491	------	151	450	6.40	20.4
30	.98	2.81	1.49	1,200	34.1	7.06	292	------	71.4	300	5.96	36.3
31	*1.49	1.16	------	275	------	6.84	314	------	57.0	------	5.52	------
TOTAL	425.35	298.89	219.44	2,851.62	3,915.46	5,471.00	12,260.38	2,667.1	6,452.1	9,538.0	1,635.96	1,450.73
MEAN												
MGD	13.7	9.64	7.31	92.0	131	176	395	95.3	208	318	52.8	48.4
CFS	21.2	14.9	11.3	142	202	273	612	147	322	492	81.7	74.6
AC-FT	1,310	917	673	8,750	12,020	16,790	37,630	8,190	19,800	29,270	5,020	4,450

CALENDAR YEAR, 1961: MAX 1,560 MIN 0.38 MEAN MGD 58.0 MEAN CFS 89.7 AC-FT 64,940
FISCAL YEAR 1961-62: MAX 3,430 MIN 0.52 MEAN MGD 129 MEAN CFS 200 AC-FT 144,800

Peak discharge (base, 5,600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-6	1000	12.57	9,140	14,100	4-25	0530	11.23	6,730	10,400
1-28	0400	13.81	11,600	17,900					

* Discharge measurement made on this day.
Note.--No gage-height record Apr. 28 to May 15.

360. Makaweli River near Waimea

Location.--Lat 21°58'15", 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 1962. Records for October 1911 to June 1917 at site 0.2 mile downstream not equivalent owing to diversion.

Gage.--Water-stage recorder. Altitude of gage is 29 ft (by hand levels from mouth). July 27, 1943, to June 15, 1959, at datum 1.00 ft higher.

Average discharge.--18 years (1944-62), 52.5 mgd (81.2 cfs).

Extremes.--Maximum discharge during year, 7,880 mgd (12,200 cfs) Jan. 28 (gage height, 10.89 ft), from rating curve extended above 2,100 mgd on basis of slope-area measurement at gage height 10.65 ft; minimum, not determined; minimum daily, 5.76 mgd (8.91 cfs) July 9, 12, 13, Aug. 19.

1943-62: Maximum discharge, 8,800 mgd (13,600 cfs) Jan. 19, 1952 (gage height, 11.19 ft), from rating curve extended above 1,300 mgd on basis of slope-area measurement at gage height 9.46 ft; minimum recorded, 2.05 mgd (3.15 cfs) July 19, 1951.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are poor. Olokele ditch diverts all low flow from Olokele River 9 miles above station for irrigation near Makaweli.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Jan. 27				Jan. 28 to June 30			
0.7	5.10	2.5	220	0.5	6.30	2.5	195
.8	8.40	3.0	350	.6	8.60	3.0	320
1.0	17.5	4.0	720	.8	16.0	4.0	690
1.3	37.8	5.0	1,250	1.0	25.0	5.0	1,240
1.6	66.5	7.0	2,780	1.5	53.5	6.0	1,930
2.0	123			2.0	107		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	31.0	295	74.3	10.5	80.1	46.7	a8.4	110	a18	20.4	39.4	a90
2	17.9	43.6	19.9	7.74	41.2	a30	a8.2	104	a17	19.5	35.0	a200
3	15.1	11.8	15.0	19.5	a32	a25	a8.0	a60	a16	18.2	32.4	a30
4	57.2	9.26	12.7	10.4	a27	a70	a8.0	a56	a16	17.3	26.1	a15
5	23.0	48.5	10.6	7.08	a23	a1,800	a25	a50	57.2	18.2	20.4	a11
6	17.9	19.4	11.8	6.42	a20	*a1,300	*2,220	a45	126	16.9	19.1	a9.0
7	7.08	101	9.26	11.7	a17	1,060	313	a40	86.2	15.6	20.5	a15
8	6.42	25.4	8.83	11.1	a15	314	104	a35	79.3	15.2	18.6	a10
9	5.76	17.9	8.83	*33.4	a14	133	125	a30	a40	16.6	22.7	a 9.0
10	12.2	11.9	79.4	27.6	a15	101	86.6	a28	a22	16.0	24.6	a 9.3
11	7.16	8.07	68.6	19.5	a13	90.5	60.1	a27	a18	14.8	17.3	a10
12	5.76	6.75	20.8	15.5	a12	97.0	51.0	*a26	a100	13.5	113	a10
13	5.76	6.42	10.1	7.41	*a11	140	46.3	a25	558	27.6	25.8	a 9.0
14	6.09	28.2	8.83	6.42	a15	90.0	42.9	a24	482	213	18.8	a 8.0
15	17.8	10.1	8.40	53.6	80.4	*119	102	79.2	680	108	79.9	a 8.0
16	10.5	6.42	8.83	52.5	*50.6	56.7	443	*73.4	249	27.9	112	a8.0
17	*123	6.09	8.07	16.2	23.6	a50	152	38.8	160	50.5	73.4	a10
18	18.3	7.65	8.07	8.40	28.4	a47	115	a30	225	52.7	89.3	a35
19	9.26	5.76	16.9	6.75	76.9	a45	84.3	a25	a450	46.4	81.5	a15
20	7.41	28.8	130	8.15	123	a50	68.4	a23	a350	*69.3	44.4	a9.0
21	7.08	a7.0	26.3	116	*356	a40	503	a21	276	22.5	29.4	a8.0
22	6.75	a6.4	22.0	54.2	118	a45	246	a20	221	15.2	24.8	a7.5
23	6.75	a14	11.8	59.3	198	a18	115	166	198	14.4	82.0	a7.2
24	35.1	a8.0	12.5	a15	57.5	a13	79.9	46.0	56.2	65.4	27.4	a7.0
25	11.2	a6.0	*12.7	a20	39.8	a16	61.2	a22	44.9	1,070	*17.3	a6.8
26	6.09	a7.0	8.07	*a50	24.7	*a13	56.1	a20	39.8	872	25.0	a7.5
27	6.09	a15	15.6	182	113	a11	370	a30	32.2	489	22.2	a20
28	10.1	*a45	17.1	70.7	26.7	a10	1,510	a22	*29.4	115	a15	a60
29	7.80	26.3	14.6	11.1	25.6	a 9.4	196	--------	26.5	67.4	a16	a50
30	13.2	13.2	9.69	890	30.6	a 9.0	127	--------	23.6	51.4	a13	a70
31	*7.41	14.1	--------	269	---------	a 8.7	208	--------	21.3	---------	a11	---------
Total	522.17	860.02	689.58	2,177.07	1,708.1	5,858.0	7,543.4	1,276.4	4,718.6	3,579.9	1,197.3	764.3
Mean												
Mgd	16.8	27.7	23.0	70.2	56.9	189	243	45.6	152	119	38.6	25.5
Cfs	26.0	42.9	35.6	109	88.0	292	376	70.6	235	184	59.7	39.5
Ac-ft	1,600	2,640	2,120	6,680	5,240	18,000	23,150	3,920	14,480	10,990	3,670	2,350

Calendar Year 1961: Max 1,800 Min 5.76 Mean mgd 49.1 Mean cfs 76.0 Ac-ft 55,030
Fiscal Year 1961-62: Max 2,220 Min 5.76 Mean mgd 84.6 Mean cfs 131 Ac-ft 94,840

* Discharge measurement made on this day.
a Doubtful or no gage-height record.

Peak discharge (base, 1,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-30	0030	5.62	1,650	2,550	1-21	1900	6.08	1,990	3,080
12- 5	-	7.72	3,520	5,450	1-28	0530	10.89	7,880	12,200
12- 7	1600	6.17	2,070	3,200	3-13	1500	6.09	2,000	3,090
1- 6	1700	10.14	6,680	10,300	4-25	0500	9.05	5,120	7,920
1-16	0600	5.40	1,500	2,320					

490. Hanapepe River below Manuahi Stream, near Eleele

Location.--Lat 21°57'20", long 159°33'15", on left bank just 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 1962. 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. See also Note below.

Gage.--Water-stage recorder. Altitude of gage is 150 ft (by barometer). July 1, 1917, to Jan. 22, 1921, staff gage at same site at different datum. Dec. 16, 1926, to June 30, 1951, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge.--38 years (1917-20, 1927-62), 53.7 mgd (83.1 cfs).

Extremes.--Maximum discharge during year, 5,020 mgd (7,770 cfs) Jan. 6 (gage height, 8.40 ft); minimum, 7.74 mgd (12.0 cfs) July 9, Sept. 16-19.

1917-21, 1926-62: Maximum discharge, 15,800 mgd (24,400 cfs) Dec. 17, 1949 (gage height, 12.74 ft, present datum), from rating curve extended above 4,900 mgd on basis of slope-area measurement at gage height 9.09 ft, present datum; minimum, 3.3 mgd (5.1 cfs) May 21, 1954.

Remarks.--Records fair. Hanapepe ditch diverts 3 miles above station for irrigation in vicinity of Makaweli.

Note.--The figures of maximum discharge for fiscal years 1918-21, 1927-61 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.7	6.20	2.5	200
.9	11.3	3.0	320
1.1	19.6	3.5	485
1.4	38.0	4.0	710
1.7	68.0	5.0	1,260
2.0	107	6.0	2,050

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.4	554	60.8	348	65.9	98.2	10.1	29.8	8.69	11.3	19.1	161
2	82.3	75.7	14.6	10.7	35.2	34.8	9.85	43.5	8.40	11.0	16.8	262
3	35.9	23.9	16.1	45.0	22.3	25.0	9.56	25.0	8.18	10.7	15.9	36.2
4	102	15.0	11.7	12.7	18.2	73.2	9.56	23.9	8.18	10.7	15.0	19.6
5	56.4	68.7	12.7	9.85	16.4	1,250	19.9	19.6	50.2	10.4	14.3	15.5
6	23.0	21.3	11.0	9.27	14.3	1,040	*1,290	17.8	278	9.85	13.9	13.5
7	10.1	182	9.85	9.56	13.5	774	149	15.9	119	9.56	16.0	18.6
8	8.69	38.7	9.85	23.0	13.2	241	39.0	14.3	50.1	9.27	17.8	12.4
9	7.96	35.8	9.85	*43.3	12.4	148	126	13.2	12.0	9.27	22.7	11.3
10	29.2	17.8	124	22.6	13.5	123	84.0	12.8	9.27	9.56	18.4	11.7
11	9.27	13.9	180	18.8	12.4	111	53.0	12.8	8.98	9.56	42.0	12.4
12	8.18	12.0	25.1	14.1	12.7	108	43.6	12.8	62.5	8.98	76.9	12.4
13	8.18	11.3	9.85	10.1	*11.7	125	40.4	*12.8	429	32.4	62.3	11.7
14	8.18	66.1	8.98	9.85	13.0	114	38.8	47.2	242	185	18.1	11.0
15	22.7	14.8	9.56	16.8	*12.6	*109	98.0	102	313	104	171	11.0
16	11.3	11.3	8.18	18.2	27.4	82.6	276	57.4	133	20.4	156	11.4
17	170	10.4	8.40	12.3	13.2	77.6	147	17.3	103	81.5	109	11.3
18	*23.6	10.7	7.96	9.85	15.8	65.6	72.8	12.8	231	*43.4	142	72.5
19	14.3	10.7	33.4	9.56	88.6	60.8	53.0	12.0	445	34.9	114	49.3
20	12.0	26.7	111	13.0	72.0	65.6	100	11.0	400	34.4	69.4	10.4
21	11.0	10.7	17.1	50.5	305	57.2	259	9.85	263	12.8	70.8	10.1
22	11.0	13.1	11.2	51.3	*91.2	63.1	114	8.98	199	10.4	46.7	9.85
23	10.4	22.4	10.2	76.9	188	20.9	69.2	70.6	247	9.56	116	9.85
24	78.0	11.3	9.85	19.7	49.5	15.5	54.0	13.5	60.5	32.4	48.8	9.56
25	14.1	10.1	8.98	22.9	36.6	18.0	55.3	10.4	38.8	628	23.9	9.27
26	12.4	10.4	*8.40	61.9	19.6	13.9	38.2	9.56	*31.7	343	42.7	*9.56
27	12.0	22.2	14.6	206	160	*12.0	173	*14.2	22.8	336	23.3	25.4
28	16.9	60.3	10.8	80.7	31.5	11.7	565	9.56	17.8	67.0	*16.8	71.1
29	14.3	*45.7	8.69	236	28.3	11.0	*72.7	--------	15.0	33.1	17.8	55.1
30	22.6	13.2	8.69	465	51.1	10.7	54.0	--------	12.8	23.4	15.9	102
31	12.0	12.4	--------	*226	-------	10.4	60.2	--------	12.0	--------	13.5	--------
Total	881.36	1,452.6	791.39	1,850.24	1,465.1	4,970.8	4,184.17	660.55	3,839.90	2,151.81	1,566.8	1,086.99
Mean												
Mgd	28.4	46.9	26.4	59.7	48.8	160	135	23.6	124	71.7	50.5	36.2
Cfs	44.0	72.5	40.8	92.3	75.6	248	209	36.5	192	111	78.2	56.1
Ac-ft	2,700	4,460	2,430	5,680	4,500	15,250	12,840	2,030	11,780	6,600	4,810	3,340

Calendar Year 1961: Max 1,250 Min 7.96 Mean mgd 43.2 Mean cfs 66.8 Ac-ft 48,420
Fiscal Year 1961-62: Max 1,290 Min 7.96 Mean mgd 68.2 Mean cfs 106 Ac-ft 76,420

* Discharge measurement made on this day.

Peak discharge (base, 2,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
12- 5	1400	7.44	3,640	5,630	1-28	0400	7.62	3,890	6,020
1- 6	1700	8.40	5,020	7,770	4-25	0400	7.81	4,150	6,420

600. South Fork Wailua River near Lihue

Location.--Lat 22°02'10", long 159°22'55", on right bank 0.3 mile upstream from Wailua Falls and 5 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 1962. Monthly discharge only for some periods, published in WSP 1319. Published as "above Waiehu Falls, near Lihue" 1912-13. See also Note below.

Gage.--Water-stage recorder. Altitude of gage is 230 ft (by barometer). 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 (corrected) higher. July 1, 1957, to June 23, 1958, at site 10 ft downstream at present datum.

Average discharge.--46 years (1912-18, 1919-20, 1921-24, 1925-57, 1958-62), 75.5 mgd (117 cfs).

Extremes.--Maximum discharge during year, 8,550 mgd (13,200 cfs) Dec. 5 (gage height, 16.67 ft); minimum, 3.30 mgd (5.11 cfs) Sept. 29, 30.

1911-62: Maximum discharge, 30,200 mgd (46,700 cfs) Nov. 12, 1955 (gage height, 11.52 ft, datum then in use), from rating curve extended above 4,200 mgd by logarithmic plotting; minimum, 1.09 mgd (1.69 cfs) Sept. 21, 1953.

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

Note.--The figures of maximum discharge for fiscal years 1959 and 1960 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.6	1.50	5.0	252
1.7	3.50	6.0	400
1.9	7.60	7.0	570
2.2	17.4	8.0	770
2.5	30.2	10.0	1,210
3.0	58.0	13.0	2,010
3.5	94.0	14.0	2,940
4.0	136		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	55.7	154	*105	234	*164	145	26.1	73.4	18.2	49.7	47.2	167
2	149	191	56.8	*31.9	132	86.0	29.0	*58.0	*13.0	49.7	15.9	501
3	*93.1	*46.6	44.5	82.6	103	76.9	*15.2	51.4	10.4	*36.6	*40.0	107
4	106	37.5	40.6	25.7	81.1	*255	16.3	40.6	8.72	16.1	50.8	*46.3
5	62.8	83.1	27.0	*7.16	85.3	*2,320	40.3	35.2	93.0	17.1	54.4	44.5
6	45.5	50.1	*10.9	4.45	57.4	1,230	1,710	30.7	321	9.58	53.8	34.2
7	6.39	222	4.83	11.3	47.4	865	298	21.0	172	7.16	77.7	44.3
8	4.45	69.6	4.26	34.8	39.0	297	114	13.6	99.3	8.72	58.1	36.3
9	6.65	38.1	4.26	45.0	35.2	228	222	34.7	33.7	9.56	86.9	27.4
10	14.7	27.0	253	25.7	42.8	209	137	45.6	22.2	39.0	72.0	38.4
11	4.45	14.4	321	17.8	33.7	131	82.5	42.8	22.7	24.5	50.1	23.1
12	3.88	12.9	49.4	23.5	28.4	59.6	67.8	22.1	80.4	4.06	154	7.60
13	3.69	25.6	15.9	16.3	27.9	90.0	58.0	6.72	870	8.42	156	5.84
14	3.69	109	6.50	47.4	32.2	127	47.4	50.1	416	318	65.7	5.21
15	4.07	33.7	5.84	111	42.3	371	71.4	231	420	266	269	4.83
16	4.45	9.85	5.21	75.2	41.7	133	291	112	229	90.0	263	5.02
17	109	5.62	16.6	7.88	38.3	136	212	83.2	186	162	154	23.9
18	23.7	5.21	15.3	7.57	41.7	98.8	108	37.0	459	112	251	356
19	10.3	5.62	6.52	35.2	89.9	81.1	74.1	14.3	631	81.8	224	168
20	5.62	16.2	55.8	150	111	79.0	213	24.3	420	98.9	176	48.2
21	3.88	14.3	1.90	216	363	72.7	430	18.6	299	50.3	160	22.2
22	5.84	5.21	5.02	174	192	231	159	11.9	298	86.2	124	11.1
23	25.6	16.0	4.26	173	258	85.8	100	73.4	258	47.4	185	5.84
24	117	7.99	32.4	64.5	123	56.2	84.6	29.7	121	120	108	5.40
25	14.8	4.07	25.7	41.2	104	58.7	79.7	28.8	108	1,240	72.7	5.84
26	3.88	3.69	69.6	54.4	69.2	43.4	71.3	15.2	86.8	691	84.6	4.64
27	3.69	12.6	9.03	164	189	39.5	297	41.1	104	735	67.1	8.68
28	7.83	55.4	3.69	245	74.8	37.4	897	30.2	72.7	213	32.9	59.0
29	3.88	51.8	3.30	796	75.5	31.6	145	------	61.5	132	10.7	17.7
30	13.6	12.6	35.4	*649	104	27.0	113	------	47.4	83.9	18.2	118
31	9.70	5.84	------	428	------	26.1	*138	------	44.0	------	14.1	------
TOTAL	926.84	1,946.60	1,245.52	3,999.56	2,826.8	7,727.8	6,338.7	1,276.62	6,026.02	4,799.70	3,196.9	1,952.50
MEAN												
MGD	29.9	62.8	41.5	129	94.2	249	204	45.6	194	160	103	65.1
CFS	46.3	97.1	64.2	200	146	386	316	70.5	301	248	160	101
AC-FT	2,840	5,970	3,820	12,270	8,680	23,720	19,450	3,920	18,490	14,730	9,810	5,990

CALENDAR YEAR 1961: MAX 2,320 MIN 2.25 MEAN MGD 70.0 MEAN CFS 108 AC-FT 78,440
FISCAL YEAR 1961-62: MAX 2,320 MIN 3.30 MEAN MGD 116 MEAN CFS 179 AC-FT 129,700

* Discharge measurement made on this day.

Peak discharge (base, 3,700 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-29	2000	16.48	7,940	12,300	1-28	0400	14.90	4,320	6,680
12- 5	1400	16.67	8,550	13,200	4-25	0500	15.56	5,590	8,650
1- 6	1130	16.09	6,830	10,600					

610. North Wailua ditch near Lihue

Location.--Lat 22°03'40", long 159°27'55", on left bank 300 ft downstream from intake, 8 miles west of Wailua, and 8.5 miles northwest of Lihue.

Records available.--July 1932 to June 1962.

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.--30 years, 12.1 mgd (18.7 cfs).

Extremes.--1932-62: 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.0	15.5	12.6	13.8	9.97	*13.5	10.6	9.97	12.3	12.0	*13.8	*12.9
2	14.7	*11.1	9.97	*12.9	*10.8	12.6	10.6	*12.0	*12.6	11.7	13.8	12.9
3	14.7	11.4	10.3	14.1	10.8	14.1	*11.7	12.0	12.3	*11.7	13.8	11.4
4	16.6	11.7	9.97	12.6	10.6	15.0	11.7	11.7	12.6	12.0	13.2	11.1
5	*15.6	13.8	*9.97	12.0	12.0	15.6	12.6	12.0	13.8	12.0	12.9	10.8
6	14.1	12.6	11.1	12.0	11.4	13.5	15.0	12.0	13.5	12.0	13.8	10.6
7	13.2	12.3	12.0	13.2	12.3	12.3	8.56	12.0	11.1	12.3	14.4	11.7
8	12.6	10.8	12.3	12.9	11.7	8.89	7.62	11.4	10.3	12.3	15.6	11.4
9	12.3	12.6	12.0	13.2	12.0	13.2	12.9	11.1	11.1	12.6	14.1	12.6
10	14.7	11.7	15.0	12.6	12.0	12.6	9.97	11.7	11.7	12.9	12.3	13.5
11	12.3	11.4	14.4	12.9	12.3	7.52	9.68	11.4	11.7	12.3	13.8	12.9
12	12.3	11.1	11.1	12.6	11.7	4.15	9.68	11.1	13.2	11.7	14.1	12.9
13	12.6	11.1	11.7	11.7	12.0	4.40	9.39	11.4	14.1	15.6	15.0	12.6
14	11.7	12.9	12.6	11.7	14.1	2.92	9.39	12.9	11.1	16.5	13.2	12.3
15	13.2	11.7	12.9	14.9	13.5	2.33	9.97	13.2	9.88	15.3	14.7	12.0
16	12.3	11.1	11.7	12.1	13.5	6.61	10.6	12.0	10.3	13.5	12.3	13.5
17	14.7	11.4	12.3	11.1	12.6	10.6	9.68	11.7	9.97	13.2	12.3	14.4
18	12.3	12.3	11.7	11.4	12.9	9.97	11.7	11.7	11.1	11.1	12.3	15.9
19	12.0	12.9	12.9	12.3	15.0	9.97	11.1	12.0	11.4	11.7	12.3	14.1
20	11.4	12.6	13.8	15.3	13.8	10.6	12.6	12.0	11.1	12.9	12.3	14.4
21	11.4	12.0	12.9	15.6	13.2	11.7	13.2	11.7	11.1	11.7	12.3	14.1
22	11.1	14.1	12.6	16.2	11.4	12.6	10.6	12.0	10.6	12.0	11.7	13.8
23	12.3	13.2	12.9	14.4	12.6	10.8	11.1	13.5	10.6	11.4	12.0	13.5
24	15.3	12.3	12.0	12.0	11.4	11.1	11.1	12.3	9.39	13.8	11.1	13.2
25	12.6	12.0	12.3	12.9	12.0	10.8	12.0	12.0	9.68	16.2	10.8	13.2
26	12.6	12.6	13.8	14.7	11.1	10.8	11.1	12.9	9.39	15.0	11.4	13.5
27	14.7	13.5	12.6	12.9	12.9	10.8	12.9	13.8	11.1	12.6	10.8	14.7
28	14.1	14.4	12.6	12.0	12.3	10.8	12.9	12.9	13.5	9.97	10.6	14.1
29	15.0	13.8	12.3	12.9	12.6	10.8	7.94	-------	12.0	8.83	10.8	12.6
30	14.4	12.3	14.1	12.9	12.9	10.8	12.3	-------	12.0	10.6	10.8	12.3
31	14.4	13.5	-------	10.6	-------	10.6	11.4	-------	12.0	--------	10.6	--------
Total	416.2	385.7	368.41	402.4	367.37	321.96	341.58	336.37	356.51	377.80	392.9	388.9
Mean												
Mgd	13.4	12.4	12.3	13.0	12.2	10.4	11.0	12.0	11.5	12.6	12.7	13.0
Cfs	20.8	19.2	19.0	20.1	18.9	16.1	17.0	18.6	17.8	19.5	19.6	20.1
Ac-ft	1,280	1,180	1,130	1,230	1,130	988	1,050	1,030	1,090	1,160	1,210	1,190

Calendar Year 1961:	Max	17.2	Min	2.33	Mean mgd	12.3	Mean cfs	19.0	Ac-ft	13,830		
Fiscal Year 1961-62:	Max	16.9	Min	2.33	Mean mgd	12.2	Mean cfs	18.9	Ac-ft	13,670		

* Discharge measurement made on this day.

620. Stable storm ditch near Lihue

Location.--Lat 22°04'00", long 159°26'45", 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 1962.

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

Average discharge.--25 years (1937-62), 7.17 mgd (11.1 cfs).

Extremes.--1936-62: Maximum daily discharge, 46 mgd (71 cfs) Apr. 3, 1948; no flow at times each year.

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

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.68	0.12	0	0.43	0	0	0	0.19	0	0	0.12	0.04
2	.52	.12	0	0	.05	0	0	.07	0	0	.12	.07
3	.43	.07	0	.01	.01	0	.44	0	0	0	.07	.07
4	.26	0	0	0	0	.25	.86	0	0	0	.07	.07
5	.19	0	0	0	.01	2.36	.86	0	0	0	0	.02
6	.19	0	13.6	0	0	1.39	1.83	.28	.07	0	.02	.02
7	.19	0	26.1	0	0	.23	.86	.52	.01	0	.01	.02
8	.19	0	27.2	0	0	0	.26	.52	0	0	.06	0
9	.15	0	25.1	0	0	0	.12	.34	0	10.2	.07	0
10	.04	0	37.7	0	0	0	.02	.34	0	15.5	.02	0
11	.01	0	14.0	0	0	0	.01	.26	0	12.7	.02	0
12	16.7	0	1.49	0	0	0	.12	.26	0	11.9	0	0
13	21	0	1.36	0	0	0	.12	.19	.54	10.4	0	0
14	21	0	1.49	0	0	0	.02	.19	.43	.62	0	0
15	22	0	1.49	.13	0	.10	.04	.26	.34	.43	.05	0
16	25	0	1.49	0	0	0	.18	.19	.34	.43	.07	0
17	26	0	1.36	0	0	0	0	.12	.34	.34	.07	0
18	26	0	1.24	0	0	0	.43	.12	.52	.34	.07	.02
19	24	0	1.24	.02	0	0	.16	.07	.62	.26	.07	.02
20	24	0	.86	.14	0	0	.08	.02	.52	.26	.02	.02
21	23	0	.62	.12	.30	0	.33	0	.52	.26	.02	.02
22	23	0	.52	0	.43	0	.12	0	.52	.34	.02	0
23	29	0	.52	.01	.11	0	.02	.04	.52	.26	.02	0
24	5.7	0	.52	0	0	0	0	0	.52	.26	.02	0
25	.12	0	.43	0	0	0	0	0	.43	.68	.02	9.84
26	17	0	.73	0	0	0	0	0	.43	.32	.02	14.7
27	31	0	.43	.07	0	0	.13	0	.43	.26	.02	17.8
28	13	0	.19	.23	0	0	.98	0	.34	.19	.02	7.97
29	.12	0	0	.76	0	0	.34	--------	.19	.19	.02	.26
30	.12	0	.18	.34	0	0	.07	--------	0	.19	.01	.26
31	.12	0	--------	.12	--------	0	.19	--------	0	--------	0	--------
Total	358.73	0.31	159.86	2.38	0.91	4.33	8.59	3.98	7.63	66.33	1.12	51.22
Mean												
Mgd	11.6	0.010	5.33	0.077	0.030	0.140	0.277	0.142	0.246	2.21	0.036	1.71
Cfs	17.9	0.016	8.25	0.119	0.046	0.217	0.429	0.220	0.381	3.42	0.056	2.65
Ac-ft	1,100	1.0	491	7.3	2.8	13	26	12	23	204	3.4	157

Calendar Year 1961:	Max	37.7	Min	0	Mean mgd	4.60	Mean cfs	7.12	Ac-ft	5,150
Fiscal Year 1961-62:	Max	37.7	Min	0	Mean mgd	1.82	Mean cfs	2.82	Ac-ft	2,040

Note.--No gage-height record July 13 to Aug. 2.

630. North Fork Wailua River at altitude 650 ft, near Lihue

Location.--lat 22°03'50", long 159°26'20", 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 1962. 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.--46 years (1915-18, 1919-62), 46.8 mgd (72.4 cfs).

Extremes.--Maximum discharge during year, 2,790 mgd (4,320 cfs) Jan. 28 (gage height, 8.99 ft), from rating curve extended above 470 mgd as explained below; minimum, 0.94 mgd (1.45 cfs) Apr. 9-13.

1914-62: 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 p. 49) has diverted from Hanalei River basin into North Fork Wailua River above station, and North Wailua and Stable storm ditches (see preceding pages) have diverted water above station for power development and irrigation in vicinity of Lihue.

Rating tables, (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Dec. 19, 20, Dec. 23 to Jan. 5, Jan. 11-19, 26)

July 1 to Jan. 27

1.1	0.81	2.4	38.0
1.2	1.32	2.9	79.0
1.3	2.07	3.6	173
1.5	4.37	4.5	360
1.7	8.00	5.0	490
2.0	17.7	6.0	870

Jan. 28 to June 30

1.7	0.94	3.0	64.0
1.8	1.80	3.5	121
1.9	3.20	4.0	201
2.0	5.20	4.5	312
2.2	11.3	5.0	460
2.4	20.1	5.5	640
2.7	38.7		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	50.9	321	94.0	61.2	*56.7	31.8	16.2	A 30	17.3	A19	26.7	95.2
2	59.6	60.3	34.4	*35.0	38.0	18.9	A 14	*A 20	*15.4	A16	23.3	113
3	*51.2	*39.3	35.6	64.5	28.1	43.0	*12.6	15.4	11.3	*A15	*25.0	32.4
4	87.2	30.9	29.8	34.4	22.1	137	11.2	14.6	11.3	15.9	19.6	*26.7
5	69.3	56.6	30.9	27.5	46.2	753	26.4	12.9	57.8	13.8	18.2	22.3
6	38.0	28.6	*14.2	24.5	21.2	389	575	11.7	214	12.9	23.4	20.1
7	29.8	113	1.26	49.7	21.6	234	71.7	11.0	67.3	10.6	30.5	38.3
8	25.9	36.2	1.32	42.0	15.9	78.0	39.3	21.6	36.7	9.94	37.3	21.2
9	24.5	38.0	1.32	50.5	13.7	81.5	77.2	13.4	21.7	4.21	34.9	17.8
10	36.9	28.1	48.5	38.7	12.6	51.6	37.4	11.7	23.3	.99	23.9	25.5
11	23.0	25.4	132	46.2	13.7	54.5	28.6	12.5	28.6	.94	59.3	19.2
12	9.14	22.6	37.4	39.1	11.9	44.5	25.0	12.1	63.8	.94	54.0	18.7
13	2.77	20.8	27.0	25.9	10.0	52.7	22.6	21.1	272	45.0	75.6	18.7
14	2.45	55.8	28.0	26.6	81.3	91.3	21.2	*82.8	114	100	31.1	16.3
15	9.55	24.5	29.2	144	37.9	217	39.4	71.2	145	53.5	119	16.3
16	5.12	20.8	22.6	85.3	30.1	57.6	55.8	28.4	76.6	23.9	99.5	30.6
17	28.5	20.8	25.6	33.2	17.3	51.3	22.1	16.8	68.8	59.5	71.1	49.3
18	6.58	26.0	21.6	24.5	17.5	38.7	34.2	14.2	198	37.4	78.7	133
19	4.85	28.3	33.8	24.5	41.1	33.2	19.3	14.2	209	34.5	80.6	54.6
20	3.59	27.0	69.9	86.8	30.1	33.8	79.8	14.6	202	70.5	71.5	30.5
21	3.33	19.3	35.8	91.0	141	33.8	215	12.5	138	27.5	71.4	22.3
22	2.97	41.5	26.3	95.1	40.1	102	52.1	11.7	112	51.1	50.6	19.6
23	4.02	31.4	34.5	96.7	54.7	29.8	40.6	26.9	121	23.9	70.9	17.8
24	55.9	22.6	25.4	40.0	27.0	28.5	33.3	10.6	64.0	95.3	42.6	16.8
25	29.8	19.3	22.6	33.1	31.3	27.6	43.0	9.94	76.3	459	34.5	6.24
26	9.52	20.4	125	40.3	19.7	22.1	26.9	14.3	71.0	575	40.2	1.11
27	3.89	30.3	33.2	92.2	61.8	20.4	103	25.0	66.4	*201	29.2	6.17
28	16.8	50.4	28.1	87.7	22.9	20.8	320	17.3	93.7	66.0	27.4	39.3
29	40.5	43.9	25.0	237	23.1	19.3	46.4	-------	A60	46.4	31.7	40.3
30	38.5	22.1	88.8	218	23.4	18.1	39.5	-------	A35	35.9	29.8	49.1
31	33.1	30.2	--------	118	--------	17.3	47.8	-------	A25	-------	23.9	----------
Total	807.18	1355.4	1163.10	2113.2	1012.0	2832.1	2196.6	578.44	2716.3	2125.62	1455.4	1018.42
Mean												
Mgd	26.0	43.7	38.8	68.2	33.7	91.4	70.9	20.7	87.6	70.9	46.9	33.9
Cfs	40.3	67.6	60.0	105	52.2	141	110	32.2	136	110	72.6	52.5
Ac-ft	2480	4160	3570	6490	3110	8690	6740	1780	8340	6520	4470	3130

Calendar Year 1961:	Max	753	Min	0.62	Mean mgd	40.2	Mean cfs	62.2	Ac-ft	45040
Fiscal Year 1961-62:	Max	753	Min	0.94	Mean mgd	53.1	Mean cfs	82.2	Ac-ft	59480

* Discharge measurement made on this day.
A Doubtful or no gage-height record.

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8- 1	1330	6.74	1,220	1,890	1- 6	1600	7.95	1,960	3,030
9-26	1330	7.44	1,590	2,460	1-21	1430	8.34	2,260	3,500
10-15	1000	7.05	1,380	2,140	1-28	0300	8.99	2,790	4,320
10-27	2400	6.79	1,240	1,920	3-13	1430	7.69	1,800	2,790
10-29	1830	8.28	2,210	3,420	4-25	0430	8.14	2,120	3,280
12- 5	1230	8.76	2,570	3,980					

680. East Branch of North Fork Wailua River near Lihue

Location.--Lat 22°04'10", 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 1962. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (by barometer). 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.--47 years (1913-14, 1915-18, 1919-62), 30.9 mgd (47.8 cfs).

Extremes.--Maximum discharge during year, 2,090 mgd (3,230 cfs) Dec. 5 (gage height, 7.10 ft), from rating curve extended above 590 mgd; minimum, 11.4 mgd (17.6 cfs) July 22, 26.

1912-62: 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 good except those above 600 mgd and those for periods of no gage-height record, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.3	11.0	2.5	138
1.5	20.0	3.0	277
1.8	41.0	5.0	960
2.2	85.0		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	38.9	*176	33.2	29.4	*52.4	44.9	15.0	*20.6	*17.2	20.6	33.0	24.8
2	54.8	36.7	15.5	*19.0	42.0	28.1	*16.5	19.0	17.9	*19.5	29.5	64.5
3	32.2	25.4	15.5	30.2	33.8	25.4	14.2	18.0	15.5	18.5	32	25.4
4	35.0	20.0	15.0	24.3	28.1	101	13.8	17.0	14.6	18.0	28	21.8
5	*30.7	34.1	19.4	18.0	61.5	629	14.6	16.0	42.0	17.0	25	19.5
6	24.9	20.9	*13.4	16.5	28.1	338	318	15.0	52.6	16.5	30	18.5
7	20.6	67.8	14.2	16.7	26.7	152	48.2	14.6	41.8	16.0	34	22.4
8	19.0	25.4	13.0	21.1	22.4	68.4	26.0	22.3	44.5	15.5	40	17.5
9	18.0	22.4	12.6	29.3	21.2	49.6	40.0	14.6	22.4	15.0	35	16.0
10	18.5	18.0	27.6	25.1	20.6	41.0	28.3	13.4	19.5	14.6	25	16.0
11	17.0	16.5	64.6	27.7	19.5	36.2	21.2	13.0	22.0	14.2	45	15.0
12	18.5	15.0	20.8	20.9	18.0	32.3	19.0	12.6	67.6	13.8	40	14.6
13	19.4	14.2	15.5	17.5	17.7	32.9	17.5	17.2	205	52.0	50	14.2
14	16.0	18.2	16.4	20.3	77.3	41.3	16.5	44.6	68.6	116	30	14.2
15	21.6	15.0	16.5	76.3	43.4	44.0	16.5	47.5	40.2	58.8	70	14.2
16	16.5	13.4	13.4	90.8	39.9	31.6	34.4	27.5	32.3	29.5	50	37.0
17	29.7	13.0	14.2	32.3	25.4	31.6	17.0	19.0	43.1	68.1	40	29.5
18	17.0	13.0	13.4	24.8	21.8	26.0	23.9	16.5	208	45.1	45	55.3
19	15.0	15.4	16.0	24.7	32.9	24.2	16.0	15.0	109	29.5	50	33.8
20	14.2	17.6	30.6	84.9	31.3	24.2	24.0	17.6	88.7	34.0	45	22.4
21	13.8	13.0	18.1	48.6	78.4	23.3	93.2	14.6	58.9	24.2	45	18.5
22	13.4	15.3	13.4	51.9	40.6	32.3	30.8	13.8	50.8	56.4	35	17.0
23	14.2	16.8	12.6	67.7	46.2	21.8	23.6	15.3	43.5	26.0	40	16.0
24	27.8	12.6	12.6	34.6	30.9	20.6	20.0	13.4	31.6	36.2	32	15.5
25	15.0	11.8	13.0	29.5	32.5	20.0	19.5	12.6	33.8	381	28	15.0
26	13.8	12.9	62.1	27.4	24.8	18.5	18.5	13.2	32.1	325	30	15.0
27	14.2	22.0	23.8	36.5	55.6	17.5	33.1	19.7	35.3	247	23	17.5
28	14.2	29.0	15.5	55.4	27.4	17.5	191	19.5	49.0	75.9	21	29.5
29	14.2	26.9	14.2	197	30.2	17.0	33.0	---------	36.3	52.4	25	27.4
30	15.5	15.0	31.9	123	26.7	16.5	26.0	---------	24.8	*40.2	23	21.8
31	14.2	14.6	---------	134	---------	16.0	24.2	---------	22.4	---------	*20.0	---------
Total	647.8	787.9	618.0	1455.4	1057.3	2022.7	1253.5	523.1	1591.0	1896.5	1098.5	689.8
Mean Mgd	20.9	25.4	20.6	46.9	35.2	65.2	40.4	18.7	51.3	63.2	35.4	23.0
Cfs	32.3	39.3	31.9	72.6	54.5	101	62.6	28.9	79.4	97.8	54.8	35.6
Ac-ft	1990	2420	1900	4470	3240	6210	3850	1610	4880	5820	3370	2120

Calendar Year 1961: Max 629 Min 9.84 Mean mgd 31.2 Mean cfs 48.3 Ac-ft 35,000
Fiscal Year 1961-62: Max 629 Min 11.8 Mean mgd 37.4 Mean cfs 57.9 Ac-ft 41,880

Peak discharge (base, 1,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-20	2230	6.09	1,460	2,260	1-28	0430	5.55	1,180	1,830
10-29	2000	6.94	1,970	3,050	3-13	1430	5.52	1,170	1,810
12- 5	1300	7.10	2,090	3,230	3-18	2230	5.86	1,340	2,070
1- 6	1030	5.20	1,040	1,610	4-25	0430	6.53	1,720	2,660

* Discharge measurement made on this day.
Note.--No gage-height record May 3-30, June 16-18, 25-30.

690. Wailua ditch near Kapaa

Location.--Lat 22°04'25", long 159°24'05", 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 1962.

Gage.--Water-stage recorder. Altitude of gage is 462 ft (by estimating slope of 2,000-ft length of ditch on basis of levels by Lihue Plantation Co.).

Average discharge.--25 years (1937-62), 10.3 mgd (15.9 cfs).

Extremes.--1936-62: 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 sugar cane.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.0	14.5	14.2	25.2	0.69	0.61	0.56	*7.17	*1.15	0.48	0.36	0.87
2	11.0	*9.90	10.8	13.0	*.69	.56	*.48	15.4	1.09	*.65	.40	.87
3	*10.9	13.7	10.9	*4.98	.69	.48	.82	6.45	1.15	.56	.40	.87
4	11.1	15.3	10.9	0	.65	*.52	1.04	1.93	1.20	.65	.40	*.87
5	11.1	15.4	11.0	5.83	.56	.61	1.04	1.93	1.20	.61	.76	.82
6	13.3	15.6	*14.1	24.1	*.52	.44	1.04	1.81	1.20	.65	.98	.93
7	15.7	15.6	19.5	24.2	*.48	.29	.87	1.87	1.26	.61	1.04	3.17
8	16.1	15.6	19.9	25.0	.61	.32	.82	1.93	1.20	.61	1.04	5.38
9	16.5	15.6	19.6	15.9	.61	.44	.73	1.81	1.31	.56	1.04	5.65
10	21.3	15.7	19.6	11.1	.61	.40	.73	1.68	1.43	.61	.98	5.83
11	23.9	15.8	20.1	11.0	.65	.36	.77	1.62	1.43	.69	.93	5.92
12	25.5	12.1	20.2	11.1	.61	.32	.73	1.55	1.31	.73	.93	6.10
13	25.6	10.7	20.3	11.2	.73	.32	.73	1.49	1.04	.73	.93	6.19
14	25.2	10.7	20.6	7.59	.73	.32	.65	1.49	.82	5.06	.98	6.19
15	20.3	14.2	20.7	4.84	.77	.29	.69	1.43	.87	6.64	.93	6.19
16	17.5	18.3	20.6	7.82	.77	.20	.69	1.37	.87	6.64	.77	6.28
17	17.6	19.7	20.6	9.7	.73	.23	.73	1.37	.87	*6.82	.82	6.37
18	17.2	19.7	20.5	5.28	.77	.23	*.77	1.31	.87	5.44	.87	6.55
19	17.6	19.9	20.6	6.47	.73	*.23	.87	1.20	.87	5.56	.87	6.64
20	23.0	19.7	20.7	5.29	.69	.89	.93	*1.09	.69	5.56	.82	6.64
21	25.2	19.7	20.8	.93	.73	1.81	.93	1.09	.61	5.65	.82	6.55
22	21.2	19.9	16.0	.61	.73	1.31	.93	1.20	.52	5.65	.82	6.46
23	18.9	20.0	9.80	.36	.77	1.09	.77	1.20	.52	5.74	*.82	6.46
24	*24.3	19.9	9.90	.23	.65	1.04	.69	1.20	.44	5.65	.82	6.46
25	29.0	19.7	10.0	.29	.65	1.04	.69	1.20	.40	2.24	.82	6.55
26	29.4	19.9	10.1	.32	.61	.93	.65	1.26	.40	.44	.87	6.64
27	28.5	20.0	*10.1	.44	.65	.77	.56	1.26	*.44	.40	.87	6.64
28	17.1	20.0	19.6	.52	.65	.69	.73	1.26	.40	.32	.87	6.64
29	12.0	19.7	25.1	.65	.61	.65	.69	----------	.48	.26	.87	6.73
30	12.3	*19.9	25.2	.69	.56	.61	.69	----------	.52	.36	.87	6.73
31	17.8	20.0	----------	.69	----------	.61	.67	----------	.44	----------	.87	----------
Total	590.1	526.40	512.00	235.33	19.90	18.61	23.69	65.57	27.00	76.57	25.57	154.19
Mean												
Mgd	19.0	17.0	17.1	7.59	0.663	0.600	0.764	2.34	0.871	2.55	0.825	5.14
Cfs	29.4	26.3	26.4	11.7	1.03	0.929	1.18	3.62	1.35	3.95	1.28	7.95
Ac-ft	1810	1620	1570	722	61	57	73	201	83	235	78	473

Calendar Year 1961: Max 29.4 Min 0 Mean mgd 9.65 Mean cfs 14.9 Ac-ft 10810
Fiscal Year 1961-62: Max 29.4 Min 0 Mean mgd 6.23 Mean cfs 9.64 Ac-ft 6980

* Discharge measurement made on this day.

710. North Fork Wailua River near Kapaa

Location.--Lat 22°02'55", long 159°22'25", on right bank 1.1 miles upstream from confluence with South Fork, 4.0 miles southwest of Kapaa, and 5.0 miles north of Lihue.

Drainage area.--18.7 sq mi.

Records available.--July 1952 to June 1962.

Gage.--Water-stage recorder. Altitude of gage is 30 ft (from topographic map).

Average discharge.--10 years, 77.0 mgd (119 cfs).

Extremes.--Maximum discharge during year, 4,490 mgd (6,950 cfs) Dec. 5 (gage height, 8.61 ft); minimum, 2.88 mgd (4.46 cfs) Sept. 8.

1952-62: 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 930 mgd on basis of slope-area measurement of peak flow; minimum, 1.37 mgd (2.12 cfs) Oct. 28, 1953.

Remarks.--Records good. Wailua ditch (see preceding page) diverts above station for irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Apr. 14 to June 18)

1.2	2.02	3.0	195
1.3	4.00	3.5	328
1.5	11.4	4.0	500
1.8	29.3	5.0	1,000
2.1	54.5	6.0	1,730
2.5	103		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	93.8	517	116	141	181	99.2	42.9	72.7	45.5	52.7	74.9	99.5
2	136	133	50.9	57.3	143	73.8	29.1	49.1	45.5	47.3	52.7	242
3	106	73.8	49.1	100	103	81.4	5.92	40.3	41.2	41.2	49.1	79.9
4	123	48.2	45.5	96.9	82.5	261	3.30	37.8	38.6	44.6	48.2	64.0
5	120	79.5	48.2	49.3	137	1,700	24.4	32.3	119	42.1	48.2	50.0
6	86.0	47.2	36.4	28.4	*74.9	1,010	1,130	39.4	310	35.4	57.0	43.8
7	55.6	184	10.2	40.2	71.6	516	228	50.0	160	33.1	94.5	63.0
8	33.6	73.7	3.09	27.9	57.7	208	102	71.9	119	30.8	86.7	40.5
9	33.9	60.0	3.30	70.2	55.6	169	147	50.9	59.8	20.4	87.2	30.1
10	58.4	47.3	58.9	64.9	52.7	144	101	43.8	49.1	11.0	93.2	35.5
11	19.9	40.3	152	63.6	53.6	125	74.9	42.1	53.2	21.2	71.9	27.9
12	20.7	35.4	54.9	66.0	48.2	117	58.7	40.3	188	22.4	147	27.2
13	14.6	36.1	28.6	40.3	46.4	118	49.1	57.9	678	81.0	132	31.6
14	10.6	71.1	28.7	67.5	159	139	44.6	114	273	245	77.3	30.8
15	11.6	41.7	32.7	238	126	307	50.0	201	245	136	239	25.9
16	13.2	28.6	27.2	214	94.6	116	117	97.6	140	54.6	238	48.9
17	48.4	20.6	26.5	66.5	68.3	109	57.7	A60	157	118	157	75.8
18	A12.	23.5	21.8	57.0	61.9	87.7	*63.5	A50	469	*90.1	168	253
19	A9.0	21.2	34.8	66.7	95.4	*73.8	47.3	A45	520	67.2	179	117
20	A7.0	45.9	87.7	160	97.4	72.7	87.9	*A50	368	109	153	73.1
21	A6.0	20.0	40.8	239	251	68.3	356	38.5	247	51.8	155	55.6
22	A5.5	36.8	29.2	196	119	164	126	27.9	202	114	127	43.8
23	A5.0	42.0	42.9	215	130	66.1	97.4	53.0	191	62.9	*146	40.3
24	*34.8	24.5	40.4	115	83.8	58.7	83.8	39.5	109	154	85.9	37.8
25	9.84	17.7	36.1	82.5	85.3	62.9	79.8	34.6	113	1,060	62.9	29.2
26	3.51	13.3	153	82.5	62.9	53.6	73.2	35.1	103	1,090	67.2	17.1
27	3.75	42.7	*58.9	155	141	50.9	133	62.0	*121	574	53.6	28.2
28	4.00	69.1	31.9	164	65.0	50.9	738	55.6	134	189	46.4	74.1
29	24.5	70.1	10.0	438	70.9	49.1	147	------	117	123	50.9	76.4
30	42.4	*30.8	88.8	519	*65.9	46.4	98.8	------	77.3	102	50.9	87.0
31	29.3	36.2	------	386	------	43.8	104	------	61.9	------	*38.6	------
TOTAL	1,185.90	2,031.3	1,448.49	4,307.7	2,884.6	6,242.3	4,501.32	1,592.3	5,555.1	4,823.8	3,138.3	1,949.0
MEAN												
MGD	38.3	65.5	48.3	139	96.2	201	145	56.9	179	161	101	65.0
CFS	59.3	101	74.7	215	149	311	225	88.0	277	249	157	101
AC-FT	3,640	6,230	4,450	13,220	8,850	19,160	13,810	4,890	17,050	14,800	9,630	5,980

CALENDAR YEAR 1961:	MAX	1,700	MIN	3.09	MEAN MGD	81.3	MEAN CFS	126	AC-FT	91,100
FISCAL YEAR 1961-62:	MAX	1,700	MIN	3.09	MEAN MGD	109	MEAN CFS	169	AC-FT	121,700

* Discharge measurement made on this day.
A No gage-height record.

Peak discharge (base, 2,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-29	2000	7.86	3,560	5,510	3-13	1530	7.47	3,170	4,900
12- 5	1300	8.61	4,490	6,950	3-18	2330	6.81	2,510	3,880
1- 6	1030	7.66	3,360	5,200	4-25	0430	8.04	3,750	5,800
1-28	0430	8.05	3,760	5,820					

715. Left Branch Opaikaa Stream near Kapaa

Location.--Lat 22°04'25", long 159°23'55", on left bank 0.1 mile upstream from confluence with Right Branch and 5 miles west of Kapaa.

Drainage area.--0.7 sq mi, approximately.

Records available.--May 1960 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 400 ft (from topographic map).

Extremes.--Maximum discharge during year, 158 mgd (244 cfs) Dec. 5 (gage height, 4.27 ft); minimum, 0.28 mgd (0.43 cfs) June 23, result of bulldozer work in channel; natural minimum, 0.51 mgd (0.79 cfs) Sept. 28-30.

1960-62: Maximum discharge, 201 mgd (311 cfs) Oct. 2, 1960 (gage height, 4.72 ft); minimum, that of June 23, 1962; natural minimum, that of Sept. 28-30, 1961.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.8	0.25	1.5	9.10
.9	.74	1.8	16.3
1.0	1.60	2.2	29.0
1.1	2.72	2.5	41.4
1.3	5.50		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.62	8.14	1.12	2.44	4.60	2.16	1.60	2.49	1.30	2.27	3.61	2.49
2	1.39	2.21	.88	.81	3.87	1.93	1.50	2.38	1.30	2.16	3.36	5.04
3	1.30	1.60	.88	.74	3.23	1.93	1.40	2.16	1.30	2.04	3.10	2.49
4	1.40	1.40	.88	.74	2.97	2.77	1.30	2.04	1.30	2.04	2.97	2.38
5	1.40	1.40	.88	.68	3.10	40.4	1.30	2.04	1.94	1.93	2.72	2.27
6	1.30	1.30	.81	.68	*2.38	25.6	18.1	1.93	1.82	1.82	3.04	2.16
7	1.21	2.32	.81	.62	2.38	*10.5	4.07	1.82	1.60	1.71	2.95	2.16
8	1.12	1.71	.81	.62	2.27	6.52	2.72	1.82	1.71	1.60	2.84	2.04
9	1.12	1.50	.81	.74	2.27	5.05	2.97	1.71	1.40	1.60	2.60	2.04
10	1.04	1.40	.81	.74	2.27	4.30	2.60	1.71	1.21	1.50	2.49	2.04
11	1.04	1.30	.88	.68	2.04	3.74	2.38	1.60	3.25	1.50	2.38	1.93
12	1.04	1.21	.74	.88	1.93	3.48	2.16	1.50	11.1	1.50	2.27	1.82
13	1.12	1.21	.74	.74	1.93	3.48	2.04	1.60	12.6	1.84	2.27	1.82
14	.96	1.30	.68	.62	1.93	3.48	2.04	2.30	5.67	2.84	1.93	1.82
15	1.12	1.21	.68	.74	1.93	2.97	2.04	2.77	3.87	2.49	3.40	1.71
16	.96	1.12	.68	1.38	1.82	2.97	2.49	2.27	3.23	1.82	2.84	2.27
17	1.21	1.12	.68	.88	*1.60	2.84	1.93	1.82	3.10	*2.48	2.97	2.57
18	1.04	1.12	.68	.74	1.60	2.60	*1.82	1.71	15.4	2.04	2.84	3.74
19	1.04	1.12	.68	1.26	1.71	*2.49	1.71	1.60	6.82	1.71	3.23	2.04
20	1.04	1.12	.81	6.01	1.71	2.27	1.82	*1.60	4.15	1.82	2.84	1.93
21	1.04	1.12	.74	3.95	2.97	2.16	3.95	1.50	3.61	1.60	2.84	1.71
22	1.04	1.12	.62	2.20	2.04	2.85	2.43	1.50	3.23	1.60	2.60	1.60
23	1.12	1.12	.56	3.05	2.48	2.16	2.04	1.50	3.10	1.60	*3.54	1.50
24	*1.04	1.04	.56	1.82	1.93	2.04	1.93	1.40	2.84	1.60	2.72	1.50
25	.88	1.04	.56	1.60	2.21	1.93	1.82	1.40	2.72	19.3	2.60	1.50
26	.81	1.04	.84	1.40	1.82	1.82	1.82	1.30	2.60	13.3	2.72	1.50
27	.81	1.04	*.68	1.50	2.66	1.82	2.75	1.40	*2.84	15.2	2.49	1.60
28	.81	1.21	.56	1.40	1.93	1.82	12.9	1.40	3.28	6.52	2.49	1.60
29	.81	1.21	.51	12.8	2.04	1.71	3.23	------	2.97	4.90	2.38	1.50
30	.81	*.96	4.33	9.18	1.93	1.60	2.72	------	2.38	4.15	2.38	1.50
31	.81	.88	------	7.22	------	1.60	2.72	------	2.27	------	2.27	------
TOTAL	33.45	46.59	25.90	68.86	69.55	152.99	96.30	50.27	115.91	108.48	85.68	62.27
MEAN												
MGD	1.08	1.50	0.863	2.22	2.32	4.94	3.11	1.80	3.74	3.62	2.76	2.08
CFS	1.67	2.32	1.34	3.44	3.59	7.63	4.81	2.79	5.78	5.59	4.28	3.21
AC-FT	103	143	79	211	213	470	296	154	356	333	263	191

CALENDAR YEAR 1961: MAX 40.4 MIN 0.51 MEAN MGD 1.90 MEAN CFS 2.94 AC-FT 2,130
FISCAL YEAR 1961-62: MAX 40.4 MIN 0.51 MEAN MGD 2.51 MEAN CFS 3.88 AC-FT 2,810

* Discharge measurement made on this day.

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-29	2030	4.01	137	212	3-18	2200	3.98	134	207
12- 5	1400	4.27	158	244	4-25	0430	3.72	114	176

770. Makaleha ditch near Kealia

Location.--Lat 22°06'55", long 159°22'05", 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 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 500 ft (from topographic map).

Average discharge.--25 years (1937-62), 4.43 mgd (6.85 cfs).

Extremes.--1936-62: Maximum daily discharge, 20.2 mgd (31.3 cfs) Aug. 1, 1961; no flow at times.

Remarks.--Records good. Ditch diverts water from Makaleha Stream for irrigation of sugar cane.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	14.9	20.2	13.8	12.2	1.34	0.27	2.10	*0.16	0.05	0.22	7.17	*9.80
2	15.8	*14.9	8.70	*9.80	*.88	.14	*4.56	.16	.05	*.16	*6.99	15.8
3	*10.2	12.4	10.8	15.3	.51	.12	4.56	.12	.05	3.73	7.17	8.90
4	14.0	9.50	8.80	10.6	.33	*.30	4.64	.10	.05	6.72	9.91	8.90
5	11.5	13.9	*10.7	7.80	.40	7.43	2.15	.08	.25	7.53	8.40	6.90
6	8.90	9.70	7.35	6.63	1.73	5.79	1.65	.08	.25	6.00	9.62	6.36
7	7.44	15.2	6.27	5.84	3.87	2.54	1.11	.08	.37	5.76	10.7	10.4
8	5.92	10.5	6.18	10.3	3.37	1.24	.42	.14	.77	5.60	9.40	7.17
9	6.18	8.30	6.18	14.1	1.41	.67	.33	.08	.34	5.52	12.3	6.72
10	8.50	7.17	13.7	13.0	.16	.42	.25	.06	.22	3.68	4.89	6.90
11	6.81	7.62	13.5	13.5	.14	4.13	.19	.03	1.32	5.76	.25	8.05
12	9.30	6.72	7.62	11.5	.14	8.50	.16	.03	6.59	5.60	.25	7.17
13	9.30	6.09	6.36	8.70	.12	10.5	.12	6.33	3.55	11.3	.16	6.99
14	6.99	8.50	6.72	11.3	.19	6.54	.10	11.3	2.39	13.5	3.03	6.54
15	10.8	7.44	7.53	13.3	.16	.42	.10	6.88	1.29	1.01	8.96	6.54
16	7.17	6.09	6.09	18.2	.16	.33	.19	.46	.64	5.25	.64	12.2
17	12.1	5.76	6.72	9.91	.12	.30	.08	.36	.42	16.2	.71	13.9
18	7.08	6.36	5.84	4.67	.06	.19	.08	.25	.98	15.4	.75	17.0
19	6.72	7.93	7.08	4.02	.08	.14	.06	2.48	1.10	5.83	.71	15.3
20	5.92	9.06	10.0	12.1	.16	.12	1.43	6.54	.60	.45	.71	9.70
21	6.09	6.45	7.62	1.48	4.05	.12	2.83	5.60	.39	.33	7.79	8.10
22	6.27	8.90	6.90	.88	2.48	.29	.42	5.12	.30	.30	11.7	7.08
23	6.36	9.10	5.92	.67	.22	.10	.30	6.63	.25	.25	16.0	6.72
24	12.6	6.63	6.45	.49	.16	.08	.31	2.72	.19	7.88	11.3	6.45
25	7.08	6.36	6.45	.39	.27	.08	.16	.05	.19	10.8	3.71	6.27
26	5.92	7.62	8.85	4.91	.14	.08	.12	.05	.16	3.51	.36	6.36
27	7.26	12.9	6.63	10.5	.45	.06	.17	.10	.27	4.64	.30	9.91
28	7.26	15.4	6.54	9.60	.25	.06	2.01	.06	.64	1.87	.25	12.8
29	6.54	13.5	5.76	8.40	.16	.05	.64	------	.71	1.06	6.58	11.7
30	7.08	7.62	15.4	3.02	.12	.06	.33	------	.39	3.45	7.62	11.5
31	7.20	8.90	------	2.10	------	.06	.22	------	.28	------	6.72	------
TOTAL	265.19	296.72	246.46	255.21	23.63	51.13	31.79	56.05	25.05	161.31	175.05	278.13
MEAN												
MGD	8.55	9.57	8.22	8.23	0.788	1.65	1.03	2.00	0.808	5.38	5.65	9.27
CFS	13.2	14.8	12.7	12.7	1.22	2.55	1.59	3.09	1.25	8.32	8.74	14.3
AC-FT	814	911	756	783	73	157	98	172	77	495	537	854

CALENDAR YEAR	1961:	MAX	20.2	MIN	0.03	MEAN MGD	6.72	MEAN CFS	10.4	AC-FT	7,530
FISCAL YEAR 1961-62:		MAX	20.2	MIN	0.03	MEAN MGD	5.11	MEAN CFS	7.91	AC-FT	5,730

* Discharge measurement made on this day.

790. Kapahi ditch near Kealia

Location.--lat 22°06'00", long 159°22'30", 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 1962. 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. Altitude of gage is 360 ft (by barometer). Prior to Nov. 26, 1936, at site 61 ft upstream at datum 2.52 ft higher.

Average discharge.--44 years (1917-20, 1921-62), 4.71 mgd (7.29 cfs).

Extremes.--1909-62: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

Remarks.--Records good. Ditch diverts from Kapaa River for irrigation in vicinity of Kapaa.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.13	2.39	*4.02	5.57	0.16	0.19	2.62	4.08	0.16	0.13	4.76	*5.53
2	.16	.10	2.38	.23	.13	.16	*3.82	9.92	.31	.13	*6.61	3.55
3	.16	4.70	2.38	2.90	.13	.16	3.58	4.16	.45	.59	4.43	.27
4	.16	4.62	2.38	5.14	.13	.21	3.47	.23	.40	.80	.56	.27
5	4.33	5.82	3.49	3.93	.13	1.75	1.45	.42	.45	3.45	.45	.27
6	4.75	4.75	3.03	3.47	.10	.62	.82	.27	.27	4.28	.50	.45
7	3.58	3.59	2.49	2.49	.10	.23	.13	.23	.34	4.04	.68	.45
8	3.63	.16	2.38	3.44	.10	.13	.13	.23	.27	3.82	.80	1.20
9	3.03	2.80	2.38	1.88	.10	.13	.16	.19	.23	3.70	.80	3.14
10	3.08	3.70	6.62	.16	1.56	.10	.16	.19	.23	3.58	.45	3.93
11	3.03	3.36	6.54	.16	2.60	.10	.13	.19	.82	3.58	.35	3.93
12	3.68	3.14	3.14	.16	2.60	.07	.13	5.47	.84	3.47	.31	1.48
13	3.58	2.92	2.60	.19	2.92	.07	.13	10.5	.35	6.26	.27	.27
14	2.92	3.36	2.71	.23	3.25	.07	.13	3.40	.19	3.15	.50	.87
15	4.50	3.14	2.92	.23	3.14	.10	.13	.19	.13	.23	.54	.40
16	3.14	2.92	2.38	.27	1.78	.07	.16	.19	.13	.19	.27	.27
17	4.72	2.71	2.49	3.84	.13	.10	.13	.16	.13	.27	.27	.23
18	3.47	2.60	2.38	2.39	.13	.10	.13	.16	.31	.19	.31	.23
19	2.92	3.03	2.38	2.44	.13	.10	.13	.16	.13	.19	.31	.19
20	2.71	3.70	4.53	2.85	1.67	.10	.16	.16	.10	.19	.31	.19
21	2.60	2.71	3.03	.19	1.48	.10	.36	.13	.10	.40	.31	.19
22	2.52	3.03	2.38	.16	.23	.13	.16	.13	.10	.45	.31	.55
23	2.82	3.36	2.20	.16	.19	.10	.16	.13	.91	.45	.31	.80
24	6.64	2.71	2.20	.13	.16	.10	.16	.13	2.20	.45	.31	.27
25	3.25	2.38	2.10	.13	.13	.10	.16	.13	2.20	.99	.31	.23
26	2.71	2.49	4.73	.10	.13	.10	.16	5.50	2.20	.47	.31	.34
27	3.03	4.39	2.71	.10	.19	.53	.25	8.50	1.44	.40	.31	.23
28	2.71	6.20	2.20	.10	.13	.19	.69	3.31	.31	.16	5.58	.23
29	2.53	5.92	2.10	.56	.16	.16	.16	--------	.16	.13	6.61	.19
30	2.71	3.47	9.65	.27	.16	.16	.16	--------	.13	.13	5.01	.19
31	2.72	3.36	--------	.27	--------	.16	.16	--------	.13	--------	4.62	--------
Total	95.92	103.53	96.92	44.14	23.95	6.39	20.28	58.46	16.12	46.27	47.47	30.34
Mean												
Mgd	3.09	3.34	3.23	1.42	0.798	0.206	0.654	2.09	0.520	1.54	1.53	1.01
Cfs	4.78	5.17	5.00	2.20	1.23	0.319	1.01	3.23	0.805	2.38	2.37	1.56
Ac-ft	294	318	297	135	73	20	62	179	49	142	146	93

Calendar Year 1961: Max 9.65 Min 0.07 Mean mgd 2.09 Mean cfs 3.23 Ac-ft 2340
Fiscal Year 1961-62: Max 10.5 Min 0.07 Mean mgd 1.62 Mean cfs 2.51 Ac-ft 1810

* Discharge measurement made on this day.

800. Kapaa Stream at Kapahi ditch intake, near Kapaa

Location.--Lat 22°06'05", long 159°22'30", on right bank 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 1962. Prior to July 1959, published as Kapaa River at Kapahi ditch intake, near Kapaa.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 365 ft (by barometer).

Average discharge.--26 years, 13.3 mgd (20.6 cfs).

Extremes.--Maximum discharge during year, 2,280 mgd (3,530 cfs) Dec. 5 (gage height, 3.82 ft); no flow at times.

1936-62: Maximum discharge, 4,960 mgd (7,670 cfs) Jan. 25, 1956 (gage height, 5.34 ft), from rating curve extended above 1,800 mgd by logarithmic plotting; no flow at times.

Remarks.--Records good.

Entire low flow is diverted into several ditches above station. Records do not include flow of Kapahi ditch (see preceding page.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Oct. 29

-0.03	0	0.4	10.9
0	.10	.6	28.4
.1	.74	.8	54.2
.2	2.53	1.0	90.5
.3	5.34	1.2	140

Oct. 30 to June 30

-0.03	0	0.6	31.0
0	.10	.8	58.0
.1	.82	1.0	97.0
.2	3.00	1.3	176
.3	7.00	1.6	287
.4	13.0	2.0	480

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	6.18	*101	13.7	2.57	28.5	28.7	4.33	*6.88	*15.6	12.4	2.77	0.14
2	11.3	10.8	1.14	3.00	*21.0	16.6	0	.31	17.0	*11.8	0	31.2
3	*5.34	1.84	1.14	*4.22	15.4	13.8	0	5.61	12.4	7.59	2.47	5.60
4	7.52	0	.99	0	13.0	*41.8	0	9.40	10.6	4.70	12.4	5.15
5	1.95	6.25	.77	0	30.6	432	7.16	8.80	36.5	2.93	6.50	4.30
6	0	0	0	0	14.6	193	182	9.40	32.8	0	15.3	3.62
7	0	28.1	0	0	15.7	73.3	24.9	9.40	32.5	0	9.24	5.83
8	0	5.68	0	.93	10.0	26.5	13.8	30.4	30.5	0	7.00	3.00
9	0	1.47	0	6.69	11.8	20.2	32.9	11.2	12.4	0	9.88	.81
10	0	0	6.84	5.02	10.6	17.0	18.2	9.40	11.2	0	11.8	0
11	0	0	.39	7.09	9.40	14.7	13.0	9.40	70.1	0	14.9	0
12	0	0	0	8.78	8.80	8.80	11.8	3.17	123	0	15.4	2.21
13	0	0	0	4.10	9.93	10.6	11.2	5.30	124	46.2	15.4	3.30
14	0	0	0	3.80	28.9	14.6	10.6	44.1	44.0	71.2	9.44	2.69
15	.03	0	0	8.67	17.8	31.0	11.2	24.1	22.0	40.5	48.5	3.30
16	0	0	0	26.2	21.0	21.4	20.9	19.8	16.2	15.0	25.3	9.35
17	1.63	0	0	2.19	13.8	22.0	11.2	13.8	23.1	43.9	30.2	9.35
18	0	0	0	3.34	11.8	15.4	12.9	11.8	102	13.0	35.9	23.3
19	0	.34	0	10.1	20.7	13.8	10.6	8.33	39.8	11.8	35.8	11.0
20	0	.50	.46	32.9	17.9	13.8	15.4	5.15	28.1	19.4	31.7	5.60
21	0	0	.29	27.3	34.8	17.7	43.3	4.30	21.6	13.0	15.1	4.30
22	0	.13	0	27.8	18.5	25.1	21.2	4.30	22.9	16.5	8.83	3.58
23	0	.22	0	23.8	22.2	13.8	17.5	4.70	16.2	12.4	21.0	3.00
24	.05	0	0	14.9	17.0	12.4	15.8	7.40	11.8	9.94	8.80	3.30
25	0	0	0	12.5	21.0	13.0	12.4	10.6	21.9	235	11.7	3.30
26	0	0	2.27	7.82	13.8	11.8	11.8	5.56	17.9	210	15.4	3.00
27	0	.02	0	5.02	36.7	10.6	16.2	9.99	20.5	109	12.4	5.98
28	0	.93	0	5.39	15.4	10.6	84.2	14.9	61.3	26.0	6.24	10.7
29	.02	3.94	0	125	15.4	10.6	16.2	------	31.0	18.6	1.63	9.15
30	0	0	1.60	108	15.8	10.0	12.4	------	15.4	13.0	0	4.70
31	.24	0	------	75.7	------	10.0	11.2	------	12.4	------	0	------
TOTAL	34.26	161.22	29.59	562.83	541.83	1,174.60	674.29	307.50	1,056.7	963.86	441.00	176.76
MEAN												
MGD	1.11	5.20	0.986	18.2	18.1	37.9	21.8	11.0	34.1	32.1	14.2	5.89
CFS	1.71	8.05	1.53	28.1	27.9	58.6	33.6	17.0	52.7	49.7	22.0	9.12
AC-FT	105	495	91	1,730	1,660	3,600	2,070	944	3,240	2,960	1,350	542

CALENDAR YEAR 1961:	MAX	432	MIN	0	MEAN MGD	10.9	MEAN CFS	16.9	AC-FT	12,200
FISCAL YEAR 1961-62:	MAX	432	MIN	0	MEAN MGD	16.8	MEAN CFS	26.0	AC-FT	18,790

Peak discharge (base, 1,400 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-29	2030	3.57	1,930	2,990	4-25	0430	3.70	2,110	3,260
12- 5	1330	3.82	2,280	3,530					

* Discharge measurement made on this day.

870. Anahola ditch wasteway near Kealia

Location.--Lat 22°08'10", long 159°22'30", 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 1962.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 820 ft above mean sea level (by hand levels from East Kauai Water Co. bench mark).

Average discharge.--26 years, 3.31 mgd (5.12 cfs).

Extremes.--1936-62: 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 the Anahola Stream station.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.26	0.34	0.39	0.34	*9.27	*9.63	2.16	*2.78	1.78	3.78	0.46	0.23
2	.34	.26	.26	.26	6.40	4.73	1.07	2.62	.38	*3.40	.30	6.46
3	.34	.18	.26	.12	4.73	4.16	.30	2.47	.38	3.24	.30	3.09
4	.26	.12	.26	.12	3.97	8.15	.30	2.47	.38	3.09	.30	2.21
5	.26	.18	.34	.12	8.69	28.6	1.50	1.52	.31	3.09	.23	2.62
6	.18	.18	.26	.18	5.51	21.8	19.7	.38	.23	1.29	.30	1.49
7	.18	.18	.26	.18	4.96	17.5	7.97	.38	3.50	.38	.23	.38
8	.26	.18	.26	.18	1.20	10.9	1.70	4.13	14.2	.38	.23	.23
9	.26	.18	.26	.18	3.78	7.29	6.13	3.78	5.52	.38	1.65	.23
10	.26	.18	.26	.12	3.24	6.84	5.57	2.78	3.97	.38	3.40	.23
11	.26	.26	.26	.12	3.24	7.60	3.24	2.62	14.2	.30	1.85	.23
12	.26	.34	.26	.12	2.62	6.84	2.78	1.59	28.9	.30	.11	.23
13	.26	.34	.26	.06	2.78	6.86	2.62	.30	19.1	.43	.11	.23
14	.18	.34	.34	.12	6.36	8.38	2.47	.38	13.7	2.75	.11	.23
15	.18	.26	.34	.06	4.73	11.5	1.17	8.50	7.50	15.0	8.27	.23
16	.12	.26	.26	3.30	7.66	7.74	4.33	7.71	5.52	5.38	9.65	.23
17	.26	.26	.26	5.41	3.97	8.48	2.78	4.54	7.34	7.85	8.17	.23
18	.18	.26	.34	3.85	2.93	5.11	4.77	3.59	11.3	13.3	12.1	.18
19	.18	.34	.26	3.73	6.55	4.35	1.20	2.44	11.0	7.50	11.8	.11
20	.18	.26	.34	9.90	6.57	4.73	3.04	2.93	10.8	11.1	10.3	.11
21	.18	.18	.26	13.2	12.0	4.54	12.1	2.62	9.08	5.74	7.60	.11
22	.18	.26	.34	9.45	7.02	5.75	8.07	2.31	8.30	6.74	5.30	.11
23	.12	.26	.26	6.84	9.94	3.78	7.17	3.24	6.83	3.98	9.40	.17
24	.12	.18	.34	5.30	7.94	3.59	7.37	2.31	4.35	7.62	4.92	.17
25	.06	.18	.34	3.97	5.30	3.59	4.54	2.16	6.51	24.8	3.78	.17
26	.06	.18	.34	5.66	4.23	2.93	1.89	4.49	6.66	22.7	3.40	.11
27	.12	.18	.26	5.67	10.5	2.78	1.81	9.81	8.34	18.7	3.09	.11
28	.12	.26	.26	4.16	5.92	2.78	12.0	6.20	11.5	10.2	1.29	.11
29	.12	.18	.26	11.5	6.37	2.47	4.35	------	9.76	5.92	.30	.11
30	.12	.12	.43	17.8	6.59	2.47	3.40	------	4.88	.46	.30	.17
31	.12	.06	------	16.5	------	2.31	2.93	------	4.16	------	.30	------
TOTAL	5.98	6.94	8.82	128.52	174.97	228.18	140.43	91.05	240.38	190.18	109.55	20.52
MEAN												
MGD	0.193	0.224	0.294	4.15	5.83	7.36	4.53	3.25	7.75	6.34	3.53	0.684
CFS	0.298	0.346	0.455	6.41	9.02	11.4	7.01	5.03	12.0	9.81	5.47	1.06
AC-FT	18	21	27	394	537	700	431	279	738	584	336	63

CALENDAR YEAR	1961:	MAX	28.6	MIN	0.06	MEAN MGD	3.10	MEAN CFS	4.80	AC-FT	3,470
FISCAL YEAR 1961-62:		MAX	28.9	MIN	0.06	MEAN MGD	3.69	MEAN CFS	5.71	AC-FT	4,130

* Discharge measurement made on this day.

880. Anahola ditch above Kaneha Reservoir, near Kealia

Location.--Lat 22°08'00", long 159°22'30", 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 1962. 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.--38 years (1922-25, 1927-62), 3.02 mgd (4.67 cfs).

Extremes.--1921-62: 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 preceding page).

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	7.60	18.0	12.2	4.71	0.04	0.12	A 0	0.04	*2.07	0.02	4.75	*2.89
2	6.50	*9.80	4.15	2.49	.04	.06	*.93	.04	2.56	.02	*4.27	3.01
3	*6.99	5.96	4.39	*8.42	.02	.06	1.58	.04	2.72	A .01	4.48	A 0
4	6.17	4.03	3.33	3.24	.02	.28	1.58	.04	2.68	A .01	5.00	.65
5	7.35	7.42	*8.32	2.09	.04	.71	.98	.70	10.4	A 0	3.91	A 0
6	4.84	4.27	3.79	1.91	.02	.34	.43	1.82	10.1	1.24	5.24	.83
7	3.33	11.0	2.45	1.82	1.85	.20	.06	2.00	4.93	2.00	5.41	5.06
8	2.78	5.16	2.45	4.34	2.22	.12	2.27	8.95	.19	1.82	3.44	2.18
9	2.56	4.67	2.09	9.43	.04	.09	4.57	.06	.04	1.91	1.74	1.82
10	4.19	5.11	8.79	5.74	.04	.06	.12	.06	.04	2.86	.02	2.00
11	2.67	3.67	4.01	7.44	.02	.09	.09	.04	.27	2.18	2.58	1.91
12	5.68	3.22	3.22	7.65	.02	.06	.09	.72	.55	1.91	4.89	1.73
13	3.11	2.67	2.18	4.17	.02	.06	.09	6.32	.20	14.0	4.00	1.58
14	3.00	5.52	3.57	8.83	.06	.09	.09	12.6	.11	16.4	2.78	1.58
15	5.29	3.33	3.99	6.18	.02	.12	1.25	4.81	.04	.20	4.75	1.50
16	2.78	2.45	2.18	9.82	.09	.06	2.36	.12	.04	3.39	.09	5.56
17	8.04	2.27	2.18	.06	.02	.06	.06	.06	.06	7.09	.09	4.10
18	2.89	2.27	1.82	.04	.02	.06	.06	.06	.12	.16	.12	9.12
19	2.45	4.85	2.00	.87	.06	.06	1.20	.93	.06	.06	.12	3.33
20	2.18	5.00	4.63	1.42	.06	.04	1.49	.09	.06	.12	.12	2.18
21	2.09	2.45	2.27	.11	.16	.04	.22	.09	.04	.04	.06	1.91
22	2.45	8.25	2.34	.06	.06	.06	.09	.09	.04	.06	.04	1.73
23	2.78	7.30	1.73	.04	.09	A .04	.09	.12	.04	.44	.09	1.64
24	7.42	3.00	2.06	.04	.06	A .04	.09	.06	.04	.75	A .04	1.58
25	2.36	2.36	1.79	.02	.04	A .02	.06	.06	.04	.70	A .02	1.50
26	1.91	2.45	5.87	.02	.04	A .02	1.81	.12	.06	.43	A .01	1.50
27	2.09	5.01	2.56	.02	.12	A .02	1.92	.16	.09	.28	A 0	2.45
28	2.09	7.81	1.73	.02	.04	A .01	.28	.09	.99	.15	1.49	7.12
29	2.00	6.14	1.58	.29	.06	A .01	.06	------	.11	1.64	3.33	3.00
30	2.95	3.00	8.50	.14	.06	A 0	.06	------	.04	5.53	3.11	4.39
31	3.42	3.11	------	.06	------	A 0	.04	------	.04	------	2.27	------
TOTAL	121.96	161.55	112.17	91.49	5.45	3.00	24.02	40.29	40.77	65.42	68.26	77.85
MEAN												
MGD	3.93	5.21	3.74	2.95	0.182	0.097	0.775	1.44	1.32	2.18	2.20	2.60
CFS	6.09	8.06	5.78	4.57	0.281	0.150	1.20	2.23	2.03	3.37	3.41	4.01
AC-FT	374	496	344	281	17	9.2	74	124	125	201	209	239

CALENDAR YEAR 1961: MAX 18.0 MIN 0 MEAN MGD 2.50 MEAN CFS 3.87 AC-FT 2,800
FISCAL YEAR 1961-62: MAX 18.0 MIN 0 MEAN MGD 2.23 MEAN CFS 3.45 AC-FT 2,490

* Discharge measurement made on this day.
A No gage-height record.

890. Anahola Stream near Kealia

Location.--Lat 22°03'55", long 159°21'20", on right bank just upstream from 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 1962. 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.--48 years (1913-18, 1919-62), 14.1 mgd (21.8 cfs).

Extremes.--Maximum discharge during year, 1,600 mgd (2,480 cfs) Dec. 5 (gage height, 5.60 ft), from rating curve extended above 240 mgd; minimum, 2.18 mgd (3.37 cfs) Oct. 7.

1910, 1913-62: 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 following page). Anahola ditch (see preceding page) diverts 3 miles above station for irrigation in vicinity of Kealia.

Rating tables (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Sept. 1-5)

July 1 to Dec. 5

1.1	2.18	1.7	15.5
1.2	2.97	1.8	23.0
1.3	3.98	2.1	56.0
1.4	5.32	2.5	130
1.5	7.30	3.0	265
1.6	10.5	3.5	440

Dec. 6 to June 30

1.4	2.35	1.7	12.0
1.5	4.20	1.9	30.0
1.6	7.00	2.1	56.0

Note.--Same as preceding table above 2.1 ft.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.7	*72.6	35.6	5.68	*23.6	*14.5	5.60	*7.50	*6.56	7.00	14.4	*6.72
2	14.0	11.1	4.92	3.37	15.0	4.38	*5.32	7.00	6.16	*7.00	*12.8	29.6
3	*7.35	4.65	4.78	*5.42	11.5	4.11	5.32	6.44	5.04	6.72	12.5	7.00
4	7.30	5.32	4.78	3.53	7.94	8.05	5.32	6.16	5.04	6.72	11.8	6.16
5	6.70	7.05	*5.85	2.65	17.0	409	5.60	5.88	18.4	6.44	10.0	5.60
6	6.82	5.75	4.27	2.42	9.19	234	193	5.60	15.8	6.16	12.7	5.04
7	5.52	23.4	3.27	2.34	10.4	98.7	22.8	5.60	35.7	6.16	12.7	6.44
8	5.05	6.74	4.21	2.55	5.72	32.4	10.0	71.1	95.7	5.88	9.50	5.60
9	4.78	5.52	3.48	8.31	5.85	17.6	40.2	9.00	8.50	5.88	11.0	4.76
10	4.92	5.52	14.4	3.91	4.92	10.5	15.1	7.00	5.88	6.44	13.6	4.48
11	4.65	5.19	3.78	6.82	6.87	10.5	9.50	6.16	91.0	6.16	11.0	4.20
12	6.37	4.65	3.78	16.5	4.52	9.50	8.00	5.88	343	5.60	11.7	4.02
13	4.65	4.25	2.97	3.25	4.52	13.2	6.16	11.4	154	53.6	10.0	4.02
14	4.52	5.27	2.97	4.18	4.65	22.8	5.88	61.6	53.1	132	9.50	3.83
15	4.78	4.78	3.68	3.27	5.19	59.8	5.04	46.9	22.1	49.0	94.8	3.83
16	4.52	4.11	2.89	9.29	10.8	15.2	17.0	17.2	15.2	10.0	37.8	6.31
17	7.05	3.88	2.65	3.27	4.46	15.2	5.32	11.0	15.5	88.3	13.6	6.72
18	4.65	3.88	2.58	2.89	3.78	11.0	5.16	8.50	50.5	37.4	28.5	24.5
19	4.25	4.52	2.58	5.71	10.5	10.0	3.83	8.00	26.5	12.0	21.0	6.16
20	3.88	5.18	3.04	50.4	11.1	10.0	23.8	7.50	12.0	18.9	19.4	4.48
21	3.98	3.88	2.97	64.9	21.7	9.50	80.9	6.16	11.0	9.50	12.0	3.83
22	4.11	4.74	2.58	13.7	10.6	10.5	20.8	5.32	11.0	9.00	10.0	3.64
23	4.11	5.44	2.42	6.20	14.0	8.00	17.5	6.16	9.50	7.50	15.2	3.64
24	7.21	3.88	2.65	3.98	13.0	7.50	11.9	3.64	8.50	11.7	9.50	3.46
25	4.18	3.37	2.58	4.48	8.73	7.50	10.0	3.09	9.50	245	8.00	3.46
26	3.58	3.68	7.73	7.00	4.62	7.00	8.50	7.80	9.00	177	8.00	3.46
27	3.78	4.11	3.61	5.52	15.9	6.72	8.50	19.2	14.4	134	7.00	4.20
28	3.48	4.78	2.50	4.92	5.19	6.72	42.7	7.50	38.2	42.0	6.72	12.1
29	3.37	4.78	2.34	108	6.30	6.44	10.5	----------	24.5	23.0	7.00	4.48
30	3.37	3.88	11.0	87.5	4.04	6.44	8.50	----------	9.00	18.4	7.50	4.02
31	3.58	3.58	----------	74.4	----------	5.88	7.50	----------	7.50	----------	6.44	----------
Total	169.21	239.48	156.86	526.36	281.59	1,092.64	625.25	374.29	1,137.78	1,154.46	475.66	195.76
Mean												
Mgd	5.46	7.73	5.23	17.0	9.39	35.2	20.2	13.4	36.7	38.5	15.3	6.53
Cfs	8.45	12.0	8.09	26.3	14.5	54.5	31.3	20.7	56.8	59.6	23.7	10.1
Ac-ft	519	735	481	1620	864	3,350	1920	1,150	3,490	3,540	1,460	601

Calendar Year 1961: Max 409 Min 2.34 Mean mgd 13.5 Mean cfs 20.9 Ac-ft 15,100
Fiscal Year 1961-62: Max 409 Min 2.34 Mean mgd 17.6 Mean cfs 27.2 Ac-ft 19,730

* Discharge measurement made on this day.

Peak discharge (base, 900 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-20	2200	4.66	986	1,530	3-12	0800	5.25	1,360	2,100
10-29	2000	5.29	1,380	2,140	3-13	1430	5.20	1,320	2,040
12- 5	1330	5.60	1,600	2,480	4-25	0500	4.91	1,140	1,760
1-21	1500	4.72	1,020	1,580					

910. Lower Anahola ditch near Kealia

Location.--Lat 22°08'00", long 159°19'30", 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 1962.

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

Average discharge.--25 years (1937-62), 2.23 mgd (3.45 cfs).

Extremes.--1936-62: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times.

Remarks.--Records good. Ditch diverts from Anahola Stream for irrigation of sugar cane.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.09	5.25	4.26	3.82	0.02	0	0.01	0.02	0.01	0.02	0.14	*3.51
2	.09	*4.90	3.33	*3.33	.01	0	.01	.02	.01	.02	*.14	.02
3	*2.65	4.05	2.92	3.75	.01	0	.01	.02	.01	.01	.09	.02
4	2.74	3.75	2.79	3.43	.01	0	2.34	.01	.01	.01	.04	.02
5	1.28	3.75	*3.26	2.72	.01	.02	1.51	.01	.01	.01	.04	.02
6	1.02	3.90	3.47	2.46	.01	.02	.04	.01	.01	.01	.04	.01
7	1.90	4.27	3.12	2.16	.01	.02	.04	.01	.01	.01	.04	.01
8	3.68	4.42	3.05	2.16	.01	.02	2.11	.01	.01	.01	.05	.01
9	3.61	4.12	2.98	3.47	.01	.02	2.03	.01	.01	.01	.05	.01
10	3.82	3.90	3.33	3.19	.01	.02	.04	.01	.01	2.90	.04	.01
11	3.90	3.54	3.33	3.05	.01	.01	.04	.01	.02	5.30	2.82	.01
12	4.12	3.26	3.12	3.26	.01	.01	.04	.01	.02	5.22	2.40	.01
13	3.75	2.98	3.05	3.33	.01	.01	.04	.01	.02	5.89	.02	.01
14	3.54	3.26	2.72	3.33	.01	.01	.04	.01	.02	8.00	.02	.01
15	3.75	3.26	2.99	3.19	.01	.02	.02	.01	.02	1.57	.02	.01
16	3.54	2.98	2.72	2.51	.01	.01	.02	.01	.02	.02	.02	2.89
17	4.05	2.85	2.46	.04	0	.01	.01	.01	.02	.01	.02	4.20
18	3.82	2.79	2.59	.01	0	.02	.01	.01	.02	.01	.02	2.65
19	3.54	2.92	2.34	4.42	0	.02	.01	1.54	.02	.01	.02	.01
20	3.19	3.12	2.46	3.02	0	.02	.01	.02	.02	.01	.02	.01
21	3.19	2.98	2.72	.01	0	.02	.02	.02	.02	.01	.02	.01
22	3.19	3.05	2.66	.01	0	.02	.01	.01	.02	.01	.02	.01
23	3.19	3.40	2.53	.05	0	.02	.01	.01	.02	.01	.02	.01
24	3.68	2.92	2.28	5.98	0	.02	.01	.01	.02	.02	.02	.01
25	3.68	2.66	2.51	2.93	0	.02	.01	.01	.02	.04	.02	.01
26	3.05	2.59	2.66	1.47	0	.02	.01	.04	.02	.02	.01	1.74
27	3.33	2.72	2.98	1.41	0	.02	.01	.02	.02	.02	.01	4.05
28	2.98	2.92	2.62	1.41	0	.01	.01	.02	.02	.02	.01	4.93
29	2.79	3.26	2.42	1.53	0	.01	.01	----------	.02	.02	.01	2.62
30	2.72	2.85	2.90	2.04	0	.01	.01	----------	.02	.05	.01	.02
31	2.85	2.72	----------	1.13	----------	.01	.01	----------	.02	----------	4.23	----------
Total	92.73	105.34	86.57	74.62	0.17	0.44	8.50	1.91	0.52	29.27	10.43	26.86
Mean												
Mgd	2.99	3.40	2.89	2.41	0.006	0.014	0.274	0.068	0.017	0.976	0.336	0.895
Cfs	4.63	5.26	4.46	3.72	0.009	0.022	0.424	0.105	0.026	1.51	0.521	1.39
Ac-ft	285	323	266	229	0.5	1.4	26	5.9	1.6	90	32	82

Calendar Year 1961:	Max	6.60	Min	0	Mean mgd	1.70	Mean cfs	2.63	Ac-ft	1,910
Fiscal Year 1961-62:	Max	8.00	Min	0	Mean mgd	1.20	Mean cfs	1.86	Ac-ft	1,340

* Discharge measurement made on this day.

942. Ka Loko ditch near Kilauea

Location.--Lat 22°10'35", long 159°23'00", 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 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 750 ft (from topographic map).

Average discharge.--29 years (1933-62), 3.38 mgd (5.23 cfs).

Extremes.--1932-62: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.11 mgd (0.17 cfs) Nov. 3, 4, 1959, Mar. 9, 1960.

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

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.97	17.4	9.48	4.05	9.07	5.12	2.14	2.81	2.23	3.12	3.02	1.77
2	4.22	5.38	2.51	2.42	6.43	2.81	2.14	2.60	2.23	2.92	2.70	3.41
3	4.09	2.81	2.14	3.99	5.37	2.51	2.14	2.42	2.14	2.92	2.81	2.05
4	3.93	2.76	1.86	2.23	4.61	3.62	2.05	2.42	2.05	2.92	2.81	1.96
5	3.11	3.49	3.26	1.77	5.70	42.2	2.14	2.32	3.10	2.70	2.32	1.86
6	3.08	2.32	2.05	1.60	5.34	35.1	6.92	2.32	2.60	2.51	2.84	1.77
7	2.51	8.26	1.86	1.52	5.47	9.57	4.15	2.42	2.97	2.42	3.05	1.96
8	2.32	3.36	2.77	1.92	3.54	2.32	3.08	3.38	2.81	2.42	2.32	1.77
9	2.32	*2.51	2.14	4.83	3.34	1.86	6.37	*1.89	2.38	2.32	2.23	1.68
10	2.51	2.50	5.08	3.39	3.12	1.52	4.16	1.77	2.23	2.81	2.23	1.68
11	2.41	2.32	2.53	5.48	4.06	3.30	2.88	1.68	3.73	2.51	2.05	1.68
12	2.76	2.04	2.10	8.92	3.12	4.01	3.23	1.52	2.03	2.23	1.96	1.68
13	2.23	1.86	*1.86	3.75	2.81	4.40	2.60	2.48	1.38	2.45	2.05	1.68
14	2.04	2.97	1.68	5.54	3.12	4.49	2.05	8.18	2.56	6.67	1.96	1.68
15	2.23	2.14	2.22	3.49	2.92	4.77	1.86	6.97	3.79	6.97	3.42	1.68
16	2.04	1.96	1.60	5.89	3.91	1.45	2.30	4.09	3.77	*4.25	3.57	1.77
17	4.06	1.77	1.52	3.24	2.81	1.37	1.77	3.23	4.06	8.64	2.70	2.38
18	2.14	1.77	1.45	*2.51	2.42	2.64	2.40	2.51	5.71	6.66	3.36	*2.33
19	1.86	2.14	1.52	2.86	3.54	3.23	2.32	2.42	*4.97	4.61	4.13	1.68
20	1.86	1.96	2.21	10.6	*4.07	3.12	2.70	2.23	3.54	4.37	3.50	1.52
21	1.86	1.77	1.77	21.3	7.91	*3.12	4.00	1.96	3.83	3.54	2.91	1.37
22	2.16	3.09	1.45	7.27	4.25	3.21	3.23	1.86	4.49	3.44	*2.42	1.29
23	2.04	3.09	1.29	5.76	5.50	2.09	3.12	1.96	4.25	3.12	3.08	1.37
24	3.07	1.77	1.37	4.37	3.77	1.13	2.42	1.68	3.65	3.95	2.14	1.52
25	1.86	1.60	1.44	3.65	3.36	.98	2.32	1.52	3.54	11.2	1.96	1.52
26	1.68	1.68	1.85	4.61	2.81	2.06	2.60	1.52	3.54	2.22	1.86	1.52
27	1.86	2.20	1.57	4.13	6.46	2.51	3.02	2.70	3.54	1.54	1.77	1.96
28	1.68	3.62	1.29	3.34	3.34	2.51	3.20	2.51	3.12	1.77	1.68	3.22
29	1.60	3.08	1.21	13.0	3.31	2.42	2.87	--------	2.92	1.52	1.77	1.96
30	1.60	1.77	9.26	19.7	2.70	2.32	2.70	--------	3.13	2.76	1.86	1.96
31	1.83	1.60	--------	20.7	--------	2.23	2.44	--------	3.34	-------	1.68	--------
Total	78.93	96.99	74.34	187.83	128.18	163.99	91.32	75.37	99.63	111.48	78.16	55.68
Mean												
Mgd	2.55	3.13	2.48	6.06	4.27	5.29	2.95	2.69	3.21	3.72	2.52	1.86
Cfs	3.95	4.84	3.83	9.37	6.61	8.18	4.56	4.16	4.97	5.76	3.90	2.88
Ac-ft	242	298	228	576	393	503	280	231	306	342	240	171

Calendar Year 1961:	Max	42.2	Min	0.98	Mean mgd	3.94	Mean cfs	6.10	Ac-ft	4,420
Fiscal Year 1961-62:	Max	42.2	Min	0.98	Mean mgd	3.40	Mean cfs	5.26	Ac-ft	3,810

* Discharge measurement made on this day.

ISLAND OF KAUAI

950. Puu Ka Ele ditch near Kilauea

Location.--Lat 22°11'05", long 159°24'20", on left bank 200 ft upstream from Puu Ka Ele Reservoir and 2 miles south of Kilauea.

Records available.--August 1932 to June 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 430 ft (by barometer).

Average discharge.--29 years (1933-62), 2.55 mgd (3.95 cfs).

Extremes.--1932-62: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times each year.

Remarks.--Records good. Ditch diverts water from Puu Ka Ele Stream 0.8 mile south of station for irrigation of sugar cane in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.57	7.42	7.12	2.89	0	0	2.49	0	0	2.77	0	3.36
2	2.68	3.72	2.87	2.68	0	0	2.49	0	0	2.68	0	5.79
3	2.98	2.68	2.49	3.38	0	0	2.39	0	0	2.68	.02	3.25
4	2.87	2.49	2.22	2.38	0	0	2.39	0	0	2.58	0	3.06
5	2.68	2.73	3.57	1.99	0	2.36	2.49	0	0	2.49	0	2.96
6	2.58	2.39	2.39	1.84	0	1.01	10.4	0	0	2.30	.30	2.87
7	2.39	4.90	2.14	1.76	0	.29	5.62	0	.07	2.30	.31	3.25
8	2.30	*2.87	2.52	1.84	0	0	1.53	.30	1.02	2.14	0	2.77
9	2.30	2.49	2.22	3.25	0	0	1.15	* 0	1.12	2.14	0	2.68
10	2.58	2.39	5.60	2.58	0	0	.08	0	0	4.23	0	2.58
11	2.30	2.30	2.87	4.94	0	0	0	0	2.67	2.14	1.57	2.58
12	2.39	2.14	2.68	5.01	0	0	0	0	4.09	1.99	3.69	2.39
13	2.22	2.07	*2.22	3.29	0	0	0	0	1.30	5.27	3.69	2.30
14	2.07	2.99	2.14	3.93	0	0	0	.62	.14	7.52	3.47	2.22
15	2.07	2.30	2.39	3.15	0	.82	0	.36	0	3.60	3.94	2.14
16	1.99	2.22	2.07	5.90	0	0	.04	.77	0	*1.73	.31	2.84
17	2.71	2.07	1.99	3.80	0	0	0	0	0	6.44	3.18	4.07
18	1.99	2.14	1.92	*2.87	0	0	0	0	.20	5.32	5.98	*5.16
19	1.84	2.30	1.92	3.04	0	0	0	0	*.06	2.49	7.07	3.15
20	1.84	2.22	2.22	6.12	*0	0	.66	0	0	3.07	6.16	2.77
21	1.84	2.14	2.14	4.26	0	*0	1.16	0	0	1.92	5.35	2.68
22	1.92	2.71	1.84	0	0	0	.11	0	0	1.76	*4.60	2.58
23	1.84	2.87	1.76	0	0	0	0	0	0	2.41	5.76	2.49
24	2.82	2.22	1.92	0	0	0	0	0	0	1.68	4.35	2.14
25	1.99	2.07	1.92	0	0	0	0	0	0	2.80	4.02	2.14
26	1.84	2.07	1.92	0	0	1.77	1.26	.01	0	2.22	3.91	2.14
27	1.92	2.39	1.84	0	0	2.77	3.98	.01	0	2.41	3.69	2.39
28	1.84	3.34	1.76	0	0	2.77	8.29	0	0	.48	3.58	3.11
29	1.84	3.56	1.69	.42	.03	2.77	3.63	------	0	.03	3.58	2.39
30	1.92	2.22	4.03	.03	0	2.58	.69	------	2.00	0	3.69	2.49
31	1.92	2.07	------	.11	------	2.58	0	------	2.87	------	3.25	------
TOTAL	70.04	84.49	76.38	71.46	0.03	19.72	50.85	2.07	15.54	81.59	85.47	86.74
MEAN												
MGD	2.26	2.73	2.55	2.31	0.001	0.636	1.64	0.074	0.501	2.72	2.76	2.89
CFS	3.50	4.22	3.94	3.57	0.002	0.984	2.54	0.114	0.775	4.21	4.27	4.47
AC-FT	215	259	234	219	0.09	61	156	6.40	48	250	262	266

CALENDAR YEAR 1961 : MAX 10.3 MIN 0 MEAN MGD 1.99 MEAN CFS 3.08 AC-FT 2,220
FISCAL YEAR 1961-62: MAX 10.4 MIN 0 MEAN MGD 1.77 MEAN CFS 2.74 AC-FT 1,980

* Discharge measurement or observation of no flow made on this day.

952. Ross ditch near Kilauea

Location.--Lat 22°11'10", long 159°24'35", on left bank 1,000 ft downstream from intake and 1.7 miles south of Kilauea.

Records available.--October 1956 to June 1962.

Gage.--Water-stage recorder and Parshall flume.

Average discharge.--5 years (1957-62), 2.42 mgd (3.74 cfs).

Extremes.--1956-62: Maximum daily discharge, 10.6 mgd (16.4 cfs) Jan. 18, 1957; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts from Puu Ka Ele Stream for irrigation in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.99	3.78	3.23	2.33	3.04	1.38	0	1.4	0.68	0.08	5.64	2.26
2	2.46	3.50	2.39	2.26	2.98	1.15	0	1.3	.56	.05	5.56	4.02
3	2.91	2.33	2.09	2.65	2.9	.97	0	1.2	.58	0	5.64	2.26
4	2.65	2.20	1.92	2.09	2.8	1.09	0	1.2	.51	0	5.48	2.03
5	2.52	2.65	2.90	1.70	2.9	5.40	0	1.1	1.73	0	5.24	1.76
6	2.39	2.20	2.14	1.55	2.9	7.06	5.0	1.1	1.83	0	5.32	1.65
7	2.09	3.01	1.92	1.60	2.8	5.98	3.0	1.2	4.78	0	5.48	1.98
8	1.98	2.78	2.09	1.60	2.7	3.18	2.0	1.5	4.75	0	5.32	1.65
9	1.87	*2.26	1.92	1.98	2.7	2.26	3.0	*1.15	1.05	0	5.24	1.50
10	2.26	2.03	3.04	1.98	2.7	2.14	2.5	.97	1.25	.5	5.24	1.45
11	1.92	1.92	2.26	2.78	2.6	2.03	2.0	.84	4.31	2.0	4.04	1.55
12	1.98	1.81	2.09	2.52	2.6	1.98	1.5	.76	9.50	4.0	1.76	1.50
13	1.81	1.70	*1.81	2.26	2.8	2.09	1.5	1.59	7.77	6.0	1.76	1.35
14	1.70	2.72	1.76	2.39	2.7	1.98	1.5	2.46	6.25	5.0	1.50	1.30
15	1.65	2.03	2.03	2.26	2.6	5.06	1.5	2.59	4.52	3.5	4.09	1.25
16	1.70	1.81	1.76	2.65	2.6	2.20	1.0	2.14	3.78	*3.99	6.25	1.65
17	2.33	1.70	1.65	2.65	2.5	1.98	1.0	1.76	3.78	5.16	4.33	3.24
18	1.70	1.65	1.60	*2.20	2.5	1.81	1.0	1.55	4.44	3.72	4.84	*3.10
19	1.55	1.92	1.65	2.14	2.5	1.70	1.5	1.50	*4.28	5.08	5.24	1.76
20	1.45	1.76	1.92	2.85	*2.52	1.65	2.0	1.40	4.60	5.16	5.24	1.40
21	1.55	1.81	1.87	3.37	2.65	*1.60	4.0	1.20	3.30	4.06	4.44	1.95
22	1.65	2.20	1.60	3.24	2.59	1.60	3.0	1.10	2.91	3.71	*3.24	1.25
23	1.81	2.46	1.55	3.17	2.59	1.45	2.5	1.25	2.46	2.61	4.68	1.25
24	3.08	1.81	1.65	3.52	2.52	1.40	2.2	1.10	1.87	3.26	3.11	1.15
25	1.87	1.60	1.50	2.98	2.52	1.45	2.0	1.02	2.03	7.42	2.72	1.10
26	1.55	1.60	1.60	2.98	2.46	.61	1.5	1.06	1.92	6.97	2.65	1.10
27	1.55	1.92	1.60	2.98	2.59	.10	1.3	1.55	2.86	7.24	2.39	1.25
28	1.55	2.33	1.50	2.98	2.52	.10	2.5	.89	2.09	6.16	2.26	2.24
29	1.50	2.59	1.45	3.46	1.65	.01	2.0	------	2.57	5.89	2.52	1.55
30	1.50	1.81	2.69	3.85	1.06	0	1.7	------	.63	5.72	3.01	2.04
31	1.45	1.65	------	3.30	------	0	1.5	------	.09	------	2.09	------
TOTAL	61.97	67.54	59.18	80.27	77.49	61.41	54.2	37.88	93.68	99.28	126.32	53.84
MEAN												
MGD	2.00	2.18	1.97	2.59	2.58	1.98	1.75	1.35	3.02	3.31	4.07	1.78
CFS	3.09	3.37	3.05	4.01	3.99	3.06	2.71	2.09	4.67	5.12	6.30	2.76
AC-FT	190	207	182	246	238	188	166	116	287	305	388	164

CALENDAR YEAR 1961: MAX 7.06 MIN 0 MEAN MGD 2.59 MEAN CFS 4.01 AC-FT 2,900
FISCAL YEAR 1961-62: MAX 9.50 MIN 0 MEAN MGD 2.39 MEAN CFS 3.70 AC-FT 2,680

* Discharge measurement made on this day.
Note.--No gage-height record Nov. 3-19, Dec. 29 to Feb. 8, Apr. 3-15.

ISLAND OF KAUAI

959. Kalihiwai ditch above wasteway, near Kilauea

Location.--Lat 22°10'40", long 159°25'45", on left bank 0.7 mile upstream from Kalihiwai reservoir and 2.5 miles southwest of Kilauea.

Records available.--April 1960 to June 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 400 ft (from topographic map).

Extremes.--1960-62: Maximum daily discharge, 21.3 mgd (33.0 cfs) Mar. 13, 1962; minimum daily, 0.87 mgd (1.35 cfs) Feb. 7, 1961.

Remarks.--Records good. Water is used for irrigation of sugar cane and domestic use.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	4.35	8.91	5.39	1.84	5.41	5.04	1.97	2.22	2.40	2.61	3.34	2.40
2	2.66	4.20	2.44	1.76	4.03	3.10	1.88	2.14	2.40	2.61	3.24	3.76
3	2.44	2.44	2.18	3.37	3.43	2.88	1.88	2.05	2.14	2.50	3.67	2.31
4	3.14	2.35	1.93	2.01	2.99	2.88	1.88	1.97	2.14	2.50	3.03	2.22
5	2.66	3.98	2.45	1.76	4.72	17.9	1.88	1.88	5.28	2.31	2.82	2.14
6	2.35	2.55	2.01	1.59	2.99	12.6	6.48	1.88	10.8	2.22	4.28	2.05
7	2.18	5.93	1.93	2.83	4.10	7.14	3.09	2.05	11.4	2.22	3.80	2.35
8	2.10	*3.27	1.93	2.18	2.88	4.60	2.22	7.72	13.1	2.14	2.82	2.05
9	2.01	2.66	1.76	3.48	2.66	3.79	14.7	*2.61	4.37	2.05	2.71	1.97
10	2.10	3.13	5.61	2.95	2.66	3.45	4.68	2.22	3.45	2.05	2.61	2.05
11	2.10	2.44	3.34	4.66	2.44	3.45	2.92	2.05	3.85	2.05	2.56	1.97
12	2.10	2.18	*2.35	3.02	2.27	3.13	2.50	1.97	15.7	1.97	2.61	1.97
13	1.93	2.10	2.10	2.44	2.18	3.45	2.40	3.00	21.3	4.52	2.40	1.88
14	1.84	2.18	*2.01	3.38	2.35	4.14	2.31	10.4	7.59	11.0	2.31	1.79
15	1.93	2.01	2.18	2.44	2.60	9.76	2.14	8.20	5.12	10.3	9.62	1.71
16	1.84	1.93	1.84	7.36	3.53	4.14	3.37	5.31	4.37	*3.91	6.68	2.05
17	3.20	1.84	1.76	*3.32	*2.44	3.45	2.14	3.56	4.14	9.32	3.91	2.14
18	2.01	1.84	1.76	2.66	2.27	3.03	2.74	2.92	7.62	7.98	6.27	*1.88
19	1.84	2.01	1.84	2.44	2.88	2.92	2.14	2.92	*6.85	4.60	4.86	1.71
20	1.76	2.01	2.38	5.22	3.29	*2.71	3.16	2.50	7.59	6.13	5.12	1.62
21	1.84	2.01	1.84	11.1	5.26	2.61	9.70	2.31	5.97	3.79	4.02	1.54
22	1.84	2.35	1.67	4.53	5.03	2.50	4.97	2.22	4.73	4.51	*3.45	1.54
23	1.79	2.76	1.59	4.64	5.78	2.40	3.80	2.40	4.60	3.24	4.55	1.54
24	4.50	2.01	1.76	3.43	3.91	2.40	2.82	2.14	3.68	3.24	3.13	1.46
25	2.01	1.93	1.59	3.28	3.32	2.31	2.82	2.05	3.68	16.0	2.82	1.46
26	1.84	1.84	1.82	3.92	2.88	2.22	2.50	3.94	3.79	7.10	2.71	1.46
27	1.93	3.12	1.59	3.78	3.61	2.14	2.85	4.75	4.12	11.3	2.50	1.54
28	1.76	3.77	1.52	3.97	2.99	2.14	5.84	2.82	3.56	4.99	2.40	2.04
29	1.76	2.88	1.52	7.25	2.88	2.05	2.82	------	3.68	4.14	2.50	1.54
30	1.76	2.10	2.45	7.26	3.92	1.97	2.50	------	2.92	3.68	2.50	1.88
31	1.84	2.01	------	8.83	------	1.97	2.31	------	2.71	------	2.22	------
TOTAL	69.41	86.74	66.54	122.70	101.70	128.27	109.41	92.20	185.05	146.98	111.46	58.02
MEAN												
MGD	2.24	2.80	2.22	3.96	3.39	4.14	3.53	3.29	5.97	4.90	3.60	1.93
CFS	3.46	4.33	3.43	6.12	5.24	6.40	5.46	5.09	9.24	7.58	5.56	2.99
AC-FT	213	266	204	377	312	394	336	283	568	451	342	178

CALENDAR YEAR 1961:	MAX	17.9	MIN	0.87	MEAN MGD	3.47	MEAN CFS	5.37	AC-FT	3,890
FISCAL YEAR 1961-62:	MAX	21.3	MIN	1.46	MEAN MGD	3.50	MEAN CFS	5.42	AC-FT	3,920

* Discharge measurement made on this day.

960. Kalihiwai ditch near Kilauea

Location.--Lat 22°10'55", long 159°25'55", on right bank 0.1 mile upstream from Kalihiwai Reservoir and 2.4 miles southwest of Kilauea.

Records available.--June 1934 to June 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 410 ft (by barometer).

Average discharge.--28 years, 2.39 mgd (3.70 cfs).

Extremes.--1934-62: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

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

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.16	8.65	3.80	1.46	0.16	0	0	1.89	0.10	0.02	0.24	0
2	.16	3.83	1.87	1.30	.16	0	0	1.78	.10	.01	.20	.03
3	.16	2.05	1.70	2.99	.16	0	0	1.87	.10	.01	.20	.01
4	.13	1.87	1.46	1.70	.16	0	0	1.87	.07	.01	.16	0
5	.13	3.72	1.30	1.38	.13	.20	0	1.54	.16	.01	.10	0
6	.13	2.14	.33	1.16	.10	.31	.15	1.54	.25	.01	.02	.63
7	.16	5.62	.29	2.42	.13	.20	.12	1.62	.35	.01	.13	1.16
8	.13	*2.05	.24	1.93	.10	.20	.71	4.49	.33	.01	.67	1.02
9	.10	.38	.16	3.18	.10	.20	11.9	.16	.16	.01	1.78	1.02
10	.10	.38	.16	2.64	.13	.16	4.76	.13	.10	.01	1.70	1.09
11	.13	.33	.13	4.26	.10	.10	1.25	.10	.07	.42	1.54	1.02
12	.13	.29	.10	2.71	.10	.07	.33	*.02	.44	1.23	1.62	1.02
13	.10	.29	.51	2.05	.02	.07	.33	.13	.44	3.61	1.54	1.02
14	.10	.29	1.46	2.91	0	.07	.24	.53	.20	10.7	1.38	1.02
15	.10	.24	1.54	2.14	0	.13	.20	.59	.16	9.79	4.42	.95
16	.07	.20	1.38	5.38	0	.13	.33	.44	.13	*3.46	3.92	1.16
17	.07	.57	1.46	*.38	*0	.13	.16	.29	.10	4.65	2.14	1.23
18	.07	1.09	1.38	.38	0	.10	.20	.24	.10	.44	1.22	*1.09
19	.07	1.23	1.54	1.07	0	.07	.20	.20	.16	.29	.29	1.02
20	.55	1.23	2.10	2.18	0	*.07	.28	.20	.13	.33	.24	.95
21	1.16	1.23	1.54	.85	0	.10	.43	.16	.13	.24	.16	.95
22	1.23	1.54	1.38	.44	0	.10	.29	.16	.10	.29	.13	.87
23	1.23	1.84	1.23	.29	0	.10	.16	.24	.05	.24	.16	.87
24	3.34	1.38	1.38	.20	0	.10	.13	.16	.04	.20	.10	.95
25	1.46	1.30	1.16	.20	0	.04	.05	.13	.04	.29	.05	.87
26	1.30	1.38	1.36	.20	0	0	.88	.24	.03	.24	.04	.87
27	1.38	2.25	1.23	.16	0	0	2.67	.24	2.03	.33	.03	.95
28	1.38	2.61	1.09	.13	0	0	5.94	.13	1.59	.29	.02	1.23
29	1.30	2.05	1.02	.16	0	0	2.74	------	.07	.29	.02	1.02
30	1.30	1.62	2.01	.20	0	0	2.34	------	.03	.29	.02	1.16
31	1.34	1.38	------	.20	------	0	2.14	------	.03	------	.01	------
TOTAL	19.17	55.03	36.31	46.65	1.55	2.65	38.93	21.09	7.79	37.73	24.25	25.18
MEAN												
MGD	0.618	1.78	1.21	1.50	0.052	0.085	1.26	0.753	0.251	1.26	0.782	0.839
CFS	0.957	2.75	1.87	2.33	0.080	0.132	1.94	1.17	0.389	1.95	1.21	1.30
AC-FT	59	169	111	143	4.8	8.1	119	65	24	116	74	77

CALENDAR YEAR	1961:	MAX	17.3	MIN	0	MEAN MGD	1.13	MEAN CFS	1.75	AC-FT	1,260
FISCAL YEAR 1961-62:		MAX	11.9	MIN	0	MEAN MGD	0.867	MEAN CFS	1.34	AC-FT	970

* Discharge measurement or observation of no flow made on this day.

970. Pohakuhonu Stream near Kilauea

Location.--Lat 22°10'55", long 159°25'35", 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 1962.

Gage.--Water-stage recorder. Altitude of gage is 380 ft (from topographic map).

Extremes.--Maximum discharge during year, 583 mgd (902 cfs) Mar. 13 (gage height, 4.06 ft); minimum, 1.38 mgd (2.14 cfs) June 23-27.

1957-62: Maximum discharge, 1,750 mgd (2,710 cfs) Aug. 6, 1959 (gage height, 7.23 ft, from flookmark 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, 5,600 cfs, from slope-area measurement of peak flow).

Remarks.--Records good. Kalihiwai ditch diverts an average of about 3 mgd about 0.5 mile above station for domestic water supply and irrigation of sugar cane. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.3	0.88	0.9	15.5
.4	1.80	1.1	26.2
.5	3.20	1.3	40.0
.6	5.30	1.6	68.0
.7	8.20	2.0	117

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	4.97	16.4	10.6	2.08	6.75	5.49	2.08	2.50	2.78	2.92	3.62	2.78
2	2.78	5.36	3.06	2.08	4.88	3.06	2.08	2.36	2.78	2.78	3.20	4.53
3	2.78	3.06	2.64	4.21	4.25	2.78	2.08	2.22	2.50	2.78	4.23	2.50
4	3.38	2.78	2.50	2.22	3.41	2.92	1.94	2.22	2.50	2.64	3.06	2.36
5	2.78	5.03	3.20	1.80	5.20	71.4	1.94	2.08	7.32	2.50	2.64	2.36
6	2.64	3.06	2.50	1.69	3.20	32.5	12.5	2.08	29.7	2.50	4.86	2.22
7	2.36	9.98	2.22	2.78	4.85	10.5	4.09	2.08	28.0	2.36	4.48	2.64
8	2.08	*3.83	2.50	2.22	3.06	5.59	2.50	12.2	28.8	2.22	2.64	2.08
9	1.94	3.06	2.22	4.18	3.06	4.67	37.2	*2.78	4.88	2.08	2.50	1.94
10	2.22	3.83	9.06	3.06	2.92	4.25	6.65	2.50	3.83	2.08	2.50	1.94
11	2.22	2.78	4.22	6.18	2.64	4.04	3.62	2.22	4.94	1.94	2.36	1.94
12	2.08	2.50	*3.06	3.75	2.50	3.83	2.92	2.08	46.9	1.80	2.50	1.69
13	1.80	2.50	2.50	2.78	2.36	4.70	2.64	3.46	70.5	6.55	2.36	1.58
14	1.80	2.78	2.36	4.05	2.64	5.28	2.36	21.9	8.46	17.8	2.22	1.58
15	1.94	2.36	2.64	3.06	2.86	21.6	2.36	11.8	5.59	14.8	17.0	1.58
16	1.80	2.22	2.08	11.6	3.75	5.09	4.12	6.79	4.67	*4.67	9.66	1.80
17	3.45	2.08	2.08	*4.04	*2.64	4.67	2.50	4.67	4.46	16.1	4.46	2.28
18	1.80	2.08	1.94	3.06	2.50	3.83	3.37	3.41	10.9	10.8	7.36	*1.94
19	1.80	2.36	1.94	2.92	3.24	3.62	2.36	3.41	*8.66	6.17	5.88	1.69
20	1.69	2.22	2.81	13.6	3.76	*3.41	5.97	2.92	8.62	9.00	5.88	1.58
21	1.80	2.22	2.08	24.4	6.95	3.20	27.3	2.64	6.75	4.67	4.67	1.58
22	1.80	3.06	1.80	5.59	5.09	2.92	6.13	2.50	5.30	5.14	*3.83	1.48
23	1.69	3.60	1.80	6.32	6.27	2.78	4.36	2.78	5.30	3.62	5.71	1.48
24	9.64	2.36	1.94	4.25	4.25	2.78	3.20	2.50	4.25	3.83	3.62	1.48
25	2.22	2.22	1.69	3.92	3.62	2.64	3.20	2.36	4.25	54.8	3.41	1.38
26	1.80	2.08	1.94	5.00	3.06	2.50	2.64	4.41	4.25	8.52	3.20	1.38
27	2.08	3.86	1.80	4.25	4.18	2.36	3.15	5.84	5.16	19.8	3.06	1.48
28	1.94	4.74	1.58	4.25	3.20	2.22	8.11	3.41	4.25	5.59	2.92	2.22
29	1.80	3.62	1.48	21.0	3.06	2.22	3.06	------	4.25	4.67	2.78	1.69
30	1.80	2.50	3.01	10.1	3.76	2.22	2.64	------	3.20	4.04	2.78	2.50
31	1.93	2.36	------	14.7	------	2.22	2.50	------	3.06	------	2.50	------
TOTAL	72.81	112.89	85.25	185.14	113.91	231.29	171.57	122.12	336.81	229.17	131.89	59.68
MEAN												
MGD	2.35	3.64	2.84	5.97	3.80	7.46	5.53	4.36	10.9	7.64	4.25	1.99
CFS	3.63	5.63	4.40	9.24	5.87	11.5	8.56	6.75	16.8	11.8	6.58	3.08
AC-FT	223	346	262	568	350	710	527	375	1,030	703	405	183

CALENDAR YEAR 1961 :	MAX	71.4	MIN	1.19	MEAN MGD	4.66	MEAN CFS	7.21	AC-FT	5,220
FISCAL YEAR 1961-62:	MAX	71.4	MIN	1.38	MEAN MGD	5.08	MEAN CFS	7.86	AC-FT	5,680

* Discharge measurement made on this day.

Peak discharge (base, 230 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-20	2230	3.40	395	611	3- 7	0030	3.13	335	518
12- 5	1330	3.78	499	772	3-13	1400	4.06	583	902
12-15	0730	2.78	257	398	4-25	0330	3.65	460	712
1-21	1530	3.25	358	554					

975. Halaulani Stream at altitude 400 ft, near Kilauea

Location.--Lat 22°10'35", long 159°25'15", on left bank 0.5 mile upstream from confluence with Pohakuhonu Stream, 1 mile upstream from Stone Dam, and 2.5 miles south (revised) of Kilauea.

Drainage area.--1.1 sq mi, approximately.

Records available.--November 1957 to June 1962.

Gage.--Water-stage recorder. Altitude of gage is 400 ft (from topographic map).

Extremes.--Maximum discharge during year, 524 mgd (811 cfs) Mar. 13 (gage height, 5.11 ft), from rating curve extended above 130 mgd as explained below; minimum, 2.95 mgd (4.56 cfs) Sept. 29.

1957-62: 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, 2.35 mgd (3.64 cfs) June 28, 1959.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.8	2.02	1.7	22.0
.9	3.05	2.0	37.0
1.1	5.80	2.6	87.0
1.4	12.2		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	7.78	23.8	17.9	4.14	11.5	9.20	3.42	4.30	4.45	4.75	7.51	4.60
2	4.90	8.44	5.20	4.20	8.12	5.65	3.30	4.17	4.45	4.60	7.13	8.08
3	5.53	5.50	4.75	8.31	6.75	4.90	3.30	4.05	4.17	4.45	8.92	4.30
4	8.50	5.20	4.17	4.45	5.65	5.63	3.30	3.92	4.14	4.45	7.32	4.05
5	5.50	8.50	5.96	3.55	8.29	85.1	3.30	3.80	11.1	4.17	6.56	3.92
6	5.20	5.35	4.17	3.30	5.65	40.8	21.4	3.80	12.7	3.92	9.80	3.67
7	4.60	15.5	3.80	3.81	8.22	19.2	6.46	3.92	18.8	3.92	9.25	4.90
8	4.30	6.94	4.30	4.47	5.35	10.0	4.30	17.1	26.4	3.80	6.94	3.80
9	4.17	*5.65	3.67	8.12	5.20	7.51	34.2	*4.90	7.32	3.80	6.56	3.67
10	4.60	6.40	12.0	5.80	5.05	6.56	9.51	4.17	5.80	3.80	6.56	3.67
11	4.56	5.05	6.26	8.97	4.75	6.58	5.80	3.92	13.2	3.55	6.18	3.80
12	4.60	4.60	4.75	7.53	4.45	6.37	5.05	3.80	50.4	3.55	6.56	3.55
13	4.17	4.30	*3.92	5.13	4.30	7.19	4.60	5.32	57.9	12.4	6.18	3.42
14	3.92	5.77	3.80	7.45	4.45	7.66	4.30	22.9	14.3	25.5	5.99	3.30
15	4.27	4.45	4.17	5.20	4.79	17.3	4.17	16.5	9.17	20.9	25.7	3.30
16	4.05	4.05	3.55	13.2	6.34	7.32	6.32	9.27	7.70	*7.51	14.0	3.92
17	7.49	3.92	3.42	7.16	4.60	7.13	4.17	6.56	7.44	23.3	8.54	4.75
18	4.30	3.80	3.30	*5.35	4.17	5.80	6.02	5.35	16.1	16.4	11.5	*5.08
19	3.80	4.05	3.55	3.48	5.94	5.35	4.05	5.41	*11.4	8.96	10.4	3.67
20	3.67	3.92	4.98	14.4	*6.65	5.05	14.9	4.60	13.7	15.7	10.5	3.42
21	3.82	3.92	3.80	16.7	11.6	*4.90	29.3	4.17	10.3	11.2	8.12	3.30
22	3.92	5.20	3.30	9.18	8.17	4.45	9.69	4.05	8.75	10.9	*6.37	3.30
23	3.80	6.30	3.30	9.48	10.3	4.30	7.35	4.44	8.13	8.33	8.91	3.17
24	7.10	4.05	3.55	7.13	6.75	4.30	5.80	3.92	6.75	10.4	6.18	3.17
25	4.05	3.67	3.17	6.26	6.13	4.30	5.99	3.80	7.18	64.3	5.35	3.17
26	3.67	3.67	4.10	7.44	5.35	3.92	5.05	7.62	6.85	19.9	5.05	3.17
27	3.92	5.60	3.42	6.75	8.51	3.80	5.61	8.88	8.47	30.1	4.60	3.42
28	3.67	7.03	3.05	5.65	5.99	3.80	11.9	5.35	7.59	11.7	4.45	5.00
29	3.55	6.06	2.95	25.2	5.65	3.67	5.50	------	7.65	9.38	4.60	3.55
30	3.67	4.17	5.72	21.4	5.79	3.55	4.75	------	5.50	8.33	5.05	4.47
31	4.33	4.05	------	26.2	------	3.42	4.60	------	5.20	------	4.17	------
TOTAL	143.41	188.91	143.98	271.41	194.46	314.71	247.41	179.99	383.01	363.97	244.95	118.59
MEAN												
MGD	4.63	6.09	4.80	8.76	6.48	10.2	7.98	6.43	12.4	12.1	7.90	3.95
CFS	7.16	9.43	7.42	13.5	10.0	15.7	12.3	9.94	19.1	18.8	12.2	6.12
AC-FT	440	580	442	833	597	966	759	552	1,180	1,120	752	364

CALENDAR YEAR 1961: MAX 85.1 MIN 2.95 MEAN MGD 7.12 MEAN CFS 11.0 AC-FT 7,970
FISCAL YEAR 1961-62: MAX 85.1 MIN 2.95 MEAN MGD 7.66 MEAN CFS 11.9 AC-FT 8,580

* Discharge measurement made on this day.

Peak discharge (base, 140 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-20	2230	3.77	256	396	3-13	1400	5.11	524	811
10-29	2000	4.04	305	472	4-25	0400	4.64	418	647
12- 5	1300	5.13	520	805	5-15	2100	3.64	230	356
1-21	1400	4.50	394	610					

995. Hanalei ditch near Kilauea

Location.--Lat 22°11'10", long 159°26'10", on right bank 205 ft upstream from Kalihiwai Reservoir, 215 ft downstream from inverted siphon across Kalihiwai River, and 2.4 miles southwest of Kilauea.

Records available.--July 1956 to June 1962 (discontinued).

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 390 ft (from topographic map). Prior to Mar. 5, 1959, at site 150 ft downstream at datum 0.25 ft higher.

Average discharge.--6 years, 2.17 mgd (3.36 cfs).

Extremes.--1956-62: Maximum daily discharge, 19.3 mgd (29.9 cfs) Sept. 17, 1956; no flow at times.

Remarks.--Records good. Ditch diverts water from Kalihiwai River 2.2 miles southwest of station for irrigation of sugar cane in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.02	4.62	2.93	4.50						0	0.01	4.05
2	0	0	0	7.10						0	0	0
3	2.89	6.10	0	8.30						0	0	1.93
4	7.55	5.99	3.42	8.15						0	0	6.70
5	8.45	3.83	4.07	8.00						2.54	0	6.70
6	8.60	3.72	0	7.85						4.05	0	7.40
7	4.43	7.19	5.53	8.15						2.88	0	7.85
8	0	*7.85	5.90	7.55						5.11	.63	4.39
9	3.93	7.10	2.60	7.10						7.55	0	0
10	8.00	6.04	0	8.15						7.40	0	3.65
11	7.85	4.35	5.03	5.46						7.40	0	7.55
12	8.00	2.58	*7.25	4.27				(*)		7.40	0	7.40
13	7.85	3.92	7.85	4.05						8.30	2.25	7.04
14	7.85	5.65	7.85	2.41						4.75	7.55	7.10
15	7.85	6.52	7.85	1.35						0	4.94	5.91
16	7.85	7.25	7.70	3.15						*3.71	0	5.34
17	8.30	7.40	7.70	*0	(*)					5.29	0	5.62
18	8.15	7.70	7.40	1.53						0	0	*8.30
19	7.85	7.70	7.55	1.50					(*)	0	0	8.15
20	7.85	8.00	7.55	0		(*)				0	0	7.85
21	7.70	7.85	6.96	0						0	0	7.55
22	7.70	8.00	6.83	0						0	*0	7.40
23	7.70	8.00	6.83	0						0	0	6.17
24	8.00	7.70	6.83	0						3.18	0	5.65
25	7.85	7.70	7.55	0						.18	0	7.10
26	7.55	7.70	8.15	0						0	0	7.10
27	7.55	7.85	8.45	0						0	0	7.10
28	7.55	4.97	8.00	0						0	0	7.40
29	7.25	7.45	7.85	0				--------		0	0	7.40
30	7.40	7.85	6.88	0				--------		0	2.20	7.85
31	7.25	7.85	------	0	--------			--------		------	7.55	------
TOTAL	208.77	196.43	172.51	98.57	0	0	0	0	0	69.74	25.13	183.65
MEAN												
MGD	6.73	6.34	5.75	3.18	0	0	0	0	0	2.32	0.811	6.12
CFS	10.4	9.80	8.90	4.92	0	0	0	0	0	3.60	1.25	9.47
AC-FT	641	603	529	303	0	0	0	0	0	214	77	564

CALENDAR YEAR 1961 :	MAX	11.9	MIN	0	MEAN MGD	2.88	MEAN CFS	4.46	AC-FT	3,220
FISCAL YEAR 1961-62:	MAX	8.60	MIN	0	MEAN MGD	2.62	MEAN CFS	4.05	AC-FT	2,930

* Discharge measurement or observation of no flow made on this day.

1000. Hanalei tunnel outlet near Lihue

Location.--Lat 22°05'00", long 159°28'15", 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 1962.

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

Average discharge.--30 years, 18.2 mgd (28.2 cfs).

Extremes.--1932-62: Maximum daily discharge, 64 mgd (99 cfs) Apr. 11, 25, 26, 1942; no flow at times.

Remarks.--Records good except those below 3 mgd, 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 and used for irrigation in vicinity of Lihue and Kapaa.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	11.9	31.5	22.7	16.8	1.73	*4.16	1.91	A1.20	1.91	2.29	*2.90	*6.80
2	8.48	*21.7	15.6	*15.6	*1.55	3.33	1.91	*1.04	*2.29	2.10	2.90	8.10
3	12.8	18.8	16.5	22.7	1.55	5.30	*1.55	1.04	2.10	*2.10	2.90	3.33
4	19.1	17.4	14.8	16.1	.89	8.10	1.55	1.04	2.29	2.10	2.90	2.90
5	*16.7	21.2	*16.5	13.9	2.01	25.3	2.41	1.04	5.60	1.91	2.69	2.69
6	10.5	17.0	14.3	13.9	1.37	13.6	14.5	1.04	9.82	1.91	3.49	2.49
7	8.60	22.7	13.9	19.9	1.55	8.35	3.33	1.04	5.17	1.55	4.27	4.60
8	7.64	17.4	15.2	18.4	1.37	4.83	2.10	2.21	3.53	1.20	4.47	3.11
9	7.32	18.8	13.4	20.8	1.37	4.37	3.00	1.37	2.10	1.20	3.78	3.55
10	9.76	16.1	20.9	17.9	1.37	3.55	2.29	1.20	1.91	1.20	3.11	5.38
11	7.32	15.6	24.1	18.4	1.37	3.78	1.73	1.04	1.91	1.20	5.90	4.55
12	7.96	14.8	15.6	16.1	1.55	3.33	1.55	1.04	4.41	1.04	7.47	4.55
13	8.28	14.3	13.4	13.4	2.03	3.78	1.04	2.16	14.0	5.97	8.08	4.28
14	9.54	20.3	14.3	12.9	5.65	5.44	1.04	5.14	7.42	11.4	4.28	4.28
15	18.8	15.2	14.8	13.8	4.84	8.89	1.04	4.83	8.07	6.61	10.8	4.55
16	17.9	14.8	13.0	6.61	3.77	4.02	1.73	2.95	5.41	3.95	8.60	5.40
17	22.2	15.6	13.4	3.78	2.90	2.90	1.04	2.10	4.99	7.70	8.08	7.02
18	18.8	16.5	13.4	3.55	3.11	2.49	1.65	1.91	9.82	5.78	8.35	11.3
19	17.0	17.4	16.5	3.33	4.24	2.10	1.20	1.91	12.2	5.08	8.97	7.37
20	16.1	17.0	20.8	6.85	3.33	2.49	3.00	1.91	11.4	7.85	7.32	6.67
21	16.1	15.2	16.4	6.55	6.83	2.92	8.30	1.73	8.55	3.78	6.83	5.72
22	15.6	22.2	14.3	5.52	3.78	4.64	1.73	1.73	6.13	4.82	5.11	5.40
23	16.5	18.8	15.8	5.11	4.41	2.29	1.20	2.63	7.10	3.33	6.72	5.40
24	23.2	16.1	13.4	3.78	2.90	2.29	1.37	1.55	3.33	9.06	4.41	5.40
25	17.4	14.3	13.4	3.55	3.37	2.29	1.04	1.55	4.24	18.6	3.55	5.40
26	16.5	16.1	16.4	3.55	2.69	1.91	.89	2.37	3.79	20.8	4.72	5.40
27	19.8	17.6	14.3	6.22	4.42	1.91	2.89	3.20	3.11	11.3	3.33	6.54
28	18.4	20.8	13.4	4.39	2.90	1.91	5.42	2.29	7.14	5.11	2.90	8.82
29	21.7	19.8	13.4	8.15	2.90	1.91	1.20	------	4.27	3.78	3.33	7.79
30	20.3	15.2	17.9	10.0	2.90	1.73	1.04	------	2.69	3.11	3.11	8.39
31	19.8	16.1	------	3.31	------	1.91	A1.04	------	2.49	------	2.69	------
TOTAL	462.00	556.3	471.8	334.85	84.65	145.82	75.69	54.26	169.19	157.43	157.96	167.18
MEAN												
MGD	14.9	17.9	15.7	10.8	2.82	4.70	2.44	1.94	5.46	5.25	5.10	5.57
CFS	23.1	27.8	24.3	16.7	4.37	7.28	3.78	3.00	8.44	8.12	7.88	8.62
AC-FT	1,420	1,710	1,450	1,030	260	448	232	167	519	483	485	513

CALENDAR YEAR 1961:	MAX	31.5	MIN	0.89	MEAN MGD	9.75	MEAN CFS	15.1	AC-FT	10,930
FISCAL YEAR 1961-62:	MAX	31.5	MIN	0.89	MEAN MGD	7.77	MEAN CFS	12.0	AC-FT	8,720

* Discharge measurement made on this day.
A No gage-height record.

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 1962.

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

Average discharge.--6 years (1953-55, 1958-62), 85.4 mgd (132 cfs).

Extremes.--Maximum discharge during year, 3,300 mgd (5,110 cfs) Jan. 28 (gage height, 5.71 ft), from rating curve extended above 660 mgd as explained below; minimum, 28.3 mgd (43.8 cfs) Sept. 29, 30.

1952-62: 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.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 1

1.3	33.0	1.8	65.0

Note.--Same as following table above 1.8 ft.

Aug. 2 to June 30

1.2	25.0	2.5	165
1.5	40.2	3.0	300
1.8	65.0	3.5	530
2.1	96.0	4.0	850

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	95.8	388	135	37.0	77.9	137	30.1	50.6	61.6	42.5	42.5	149
2	66.4	78.1	42.8	34.9	63.3	79.1	30.1	44.9	78.6	38.4	39.0	171
3	91.0	55.7	58.0	89.5	48.0	92.3	29.6	38.4	72.2	37.2	37.2	65.0
4	156	*44.3	45.7	46.6	40.2	90.1	29.6	35.4	65.9	38.2	*36.0	48.9
5	83.9	116	50.0	34.8	286	462	66.8	33.7	162	34.2	34.8	41.0
6	51.1	54.0	35.4	30.1	83.6	302	710	32.2	226	32.2	34.8	37.8
7	41.2	197	31.1	119	86.7	230	111	31.7	96.9	31.1	52.4	55.1
8	37.2	70.4	*37.5	83.9	59.9	85.8	63.3	57.0	106	30.6	46.3	40.2
9	36.2	72.7	33.7	135	54.8	89.5	124	39.0	60.8	30.1	50.2	35.4
10	59.8	48.9	152	86.8	49.6	66.4	73.4	34.8	48.0	30.1	41.0	47.0
11	40.0	43.3	96.5	76.0	44.7	90.9	48.0	32.7	44.1	29.6	97.7	36.0
12	42.6	36.0	41.1	51.9	36.0	71.2	39.6	31.1	79.4	29.6	131	*36.6
13	47.5	32.2	34.2	35.4	35.0	123	36.0	76.9	696	246	70.1	33.7
14	42.9	74.2	39.4	51.2	419	120	33.7	153	264	788	42.5	33.2
15	79.1	36.6	46.5	399	297	157	48.8	152	322	227	203	35.4
16	60.1	31.1	34.2	341	201	52.3	96.1	82.3	125	79.2	186	47.6
17	192	35.1	35.1	75.5	91.2	51.8	44.9	65.9	95.8	308	148	50.8
18	67.9	44.8	32.2	50.6	95.0	*45.7	50.6	58.2	153	145	157	46.8
19	50.7	60.4	68.1	39.6	183	40.2	40.2	55.1	337	107	164	56.2
20	42.3	59.6	153	75.4	133	52.0	53.7	59.9	418	143	103	40.3
21	40.0	36.0	73.4	152	384	46.7	311	48.9	241	54.8	93.6	34.3
22	37.8	82.2	45.4	87.4	124	60.2	105	41.0	154	46.4	73.2	32.2
23	40.9	64.6	36.6	97.9	366	35.4	77.7	92.4	218	39.0	127	31.7
24	99.1	40.3	34.2	50.6	107	37.4	53.1	52.3	63.3	136	72.5	31.7
25	41.2	34.8	31.7	71.6	98.2	48.2	53.4	44.1	88.2	565	57.0	31.1
26	37.7	46.2	30.6	118	80.3	33.7	43.7	61.3	92.7	611	81.3	35.5
27	46.6	72.2	31.1	216	173	32.2	186	89.1	67.5	246	48.9	54.9
28	53.8	104	30.6	93.0	92.0	34.7	566	62.5	151	77.0	44.9	79.7
29	64.9	68.3	28.7	248	86.8	32.7	89.4	------	102	61.6	56.9	60.6
30	63.6	37.8	33.1	448	98.1	31.1	70.4	------	63.3	48.9	46.5	74.1
31	46.9	43.0	------	140	------	30.6	79.2	------	49.7	------	36.6	------
TOTAL	1,956.2	2,207.8	1,576.9	3,615.7	3,994.3	2,861.2	3,394.4	1,656.4	4,803.0	4,332.7	2,424.9	1,572.8
MEAN												
MGD	63.1	71.2	52.6	117	133	92.3	109	59.2	155	144	78.2	52.4
CFS	97.6	110	81.3	180	206	143	169	91.5	240	223	121	81.1
AC-FT	6,000	6,780	4,840	11,100	12,260	8,780	10,420	5,080	14,740	13,300	7,440	4,830

CALENDAR YEAR	1961 :	MAX	727	MIN	27.9	MEAN MGD	84.5	MEAN CFS	131	AC-FT	94,700
FISCAL YEAR	1961-62:	MAX	788	MIN	28.7	MEAN MGD	94.2	MEAN CFS	146	AC-FT	105,600

Peak discharge (base, 2,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-14	2000	5.64	3,150	4,870	1-28	0200	5.71	3,300	5,110
1- 6	1030	5.09	2,140	3,310					

* Discharge measurement made on this day.

2000. Left Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°31'09", long 157°56'53", on left bank 140 ft upstream from intake of Mauka ditch and confluence with 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 1962. Monthly discharge only for some periods, published in WSP 1319.

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

Average discharge.--40 years (1913-24, 1926-53, 1960-62), 10.6 mgd (16.4 cfs).

Extremes.--Maximum discharge during year, 2,000 mgd (3,090 cfs) Nov. 1 (gage height, 9.01 ft), from rating curve extended above 44 mgd as explained below; minimum, 0.54 mgd (0.84 cfs) Feb. 26.

1913-53, 1960-62: 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; minimum, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.6	0.56	2.5	13.4
1.7	.93	2.8	27.5
1.8	1.45	3.1	52.0
2.1	4.30	3.5	100
2.3	7.90	4.0	185

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	9.31	32.1	10.1	4.30	98.5	10.9	1.80	2.01	9.74	11.6	2.53	2.87
2	4.69	6.10	3.58	8.58	11.0	3.34	1.73	1.45	3.77	5.10	2.34	2.08
3	4.30	4.94	5.02	6.53	5.26	2.91	1.59	1.19	3.18	4.62	2.15	1.66
4	10.8	3.70	3.46	4.10	4.30	4.35	1.45	1.08	1.80	4.90	2.01	1.73
5	9.65	56.5	4.69	2.62	4.06	7.94	1.45	.98	26.3	6.83	5.38	1.52
6	*3.82	7.10	2.62	35.1	6.11	8.43	1.58	.93	67.3	3.78	4.04	1.73
7	3.10	18.0	2.43	7.02	3.46	3.46	20.4	.89	13.3	4.13	2.34	*3.24
8	4.39	6.50	2.43	12.2	2.91	3.64	1.94	3.15	18.7	3.22	*2.74	1.45
9	12.3	17.5	6.26	11.7	2.62	7.67	41.3	1.52	7.92	3.10	3.76	3.30
10	15.9	6.30	6.70	5.99	2.72	3.00	3.23	.85	5.42	2.91	3.13	3.10
11	9.30	5.42	44.0	5.23	2.91	4.73	2.15	.78	19.2	2.62	4.28	1.29
12	6.39	4.30	3.58	3.34	2.15	4.82	1.80	*.74	151	2.53	3.51	1.39
13	6.71	4.18	2.81	2.91	2.01	3.00	1.66	.74	12.3	3.09	3.43	1.29
14	3.70	*14.3	7.63	2.91	8.17	25.5	1.52	8.45	70.4	19.9	3.32	1.34
15	3.35	4.18	3.65	3.94	*8.84	21.7	1.45	1.63	12.1	12.5	61.3	1.61
16	6.09	3.58	3.23	2.53	6.79	6.18	3.27	8.86	7.50	8.10	8.66	5.77
17	77.6	5.97	2.43	2.34	2.75	12.0	1.80	2.23	5.74	18.9	7.34	3.69
18	7.90	6.63	2.65	12.7	2.97	10.7	1.29	1.19	23.8	36.8	16.5	25.6
19	5.90	11.1	5.69	3.86	6.59	4.46	1.19	.98	20.6	7.74	7.58	2.34
20	6.91	6.13	5.29	2.43	2.34	5.92	1.08	1.41	*24.6	6.66	4.46	2.00
21	4.46	11.1	3.22	2.57	29.9	9.99	1.03	.98	23.8	7.31	12.7	1.52
22	3.82	16.5	2.15	4.95	22.4	4.62	1.40	.78	17.5	18.3	4.29	1.34
23	9.18	8.20	12.4	11.5	9.48	4.08	1.45	.78	40.3	4.30	4.18	1.24
24	18.4	4.30	5.18	3.24	4.06	3.82	1.03	.78	9.01	3.58	3.00	1.19
25	4.46	3.70	4.63	4.03	6.70	3.22	31.4	.59	17.5	14.3	3.00	1.13
26	4.77	5.19	2.78	27.7	3.34	2.81	3.55	42.9	7.10	5.51	4.51	.98
27	3.29	8.72	*2.62	28.1	6.55	2.43	1.66	26.6	8.56	3.34	2.53	1.73
28	3.82	10.5	2.43	14.1	7.75	*2.64	11.6	3.27	13.8	2.91	2.24	8.82
29	4.18	13.9	7.32	6.91	6.15	2.34	5.23	------	21.8	2.81	2.15	20.4
30	3.34	4.30	23.3	4.78	7.25	2.08	1.87	------	6.30	3.46	2.01	3.85
31	10.8	4.98	------	51.9	------	1.94	2.01	------	7.87	------	4.08	------
TOTAL	282.63	315.92	194.28	300.11	290.04	194.62	155.91	117.74	678.21	234.85	195.49	111.20
MEAN												
MGD	9.12	10.2	6.48	9.68	9.67	6.28	5.03	4.21	21.9	7.83	6.31	3.71
CFS	14.1	15.8	10.0	15.0	15.0	9.71	7.78	6.51	33.8	12.1	9.76	5.73
AC-FT	867	970	596	921	890	597	478	361	2,080	721	600	341

CALENDAR YEAR 1961: MAX 114 MIN 0.81 MEAN MGD 7.61 MEAN CFS 11.8 AC-FT 8,520

FISCAL YEAR 1961-62: MAX 151 MIN 0.59 MEAN MGD 8.41 MEAN CFS 13.0 AC-FT 9,420

* Discharge measurement made on this day.

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-6	2100	7.47	1,360	2,100	3-12	0130	7.84	1,510	2,340
11-1	1400	9.01	2,000	3,090	3-14	0200	6.99	1,170	1,810

2030. Mauka ditch near Wahiawa

Location.--Lat 21°30'45", long 157°59'20", on left bank 3 miles northeast of Wahiawa.

Records available.--March 1947 to June 1962. Prior to July 1958, published as Kaukonahua ditch near Wahiawa.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,100 ft (from topographic map).

Average discharge.--15 years, 3.21 mgd (4.97 cfs).

Extremes.--1947-62: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.83	a4.5	3.98	2.79	5.42	4.70	2.58	2.21	4.26	3.40	3.09	2.99
2	3.98	a3.0	2.99	2.68	2.99	4.22	2.48	1.39	3.50	2.99	2.99	2.68
3	3.86	a2.8	2.99	3.09	3.58	3.98	2.30	1.06	3.30	2.89	2.79	2.21
4	4.58	a2.7	2.79	2.99	4.70	4.22	2.12	.88	2.21	2.89	2.58	2.21
5	4.46	a5.0	2.89	2.39	4.58	4.58	2.12	.73	3.93	2.99	3.17	1.94
6	3.86	a3.5	2.48	2.34	4.83	4.83	2.21	.80	4.58	2.68	3.50	2.03
7	3.40	a4.0	2.39	2.95	4.46	4.34	5.16	1.53	4.46	2.68	2.79	*3.03
8	3.40	3.30	2.30	2.60	3.98	4.22	3.09	2.71	4.70	2.48	3.19	2.12
9	3.62	*4.58	2.80	3.00	3.74	4.58	4.24	2.54	4.22	2.39	3.09	1.79
10	4.22	3.40	3.30	2.67	3.86	4.22	4.34	1.61	4.10	2.39	3.19	3.09
11	3.30	3.09	4.42	2.30	3.86	4.10	3.30	1.53	4.22	2.30	3.06	1.85
12	3.40	2.89	2.89	2.12	3.30	4.58	2.89	1.39	5.09	2.30	3.50	1.69
13	3.40	2.79	2.58	2.03	*3.09	4.10	2.48	1.39	4.70	2.30	3.50	1.61
14	2.89	3.62	2.96	1.94	4.22	4.46	2.30	*3.48	5.64	3.62	3.30	1.77
15	2.79	2.89	2.68	2.12	4.83	4.46	2.21	2.32	4.10	3.50	4.46	2.03
16	3.40	2.68	2.58	1.94	4.83	4.46	3.30	3.34	3.50	2.89	4.10	3.15
17	6.48	2.79	2.30	1.77	3.98	4.70	2.89	2.94	3.30	2.95	3.98	2.79
18	3.98	2.99	2.21	2.40	3.86	4.58	1.94	1.69	3.40	3.74	4.34	3.74
19	3.62	3.09	3.13	2.04	4.34	4.34	1.69	1.46	3.74	2.68	3.98	2.68
20	3.62	3.32	2.99	1.61	3.40	4.34	1.61	1.94	*3.98	2.48	3.86	2.30
21	3.19	3.50	*2.48	2.64	4.61	*4.58	1.46	1.39	4.10	2.12	4.10	2.03
22	3.09	4.22	2.12	3.98	5.35	4.34	2.11	1.12	4.10	2.80	3.86	1.94
23	3.50	3.74	2.88	5.74	5.22	4.22	1.77	1.06	4.34	2.65	3.74	1.69
24	a4.0	2.99	2.68	4.46	4.46	4.34	1.39	1.06	3.62	3.30	3.40	1.61
25	a2.9	2.68	2.68	3.86	4.58	4.10	3.19	.88	3.98	4.05	3.40	1.53
26	a2.7	3.14	2.21	5.87	4.22	3.98	3.37	2.73	3.40	3.86	3.74	1.53
27	a2.8	3.86	2.21	6.00	4.58	3.50	1.85	4.58	3.40	*3.50	3.19	2.10
28	a2.7	4.02	2.03	6.00	4.58	3.50	3.08	3.40	3.50	3.30	2.99	4.60
29	a2.6	3.98	1.94	5.61	4.34	3.30	3.92	--------	3.74	3.19	2.89	4.83
30	a2.6	2.99	3.82	5.48	4.70	2.99	2.12	--------	3.19	3.40	2.68	4.83
31	a3.5	3.19	--------	6.34	--------	2.79	2.21	--------	3.19	--------	3.06	--------
Total	110.67	105.24	82.70	103.75	128.49	129.65	81.72	53.16	121.49	88.71	105.51	74.39
Mean												
Mgd	3.57	3.39	2.76	3.35	4.28	4.18	2.64	1.90	3.92	2.96	3.40	2.48
Cfs	5.52	5.25	4.26	5.18	6.63	6.47	4.08	2.94	6.06	4.57	5.27	3.84
Ac-ft	340	323	254	318	394	398	251	163	373	272	324	228

Calendar Year 1961:	Max	7.27	Min	0.03	Mean mgd	3.63	Mean cfs	5.62	Ac-ft	4,060
Fiscal Year 1961-62:	Max	6.48	Min	0.73	Mean mgd	3.25	Mean cfs	5.03	Ac-ft	3,640

* Discharge measurement made on this day.
a No gage-height record.

2040. North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'55", long 157°59'20", on left bank 3 miles northeast of Wahiawa and 8.6 miles north of Pearl City.

Drainage area.--4.86 sq mi.

Records available.--September 1946 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 970 ft (from topographic map).

Average discharge.--15 years (1947-62), 20.7 mgd (32.0 cfs).

Extremes.--Maximum discharge during year, 1,760 mgd (2,720 cfs) Nov. 1 (gage height, 12.58 ft), from rating curve extended above 190 mgd as explained below; minimum, 0.63 mgd (0.98 cfs) Feb. 26.

1946-62: Maximum discharge, 2,200 mgd (3,400 cfs) Nov. 28, 1954 (gage height, 15.55 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. Mauka ditch (see preceding page) diverts 2.6 miles above station for domestic use in Wahiawa. Poamoho tunnel (see p. 56) diverts from Poamoho Stream into North Fork Kaukonahua Stream about 1 mile above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 17-20)

0.33	0.68	1.3	20.0
.4	1.06	1.6	37.5
.5	1.80	2.0	74.0
.6	2.75	2.5	148
.8	5.40	3.0	245
1.0	9.10	4.0	424

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	25.0	71.8	60.4	11.0	279	26.5	3.23	3.11	18.1	23.0	4.82	8.27
2	5.71	9.21	6.25	4.37	35.1	6.61	3.11	*2.27	3.93	8.50	*5.07	5.01
3	6.25	6.25	6.50	14.3	16.9	7.10	2.99	2.08	3.48	7.50	4.61	3.11
4	21.6	4.96	4.96	11.1	10.3	6.84	2.87	1.99	1.72	7.70	3.39	2.99
5	20.0	78.2	5.65	4.70	8.50	15.0	2.99	1.99	31.6	9.63	10.3	2.99
6	6.90	10.0	3.47	41.0	11.9	38.9	3.23	1.80	144	5.74	12.6	2.99
7	4.09	25.5	2.99	50.3	7.62	8.18	72.0	1.35	39.2	6.25	4.24	8.13
8	6.44	8.10	2.87	14.1	5.74	8.05	4.84	1.30	46.5	4.96	6.72	4.40
9	13.5	*27.4	7.56	22.2	4.82	17.8	89.6	2.70	14.0	5.11	5.08	2.99
10	33.1	10.9	22.9	18.5	4.53	8.19	7.73	1.06	7.50	5.74	7.97	7.42
11	7.36	6.25	87.0	8.49	5.40	6.71	3.59	.84	22.9	4.38	6.77	3.11
12	11.0	5.11	7.70	6.60	4.09	14.9	2.75	.79	369	3.59	20.4	*2.46
13	10.1	4.53	4.96	4.09	3.35	9.89	2.56	.74	46.3	3.71	17.8	2.27
14	5.91	21.9	10.1	3.71	*9.78	60.1	2.37	9.05	271	49.8	6.18	2.46
15	4.53	5.40	6.08	7.04	23.3	65.5	2.37	3.31	44.1	38.0	173	2.99
16	7.97	4.09	4.82	4.60	16.8	12.5	7.07	19.0	21.0	19.7	30.6	7.64
17	180	5.18	4.53	3.23	7.70	35.9	5.17	4.96	12.8	32.7	17.0	4.73
18	13.5	8.15	3.59	28.8	4.82	24.7	2.56	1.57	28.7	114	40.9	29.5
19	7.50	14.3	10.7	18.1	9.41	9.40	2.27	1.00	*56.3	25.2	23.9	3.89
20	8.39	16.6	*9.48	5.49	5.41	11.1	2.18	1.57	88.2	25.2	11.0	2.37
21	5.11	16.7	3.11	4.14	70.9	*36.9	1.89	1.06	88.3	11.5	21.1	1.57
22	4.24	36.1	3.71	6.04	56.4	10.7	3.16	.79	66.0	35.5	12.0	1.06
23	7.23	20.7	12.6	24.4	37.7	7.88	2.18	.79	150	10.0	7.70	.90
24	24.4	6.25	6.47	5.77	10.3	17.0	1.89	.90	23.9	6.76	6.59	.90
25	5.74	4.53	6.02	2.84	11.9	9.14	36.5	.68	37.8	62.0	5.74	.90
26	4.96	6.79	3.94	31.7	6.59	6.76	6.70	51.1	16.5	17.5	7.89	.95
27	5.25	11.1	3.74	95.1	10.7	5.11	2.18	63.4	15.7	7.41	5.79	1.20
28	5.16	18.6	3.23	86.8	13.6	5.11	21.6	4.75	19.9	5.91	4.38	9.67
29	4.38	28.3	3.23	21.1	8.32	4.38	13.3	------	49.1	4.96	4.24	38.1
30	4.38	6.08	65.8	9.13	18.7	3.71	2.75	------	12.1	5.91	3.71	10.1
31	7.83	13.8	------	81.1	------	3.47	2.87	------	9.60	------	5.30	------
TOTAL	477.33	512.78	386.36	649.84	719.58	503.73	320.50	185.95	1,759.23	569.86	496.99	172.07
MEAN												
MGD	15.4	16.5	12.9	21.0	24.0	16.2	10.3	6.64	56.7	19.0	16.0	5.74
CFS	23.8	25.6	19.9	32.4	37.1	25.1	16.0	10.3	87.8	29.4	24.8	8.87
AC-FT	1,460	1,570	1,190	1,990	2,210	1,550	984	571	5,400	1,750	1,530	528

CALENDAR YEAR	1961:	MAX	279	MIN	1.20	MEAN MGD	15.1	MEAN CFS	23.4	AC-FT	16,890
FISCAL YEAR 1961-62:		MAX	369	MIN	0.68	MEAN MGD	18.5	MEAN CFS	28.6	AC-FT	20,730

* Discharge measurement made on this day.

2080. South Fork Kaukonahua Stream at East Pump Reservoir, near Wahiawa

Location (revised).--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 1962.

Gage.--Water-stage recorder and Ogee-type dam control. Datum of gage is 860.35 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 11.8 mgd (18.3 cfs).

Extremes.--Maximum discharge during year, 916 mgd (1,420 cfs) Nov. 1 (gage height, 5.59 ft); minimum, 1.32 mgd (2.04 cfs) June 25.

1957-62: Maximum discharge, 1,270 mgd (1,960 cfs) Feb. 21, 1959 (gage height, 6.40 ft); no flow Dec. 24, 25, 27, 28, 1960.

Remarks.--Records fair. Koolau ditch diverts water into Koolau Reservoir (capacity, 43,000,000 gal), and Ku Tree Reservoir (capacity, 293,000,000 gal) located on tributary.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Feb. 10-13)

1.3	0.80	2.0	16.0
1.4	1.60	2.1	21.4
1.5	2.75	2.2	30.0
1.6	4.25	2.5	61.0
1.7	6.20	3.0	136
1.8	8.55	3.5	235
1.9	11.8		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24.1	33.9	8.54	6.67	149	16.7	2.48	4.80	12.4	12.8	4.25	3.00
2	8.08	10.5	4.45	3.31	20.4	7.85	2.48	3.60	5.76	5.80	4.25	3.31
3	7.14	6.20	5.25	5.20	10.5	7.14	2.48	2.75	5.88	5.00	4.10	2.48
4	6.00	5.20	5.00	5.93	7.61	6.91	2.36	2.36	3.31	5.20	3.75	2.23
5	5.39	78.6	4.10	3.16	6.44	14.6	2.48	2.23	23.1	9.10	4.24	*2.00
6	*5.20	16.0	3.60	2.48	7.46	24.4	2.36	2.12	38.4	4.60	7.28	2.00
7	3.75	26.4	3.16	18.5	6.20	8.88	36.9	2.00	27.9	4.60	3.91	2.12
8	3.75	9.85	3.00	14.3	4.80	8.55	4.52	1.90	34.5	4.25	3.45	1.90
9	3.45	12.2	3.31	32.3	4.45	7.91	48.0	4.56	11.3	4.25	3.45	1.80
10	6.52	*8.82	5.68	24.3	4.10	6.20	7.05	2.35	6.91	4.80	8.16	1.90
11	8.96	6.20	20.3	7.93	4.36	5.39	3.60	2.00	10.7	3.75	3.60	1.90
12	11.4	5.60	4.95	4.60	3.91	7.77	2.90	1.90	123	3.16	3.45	2.00
13	17.5	5.20	3.45	3.75	*3.45	5.80	2.48	*1.51	18.2	3.16	2.90	2.48
14	7.35	9.94	16.6	3.31	10.1	5.79	2.23	12.3	159	48.4	3.34	1.80
15	5.80	5.39	6.22	4.18	27.0	33.5	2.12	4.67	28.2	43.1	45.4	1.90
16	21.5	4.25	3.91	3.75	11.1	6.89	4.51	16.5	15.0	20.9	15.8	3.04
17	174	3.91	3.00	2.90	6.66	6.67	5.14	6.60	10.8	13.5	8.56	3.47
18	22.8	4.25	2.90	20.6	5.39	6.20	2.48	2.90	10.2	102	20.2	28.5
19	13.0	17.7	17.2	14.2	11.2	5.20	2.36	2.12	15.0	13.5	8.55	3.80
20	14.6	18.7	13.0	4.45	5.55	5.39	2.62	2.20	10.7	9.85	5.20	2.23
21	9.20	9.01	5.00	3.16	39.7	7.05	1.80	1.90	9.47	7.14	9.71	2.23
22	7.38	6.91	*3.70	2.90	78.2	*9.64	3.49	1.69	11.2	12.2	7.69	1.69
23	17.2	8.89	4.52	5.75	46.8	4.60	2.75	1.69	36.8	*6.91	4.80	1.41
24	18.0	4.80	5.68	4.52	14.3	4.10	2.23	1.60	10.5	5.60	5.39	1.41
25	7.38	4.25	6.49	4.25	17.7	3.75	74.3	1.50	20.7	30.3	4.10	1.32
26	7.38	5.83	3.75	23.0	9.85	3.45	9.83	25.5	9.13	12.9	5.20	1.41
27	6.20	21.2	4.40	38.0	18.5	3.16	3.91	55.0	7.38	6.44	3.60	1.60
28	6.91	20.5	2.75	11.9	19.9	3.00	17.2	7.58	10.1	5.20	3.00	41.4
29	5.60	8.08	2.36	9.62	15.2	2.90	13.2	---------	26.3	4.80	2.75	15.2
30	4.80	5.39	13.4	5.80	17.3	2.75	4.45	---------	7.50	4.60	2.62	4.86
31	5.90	4.60	---------	50.5	---------	2.62	4.10	---------	6.00	--------	2.48	---------
Total	466.24	388.27	189.67	345.22	587.13	244.76	278.81	177.83	725.34	417.81	215.18	146.39
Mean												
Mgd	15.0	12.5	6.32	11.1	19.6	7.90	8.99	6.35	23.4	13.9	6.94	4.88
Cfs	23.2	19.3	9.78	17.2	30.3	12.2	13.9	9.82	36.2	21.5	10.7	7.55
Ac-ft	1430	1190	582	1060	1830	751	856	546	2230	1,280	660	449

Calendar Year 1961: Max 174 Min 0.15 Mean mgd 10.4 Mean cfs 16.1 Ac-ft 11,650
Fiscal Year 1961-62: Max 174 Min 1.32 Mean mgd 11.5 Mean cfs 17.8 Ac-ft 12,860

* Discharge measurement made on this day.

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-17	1500	4.63	553	856	1-25	1600	4.41	481	744
11-1	1400	5.59	916	1,420	3-14	0430	5.45	860	1,330

2085. Right Branch of South Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'00", long 157°59'06", on left bank 500 ft below spillway of Ku Tree Reservoir, 1 mile above mouth, and 3 miles east of Wahiawa Post Office.

Drainage area.--0.86 sq mi.

Records available.--August 1957 to June 1962.

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

Extremes.--Maximum discharge during year, 840 mgd (1,300 cfs) Oct. 31 (gage height, 5.95 ft), from rating curve extended above 110 mgd by logarithmic plotting; minimum, 0.01 mgd (0.02 cfs) on many days.

1957-62: Maximum discharge, that of Oct. 31, 1961; no flow at times.

Remarks.--Records fair.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Sept. 13)

0.02	0	1.2	3.80
.1	.02	1.5	6.60
.2	.09	1.8	10.8
.3	.20	2.1	16.5
.5	.51	2.5	28.0
.7	1.00	3.0	50.0
.9	1.85	3.5	87.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.38	1.68	0.14	0.02	19.5	2.57	0.27	0.47	0.36	0.24	0.06	0.04
2	.77	.69	.06	.02	3.15	1.17	.14	.24	.23	.09	.13	.04
3	.38	.29	.10	.02	.96	.69	.13	.11	.06	.12	.20	.04
4	.39	.20	.09	.02	.57	.70	.13	.06	.04	.17	.18	.02
5	.21	9.46	.07	.02	.51	3.58	.34	.04	2.65	.09	.18	.01
6	.07	1.52	.06	.02	.31	5.90	.42	.02	1.88	.17	.25	.02
7	.11	3.11	.07	.02	.28	1.74	7.22	.01	.48	.07	.14	.02
8	.08	.68	.08	.23	.13	1.54	.66	.05	8.70	.06	.08	.06
9	.05	1.07	.11	4.79	.10	.94	.36	.03	.88	.05	.06	.01
10	.05	.71	.06	3.00	.10	.83	.37	.02	.35	.05	.07	.01
11	.04	.46	.02	.41	.09	.86	.24	.02	.12	.02	.14	.01
12	.04	.09	.02	.06	.16	2.24	.11	.02	9.06	.02	.24	*.01
13	.13	.16	.01	.04	*.20	1.45	.07	*.01	2.62	.03	.16	.01
14	.04	.25	.02	.03	.16	.83	.08	.03	74.4	2.86	.31	.01
15	.06	.15	.01	.25	1.28	.73	.06	.01	4.32	4.26	2.76	.01
16	6.12	.08	.01	.04	1.73	.66	1.37	*2.23	1.70	.65	1.43	.02
17	23.7	*.05	.01	.01	.76	.62	.54	.87	.91	.78	1.07	.01
18	1.84	.01	.03	3.75	1.09	.69	.24	.22	.87	9.63	5.29	.01
19	1.16	.01	.23	1.81	3.00	.60	.13	.10	.80	1.04	.85	.01
20	.96	.01	.04	.39	.66	.86	.12	.31	.75	.27	.34	.02
21	.33	.02	.01	.13	7.66	*.65	.12	.11	*.74	.21	3.44	.02
22	.28	.02	*.02	.30	15.8	.42	1.06	.04	1.13	.11	1.19	.02
23	.73	.22	.02	1.13	15.0	.39	.31	.02	4.35	.11	1.02	.02
24	.65	.04	.02	.33	1.82	.41	.12	.03	1.20	.07	1.61	.02
25	.35	.01	.02	.22	3.59	.39	4.24	.02	1.20	8.43	1.00	.03
26	.06	.79	.02	2.31	1.22	.33	1.08	.10	.62	*1.99	1.30	.02
27	.16	8.45	.02	3.04	1.75	.22	.28	3.25	.46	.55	.49	.04
28	.44	4.51	*.01	.59	2.79	.29	3.21	.49	.41	.29	.21	.05
29	.45	.95	.04	.16	1.76	.28	2.22	------	.40	.23	.21	.06
30	.16	.33	.02	.86	3.07	.25	.48	------	.18	.19	.11	.06
31	.09	.41	------	46.8	------	.22	.53	------	.18	------	.02	------
TOTAL	42.28	36.43	1.44	70.82	89.20	33.05	26.65	8.93	122.05	32.85	24.54	0.73
MEAN												
MGD	1.36	1.18	0.048	2.28	2.97	1.07	0.860	0.319	3.94	1.10	0.792	0.024
CFS	2.11	1.82	0.074	3.53	4.60	1.65	1.33	0.493	6.09	1.69	1.22	0.038
AC-FT	130	112	4.4	217	274	101	82	27	375	101	75	2.2

CALENDAR YEAR	1961:	MAX	46.8	MIN	0.01	MEAN MGD	1.19	MEAN CFS	1.84	AC-FT	1,330
FISCAL YEAR 1961-62:		MAX	74.4	MIN	0.01	MEAN MGD	1.34	MEAN CFS	2.07	AC-FT	1,500

* Discharge measurement made on this day.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	2230	5.95	840	1,300	3-14	0230	5.76	716	1,110

2109. Poamoho tunnel near Wahiawa

Location.--Lat 21°31'10", long 157°58'50", on left bank 5 ft downstream from tunnel outlet and 3.5 miles northeast of Wahiawa Post Office.

Records available.--July 1958 to June 1962.

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

Extremes.--1958-62: Maximum daily discharge, 116 mgd (179 cfs) Aug. 8, 1958; no flow at times each year.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water from Poamoho Stream basin is diverted by Poamoho tunnel to Kaukonahua Stream basin.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.32	11.7	7.64	0.38	35.9	3.25	0.59	0.02	3.70	2.37	0.62	A0.64
2	.01	.26	.49	.03	9.59	1.52	.59	.03	.03	.13	1.03	A.60
3	0	.02	.20	.28	4.23	2.50	.56	.03	.02	.02	.71	A.52
4	2.52	0	.04	2.40	2.93	1.82	.53	.03	.01	.07	.40	A.50
5	.71	10.2	.01	.27	2.57	6.44	.59	.03	3.17	.16	4.12	A.50
6	.02	.57	0	2.40	*3.74	10.9	.76	.02	31.2	.02	3.37	*A.54
7	0	2.91	0	9.09	2.16	2.51	19.4	.02	4.66	0	.65	2.26
8	0	.18	0	.44	1.74	2.70	1.11	.02	8.76	0	1.30	.84
9	0	1.53	0	4.10	1.48	6.07	17.9	.02	*2.09	.09	1.48	.50
10	.07	.20	7.03	2.60	1.36	2.41	1.90	.01	.86	.57	2.15	.95
11	0	.01	3.07	.57	1.72	1.81	.69	.01	2.36	.06	3.69	.54
12	0	0	.27	.48	1.30	4.31	.44	.01	70.3	0	6.40	.34
13	0	0	.02	.08	1.00	3.09	.34	0	12.8	0	8.14	.30
14	0	3.05	.04	.06	1.76	20.1	.28	.42	62.3	10.5	1.74	.38
15	0	.06	.12	1.20	7.48	17.5	.30	.02	11.9	8.13	37.0	.50
16	0	0	.01	.27	5.13	3.80	2.49	2.37	3.54	2.43	6.28	.59
17	24.0	0	0	.04	2.15	9.92	1.16	.02	.12	3.00	3.06	.75
18	.56	0	0	5.44	1.18	5.11	.42	.02	.48	26.4	4.73	.66
19	.02	4.13	1.48	2.86	2.14	*2.77	.34	.02	7.22	*8.53	6.94	.50
20	.19	2.56	.66	.52	1.43	2.90	.32	.02	29.7	6.27	2.49	.38
21	0	1.52	.05	.45	11.0	15.9	.15	.01	22.6	1.81	2.09	.25
22	0	8.15	.03	.51	10.2	2.69	.27	0	15.0	3.06	2.03	.21
23	.01	2.43	.02	2.02	10.3	2.53	.21	0	32.4	1.43	A1.5	.18
24	1.65	.14	0	.52	2.78	8.96	.22	0	2.39	.86	A1.0	.16
25	.02	.02	0	.14	2.91	3.07	.15	0	4.16	18.6	A.80	.15
26	.08	.50	0	6.84	1.74	2.23	.08	3.40	.85	3.90	A1.1	.15
27	.03	.17	.02	20.2	2.99	1.74	.08	5.73	.91	1.42	A.90	.18
28	0	1.56	.01	23.1	2.75	1.54	3.78	.02	2.58	.91	A.74	.53
29	0	3.16	0	5.02	1.88	.95	.23	------	8.97	.73	A.62	5.26
30	0	.03	7.22	3.01	3.26	.56	.02	------	.60	.82	A.54	1.86
31	.14	.90	------	19.2	------	.56	.02	------	.14	------	A.70	------
TOTAL	31.35	55.96	28.43	114.52	140.80	152.16	55.92	12.30	345.82	102.29	108.32	21.72
MEAN												
MGD	1.01	1.81	0.948	3.69	4.69	4.91	1.80	0.439	11.2	3.41	3.49	0.724
CFS	1.56	2.79	1.47	5.71	7.26	7.59	2.79	0.680	17.3	5.27	5.40	1.12
AC-FT	96	172	87	351	432	467	172	38	1,060	314	332	67

CALENDAR YEAR	1961:	MAX	46.3	MIN	0	MEAN MGD	2.08	MEAN CFS	3.22	AC-FT	2,330
FISCAL YEAR	1961-62:	MAX	70.3	MIN	0	MEAN MGD	3.20	MEAN CFS	4.95	AC-FT	3,590

* Discharge measurement made on this day.
A No gage-height record.

2110. Poamoho Stream near Wahiawa

Location.--Lat 21°31'25", long 157°58'55", on left bank just below concrete diversion dam, 3.5 miles northeast of Wahiawa, and 9.5 miles north of Waipahu.

Drainage area.--1.79 sq mi.

Records available.--January 1947 to June 1962.

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

Average discharge.--15 years, 2.50 mgd (3.87 cfs).

Extremes.--Maximum discharge during year, 894 mgd (1,380 cfs) Oct. 31 (gage height, 5.57 ft), from rating curve extended above 49 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) on several days in November and December.

1947-62: Maximum discharge, 1,000 mgd (1,550 cfs) Oct. 23, 1958 (gage height, 6.06 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 previous page) diverts from Poamoho Stream, about 175 ft above station, into North Fork Kaukonahua Stream.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.01	0	0.7	4.15
.1	.04	.9	7.70
.2	.19	1.1	12.7
.3	.47	1.4	25.5
.4	.99	1.9	65.0
.5	1.77		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	9.27	2.15	2.15	0.99	16.8	0.03	0.43	0.99	4.29	3.45	0.79	0.23
2	2.05	1.85	1.77	.85	.02	.03	.39	.74	1.86	2.96	.74	.23
3	1.77	1.50	1.68	.85	.02	.03	.33	.55	1.50	2.83	.69	.23
4	5.86	1.25	1.41	.92	.02	.03	.30	.47	.79	2.60	.69	.23
5	4.89	1.77	1.50	.92	.01	.05	.28	.43	2.07	2.46	.69	.23
6	2.23	1.77	.85	.85	*.02	.03	.21	*.39	3.55	2.15	.69	*.21
7	1.33	1.85	.74	1.11	.01	.02	.79	.36	3.19	1.85	.69	.21
8	1.41	*1.68	.64	.99	.01	.01	.59	.36	3.05	1.77	.69	.19
9	2.33	1.68	.74	.99	.01	.01	1.10	1.04	*2.72	1.85	.69	.19
10	4.35	1.60	1.33	.92	.02	.01	.74	.43	1.25	2.05	.69	.19
11	1.50	1.18	1.18	.85	.02	.01	.69	.33	4.03	1.77	.59	.21
12	2.27	.99	1.04	.79	.03	.02	.64	.30	58.7	1.41	.51	.19
13	2.05	.85	.79	.74	.03	.03	.64	.28	.03	1.50	.43	.19
14	1.41	1.33	.79	.69	.01	.05	.59	4.20	27.5	2.15	.39	.19
15	1.04	1.33	.85	.69	.02	.03	.59	1.50	.03	2.25	.47	.19
16	1.18	.85	.64	.69	.01	.02	.55	5.16	2.97	2.25	.47	.19
17	3.30	.69	.59	.64	.01	.03	.43	2.37	4.73	2.05	.43	.17
18	2.96	.85	.51	.64	.01	.02	.36	.79	4.73	1.85	.39	.17
19	1.68	1.11	.85	.79	.01	.01	.33	.55	5.40	*1.41	.36	.15
20	2.25	1.33	.79	.69	.01	.02	.33	.74	5.55	1.18	.33	.15
21	1.18	1.25	*.79	.64	.02	.03	.56	.59	5.40	1.04	.30	.15
22	1.04	1.25	.64	.69	.02	.02	.74	.39	5.20	1.04	.30	.15
23	1.51	1.25	.51	.69	.02	.02	.48	.39	5.40	.99	.30	.15
24	2.25	1.11	.51	.64	.01	.02	.33	.51	4.90	.99	.30	.15
25	1.25	.92	.64	.64	.01	.02	1.37	.36	4.90	1.04	.30	.13
26	1.20	.92	.59	.69	.01	.02	1.69	3.09	4.60	.92	.30	.13
27	1.25	.99	.69	2.50	.01	.02	.64	5.54	3.97	.92	.28	.11
28	.92	1.67	.51	.28	.02	.03	4.69	1.60	3.85	.85	.28	.13
29	.92	2.05	.51	.17	.01	.49	4.52	------	3.85	.85	.28	.15
30	1.11	1.18	1.08	.17	.02	.74	1.11	------	3.45	.85	.25	.15
31	.88	1.00	------	38.5	------	.55	1.18	------	3.45	------	.25	------
TOTAL	68.64	41.29	27.31	62.21	17.25	2.45	27.62	34.45	186.91	51.28	14.56	5.34
MEAN												
MGD	2.21	1.33	0.910	2.01	0.575	0.079	0.891	1.23	6.03	1.71	0.470	0.178
CFS	3.43	2.06	1.41	3.10	0.890	0.122	1.38	1.90	9.33	2.64	0.726	0.275
AC-FT	211	126	84	191	53	7.5	85	106	574	157	45	16

CALENDAR YEAR	1961:	MAX	38.5	MIN	0.01	MEAN MGD	1.79	MEAN CFS	2.77	AC-FT	2,000
FISCAL YEAR	1961-62:	MAX	58.7	MIN	0.01	MEAN MGD	1.48	MEAN CFS	2.29	AC-FT	1,660

* Discharge measurement made on this day.

2116. Makaha Stream near Makaha

Location.--Lat 21°30'18", long 158°10'58", on right bank 1.5 miles northeast of Kaneaki Heiau and 3.4 miles northeast of Makaha.

Drainage area.--2.13 sq mi.

Records available.--July 1959 to June 1962.

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

Extremes.--Maximum discharge during year, 756 mgd (1,170 cfs) Mar. 13 (gage height, 6.50 ft, from floodmark), from rating curve extended above 32 mgd on basis of slope-area measurement of peak flow; no flow for many days.

1959-62: Maximum discharge, that of Mar. 13, 1962; no flow at times.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Mar. 17 to Apr. 6)

1.04	0	1.7	4.00
1.1	.02	1.9	8.20
1.2	.11	2.2	19.2
1.3	.35	2.6	44.5
1.4	.80	3.0	85.0
1.5	1.54		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.38	0.33		0	2.67	0.24	0.09	2.33	2.91	1.81	1.06	3.05
2	.21	.26		0	1.83	.18	.09	2.33	1.63	1.54	.92	1.12
3	.14	.18		0	.75	.16	.09	1.61	1.12	.92	.80	.75
4	.09	.12		0	.50	.14	.08	1.28	.80	.75	1.00	.60
5	.08	.18		0	.86	1.63	.08	1.00	.92	.75	1.00	.50
6	.06	.29		0	1.73	4.75	.08	.80	1.28	.75	.92	.46
7	.06	.29		0	.80	2.10	5.46	.70	1.00	.75	7.63	.42
8	.05	.24		0	.60	2.22	.86	*6.16	8.77	.75	3.75	*.38
9	.04	.16		0	.42	1.36	.70	2.45	7.16	.75	3.52	.35
10	.03	.09		0	.32	1.00	.60	1.70	2.95	.75	2.72	.29
11	.03	.07		0	.24	.75	.42	1.36	2.33	.70	1.90	.29
12	.03	.05		0	.21	.65	.29	1.06	6.41	.65	1.61	.29
13	.02	.04		0	.16	.60	.24	1.00	*24.3	.65	1.28	.26
14	.02	.03		.84	.12	.50	.21	1.96	A80	2.05	1.20	.26
15	.02	*.02		1.20	.25	.50	.35	1.20	A22	1.80	.85	.24
16	.03	.02		.42	.60	.38	2.66	6.03	*A12	1.12	1.54	.26
17	.62	.02		.29	*.55	.29	1.20	4.05	4.00	1.61	1.28	.29
18	.42	.02		.24	.42	.26	.75	2.58	2.95	2.18	1.00	.29
19	.24	.02		.24	.74	.26	.65	2.22	2.45	.92	1.00	.26
20	.16	.02		.24	.55	*.24	.50	2.22	1.90	.70	.80	.24
21	.11	.01		.29	.50	.21	.46	1.45	1.61	.60	.92	.21
22	.08	0		.21	.55	.18	1.07	1.20	1.54	.55	1.00	.21
23	.09	0		.16	.95	.18	.60	2.51	1.61	.50	.80	.21
24	.09	.01		.09	.50	.18	.38	1.54	1.28	.46	.70	.18
25	.06	0		.07	.42	.16	.54	1.06	1.45	16.4	.65	.16
26	.06	.01		.05	.35	.14	.65	1.00	1.36	5.36	.70	.16
27	.06	.01		.06	.46	.12	.38	1.12	3.66	2.58	.65	.16
28	.04	0		.09	.65	.11	11.4	.92	12.6	1.90	.50	.16
29	.03	0	(*)	.11	.46	.11	4.76	------	11.1	1.45	.46	.16
30	.03	0		.09	.32	.11	2.58	------	4.19	* 1.20	.46	.16
31	.05	0	-------	3.79	------	.11	3.11	------	2.58	------	.42	------
TOTAL	3.43	2.49	0	8.48	19.48	19.82	41.33	54.84	229.86	52.90	43.04	12.37
MEAN												
MGD	0.111	0.080	0	0.274	0.649	0.639	1.33	1.96	7.41	1.76	1.39	0.412
CFS	0.171	0.124	0	0.423	1.00	0.989	2.06	3.03	11.4	2.73	2.15	0.638
AC-FT	11	7.6	0	26	60	61	127	168	705	162	132	38

CALENDAR YEAR 1961: MAX 13.6 MIN 0 MEAN MGD 0.739 MEAN CFS 1.14 AC-FT 830
FISCAL YEAR 1961-62: MAX 80 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	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-13	2300	6.50	756	1,170	4-25	1000	3.42	138	214

* Discharge measurement or observation of no flow made on this day.
A No gage-height record.

2118. Kaupuni Stream at altitude 360 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.--3.27 sq mi.

Records available.--May 1960 to June 1962.

Gage.--Water-stage recorder and concrete-masonry control. Altitude of gage is 360 ft (from topographic map).

Extremes.--Maximum discharge during year, 446 mgd (690 cfs) Mar. 14 (gage height, 4.06 ft), from rating curve extended above 20 mgd on basis of slope-area measurement of peak flow; no flow most of year.

1960-62: Maximum discharge, that of Mar. 14, 1962; no flow at times each year.

Remarks.--Records good. Records include diversion by 12-inch pipe at station for irrigation. Several water-development tunnels above station may affect flow.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.6	0	1.4	1.35
.7	.05	1.6	3.00
.8	.19	1.9	7.80
.9	.30	2.2	17.7
1.0	.43	2.5	35.0
1.2	.71	2.8	64.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.13						0		0	0	0	
2	.06						0		0	0	0	
3	.06						0		0	0	0	
4	.06						0		0	0	0	
5	*.05						0		0	0	0	
6	.04						0		0	0	0	
7	.04						0		0	0	1.28	
8	.05						0		0	0	.56	
9	.05						0		0	0	0	
10	.06						0		0	0	0	
11	0						0		0	0	0	
12	0						0		*.13	0	0	
13	0						0		.26	0	0	
14	0						0		*58.0	0	0	
15	0						0		4.84	0	0	
16	0						0		*1.77	0	0	
17	0						0		.56	0	0	
18	0						0		.10	0	.18	
19	0						0		0	0	0	
20	0						0		0	0	0	
21	0						0		0	0	0	
22	0						0		0	0	0	
23	0						0		0	0	0	
24	0						0		0	0	0	
25	0						0		0	2.17	0	
26	0						0		0	.15	0	
27	0						0		0	0	0	
28	0						.61		*1.46	0	0	
29	0						.12	---------	1.23	0	0	
30	0						0	---------	0	0	0	
31	0		---------		---------		0	---------	0	------	0	---------
TOTAL	0.60	0	0	0	0	0	0.73	0	68.35	2.32	2.02	0
MEAN												
MGD	0.019	0	0	0	0	0	0.024	0	2.20	0.077	0.065	0
CFS	0.030	0	0	0	0	0	0.036	0	3.41	0.120	0.101	0
AC-FT	1.8	0	0	0	0	0	2.2	0	210	7.1	6.2	0

CALENDAR YEAR 1961: MAX 2.94 MIN 0 MEAN MGD 0.146 MEAN CFS 0.226 AC-FT 162
FISCAL YEAR 1961-62: MAX 58.0 MIN 0 MEAN MGD 0.203 MEAN CFS 0.314 AC-FT 227

Peak discharge (base, 160 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-14	0130	4.06	446	690

* Discharge measurement made on this day.

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 1962.

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

Extremes.--1960-62: 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.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.26	0.15	1.00	0.29	0.20	0.23	0.26	0.20	0.23	0.23	0.29	0.20
2	.23	.20	1.07	.26	.20	.23	.18	.26	.23	.23	.20	.18
3	.23	.29	1.14	.26	.32	.23	.20	.23	.23	.20	.23	.20
4	.23	.23	1.19	.20	.36	.32	.23	.23	.23	.20	.32	.23
5	.26	.29	.93	.18	.36	.39	.29	.32	.23	.26	.23	.23
6	.26	.20	1.00	.18	.36	.20	.32	.32	.20	.20	.20	.23
7	.23	*.18	.94	.15	*.32	.23	.20	.32	.20	.23	.29	.29
8	.39	.15	.73	.15	.29	.29	.23	.23	*.15	.23	.23	.20
9	.32	.15	1.13	.15	.32	.29	.29	.20	.20	.26	.29	.23
10	.32	.23	1.14	.13	.26	.32	.32	.26	.29	.26	.26	.23
11	.20	.20	1.05	.19	.23	.39	.29	.29	.29	.20	.29	.26
12	.23	.23	.77	.18	.23	.36	.26	.23	.20	.23	.29	.23
13	.18	.23	.15	.18	.23	.32	.26	.23	.31	.26	.23	.23
14	.20	.20	.15	.20	.23	.32	.26	.26	.50	.32	.32	.20
15	.23	.18	.15	.20	.32	.29	.32	.26	.20	.23	.36	.20
16	.23	.15	.18	*.18	.32	.32	.23	.26	.36	.20	.39	.26
17	.13	.15	.18	.15	.23	.23	.29	.18	.55	.20	.39	.29
18	.15	.15	.15	.26	.32	.23	.36	.15	.36	.20	.29	.26
19	.23	.20	.15	.36	.32	.26	.26	.23	.29	.18	.36	.26
20	.23	.15	.13	.32	.32	.29	.32	.26	.29	.20	.26	.29
21	.23	.11	.15	.32	.32	.29	.29	.29	.36	.20	.29	.20
22	.26	.15	.15	.32	.26	.29	.36	.29	.32	.20	.26	.23
23	.29	.18	.23	.32	.32	.26	.36	.32	.32	*.20	.20	.23
24	.29	.15	.20	.29	.20	.32	.32	.23	.32	.20	.23	.23
25	.23	.15	.23	.26	.29	.36	.39	.20	.32	.20	.23	.18
26	.29	.23	.23	.23	.23	*.20	.32	.26	.32	.18	.20	.15
27	.26	.23	.20	.23	.32	.18	.32	.23	.36	.29	.23	.18
28	.29	.20	.18	.23	.29	.20	.43	.23	.43	.36	*.23	.15
29	.26	.15	*.18	.20	.20	.23	*.29	--------	.47	.29	.23	.15
30	.26	.18	.29	.32	.23	.20	.26	--------	.23	.29	.20	.23
31	.23	.44	--------	.26	--------	.20	.23	--------	.29	--------	.23	--------
Total	7.63	6.08	15.37	7.15	8.40	8.47	8.94	6.97	9.28	6.93	8.25	6.63
Mean Mgd	0.246	0.196	0.512	0.231	0.280	0.273	0.288	0.249	0.299	0.231	0.266	0.221
Cfs	0.381	0.304	0.793	0.357	0.433	0.423	0.446	0.385	0.463	0.357	0.412	0.342
Ac-ft	23	19	47	22	26	26	27	21	28	21	25	20

Calendar Year 1961:	Max	1.37	Min	0.11	Mean mgd	0.350	Mean cfs	0.542	Ac-ft	393
Fiscal Year 1961-62:	Max	1.19	Min	0.11	Mean mgd	0.274	Mean cfs	0.424	Ac-ft	305

* Discharge measurement made on this day.

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 1962.

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

Average discharge.--5 years, 5.50 mgd (8.51 cfs).

Extremes.--Maximum discharge during year, 868 mgd (1,340 cfs) Mar. 12 (gage height, 7.81 ft), from rating curve extended above 190 mgd as explained below; minimum, 0.10 mgd (0.16 cfs) June 25.

1957-62: Maximum discharge, 1,520 mgd (2,350 cfs) Dec. 6, 1957 (gage height, 9.57 ft), from rating curve extended above 190 mgd on basis of slope-area measurement at gage height 7.96 ft; no flow at times.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 1-16)

2.1	0.06	3.0	10.8
2.2	.17	3.2	18.4
2.4	.87	3.6	42.0
2.6	2.55	4.0	76.0
2.8	5.70	4.3	110

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	13.7	25.4	6.71	1.63	52.1	1.41	0.46	2.55	6.49	3.66	1.21	0.51
2	1.95	4.01	1.93	.82	11.8	1.07	.42	1.55	2.03	2.05	*1.00	.55
3	1.34	1.85	1.15	1.41	4.12	.87	.42	1.00	1.48	1.65	.93	.39
4	1.14	1.34	1.55	4.45	2.55	.82	.39	.78	.87	1.75	.87	.30
5	.87	29.4	.78	2.05	1.95	3.40	.42	.64	6.06	4.96	10.5	.10
6	1.42	5.24	.51	6.23	7.45	15.8	.42	.55	22.7	1.65	3.99	.27
7	.46	4.38	.39	9.96	2.66	3.51	27.4	.51	11.6	1.14	1.21	.33
8	.30	2.45	.33	2.96	1.41	4.27	2.61	.46	18.2	1.07	.87	.27
9	.25	1.85	.39	7.43	1.07	6.52	39.8	1.15	5.03	1.67	2.26	.23
10	.30	*1.55	2.85	5.82	.93	2.45	4.00	.60	2.45	5.63	2.08	.27
11	.51	1.00	14.5	1.85	1.07	1.55	1.85	.39	11.4	1.45	1.14	*.25
12	.25	.82	1.63	1.34	1.21	3.15	1.27	.33	102	.82	1.65	.23
13	.33	.73	.69	1.00	.69	2.02	1.00	.33	10.8	1.60	.93	.23
14	.55	10.8	.46	.73	*13.8	6.20	.82	*1.25	86.8	11.5	.87	.17
15	.25	1.88	.55	4.29	19.4	20.6	.78	1.97	12.2	16.4	37.1	.21
16	.65	.87	.39	2.25	5.65	2.55	9.91	10.2	5.00	15.9	6.72	.78
17	63.1	.64	.30	.78	2.59	3.02	3.21	3.18	3.25	9.80	2.83	.94
18	6.74	.69	.27	6.90	1.85	3.98	1.14	1.00	2.69	40.0	3.69	6.43
19	2.55	1.99	.82	6.63	2.00	1.75	.78	.64	*3.78	5.39	3.50	1.04
20	1.95	5.84	3.09	1.75	2.12	1.55	.69	.55	3.95	5.63	1.93	.36
21	1.75	1.86	1.02	1.21	20.2	7.20	.60	.46	3.54	2.45	1.34	.21
22	1.07	2.20	.46	.87	17.2	*3.35	1.98	.33	6.15	5.45	1.41	.16
23	3.70	2.05	1.90	1.59	5.52	1.48	1.00	.33	27.6	2.55	1.07	.13
24	7.20	1.07	5.45	1.69	2.83	1.21	.64	.36	4.47	1.55	1.00	.12
25	1.95	.64	*5.27	.78	5.07	1.00	10.7	.27	13.8	16.4	.78	.10
26	3.57	.64	4.15	5.57	2.45	.87	3.90	.50	5.01	5.17	.73	.12
27	1.89	1.34	3.08	28.6	5.00	.73	1.34	2.97	2.97	2.55	.69	.19
28	.87	2.55	1.60	14.9	4.36	.69	12.3	1.15	30.8	1.65	.55	.33
29	.73	1.85	.73	9.74	2.25	.64	9.15	------	21.9	1.41	.46	6.05
30	.73	.93	13.0	3.25	1.65	.60	2.25	------	4.04	1.41	.39	2.06
31	1.34	.97	------	16.4	------	.51	2.45	------	2.55	------	.36	------
TOTAL	123.41	118.83	75.55	154.88	202.95	104.77	144.10	36.00	441.61	174.31	94.03	23.53
MEAN												
MGD	3.98	3.83	2.52	5.00	6.77	3.38	4.65	1.29	14.2	5.81	3.03	0.784
CFS	6.16	5.93	3.90	7.73	10.5	5.23	7.19	1.99	22.0	8.99	4.69	1.21
AC-FT	379	365	232	475	623	322	442	110	1,360	535	289	72

CALENDAR YEAR 1961: MAX 120 MIN 0.16 MEAN MGD 4.24 MEAN CFS 6.56 AC-FT 4,760
FISCAL YEAR 1961-62: MAX 102 MIN 0.10 MEAN MGD 4.64 MEAN CFS 7.18 AC-FT 5,200

* Discharge measurement made on this day.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-17	1430	5.36	267	413	3-12	0630	7.81	868	1,340
11-1	1530	6.26	445	689	3-14	0200	7.36	733	1,130
1-9	1030	5.12	228	353					

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.--44.9 sq mi.

Records available.--June to October 1951, December 1951 to Oct. 1959, July 1960 to June 1962.

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.--9 years (1952-59, 1960-62), 23.5 mgd (36.4 cfs).

Extremes.--Maximum discharge during year, 1,910 mgd (2,960 cfs) Mar. 14 (gage height, 6.69 ft), from rating curve extended above 460 mgd; minimum, 5.70 mgd (8.82 cfs) June 7.

1951-62: Maximum discharge, 8,790 mgd (13,600 cfs) Nov. 28, 1954 (gage height, 14.82 ft), from rating curve extended above 470 mgd on basis of slope-area measurement of peak flow; minimum, that of June 7, 1962.

Revisions.--The maximum discharge for the fiscal year 1961 has been revised to 506 mgd (783 cfs) Feb. 13, 1961, (gage height, 4.07 ft), superseding figure published in Surface Water Records of Hawaii and other Pacific Areas (1961).

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

Revisions.--The revised figure of discharge, in million gallons a day, for a day in the fiscal year 1961, superseding that published in Surface Water Records of Hawaii and other Pacific Areas (1961), is given herewith:

Feb. 13, 1961 145

Month	Mgd-days	Maximum	Minimum	Mean		Runoff in acre-feet
				Mgd	Cfs	
February 1961	686.8	145	14.5	24.5	37.9	2,110
Fiscal year 1960-61	4,826.48	145	7.0	13.2	20.4	14,800

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23	30	12	12.9	137	12.6	12	20.2	15.7	19.8	13.9	10.4
2	11	12	10	10.5	*51.6	12.9	11	18.9	15.3	15.7	10.9	16.9
3	10	11	9.0	11.3	21.9	13.5	11	18.9	18.1	15.3	13.5	16.5
4	11	10	11	10.8	15.3	13.5	11	18.5	18.9	15.3	15.3	11.3
5	11	40	10	10.8	14.5	*15.0	12	18.1	16.1	14.9	17.7	11.0
6	12	20	9.6	10.8	14.5	34.7	20	18.5	18.0	14.2	18.5	10.5
7	11	15	9.2	13.5	15.3	22.0	40	18.5	20.7	16.1	15.7	8.26
8	16	11	9.0	13.9	13.9	16.9	15	18.5	42.8	15.7	15.6	9.22
9	16	*9.22	10	11.3	13.9	14.9	60	18.1	19.4	15.3	9.22	15.3
10	11	9.48	11	11.0	13.5	14.9	25	18.5	17.7	15.3	9.48	15.3
11	12	8.96	12	10.8	13.2	14.5	15	18.1	20.1	14.9	8.49	11.3
12	11	11.0	10	10.8	13.2	14.5	13	17.7	177	14.2	12.6	11.0
13	12	11.6	8.49	10.8	13.5	14.9	12	17.3	51.7	14.2	12.3	10.8
14	13	8.96	8.07	12.9	13.5	15.3	12	16.5	491	17.9	9.48	8.70
15	12	9.22	*7.97	13.5	13.5	17.7	11	16.1	80.2	42.8	21.6	7.02
16	15	8.49	10.3	11.3	14.2	16.9	20	*23.5	*48.9	32.2	24.9	10.5
17	90	8.28	10.8	12.3	13.5	16.1	15	21.2	32.8	21.6	15.3	11.3
18	20	8.96	10	11.3	13.2	16.1	13	17.3	29.2	69.8	14.9	9.22
19	15	14.2	9.0	17.8	13.9	15.7	12	16.5	23.0	28.1	17.7	8.70
20	13	18.0	11	17.7	14.5	13.9	11	17.7	20.7	19.8	17.3	8.07
21	12	8.70	10	16.9	13.9	12.9	11	17.3	19.4	18.1	14.5	8.07
22	11	8.49	8.96	17.3	18.1	11.9	13	15.7	21.6	16.9	14.2	*8.41
23	13	8.28	13.9	14.9	24.0	12.6	12	16.5	41.9	13.5	13.9	8.56
24	17	8.28	14.5	10.5	15.7	13.2	11	18.9	25.5	*12.6	13.9	8.70
25	13	8.07	10.0	10.8	14.2	14.9	23	19.4	25.5	34.4	13.9	7.02
26	15	11.6	11.6	*12.2	14.2	14.9	20	18.1	25.5	26.9	15.7	7.02
27	13	12.9	10.8	15.7	13.5	13.5	15	17.7	18.1	16.9	16.9	7.23
28	12	8.70	10.5	16.9	13.5	13.2	25	17.3	19.4	19.8	13.5	7.65
29	11	8.49	10.5	16.5	13.2	13	22	----------	37.2	19.4	11.6	7.44
30	11	7.86	12.9	12.6	12.9	13	*20	----------	18.5	14.5	12.9	7.65
31	15	8.28	----------	20.2	----------	12	19.4	----------	19.8	----------	10.6	----------
Total	488	375.02	312.09	410.5	600.8	471.6	542.4	509.5	1449.7	626.1	445.97	299.44
Mean												
Mgd	15.7	12.1	10.4	13.2	20.0	15.2	17.5	18.2	46.8	20.9	14.4	9.98
Cfs	24.3	18.7	16.1	20.4	30.9	23.5	27.1	28.2	72.4	32.3	22.3	15.4
Ac-ft	1500	1150	958	1260	1840	1450	1660	1560	4450	1920	1370	919

Calendar Year 1961: Max 145 Min 7.0 Mean mgd 14.6 Mean cfs 22.6 Ac-ft 16,390
Fiscal Year 1961-62: Max 491 Min 7.02 Mean mgd 17.9 Mean cfs 27.7 Ac-ft 20,040

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-14	0500	6.69	1,910	2,960

* Discharge measurement made on this day.
Note.--No gage-height record July 1 to Aug. 8, Sept. 1-12, 18-21, Dec. 29 to Jan. 30.

2140. Pearl Harbor Springs at Waiawa, near Pearl City

Location.--Lat 21°23'35", long 157°59'10", on right bank at rear of Oahu Sugar Co. pumping plant 9, 0.7 mile west of Pearl City and 9.8 miles northwest of Honolulu.

Records available.--March 1931 to June 1934, July 1937 to June 1962.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 0.73 ft below mean sea level, datum of 1929.

Average discharge.--28 years, 11.6 mgd (17.9 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-62: Maximum daily discharge, 18.7 mgd (28.9 cfs) Feb. 27, 1949; minimum daily, 2.98 mgd (4.61 cfs) Sept. 26, 1961.

Remarks.--Records good except those for period of no gage-height record, which are fair. Oahu Sugar Co. pump 9 diverts about 3 mgd at times for irrigation of sugar cane. Surface runoff from floods not included in figures of discharge.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	8.40	4.25	4.45	5.2		8.0	9.36	*9.04	6.74	9.36	6.82	5.00
2	8.40	4.00	6.80	5.0		8.0	6.19	8.72	6.90	7.34	5.90	7.44
3	8.40	4.43	6.80	5.0		8.2	6.33	8.72	9.04	7.47	5.57	7.44
4	8.40	7.44	6.80	4.3		6.6	6.62	8.72	8.72	6.82	5.91	5.36
5	6.11	7.44	4.93	4.1		9.0	7.00	8.72	6.49	5.88	6.49	4.50
6	6.17	7.44	4.00	3.9		9.0	10.0	8.72	6.23	6.90	6.07	4.00
7	7.15	5.41	4.00	3.8		*9.0	10.0	*9.36	5.48	8.72	5.96	4.00
8	8.40	5.57	4.35	5.4		9.0	7.05	9.36	8.40	9.04	7.76	4.00
9	8.40	5.05	6.80	4.0		8.08	6.91	9.68	8.40	6.95	7.76	4.00
10	8.40	*6.29	6.80	3.1		8.08	7.47	9.68	8.40	7.86	6.27	4.00
11	8.08	5.29	4.76	3.1		8.40	6.16	9.68	8.40	8.13	4.78	4.25
12	8.08	7.44	4.63	3.1		6.23	6.95	8.35	8.40	7.00	5.04	4.00
13	8.08	7.44	4.36	3.1		5.60	9.04	6.33	8.40	6.23	5.65	4.00
14	8.08	6.82	3.37	3.1		6.87	9.04	5.90	8.40	8.40	5.62	4.00
15	8.08	5.00	3.42	3.1	7.0	6.74	6.95	5.90	9.04	8.72	5.06	4.31
16	8.08	4.00	6.80	3.1		8.72	8.78	7.86	9.04	6.23	5.06	6.50
17	5.84	4.00	6.80	4.0		9.04	9.04	9.04	9.04	5.06	5.06	6.80
18	4.91	5.43	3.97	3.7		7.15	9.04	9.04	9.04	7.38	6.42	4.51
19	6.35	7.44	4.00	3.4		7.00	9.04	9.04	*9.36	8.40	8.72	4.00
20	5.32	7.44	3.22	5.6		6.62	9.36	9.04	9.36	9.04	8.72	4.00
21	6.67	5.46	4.00	6.0		6.62	9.36	9.04	9.36	8.40	5.96	*3.74
22	7.76	5.59	3.61	6.0		6.23	9.04	9.04	9.36	8.40	5.34	3.74
23	7.76	5.43	5.34	6.0		8.72	9.04	9.04	9.36	6.23	5.06	4.28
24	5.10	5.59	5.34	4.0		8.72	9.04	9.04	9.36	*5.34	5.34	6.50
25	4.50	4.73	3.82	4.1		8.72	9.04	9.36	9.36	7.17	5.60	4.46
26	4.50	6.80	2.98	*4.7		8.45	9.04	9.36	8.18	8.72	8.40	3.74
27	5.42	6.80	3.93	6.0		6.42	9.04	6.69	7.52	8.72	8.40	3.48
28	5.62	4.70	5.2	7.4		9.04	9.04	6.29	7.52	8.72	5.23	3.48
29	7.44	4.45	3.6	8.4		9.04	9.04	------	7.52	8.72	5.19	3.48
30	7.44	4.47	5.2	8.6		9.04	9.04	------	7.34	8.72	5.74	5.90
31	4.72	4.35	------	8.8	---------	9.36	9.04	------	9.36	------	4.78	------
TOTAL	216.06	175.99	144.08	149.1	210.0	245.69	260.09	238.76	257.52	230.07	189.68	138.91
MEAN												
MGD	6.97	5.68	4.80	4.81	7.0	7.93	8.39	8.53	8.31	7.67	6.12	4.63
CFS	10.8	8.78	7.43	7.44	10.8	12.3	13.0	13.2	12.9	11.9	9.47	7.16
AC-FT	663	540	442	458	644	754	798	733	790	706	582	426

CALENDAR YEAR	1961:	MAX	10.9	MIN	2.98	MEAN MGD	7.55	MEAN CFS	11.7	AC-FT	8,460
FISCAL YEAR 1961-62:		MAX	10.0	MIN	2.98	MEAN MGD	6.73	MEAN CFS	10.4	AC-FT	7,540

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 28 to Dec. 8.

2160. Waiawa Stream near Pearl City

Location.--Lat 21°23'55", long 157°58'50", on left bank 100 ft upstream from 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 1962.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1.81 ft above mean sea level, datum of 1929.

Average discharge.--10 years, 14.7 mgd (22.7 cfs)

Extremes.--Maximum discharge during year, 1,450 mgd (2,240 cfs) Mar. 12 (gage height, 8.13 ft), from rating curve extended above 680 mgd as explained below; minimum, 2.30 mgd (3.56 cfs) July 22.

1952-62: 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, 1.67 mgd (2.58 cfs) June 8, 1957.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.5	1.92	2.5	30.3
1.6	2.90	2.8	53.9
1.8	5.50	3.1	87.0
2.0	9.27	3.5	151
2.2	15.2	3.9	240

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	30	60	7.4	5.0	100	5.6	3.20	10.2	4.63	7.10	3.10	4.06
2	9.10	25	4.5	3.6	35	5.2	3.20	7.04	4.78	5.21	3.00	3.57
3	5.50	9.0	3.5	4.0	12	5.0	3.57	5.21	4.20	3.93	3.10	3.30
4	4.49	4.0	4.5	5.4	9.0	5.0	3.93	4.34	3.69	3.69	3.20	3.10
5	9.25	90	3.7	4.7	7.0	10	4.34	3.80	3.45	3.69	11.8	3.10
6	5.10	25	3.0	5.8	13	20	4.06	3.20	34.5	3.93	10.9	3.20
7	3.57	18	2.5	6.4	9.0	13.8	35	3.00	23.7	3.80	5.35	3.80
8	3.00	9.0	2.4	4.0	7.2	10.0	7.10	3.00	41.8	3.45	3.93	4.38
9	2.90	*5.0	3.0	6.0	6.2	11.7	56	3.00	15.1	3.92	4.06	4.92
10	3.53	4.0	10	5.2	6.0	8.27	11.7	3.10	8.04	3.57	4.20	5.10
11	3.00	3.5	35	4.2	6.6	5.50	7.18	3.00	6.22	3.57	4.20	4.92
12	5.69	3.2	14	3.6	7.0	5.06	5.32	2.90	214	3.45	5.16	4.92
13	4.63	3.0	6.0	3.3	5.0	6.36	4.06	3.00	31.8	3.20	5.17	5.42
14	3.30	13	2.8	3.2	20	5.50	3.69	3.20	218	5.97	4.43	6.28
15	3.10	7.0	3.0	5.0	25	17.7	3.69	3.69	44.0	21.2	37.5	6.51
16	3.00	4.0	2.80	4.0	15	7.33	25.3	8.93	*18.8	21.9	19.7	5.06
17	150	2.8	2.5	3.3	10	4.49	16.1	9.90	10.4	7.96	8.41	4.34
18	20	3.0	2.4	6.0	7.0	3.88	6.66	5.50	7.42	101	9.66	4.81
19	5.67	4.5	3.0	5.6	7.4	4.51	4.78	4.20	6.79	20.7	7.42	4.06
20	3.93	7.0	4.0	4.5	8.0	4.07	3.69	3.69	5.50	12.7	5.50	4.06
21	3.10	4.0	3.5	4.0	25	11.2	3.3	3.30	4.63	7.22	4.79	4.54
22	2.90	4.5	3.0	3.7	19	13.0	8.0	3.10	5.71	6.61	4.70	*5.08
23	3.10	4.0	4.0	5.2	12	5.67	5.0	3.20	25.5	6.36	5.75	5.56
24	3.80	3.3	5.8	5.4	8.4	4.34	3.5	3.00	9.53	5.13	4.49	5.54
25	3.93	2.8	5.6	3.5	10	3.45	12	2.90	13.4	21.0	4.06	4.49
26	3.69	2.8	5.0	*7.0	8.0	3.20	8.0	2.80	11.4	19.6	3.93	4.49
27	3.30	3.8	4.2	40	10	3.30	6.0	5.61	5.84	*7.97	4.20	4.75
28	3.1	5.0	3.8	25	8.6	3.30	15	4.78	4.78	5.21	4.20	5.86
29	3.0	4.0	3.4	15	7.2	3.30	10	----------	55.7	3.93	4.43	5.79
30	3.0	3.1	6.8	9.0	6.4	3.45	7.0	----------	11.5	3.30	4.69	4.92
31	7.0	3.2	---------	35	---------	3.20	*8.2	----------	6.22	---------	4.89	----------
Total	318.68	340.5	165.10	245.6	430.0	216.38	298.57	122.59	861.03	330.27	209.92	139.93
Mean Mgd	10.3	11.0	5.50	7.92	14.3	6.98	9.63	4.38	27.8	11.0	6.77	4.66
Cfs	15.9	17.0	8.51	12.3	22.1	10.8	14.9	6.77	43.0	17.0	10.5	7.22
Ac-ft	978	1,040	507	754	1,320	664	916	376	2,640	1,010	644	429

Calendar Year 1961: Max 331 Min 2.2 Mean mgd 9.24 Mean cfs 14.3 Ac-ft 10,340
Fiscal Year 1961-62: Max 218 Min 2.4 Mean mgd 10.1 Mean cfs 15.6 Ac-ft 11,280

Peak discharge (base, 800 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-9	-	7.51	1,200	1,860	3-14	0300	7.80	1,320	2,040
3-12	0800	8.13	1,450	2,240					

* Discharge measurement made on this day.
Note.--No gage-height record July 1, 17, 18, July 28 to Sept. 15, Sept. 17 to Dec. 6, Jan. 7, 9, 21-31.

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 1962.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 2.91 ft above mean sea level, datum of 1929. Prior to July 1, 1952, at site 120 ft downstream at datum 2.27 ft lower.

Average discharge.--12 years (1940-41, 1944-45, 1952-62), 10.5 mgd (16.2 cfs).

Extremes.--1939-45, 1952-62: 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 of powerplant and is then discharged into Pearl Harbor.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	10.5	10.2	9.90	9.90	10.5	10.6	10.8	11.2	11.0	11.2	10.9	10.7
2	10.6	10.2	9.90	9.79	10.5	10.6	10.7	11.2	11.0	11.2	10.9	10.7
3	10.6	10.2	9.90	9.79	10.5	10.7	10.7	11.2	11.0	11.1	10.9	10.7
4	10.7	10.1	10.0	9.79	10.5	10.7	10.6	11.2	11.0	11.1	10.8	10.6
5	10.6	10.2	10.1	9.79	10.6	10.8	10.6	11.2	11.0	11.0	10.8	10.6
6	10.5	10.3	10.0	9.79	10.6	10.8	10.7	11.2	11.0	11.0	10.9	10.6
7	10.5	10.2	10.0	9.90	10.6	10.8	10.9	11.2	11.0	11.0	10.8	10.5
8	10.3	10.2	10.0	9.90	10.6	10.8	10.8	11.1	11.2	11.0	10.8	10.5
9	10.5	10.1	10.0	9.90	10.5	10.8	10.7	11.1	11.0	11.0	10.8	10.3
10	10.3	10.0	10.0	9.90	10.5	10.8	10.7	11.2	11.0	11.0	10.8	10.2
11	10.3	9.90	10.0	9.90	10.6	10.8	10.6	11.2	11.0	11.0	10.7	10.5
12	10.3	10.0	10.0	9.79	10.6	10.8	10.6	11.1	11.1	10.9	10.7	10.5
13	10.3	10.0	*9.85	9.90	10.6	10.7	10.7	11.1	11.2	10.9	10.7	10.5
14	10.3	9.90	9.90	9.90	10.5	10.7	10.8	11.0	11.4	10.9	10.7	10.5
15	10.3	9.90	9.90	10.0	10.5	10.7	10.8	11.0	11.2	11.0	10.7	10.5
16	10.3	9.90	9.90	9.90	10.5	10.8	10.9	11.1	11.4	10.9	10.7	10.5
17	10.3	10.0	9.90	9.90	10.5	10.8	10.9	11.1	11.4	10.9	10.7	10.5
18	10.3	10.0	9.79	9.90	10.5	10.7	11.0	11.1	11.4	10.9	10.7	10.5
19	10.3	10.0	9.79	9.90	10.6	10.7	11.0	11.1	11.4	10.8	10.7	10.5
20	10.3	10.0	9.79	10.1	10.5	10.7	11.0	11.1	11.4	11.0	10.7	10.5
21	10.3	10.0	9.79	10.2	10.5	10.7	10.9	11.1	11.4	11.0	10.7	*10.5
22	10.3	10.0	9.79	10.2	10.5	10.7	10.8	11.1	11.4	11.0	10.7	10.3
23	10.3	10.0	9.79	10.2	10.6	10.8	11.2	11.1	11.4	10.9	10.7	10.5
24	10.3	9.90	9.90	10.1	10.6	10.8	11.1	11.1	11.4	*10.8	10.7	10.5
25	10.2	10.0	9.90	10.1	10.6	10.8	11.1	11.1	11.4	11.0	10.7	10.5
26	10.2	10.0	9.79	10.1	10.7	10.7	11.1	11.1	11.4	11.0	10.8	10.5
27	10.2	10.0	9.90	10.2	10.7	10.7	11.1	11.1	11.2	11.0	10.8	10.3
28	10.2	10.0	9.90	10.2	10.6	10.7	11.4	11.0	11.2	11.0	10.7	10.3
29	10.3	9.90	9.79	10.2	10.6	10.7	11.4	------	11.2	11.0	10.7	10.3
30	10.3	9.90	9.90	10.2	10.6	10.7	11.4	------	11.1	10.9	10.7	10.5
31	10.2	9.90	------	10.2	------	10.8	*11.2	------	11.2	------	10.6	------
TOTAL	320.9	310.90	297.07	309.54	316.8	332.9	338.2	311.4	347.4	329.4	333.2	314.6
MEAN												
MGD	10.4	10.0	9.90	9.99	10.6	10.7	10.9	11.1	11.2	11.0	10.7	10.5
CFS	16.0	15.5	15.3	15.4	16.3	16.6	16.9	17.2	17.3	17.0	16.6	16.2
AC-FT	985	954	912	950	972	1,020	1,040	956	1,070	1,010	1,020	965

CALENDAR YEAR	1961:	MAX	11.4	MIN	9.68	MEAN MGD	10.3	MEAN CFS	15.9	AC-FT	11,580
FISCAL YEAR 1961-62:		MAX	11.4	MIN	9.79	MEAN MGD	10.6	MEAN CFS	16.4	AC-FT	11,850

* Discharge measurement made on this day.

2230. Waimalu Stream near Aiea

Location.--Lat 21°23'35", long 157°57'02", on right bank 350 ft downstream from bridge on Moanalua Highway, 1.5 miles northwest of Aiea, and 1.6 miles east of Pearl City.

Drainage area.--6.07 sq mi.

Records available.--January 1952 to June 1962.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1.84 ft above mean sea level, datum of 1927. Prior to Feb. 21, 1961, at site 350 ft upstream at different datums.

Average discharge.--10 years, 4.23 mgd (6.54 cfs).

Extremes.--Maximum discharge during year, 488 mgd (755 cfs) Mar. 12 (gage height, 2.91 ft), from rating curve extended above 230 mgd by logarithmic plotting; minimum, 0.25 mgd (0.39 cfs) Feb. 12.

1952-62: Maximum discharge, 2,790 mgd (4,320 cfs) May 14, 1960 (gage height, 9.49 ft, from floodmark), from rating curve extended above 390 mgd on basis of slope-area measurement of peak flow; no flow Sept. 25, Sept. 28 to Oct. 1, 1958.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.2	0.16	0.8	4.55
.3	.38	1.0	9.80
.4	.76	1.2	19.0
.5	1.32	1.4	33.3
.6	2.12	1.6	54.5
.7	3.19		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	8.78	2.73	0.45	0.38	18.9	0.41	0.35	*1.20	1.51	3.84	0.38	0.60
2	2.44	1.16	.38	.35	17.0	.38	.35	.76	1.29	.98	.35	.40
3	1.15	.49	.41	.45	4.07	.35	.45	.53	.53	.68	.41	.40
4	.76	.38	.35	.60	1.56	.33	.41	.41	.35	.49	.49	.40
5	.53	5.25	.35	*.49	.92	*.55	.45	.35	.31	.45	16.5	.40
6	.49	2.62	.41	.50	.68	2.94	.59	.35	19.8	.53	3.07	.40
7	.76	.98	.53	1.23	1.28	1.67	.80	.35	4.61	.49	.76	.40
8	.92	.57	.60	.60	.68	1.04	.49	.35	8.36	.41	1.02	.40
9	.81	.45	.68	1.26	.53	1.15	52.7	.31	3.87	.41	.91	.40
10	.72	*.35	.64	.98	.60	.87	3.91	.31	1.64	.72	.57	.54
11	.60	.38	.64	2.44	.72	.82	.98	.29	.76	.60	.50	.50
12	.57	.38	.81	1.20	.68	.64	.45	.29	44.9	.45	.50	.50
13	.49	.33	*1.04	1.02	.60	.53	.41	.29	6.94	.41	.50	.50
14	.45	5.16	.76	.76	1.47	.64	.41	.41	*26.0	.73	.50	*.70
15	.60	.76	.64	.57	8.88	.81	.41	.45	10.9	16.6	7.0	.60
16	.53	.41	.49	.76	1.96	.81	1.79	*3.36	3.08	5.30	5.0	.80
17	*51.2	.38	.41	.60	1.09	.64	2.54	2.28	1.64	1.96	*4.0	.80
18	14.4	.41	.35	.45	.72	.64	.93	.92	.92	36.5	5.0	.60
19	2.54	.57	.35	.41	.60	.72	.64	.53	.60	6.25	2.0	.54
20	1.20	.68	.35	.41	.49	.87	.49	.60	.64	2.44	1.0	.50
21	.68	.72	.36	.38	1.12	.76	.41	.49	.45	5.00	*.56	.45
22	.53	.64	.35	.37	2.80	.68	.45	.31	.41	6.31	.50	.45
23	.49	.64	.45	.29	2.04	.53	.33	.31	2.00	1.64	.45	.45
24	.45	.57	.53	.27	1.26	.45	.33	.27	1.15	.87	.43	.49
25	.84	.57	.60	.35	.76	.41	.35	.27	3.59	6.20	.40	.49
26	1.02	.49	.76	.49	.57	.38	.33	1.03	2.64	4.07	.50	.49
27	.87	.53	.72	15.8	.71	.35	.33	3.54	1.48	*1.40	.60	*.49
28	.68	.68	.60	2.86	1.04	.38	9.21	1.40	1.26	.81	.50	.49
29	.64	.68	.53	1.64	.68	.41	15.7	------	25.5	.57	.45	.49
30	.64	.57	.45	.98	.49	.53	2.33	------	2.65	.35	.40	.49
31	.49	.45	------	2.45	------	.45	1.26	------	1.15	------	.50	--------
TOTAL	97.27	30.98	15.99	41.34	74.90	22.14	100.58	21.96	180.93	107.46	55.75	15.16
MEAN												
MGD	3.14	0.999	0.533	1.33	2.50	0.714	3.24	0.784	5.84	3.58	1.80	0.505
CFS	4.85	1.55	0.825	2.06	3.86	1.10	5.02	1.21	9.03	5.54	2.79	0.781
AC-FT	299	95	49	127	230	68	309	67	555	330	171	47

CALENDAR YEAR 1961:	MAX	51.2	MIN	0.25	MEAN MGD	1.66	MEAN CFS	2.57	AC-FT	1,860
FISCAL YEAR 1961-62:	MAX	52.7	MIN	0.27	MEAN MGD	2.09	MEAN CFS	3.23	AC-FT	2,350

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-17	1600	2.53	300	464	3-12	1000	2.91	488	755
1- 9	1030	2.71	390	603					

* Discharge measurement made on this day.
Note.--No gage-height record May 11 to June 30.

2240. Pearl Harbor Springs at Kalauao, near Aiea

Location.--Lat 21°23'05", long 157°56'45", on left bank 900 ft downstream from Oahu Sugar Co. pump 6, 1.1 miles west of Aiea, and 7.6 miles northwest of Honolulu.

Records available.--March 1931 to June 1962.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1.38 ft below mean sea level, datum of 1929.

Average discharge.--31 years, 15.8 mgd (24.4 cfs), unadjusted for pumpage.

Extremes.--1931-62: Maximum daily discharge, 25 mgd (39 cfs) Feb. 17-26, 1938, Feb. 23, 24, 1955; minimum daily, 7.06 mgd (10.9 cfs) Aug. 10, 1960.

Remarks.--Records good. When water is needed for irrigation of sugar cane, Oahu Sugar Co. pump 6 diverts about 7 mgd as a high-lift pump or 9 mgd as a low-lift pump. Surface runoff from floods not included in figures of discharge.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.6	9.44	11.1	14.2	16.7	15.4	16.3	16.7	12.5	16.7	15.9	15.4
2	14.6	14.2	13.8	11.8	16.3	15.4	12.9	*16.3	15.4	16.7	15.9	15.4
3	14.6	13.8	13.8	11.8	16.3	15.4	13.8	16.3	15.4	16.7	*15.4	15.0
4	14.6	13.8	13.8	14.2	15.9	15.9	16.3	16.3	15.4	16.3	15.4	15.0
5	14.6	13.8	11.0	14.2	16.3	11.9	16.3	16.3	15.4	16.3	15.4	15.4
6	14.6	13.8	14.2	10.2	16.7	14.6	16.7	16.3	15.9	16.3	15.0	15.4
7	10.2	14.2	14.2	13.8	15.9	16.3	16.7	15.9	15.4	16.3	15.0	12.8
8	14.6	14.2	13.8	13.8	15.4	16.3	16.3	15.9	15.4	16.3	15.4	15.9
9	14.6	14.2	13.8	10.3	15.4	16.3	16.3	15.9	15.4	15.9	15.4	15.4
10	10.2	14.2	13.3	12.5	15.4	16.3	15.9	15.9	15.4	15.9	15.4	15.4
11	11.2	*10.6	13.3	12.5	15.4	16.3	15.9	15.9	15.4	15.9	15.4	15.4
12	11.1	14.2	9.50	13.3	15.4	16.3	15.9	15.9	15.4	15.9	15.4	11.1
13	11.5	14.2	10.7	11.5	15.4	15.9	15.9	15.9	15.9	15.9	14.9	11.4
14	11.8	10.8	12.8	14.6	15.4	16.3	16.3	15.4	15.9	15.9	12.2	13.1
15	14.6	10.4	15.9	15.4	15.0	13.9	16.7	15.4	15.9	15.9	12.6	13.0
16	14.6	10.8	13.3	14.6	15.0	15.9	16.7	15.4	15.9	15.9	13.5	15.4
17	13.4	11.5	13.3	14.2	15.0	15.9	16.7	15.9	16.3	15.9	15.4	15.4
18	14.6	9.50	13.3	14.2	15.0	15.6	13.1	15.9	16.3	15.9	15.4	15.4
19	14.2	13.8	13.3	11.2	15.4	15.9	13.4	15.9	*16.3	15.9	15.4	15.4
20	14.2	13.8	7.77	14.6	15.4	15.9	16.7	15.9	16.7	15.9	15.4	15.4
21	14.2	13.8	7.72	14.6	15.4	13.4	16.7	15.9	16.7	15.4	15.4	11.7
22	14.2	13.8	8.51	14.6	15.4	12.0	15.8	15.9	16.7	15.4	15.4	13.2
23	14.2	13.8	10.5	14.6	15.4	15.9	13.1	15.9	16.7	15.9	13.7	15.4
24	14.6	13.3	13.3	10.3	15.4	15.9	14.0	15.9	19.2	15.9	14.4	15.4
25	10.3	13.3	13.3	10.3	15.4	15.9	16.7	15.9	20.3	15.9	11.7	15.4
26	10.8	13.8	10.0	13.0	15.4	13.2	14.9	15.9	16.7	15.9	15.4	15.4
27	11.0	13.8	13.3	13.3	15.4	13.1	17.2	15.9	16.7	15.9	15.4	15.4
28	10.8	9.96	13.3	16.3	15.4	13.5	17.2	15.4	16.7	15.9	13.9	15.4
29	13.8	9.96	10.7	16.7	15.4	12.8	17.2	--------	16.7	15.9	13.8	15.4
30	13.8	10.1	14.2	16.7	15.4	16.3	13.1	--------	16.7	15.9	15.4	15.4
31	10.6	11.4	--------	16.7	--------	16.3	14.6	--------	16.7	--------	15.4	--------
Total	406.7	392.26	370.80	420.0	466.7	470.0	485.3	446.0	501.4	480.4	459.7	440.2
Mean												
Mgd	13.1	12.7	12.4	13.5	15.6	15.2	15.7	15.9	16.2	16.0	14.8	14.7
Cfs	20.3	19.6	19.2	20.9	24.1	23.5	24.3	24.6	25.1	24.8	22.9	22.7
Ac-ft	1250	1200	1140	1290	1430	1440	1490	1370	1540	1470	1410	1350

Calendar Year 1961:	Max	17.6	Min	7.72	Mean mgd	14.2	Mean cfs	22.0	Ac-ft	15,910
Fiscal Year 1961-62:	Max	20.3	Min	7.72	Mean mgd	14.6	Mean cfs	22.6	Ac-ft	16,380

* Discharge measurement made on this day.

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 1962.

Gage.--Water-stage recorder and concrete control. Datum of gage is 12.75 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 1.26 mgd (1.95 cfs).

Extremes.--Maximum discharge during year, 317 mgd (490 cfs) Nov. 1 (gage height, 3.88 ft), from rating curve extended above 50 mgd on basis of slope-area measurement at gage height 6.29 ft; minimum, 0.05 mgd (0.08 cfs) Sept. 15-20, 25-27, Oct. 5-7, 12, 13.

1957-62: Maximum discharge, 1,160 mgd (1,790 cfs) May 14, 1960 (gage height, 6.29 ft), from rating curve extended above 61 mgd on basis of slope-area measurement of peak flow; minimum, 0.02 mgd (0.03 cfs) on several days in 1959 and 1960.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.05	0.9	3.20
.5	.27	1.0	4.75
.6	.64	1.2	9.30
.7	1.20	1.5	19.5
.8	2.00	1.8	35.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.61	0.10	0.08	0.07	28.8	0.16	0.19	0.99	2.75	2.90	0.30	0.28
2	.70	.10	.08	.07	13.2	.16	.19	.42	.88	1.02	.33	.21
3	.10	.10	.08	.07	1.71	.16	.19	.30	.72	.59	.30	.21
4	.12	.10	.08	.07	.37	.19	.19	.18	1.01	.54	.33	.21
5	.12	5.49	.08	.05	.19	.38	.22	.14	1.58	.30	5.83	.21
6	.12	.48	.08	.10	.42	3.55	.21	.14	8.47	.14	1.82	.21
7	.14	.12	.07	.05	.64	1.52	1.53	.14	2.70	.16	.39	.21
8	.12	.10	.07	.07	.21	*1.57	.24	2.48	4.67	.16	.33	.21
9	.12	.10	.07	.08	.19	.54	23.9	.58	4.27	.39	.27	.21
10	.12	*.08	.07	.07	.19	.36	1.67	.16	1.14	.89	.24	.24
11	.12	.08	.08	.07	.19	.21	.27	.64	.93	.14	.24	.21
12	.12	.08	.07	.07	.21	.21	.17	1.07	24.7	.14	.24	.21
13	.12	.08	*.07	.07	.21	.19	.12	.15	4.34	.16	.24	.21
14	.10	.08	.07	.07	1.63	.19	.14	.16	*14.3	1.12	.24	.24
15	.12	.08	.07	.08	4.47	.19	.18	.14	7.44	7.06	4.90	.21
16	.16	.08	.07	.07	1.43	.21	*.68	3.01	1.74	1.83	3.38	.30
17	29.8	.08	.07	.07	.36	.19	.98	1.95	.73	.65	.84	.30
18	3.17	.08	.05	.07	.19	.19	.21	.47	.40	14.5	1.54	.21
19	.39	.12	.08	.10	.24	.19	.16	.21	.46	2.36	1.35	.21
20	.10	.10	.07	.07	.21	.19	.14	.19	.30	.84	.54	.19
21	.10	.10	.07	.07	.43	.19	1.27	.16	.24	6.01	.36	*.19
22	.10	.10	.07	.07	1.29	.19	1.15	.16	.27	4.20	.33	.16
23	.10	.10	.07	.07	.84	.19	.40	.19	1.47	1.10	.30	.16
24	.10	.08	.07	.08	.41	.19	.16	.16	.59	.43	.24	.19
25	.10	.10	.07	.10	.21	.19	.18	.14	4.34	4.75	.21	.19
26	.11	.10	.05	.16	.19	.19	.27	1.06	1.59	3.29	.27	.19
27	.10	.12	.07	*8.69	.24	.19	.21	4.01	.51	*.78	.30	.19
28	.08	.10	.07	.52	.24	.19	4.18	1.03	.27	.45	.24	.19
29	.08	.08	.07	.10	.19	.19	8.39	------	13.0	.30	.24	.19
30	.12	.08	.07	.12	.16	.19	1.24	------	1.30	.27	.21	.19
31	.12	.08	------	3.62	------	.19	*.55	------	.39	------	.27	------
TOTAL	38.58	8.67	2.14	15.04	59.26	12.64	49.58	20.43	107.50	57.47	26.62	6.33
MEAN												
MGD	1.24	0.280	0.071	0.485	1.98	0.408	1.60	0.730	3.47	1.92	0.859	0.211
CFS	1.93	0.433	0.110	0.751	3.06	0.631	2.47	1.13	5.36	2.96	1.33	0.326
AC-FT	118	27	6.6	46	182	39	152	63	330	176	82	19

CALENDAR YEAR 1961: MAX 29.8 MIN 0.05 MEAN MGD 0.782 MEAN CFS 1.21 AC-FT 877
FISCAL YEAR 1961-62: MAX 29.8 MIN 0.05 MEAN MGD 1.11 MEAN CFS 1.72 AC-FT 1,240

* Discharge measurement made on this day.

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-17	1500	3.36	209	323	3-12	0930	3.61	257	398
11- 1	0130	3.88	317	490					

2260. North Halawa Stream near Aiea

Location.--Lat 21°23'45", long 157°53'35", 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 1962. 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.--12 years (1930-33, 1953-62), 4.09 mgd (6.33 cfs).

Extremes.--Maximum discharge during year, 556 mgd (860 cfs) Nov. 1 (gage height, 9.70 ft), from rating curve extended above 44 mgd on basis of slope-area measurements at gage heights 10.3 and 13.04 ft; no flow for many days.

1929-33, 1953-62: Maximum discharge, 4,300 mgd (6,650 cfs) Feb. 28, 1932 (gage height, 13.36 ft), from rating curve extended above 270 mgd; 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.

Rating table (gage height, in feet, and discharge, in million gallons a day)

4.07	0	4.7	2.09
4.1	.01	4.9	4.19
4.2	.06	5.2	9.40
4.3	.19	5.5	17.5
4.4	.43	5.8	28.7
4.5	.81	6.1	44.2
4.6	1.35		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.37	2.97	0	0.01	37.6	0.27	0	0.93	3.72	3.25	0.21	0.01
2	1.19	1.24	0	.01	19.8	.18	0	.43	1.57	1.10	.13	0
3	.35	.54	0	.01	3.63	.10	0	.32	.85	.72	.09	0
4	.18	.30	0	.01	1.40	.06	0	.19	.53	.56	.07	0
5	.08	9.16	0	0	.68	.72	0	.12	4.93	.20	11.5	0
6	.03	1.92	0	2.66	6.60	5.39	0	.06	21.3	.15	2.17	0
7	.01	.81	0	1.71	1.23	2.64	0	.04	5.57	.05	.68	0
8	0	*.40	0	.66	.45	*3.54	0	9.65	8.03	.01	1.77	0
9	0	.23	0	.46	.19	1.53	11	1.19	7.20	1.5	.60	0
10	0	.13	0	.36	.10	.81	2.0	.27	2.37	.80	.27	0
11	.51	.05	*0	.10	.94	.43	.80	.18	4.06	.01	.21	0
12	.10	.02	0	.05	.77	.32	.25	.08	39.7	.01	.16	0
13	.68	.01	0	.03	.18	.19	.08	.05	*8.87	.01	.09	0
14	.52	3.85	0	.01	3.39	.10	.03	.03	24.4	.50	.08	0
15	.18	.27	0	.77	5.27	1.79	.02	.02	12.1	7.0	12.4	0
16	.37	.14	0	2.38	1.95	.37	.01	5.81	4.47	3.0	4.90	0
17	33.8	.07	0	.18	.77	.19	.01	2.23	2.40	1.2	1.91	0
18	6.86	.04	0	.09	.53	.10	0	.82	1.77	11	2.75	0
19	1.91	.03	0	.04	.43	.06	0	.43	1.85	3.5	1.01	0
20	1.05	.15	0	.02	.35	.03	0	.32	1.28	1.5	1.00	*0
21	.60	.06	0	.01	3.36	.02	0	.19	1.28	.60	.56	0
22	.35	.05	0	.01	1.54	.01	0	.10	1.55	.64	.37	0
23	.23	.03	0	**.01	1.47	0	0	.06	5.67	.30	.25	0
24	2.49	.01	0	.01	.97	0	.01	.05	2.65	.12	.18	0
25	.40	.01	0	.01	.53	0	.01	.03	8.70	7.0	.14	0
26	.36	.01	0	1.81	.40	0	0	.05	4.07	3.5	.12	0
27	.23	.01	0	8.40	2.31	0	0	1.47	2.12	1.7	.10	0
28	.13	0	0	3.38	.87	0	3.88	.81	13.8	1.0	.08	0
29	.05	0	0	.87	.53	0	4.74	------	26.1	.50	.04	0
30	.02	0	.35	.35	.40	0	1.43	------	3.22	*.30	.01	0
31	.46	0	------	9.53	------	0	.69	------	3.51	---------	.01	------
TOTAL	56.51	22.51	0.35	33.95	98.64	18.85	24.96	25.93	229.64	51.73	43.86	0.01
MEAN MGD	1.82	0.726	0.012	1.10	3.29	0.608	0.805	0.926	7.41	1.72	1.41	0.0003
CFS	2.82	1.12	0.018	1.69	5.09	0.941	1.25	1.43	11.5	2.66	2.19	0.0005
AC-FT	173	69	1.1	104	303	58	77	80	705	159	135	0.03

CALENDAR YEAR 1961 :	MAX	46.2	MIN	0	MEAN MGD	1.70	MEAN CFS	2.63	AC-FT	1,910
FISCAL YEAR 1961-62 :	MAX	39.7	MIN	0	MEAN MGD	1.66	MEAN CFS	2.57	AC-FT	1,860

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-1	0030	9.70	556	860	3-12	0700	8.48	307	475

* Discharge measurement or observation of no flow made on this day.

** Field estimate made on this day.

Note.--No gage-height record Dec. 18 to Jan. 23, Apr. 5-30.

2270. Halawa Stream near Aiea

Location.--Lat 21°22'25", long 157°55'40", on right bank 0.7 mile southeast of Aiea Post Office, and 6.2 miles northwest of Honolulu Post Office

Drainage area.--8.78 sq mi.

Records available.--April 1953 to June 1962.

Gage.--Water-stage recorder and concrete control. Datum of gage is 16.52 ft above mean sea level, datum of 1929.

Average discharge.--9 years, 6.74 mgd (10.4 cfs).

Extremes.--Maximum discharge during year, 342 mgd (529 cfs) Mar. 12 (gage height, 5.08 ft); minimum, 0.26 mgd (0.40 cfs) June 30.

1953-62: Maximum discharge, 2,400 mgd (3,710 cfs) May 14, 1960 (gage height, 10.8 ft); no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. At times, the Oahu Sugar Co. installs flashboards on the control diverting the entire flow for irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Mar. 12, 13)

1.2	0.30	1.9	15.3
1.3	1.10	2.3	34.6
1.4	2.55	2.8	71.5
1.6	6.20		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.16	3.87	2.20	2.65	58.4	1.90	0.90	1.90	1.90	6.61	2.55	0.64
2	4.76	4.76	2.65	2.35	33.8	1.90	.90	1.47	2.80	3.15	2.20	.56
3	3.15	3.15	2.35	2.55	9.33	1.60	1.10	1.00	2.55	2.80	1.90	.48
4	2.55	3.00	1.90	3.15	4.36	1.47	1.35	.90	2.35	2.65	2.20	.42
5	1.90	13.2	1.60	3.30	2.80	1.75	1.21	.80	2.69	2.55	10.0	.42
6	1.75	6.68	2.05	3.15	6.99	4.37	1.00	.72	27.6	2.65	5.67	.48
7	2.05	4.76	2.20	5.63	4.14	4.56	1.00	.64	11.1	3.00	2.35	1.35
8	2.20	4.36	2.20	2.55	2.80	5.62	.90	6.66	12.5	2.80	2.20	2.35
9	2.05	3.60	1.90	2.65	2.55	3.30	24.1	3.13	10.6	7.20	2.20	2.20
10	2.05	3.00	1.60	3.30	2.55	2.55	4.40	1.47	4.36	6.69	2.05	2.35
11	2.05	*2.65	*1.75	2.35	2.20	*1.90	2.20	1.00	4.40	4.15	2.05	2.05
12	1.90	2.65	1.75	2.05	2.65	2.20	1.75	1.10	67.7	3.60	2.05	1.75
13	2.05	2.35	2.05	1.75	2.05	2.80	1.35	1.00	*18.2	3.00	2.05	1.60
14	2.20	3.95	2.05	1.60	2.98	2.80	1.21	1.10	38.4	3.37	2.05	1.60
15	2.20	2.65	2.05	1.60	6.35	3.15	1.21	1.47	29.1	15.8	10.9	1.60
16	2.35	2.20	2.58	1.90	4.56	2.55	1.60	6.18	10.4	6.81	6.82	2.05
17	44.3	2.20	2.73	2.05	3.15	1.90	1.47	4.70	5.58	4.56	3.45	2.20
18	17.7	2.20	2.80	1.90	2.65	1.90	1.60	2.65	3.80	22.7	3.76	2.20
19	6.20	2.20	3.45	2.05	2.20	2.20	1.75	1.75	3.30	9.40	3.60	2.35
20	5.18	2.05	3.30	1.90	1.90	2.20	1.60	1.35	3.00	5.79	2.35	*3.00
21	4.15	1.90	3.00	1.47	2.78	2.20	1.21	1.21	2.35	6.30	1.75	2.20
22	3.30	1.90	3.00	1.21	4.36	2.05	1.00	1.10	2.35	9.34	1.60	1.60
23	2.65	1.60	2.55	*1.10	3.30	1.60	1.00	.90	5.83	6.00	1.10	1.10
24	3.97	1.90	2.35	1.21	3.00	1.47	1.21	.80	4.15	4.76	1.00	.90
25	3.00	2.20	2.20	1.60	2.65	1.21	1.35	.72	8.76	11.9	.90	.72
26	2.65	2.05	2.20	2.20	2.05	1.35	*1.60	1.10	6.96	8.90	1.00	.64
27	2.65	1.75	3.00	7.99	2.20	1.47	1.75	1.47	3.80	5.18	1.47	.56
28	2.65	1.75	2.65	4.56	2.65	1.47	1.60	1.35	8.93	a3.6	1.35	.48
29	2.55	1.75	2.35	3.60	2.05	1.47	5.64	--------	42.5	a3.3	1.00	.42
30	2.55	1.75	2.56	2.55	2.05	1.35	2.20	--------	7.74	*a3.0	.80	.42
31	2.55	1.75	--------	4.38	--------	1.10	2.35	--------	4.15	--------	.64	--------
Total	148.42	95.78	71.02	82.30	185.50	69.36	73.51	49.64	359.85	181.56	85.01	40.69
Mean												
Mgd	4.79	3.09	2.37	2.65	6.18	2.24	2.37	1.77	11.6	6.05	2.74	1.36
Cfs	7.41	4.78	3.67	4.10	9.56	3.47	3.67	2.74	17.9	9.36	4.24	2.10
Ac-ft	455	294	218	253	569	213	226	152	1,100	557	261	125

Calendar Year 1961:	Max	78.3	Min	0.56	Mean mgd	4.25	Mean cfs	6.58	Ac-ft	4,760	
Fiscal Year 1961-62:	Max	67.7	Min	0.42	Mean mgd	3.95	Mean cfs	6.11	Ac-ft	4,420	

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-1	0100	4.68	322	498	3-12	0900	5.08	342	529

* Discharge measurement made on this day.
a No gage-height record.

2280. Moanalua Stream near Honolulu

Location.--Lat 21°22'50", long 157°52'20", on left bank 5 miles upstream from mouth and 5 miles north of Honolulu Post Office.

Drainage area.--2.73 sq mi.

Records available.--June 1926 to June 1962.

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 1.0 ft higher.

Average discharge.--36 years, 1.99 mgd (3.08 cfs).

Extremes.--Maximum discharge during year, 348 mgd (538 cfs) Mar. 12 (gage height, 5.45 ft), from rating curve extended above 42 mgd by test on model of station site and on basis of culvert computation at gage height 9.8 ft; no flow for many days.

1926-62: 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.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.87	0	1.4	1.13
.9	.01	1.5	1.86
1.0	.03	1.7	4.10
1.1	.10	1.9	7.70
1.2	.30	2.3	19.5
1.3	.63	2.7	37.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0	0		0	18.3	0.02	0	0	0	0.92	0.02	
2	0	0		0	13.7	.02	0	0	0	.33	.02	
3	0	0		0	2.33	.02	0	0	0	.07	.02	
4	0	0		0	.67	.01	0	0	0	.03	.02	
5	0	.80		0	.21	.02	0	0	0	.02	.01	
6	0	.35		5.77	3.22	*.06	0	0	14.7	.02	.01	
7	0	.06		.75	.22	.13	0	0	1.94	.01	0	
8	0	**.02	(*)	0	.02	.25	0	.11	2.55	.01	0	
9	0	.02		0	.01	.17	5.23	.01	3.13	0	0	
10	0	.02		0	.01	.08	.17	0	.86	0	0	
11	0	.02		0	1.72	.04	.01	0	.84	0	0	
12	0	.02		0	.33	.02	.01	0	33.1	0	0	
13	0	.01		0	.03	.02	0	0	5.51	0	0	
14	0	.01		0	.03	.02	0	0	13.5	0	0	
15	0	0		0	.50	.01	0	0	7.80	5.98	4.93	
16	0	0		0	.30	.01	0	0	1.97	1.59	1.18	
17	14.2	0		0	.10	.01	0	0	.81	.44	.27	
18	3.69	0		0	.07	.01	0	0	.35	11.3	.06	
19	.77	0		0	.05	.01	0	0	*.46	1.93	.03	
20	.23	0		0	.03	0	0	0	.21	.76	.02	(*)
21	.08	0		0	.04	0	0	0	.10	.38	.02	
22	.04	0		0	.09	0	0	0	.21	.38	.01	
23	.03	0		*0	.96	0	0	0	.67	.15	.01	
24	.01	0		0	.28	0	0	0	.44	.04	0	
25	.02	0		0	.10	0	0	0	.80	3.27	0	
26	.02	0		0	.05	0	*0	0	.71	1.37	0	
27	.01	0		.83	.04	0	0	0	.33	.44	0	
28	.01	0		1.25	.02	0	0	0	7.13	.13	0	
29	0	0		.04	.02	0	0	------	15.7	.05	0	
30	0	0		.02	.02	0	0	------	2.04	.03	0	
31	0	0	--------	3.14	------	0	0	------	.81	------	0	--------
TOTAL	19.11	1.33	0	11.80	43.47	0.93	5.42	0.12	116.67	29.65	6.63	0
MEAN												
MGD	0.616	0.043	0	0.381	1.45	0.030	0.175	0.004	3.76	0.988	0.214	0
CFS	0.954	0.066	0	0.589	2.24	0.046	0.270	0.006	5.82	1.53	0.331	0
AC-FT	59	4.1	0	36	133	2.9	17	0.4	358	91	20	0

CALENDAR YEAR	1961:	MAX	36.3	MIN	0	MEAN MGD	0.626	MEAN CFS	0.969	AC-FT	701
FISCAL YEAR	1961-62:	MAX	33.1	MIN	0	MEAN MGD	0.644	MEAN CFS	0.996	AC-FT	721

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-6	2030	4.73	244	378	3-12	0800	5.45	348	538

* Discharge measurement or observation of no flow made on this day.

** Field estimate made on this day.

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 1962.

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.--43 years (1913-20, 1926-62), 3.16 mgd (4.89 cfs).

Extremes.--Maximum discharge during year, 377 mgd (583 cfs) Oct. 31 (gage height, 3.78 ft), from rating curve extended above 68 mgd by test on model of station site; minimum, 0.83 mgd (1.28 cfs) Jan. 14.

1913-21, 1925-62: 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 tunnels above station. Occasional small diversions for irrigation above station.

Rating table (gage height, in feet, and discharge in million gallons a day)
(Shifting-control method used Oct. 31 to Nov. 3, Mar. 26-28)

0.2	0.61	1.0	7.90
.3	1.15	1.2	11.5
.5	2.65	1.7	31.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.99	4.14	3.25	1.43	14.4	2.87	1.71	1.78	5.35	3.07	1.71	1.78
2	2.17	2.57	2.41	1.78	*11.7	2.09	1.64	1.93	2.25	2.25	1.71	1.71
3	1.93	*2.81	3.67	1.78	2.65	2.01	1.64	1.71	1.93	2.01	1.71	1.71
4	1.93	2.25	2.73	1.64	A2.1	2.01	1.57	1.64	1.85	2.09	2.00	1.71
5	2.20	11.5	2.49	1.50	A2.3	3.15	1.57	1.57	3.90	2.12	6.38	1.71
6	1.78	5.10	2.17	2.02	A4.0	3.41	1.50	1.57	9.26	1.78	2.25	1.78
7	1.71	3.80	2.09	1.71	A3.0	2.61	1.85	1.57	4.13	1.93	6.30	1.78
8	1.71	2.99	2.09	2.53	A2.4	2.41	1.71	4.93	7.09	1.85	3.26	1.78
9	2.09	2.82	2.09	3.10	A2.0	2.49	16.1	1.93	4.38	2.23	2.25	1.85
10	2.09	2.73	2.25	3.34	A2.3	2.09	1.29	1.78	2.90	1.93	2.01	1.78
11	2.01	2.65	2.09	4.54	A2.9	*1.93	.93	1.71	3.31	1.71	2.27	1.64
12	2.01	2.65	*2.01	2.59	A2.5	1.85	.88	1.64	5.65	1.64	2.09	1.57
13	2.46	3.18	1.93	1.78	1.90	1.85	.88	1.64	3.07	1.78	1.93	1.57
14	2.01	4.90	2.31	2.28	2.25	1.93	.88	3.43	5.96	5.30	1.85	1.64
15	1.78	2.57	2.01	3.96	2.75	3.32	1.09	1.93	*3.45	5.82	*9.01	1.71
16	3.84	2.49	1.93	2.54	2.41	2.09	1.15	4.13	2.49	3.07	4.06	1.71
17	27.4	2.57	1.93	1.78	2.01	2.21	1.09	3.09	2.41	4.06	2.65	1.64
18	4.61	2.74	1.93	3.20	4.40	2.41	1.09	2.17	2.25	7.93	2.41	1.64
19	2.99	2.73	2.41	2.09	2.41	2.01	1.22	1.85	2.17	2.73	2.49	1.57
20	2.57	2.41	2.25	1.78	2.01	2.02	1.22	1.78	2.09	2.17	2.01	1.57
21	2.65	3.86	2.09	1.78	2.34	2.39	1.22	1.71	2.34	3.26	2.17	1.57
22	2.25	2.57	1.93	1.85	2.84	1.93	1.15	1.64	2.41	3.51	2.09	1.50
23	2.65	2.41	1.93	1.78	2.65	1.78	1.15	1.85	2.33	2.25	*1.85	1.50
24	2.41	2.33	3.41	*1.71	2.09	1.78	1.15	1.78	2.49	1.93	1.78	1.57
25	2.17	2.33	4.57	2.10	2.09	1.78	1.61	1.64	7.40	*4.15	1.85	1.57
26	4.51	2.41	4.93	2.64	2.01	1.71	1.22	10.3	2.91	2.33	1.93	*1.50
27	2.33	2.65	4.08	4.38	2.41	1.71	1.22	6.11	3.10	2.09	1.78	1.43
28	2.17	2.57	1.85	2.84	2.57	1.64	3.32	2.25	4.72	1.93	1.78	1.64
29	2.09	2.73	1.74	2.09	2.64	1.71	*2.56	------	5.69	1.85	1.78	1.78
30	2.01	2.41	1.78	2.33	2.41	1.71	1.78	------	3.33	1.85	1.71	1.57
31	3.06	2.92	------	10.6	------	1.71	1.93	------	5.00	------	1.78	------
TOTAL	100.58	98.79	74.35	81.47	96.44	66.61	59.32	71.06	117.61	82.62	80.85	49.48
MEAN												
MGD	3.24	3.19	2.48	2.63	3.21	2.15	1.91	2.54	3.79	2.75	2.61	1.65
CFS	5.02	4.93	3.83	4.07	4.97	3.32	2.96	3.93	5.87	4.26	4.03	2.55
AC-FT	309	303	228	250	296	204	182	218	361	254	248	152

CALENDAR YEAR 1961 :	MAX	27.8	MIN	1.43	MEAN MGD	3.10	MEAN CFS	4.80	AC-FT	3,480
FISCAL YEAR 1961-62:	MAX	27.4	MIN	0.88	MEAN MGD	2.68	MEAN CFS	4.15	AC-FT	3,000

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0430	3.78	377	583	11-2	0700	3.20	227	351

* Discharge measurement made on this day.
A No gage-height record.

2400. West Branch Manoa Stream near Honolulu

Location.--Lat 21°19'55", long 157°48'10", on left bank 100 ft upstream from highway bridge 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 1962.

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

Average discharge.--43 years (1913-20, 1926-62), 2.43 mgd (3.76 cfs).

Extremes.--Maximum discharge during year, 350 mgd (542 cfs) Feb. 26 (gage height, 3.80 ft, from floodmarks), from rating curve extended above 73 mgd by test on model of station site; minimum, 0.07 mgd (0.11 cfs) June 25.

1913-21, 1925-62: 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 except those for periods of no gage-height record, which are fair. Occasional small diversion for irrigation above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 17-21, June 16-26)

0.04	0.10	0.8	6.20
.1	.32	1.0	10.6
.2	.82	1.3	20.7
.3	1.42	1.6	36.0
.7	4.50		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.86	3.72	1.97	0.50	16.6	2.30	0.50	0.60	A2.8	2.10	0.87	0.60
2	1.68	1.37	.93	.91	9.31	.99	.46	*.71	A1.7	1.36	.82	.46
3	1.36	*1.48	1.33	.88	2.02	.87	.46	.50	A1.5	1.29	.76	.41
4	1.23	.87	.93	.71	1.62	.87	.46	.46	A1.3	1.11	.87	.41
5	1.66	12.8	.87	.55	1.68	2.03	.46	.36	4.03	1.11	3.49	.41
6	1.11	4.68	.71	1.40	2.64	1.98	.41	.28	10.6	.93	.76	.36
7	1.11	2.84	.60	.74	1.49	1.47	.89	.28	3.55	.93	3.49	.36
8	1.05	1.82	.66	1.96	1.05	1.17	.46	1.78	4.47	.82	1.88	.36
9	1.39	1.62	.66	3.24	.87	1.23	6.86	.41	2.73	1.08	1.04	.36
10	1.83	1.29	.91	2.78	.99	.87	.99	.36	1.82	1.22	.71	.36
11	1.64	1.17	1.30	1.62	1.29	*.87	.66	.28	1.89	.76	1.21	.28
12	1.55	1.05	*.60	.99	.87	.76	.55	.23	6.27	.71	.90	.28
13	2.28	1.42	.60	.71	.88	.76	.46	.23	2.10	.71	.55	.28
14	1.55	3.23	1.04	1.01	1.18	.82	.41	.88	6.01	5.14	.46	.28
15	1.23	1.06	.66	2.62	2.04	2.30	.50	.36	*2.82	5.82	*8.52	.32
16	4.24	.90	.55	1.10	1.49	1.05	.50	1.53	1.95	2.31	2.65	.41
17	32.8	.90	.50	.60	.99	1.84	.36	1.21	1.62	2.93	1.91	.10
18	4.43	1.62	.50	1.89	4.46	1.72	.32	.60	1.90	8.35	1.49	.13
19	2.47	1.39	1.05	.71	1.86	1.05	.28	.41	2.02	2.17	1.51	.19
20	1.82	.82	.66	.60	1.05	1.05	.32	.36	1.42	1.82	1.11	.13
21	1.97	2.95	.55	.50	2.38	2.48	.32	.28	1.81	3.32	1.72	.23
22	1.36	1.27	.50	.60	2.54	.99	.32	.28	2.20	3.69	1.05	.16
23	1.42	.82	.50	.66	2.99	.87	.28	.36	2.03	1.62	.87	.23
24	1.42	.71	1.25	*.46	1.29	.87	.28	.32	1.62	1.36	.76	.24
25	1.05	.66	1.30	.92	1.51	.76	1.23	.23	5.40	*3.41	.76	.13
26	3.37	.76	.78	2.58	1.05	.71	.55	A11	1.95	1.62	.93	*.21
27	1.17	.93	1.07	5.19	1.97	.66	.41	5.30	1.62	1.29	.66	.28
28	.99	.93	.50	2.07	1.83	.60	2.48	1.68	5.08	1.11	.60	.41
29	.93	1.36	.89	.99	1.96	.60	1.64	------	4.50	1.11	.55	.66
30	.87	.82	.90	1.09	1.36	.50	.66	------	1.89	.99	.50	.64
31	1.35	2.01	------	7.33	------	.50	.63	------	3.07	------	.55	------
TOTAL	85.19	59.77	25.77	47.91	73.26	35.54	25.11	31.28	93.67	62.19	43.95	9.68
MEAN												
MGD	2.75	1.93	0.859	1.55	2.44	1.15	0.810	1.12	3.02	2.07	1.42	0.323
CFS	4.25	2.98	1.33	2.39	3.78	1.77	1.25	1.73	4.67	3.21	2.19	0.499
AC-FT	261	183	79	147	225	109	77	96	287	191	135	30

CALENDAR YEAR	1961 :	MAX	32.8	MIN	0.13	MEAN MGD	1.90	MEAN CFS	2.94	AC-FT	2,120
FISCAL YEAR	1961-62:	MAX	32.8	MIN	0.10	MEAN MGD	1.63	MEAN CFS	2.52	AC-FT	1,820

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0430	3.23	211	326	2-26	About 0800	3.80	350	542

* Discharge measurement made on this day.
A No gage-height record.

2440. Pukele Stream near Honolulu

Location.--Lat 21°18'35", long 157°47'30", on right bank 200 ft upstream from bridge on Palolo Belt Road, 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 1962.

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

Average discharge.--36 years, 1.25 mgd (1.93 cfs).

Extremes.--Maximum discharge during year, 235 mgd (364 cfs) Mar. 28 (gage height, 4.40 ft), from rating curve extended above 62 mgd on basis of slope-area measurement at gage height 6.13 ft; minimum, 0.18 mgd (0.28 cfs) Jan. 31.

1926-62: 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 except those for period of no gage-height record, which are poor. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.9	0.18	1.4	3.39
1.0	.43	1.6	6.20
1.1	.87	2.0	15.2
1.2	1.50		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.87	0.67	0.40	0.40	7.73	0.50	0.31	0.26	3.5	1.33	0.87	0.50
2	.62	.62	.40	.40	*7.01	.46	.37	.26	2.5	1.10	.87	.43
3	.62	.62	.43	.40	1.47	.46	.37	.26	1.5	1.10	.82	.43
4	.67	.62	.40	.40	.82	.43	.34	.26	.80	1.04	.82	.40
5	.67	3.46	.40	.37	.82	.58	.31	.28	2.0	1.04	3.99	.40
6	.62	1.78	.40	.37	.98	.68	.31	.31	5.0	.98	.82	.40
7	.62	*.77	.43	.34	.87	.54	.31	.31	3.2	.92	2.40	.37
8	.62	.72	.43	.34	.72	.50	.45	3.0	4.5	.87	1.19	.37
9	.62	.77	.46	.40	.67	.50	8.50	2.0	*3.5	.77	.82	.34
10	.62	.72	.46	.40	.58	.50	.37	1.3	2.6	.72	.77	.31
11	.58	.72	.46	3.21	.50	.50	.31	.90	2.4	.67	.77	.34
12	.54	.72	.46	1.00	.46	.50	.31	.60	6.0	.62	.77	.34
13	.58	.67	.50	.40	.46	*.50	.34	.40	3.0	.62	.77	.34
14	.50	.82	.54	.43	.50	.50	.34	1.5	4.5	3.02	.72	.31
15	.50	.62	.54	1.23	.43	.46	.34	1.2	4.0	5.20	*3.04	.31
16	.54	.58	.54	.70	.48	.43	.37	2.0	3.0	1.86	.92	.28
17	14.9	.58	.54	.50	.40	.40	.34	1.3	2.0	1.32	.67	.26
18	2.87	.54	.58	1.84	.43	.40	.34	.90	1.4	6.61	.72	.26
19	.98	.62	.43	.62	.43	.40	.34	.80	1.0	1.57	.67	.26
20	.82	.54	.34	.62	.43	.50	.34	.66	.80	1.10	.67	.26
21	.87	.58	*.28	.62	.43	.70	.31	.56	1.1	2.04	.72	.26
22	.87	.50	.28	.62	.54	.37	.31	.48	1.3	1.47	.67	.28
23	.87	.46	.28	.58	.54	.37	.31	.45	.87	1.16	.67	.28
24	.87	.43	.28	.54	.46	.37	*.29	.50	.87	1.16	.67	.28
25	.82	.43	.60	*.54	.46	.37	.31	.40	3.23	*2.34	.62	*.27
26	.98	.40	1.85	.62	.50	.37	.28	2.5	1.43	1.16	.62	.28
27	.77	.43	1.12	1.13	.54	.37	.28	3.0	1.16	.98	.58	.28
28	.77	.40	.34	.77	.54	.34	1.41	1.3	6.77	.98	.58	.28
29	.77	.49	.37	.54	.50	.34	.66	------	6.49	.98	.54	.28
30	.72	.40	.40	.56	.46	.34	.24	------	1.50	.92	.54	.28
31	.72	.40	------	9.57	------	.31	.26	------	2.05	------	.54	------
TOTAL	38.39	22.08	14.94	30.46	31.16	13.99	19.67	27.69	83.97	45.65	29.84	9.68
MEAN												
MGD	1.24	0.712	0.498	0.983	1.04	0.451	0.635	0.989	2.71	1.52	0.963	0.323
CFS	1.92	1.10	0.770	1.52	1.61	0.698	0.982	1.53	4.19	2.35	1.49	0.499
AC-FT	118	68	46	93	96	43	60	85	258	140	92	30

CALENDAR YEAR	1961:	MAX	18.4	MIN	0.20	MEAN MGD	1.03	MEAN CFS	1.59	AC-FT	1,160
FISCAL YEAR	1961-62:	MAX	14.9	MIN	0.24	MEAN MGD	1.01	MEAN CFS	1.56	AC-FT	1,130

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0400	4.37	222	343	3-28	2100	4.40	235	364

* Discharge measurement made on this day.

Note.--No gage-height record Feb. 8 to Mar. 22.

2460. Waiomao Stream above Pukele 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 1962.

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.--36 years (1926-62), 1.15 mgd (1.78 cfs).

Extremes.--Maximum discharge during year, 275 mgd (425 cfs) Oct. 31 (gage height, 4.60 ft), from rating curve extended above 90 mgd as explained below; no flow June 19-29.

1911-12, 1926-62: Maximum discharge 932 mgd (1,440 cfs), revised, Apr. 11, 1930 (gage height, 6.27 ft), from rating curve extended above 90 mgd on basis of slope-area measurement at gage height 4.74 ft; no flow at times.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 31 to Nov. 4)

0.74	0	1.3	1.86
.8	.03	1.5	3.70
.9	.16	1.8	8.40
1.0	.40	2.2	18.5
1.1	.75		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.57	1.26	0.83	0.20	8.02	0.20	0.07	0.28	4.14	1.69	0.22	0.12
2	.63	.61	.22	.16	*7.83	.16	.03	.32	1.03	.75	.20	.08
3	.34	.34	.31	.20	1.80	.14	.02	.20	.49	.55	.18	.06
4	.26	*.24	.26	.18	.88	*.11	.02	.14	.28	.43	.42	.05
5	.71	3.62	.24	.16	.52	.55	.01	.11	1.45	.52	8.63	.04
6	.37	1.89	.16	.12	.68	1.04	.01	.09	7.59	.31	1.13	.03
7	.22	1.09	.12	.12	.55	.59	.20	.08	2.46	.28	2.97	.02
8	.22	.71	.11	.22	.34	.40	.16	4.00	7.00	.26	2.58	.02
9	.28	.43	.09	.85	.24	.40	11.4	.77	3.85	1.06	.68	.01
10	.26	.31	.08	.83	.22	.28	1.78	.33	1.44	.73	.41	.02
11	.44	.24	.11	4.55	.22	.20	.61	.21	1.40	.34	.46	.04
12	.40	.20	.07	2.55	.20	.18	.37	.14	8.13	.22	.77	.02
13	.49	.18	.06	.59	.16	.14	.24	.11	2.12	.20	.25	.01
14	.40	1.14	*.07	.43	.36	.16	.16	1.00	5.27	3.31	.20	.01
15	.22	.31	.07	3.60	.59	.16	.16	.45	*5.03	5.78	*3.79	.01
16	.87	.22	.04	1.69	.71	.14	.22	2.28	1.04	1.81	1.18	.02
17	16.6	.18	.03	.59	.28	.14	.28	1.42	.66	.91	.59	.02
18	2.95	.22	.02	2.70	.49	.28	.16	.49	.60	6.13	.63	.01
19	1.04	.26	.14	.94	.53	.18	.14	.46	.40	1.09	.63	0
20	.63	.26	.14	.63	.24	.20	.12	.26	.26	.71	.39	0
21	.49	.81	.08	.37	.32	.50	.09	.20	.48	1.26	.50	0
22	.31	.31	.08	.37	.53	.22	.08	.14	.64	1.27	.31	0
23	.46	.22	.05	.37	.91	.14	.07	.16	.34	.55	.22	0
24	.52	.16	.15	.28	.31	.14	*.06	.18	.47	.37	.18	0
25	.26	.14	1.87	*.34	.24	.12	.18	.11	3.48	1.55	.16	*0
26	.70	.12	3.09	.67	.20	.12	.12	3.26	.83	*1.17	.20	0
27	.39	.16	2.40	1.73	.26	.09	.09	3.40	.58	.52	.16	0
28	.34	.12	.63	1.53	.49	.07	2.10	.75	14.9	.37	.11	0
29	.22	.25	.31	.43	.44	.07	2.27	------	9.35	.28	.09	0
30	.18	.12	.26	2.53	.28	.07	.52	------	1.92	.26	.07	.01
31	.22	.12	------	*15.1	------	.08	.34	------	3.37	------	.06	------
TOTAL	32.99	16.24	12.09	45.03	28.84	7.27	22.08	21.34	91.00	34.68	28.37	0.60
MEAN												
MGD	1.06	0.524	0.403	1.45	0.961	0.235	0.712	0.762	2.94	1.16	0.915	0.020
CFS	1.65	0.810	0.623	2.25	1.49	0.363	1.10	1.18	4.54	1.79	1.42	0.031
AC-FT	101	50	37	138	89	22	68	65	279	106	87	1.8

CALENDAR YEAR 1961: MAX 25.3 MIN 0 MEAN MGD 0.938 MEAN CFS 1.45 AC-FT 1,050
FISCAL YEAR 1961-62: MAX 16.6 MIN 0 MEAN MGD 0.933 MEAN CFS 1.44 AC-FT 1,040

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0530	4.60	275	425	3-28	2000	4.42	231	357
11-2	0800	3.67	74.8	116					

* Discharge measurement or observation of no flow made on this day.

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 1962.

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

Average discharge.--10 years, 3.36 mgd (5.20 cfs).

Extremes.--Maximum discharge during year, 792 mgd (1,230 cfs) Oct. 31 (gage height, 3.32 ft), from rating curve extended above 450 mgd as explained below; minimum, not determined; minimum daily, 0.30 mgd (0.46 cfs) Aug. 3.

1952-62: Maximum discharge, 2,100 mgd (3,250 cfs) Mar. 5, 1958 (gage height, 5.33 ft), from rating curve extended above 450 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) June 25, 1958.

Remarks.--Records fair except those for periods of no gage-height record and those below 5.0 mgd, which are poor.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.2	1.40	2.04	0.69	40	0.66	0.56	1.05	8.19	4.80	1.32	0.99
2	1.8	.55	1.14	.74	*10	.56	.60	2.14	2.90	3.60	1.20	.72
3	1.5	.30	1.38	1.03	4.20	40	.56	.75	2.60	3.20	1.20	.66
4	2.5	1.03	1.19	.84	3.60	1.2	.50	.97	3.20	3.40	1.28	.66
5	1.7	9.13	1.19	.76	2.60	4.51	.45	1.47	5.92	3.40	16.4	.66
6	1.2	5.15	1.14	.69	3.60	4.50	3.28	1.62	21.1	1.20	2.50	.60
7	1.1	3.40	1.10	.71	2.90	3.61	1.85	1.47	6.05	1.01	6.37	.66
8	1.3	3.40	.96	.95	2.40	2.20	37.7	6.89	19.4	.85	2.95	.66
9	1.2	2.34	1.05	2.66	2.20	1.77	4.15	2.19	8.70	1.61	1.60	.72
10	1.0	1.85	1.06	2.26	1.58	1.40	1.85	1.8	4.25	1.20	1.32	1.10
11	1.6	1.38	.88	8.33	2.16	2.23	1.70	1.5	3.60	.78	1.60	1.40
12	1.4	1.14	.75	4.19	3.12	2.07	1.47	1.2	9.75	.72	1.75	.72
13	1.8	1.00	.72	2.90	1.92	1.47	1.47	1.0	5.10	.78	1.46	.72
14	1.2	3.59	.98	3.00	1.71	1.19	1.51	2.04	16.6	7.03	1.46	.72
15	.90	1.24	.82	4.84	2.38	1.19	1.46	1.63	*7.40	12.8	*7.54	.78
16	2.0	.96	.85	3.40	1.48	1.93	1.71	6.44	4.20	2.80	2.30	.72
17	50	1.00	.72	3.20	.96	1.69	1.40	3.84	3.20	2.43	1.75	.72
18	5.10	1.14	.72	3.03	1.76	1.34	1.54	1.42	3.40	15.9	1.90	.72
19	2.90	2.32	1.33	.55	3.43	1.63	1.47	1.16	2.90	4.40	2.10	.72
20	3.20	2.20	.90	.43	1.82	2.55	1.2	1.10	2.60	2.80	1.46	.66
21	3.20	3.03	.70	.37	1.35	1.47	1.0	1.0	3.43	5.70	*1.60	.50
22	1.9	2.60	.66	.37	1.48	.96	.96	.90	3.20	4.80	1.32	.41
23	2.2	2.90	.60	.36	1.82	1.36	.90	1.19	3.40	2.50	1.20	.41
24	2.5	2.40	.89	.34	2.54	1.25	.80	.92	3.24	2.35	1.10	.41
25	1.1	1.71	3.14	1.55	2.05	1.22	2.74	.89	8.80	10.2	1.01	*.38
26	1.97	1.34	4.18	2.0	1.53	1.1	.86	12.2	3.10	*4.20	1.01	.38
27	1.85	1.37	4.21	4.0	1.29	.90	.70	10.7	3.40	1.90	.85	.41
28	1.85	1.14	1.47	2.19	1.09	.70	8.80	2.90	31.0	1.60	.85	.38
29	2.20	1.61	.88	2.07	.32	.66	9.75	------	18.8	1.46	.78	.41
30	2.05	.89	.79	2.94	.80	.64	1.96	------	4.80	1.32	.72	.41
31	2.29	1.13	------	*35	------	.60	1.47	------	5.90	------	.72	------
TOTAL	108.71	64.64	38.44	96.39	108.09	48.96	96.37	72.38	230.13	110.74	70.62	19.41
MEAN												
MGD	3.51	2.09	1.28	3.11	3.60	1.58	3.11	2.58	7.42	3.69	2.28	0.647
CFS	5.43	3.23	1.98	4.81	5.57	2.44	4.81	3.99	11.5	5.71	3.52	1.00
AC-FT	334	198	118	296	332	150	296	222	706	340	217	60

CALENDAR YEAR	1961:	MAX	57.9	MIN	0.20	MEAN MGD	2.61	MEAN CFS	4.04	AC-FT	2,930
FISCAL YEAR 1961-62		MAX	50	MIN	0.30	MEAN MGD	2.92	MEAN CFS	4.52	AC-FT	3,270

Peak discharge (base, 220 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	-	3.32	792	1,230	3-28	2030	2.99	594	919

* Discharge measurement made on this day.

Note.--No gage-height record July 1-17, 22-25, Sept. 20-23; Oct. 26, 27, Oct. 31 to Nov. 2, Nov. 30 to Dec. 4, Dec. 26 to Jan. 5, Jan. 20-24, 26, 27, Feb. 10-13, 21, 22.

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 2.1 miles west of Waimanalo.

Records available.--March 1954 to June 1962.

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

Average discharge.--8 years, 1.88 mgd (2.91 cfs).

Extremes.--1954-62: 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 Stream for irrigation in vicinity of Waimanalo.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.00	A1.40	2.00	1.94	1.75	0.61	1.70	0	0.84	2.90	1.66	2.60
2	1.94	A1.34	2.00	1.94	.95	.61	1.70	0	.79	1.71	2.67	2.52
3	1.94	A1.34	2.06	1.88	.61	.65	1.70	0	.69	.94	2.75	2.45
4	1.88	A1.28	2.06	1.88	.57	.79	1.64	0	.65	.89	3.08	2.45
5	1.88	A1.34	2.06	1.82	.57	.94	1.64	.29	.74	.84	4.90	2.37
6	1.88	A1.34	2.00	2.00	.61	1.18	1.64	.50	.74	.84	3.77	*2.30
7	1.82	A1.40	2.00	2.00	.61	1.05	1.64	.40	.74	.89	4.10	2.30
8	1.76	A1.40	2.00	2.00	.57	1.05	1.64	.84	*1.87	.84	3.85	2.30
9	1.76	A1.34	2.00	2.00	.57	1.10	1.28	.69	1.22	1.36	3.45	2.30
10	1.76	A1.40	2.00	2.06	.57	1.05	.65	.46	1.16	.97	3.29	2.30
11	1.76	A1.52	1.94	2.15	.64	.99	.61	.43	.99	.79	3.05	2.30
12	1.76	1.82	*2.00	1.99	.57	.89	.61	.40	1.37	.74	2.90	2.30
13	1.70	1.88	1.94	1.22	.53	1.22	.61	.37	1.43	1.75	2.82	2.30
14	1.70	1.94	2.06	1.16	.53	.89	.61	.40	2.23	3.09	2.75	2.24
15	1.70	1.88	2.00	1.40	.53	.69	.61	.37	1.34	3.65	2.90	2.24
16	1.80	1.94	1.94	.99	.61	.65	.61	.69	1.22	3.53	.69	2.24
17	2.06	1.94	1.94	.84	.61	.65	*.61	.65	1.10	3.30	0	2.24
18	1.94	1.94	1.94	1.10	.79	.65	.61	.50	1.05	3.92	0	2.18
19	1.88	2.00	2.06	.94	.65	.65	.61	.43	.94	3.29	0	2.18
20	1.88	1.94	2.00	1.57	.61	.61	.61	.40	.89	2.97	0	2.18
21	1.88	2.06	1.94	2.18	.61	.61	.61	.37	.84	2.97	0	2.18
22	1.88	2.00	1.94	2.12	.61	.61	.61	.34	.84	2.75	.65	2.18
23	1.88	2.06	1.94	2.06	.61	.61	.61	.37	1.63	2.67	1.70	2.12
24	*1.75	2.00	2.12	2.06	.61	.61	.61	.34	2.67	*2.75	1.70	2.12
25	1.28	2.06	2.37	2.06	.61	.61	.61	.34	2.82	2.73	2.67	2.12
26	1.40	2.06	2.62	*2.06	.61	.61	.61	.52	2.67	2.06	2.67	2.06
27	A1.40	2.00	2.18	2.12	.61	1.24	.61	.50	2.60	1.16	2.60	2.06
28	A1.40	2.00	1.94	2.12	*.57	1.70	.81	.61	3.52	1.10	2.60	2.12
29	A1.40	2.00	2.00	2.00	.57	1.70	.65	------	4.02	1.05	2.60	2.06
30	A1.34	2.00	2.06	2.12	.53	1.70	.57	------	2.90	1.05	2.60	2.06
31	A1.34	2.00	------	1.98	------	1.70	.20	------	3.05	------	2.60	------
TOTAL	53.75	54.62	61.11	55.76	19.39	28.62	27.83	11.21	49.56	59.50	71.02	67.37
MEAN												
MGD	1.73	1.76	2.04	1.80	0.646	0.923	0.898	0.400	1.60	1.98	2.29	2.25
CFS	2.68	2.73	3.15	2.78	1.00	1.43	1.39	0.619	2.47	3.07	3.54	3.48
AC-FT	165	168	188	171	60	88	85	34	152	183	218	207

CALENDAR YEAR	1961:	MAX	2.62	MIN	0	MEAN MGD	1.50	MEAN CFS	2.32	AC-FT	1,680
FISCAL YEAR 1961-62:		MAX	4.90	MIN	0	MEAN MGD	1.53	MEAN CFS	2.37	AC-FT	1,720

* Discharge measurement made on this day.
A No gage-height record.

2540. Makawao Stream near Kailua

Location.--Lat 21°21'50", long 157°46'05", on left bank 650 ft upstream from mouth, 2.7 miles southwest of Kailua, and 4.3 miles southeast of Kaneohe Courthouse.

Drainage area.--2.06 sq mi (revised).

Records available.--November 1912 to June 1916, January 1958 to June 1962.

Gage.--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.

Average discharge.--7 years (1913-16, 1958-62), 3.07 mgd (4.75 cfs).

Extremes.--Maximum discharge during year, 297 mgd (460 cfs) May 5 (gage height, 5.17 ft); minimum, 0.53 mgd (0.82 cfs) Sept. 17.

1912-16, 1958-62: Maximum discharge, 1,380 mgd (2,140 cfs) Mar. 5, 1958 (gage height, 9.08 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, that of Sept. 17, 1961.

Remarks.--Records good. Maunawili ditch (see preceding page) diverts 1.5 miles above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.3	0.28	1.8	4.23
1.4	.72	1.9	5.97
1.5	1.30	2.1	10.5
1.6	2.05	2.4	20.0
1.7	2.98	2.9	44.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.43	0.93	0.62	0.78	21.9	3.30	1.57	4.08	4.14	3.19	2.77	2.05
2	1.10	.88	.62	.72	18.2	3.19	1.57	3.91	3.08	2.88	1.87	1.87
3	.99	.83	.72	.72	6.04	3.19	1.57	3.55	2.98	2.77	2.29	1.80
4	.88	.78	.72	.72	4.67	3.08	1.57	3.43	2.98	2.66	3.34	1.80
5	.93	.78	.67	.72	3.91	4.15	1.57	3.19	3.30	2.66	43.2	1.71
6	.93	.83	.67	.83	3.91	8.48	1.57	3.08	3.55	2.57	5.43	1.64
7	.88	.88	.67	.78	3.55	3.91	2.19	3.08	*2.98	2.57	10.8	*1.71
8	.88	.83	.72	.78	3.91	3.55	1.80	6.32	20.0	2.48	6.02	1.64
9	.88	.83	.67	.72	4.40	3.44	11.7	3.79	8.04	7.64	3.91	1.64
10	.83	.83	.67	.78	4.23	3.08	3.79	3.43	4.67	4.04	3.55	1.57
11	.88	.83	*.67	1.43	10.8	2.88	2.98	3.30	4.50	2.88	3.43	1.57
12	.83	.78	.62	3.43	5.15	2.88	2.77	3.19	18.0	2.66	3.19	1.57
13	.83	.83	.62	1.10	4.67	2.77	2.57	3.30	7.78	2.48	2.98	1.50
14	.78	.83	.67	1.17	4.50	2.88	2.38	3.55	24.5	2.49	2.88	1.43
15	.78	.78	.67	2.71	4.23	2.98	2.48	3.19	9.09	2.57	4.76	1.43
16	.88	.78	.62	2.78	3.91	2.98	*2.57	6.88	5.75	2.38	4.08	1.43
17	1.67	.78	.62	1.64	3.79	2.98	2.28	4.66	4.67	2.38	4.84	1.43
18	1.05	.78	.62	1.92	5.03	2.88	2.28	3.67	4.08	2.88	4.84	1.36
19	.99	.78	.62	1.64	4.08	2.77	2.20	3.55	3.67	2.20	4.67	1.36
20	.88	.72	.62	1.43	3.91	2.77	2.12	3.43	3.43	2.20	4.40	1.36
21	.88	.83	.62	1.24	3.91	2.77	2.20	3.30	3.30	2.20	4.40	1.30
22	.88	.78	.62	1.17	3.55	2.66	1.95	3.30	3.08	2.05	3.55	1.30
23	.93	.78	.67	1.17	3.55	2.66	1.87	3.43	2.98	2.05	2.66	1.30
24	*.99	.72	.83	1.05	3.55	2.66	1.71	3.30	2.66	*1.95	2.59	1.30
25	.93	.72	1.12	*1.05	3.55	2.66	1.57	3.19	2.77	5.89	2.12	1.30
26	1.10	.67	1.29	.99	3.55	2.57	1.50	4.11	2.48	3.91	2.12	1.30
27	.93	.72	1.10	.99	3.55	1.87	1.71	4.00	2.38	3.55	2.05	1.30
28	.88	.67	.83	1.05	*3.43	1.43	6.42	3.30	9.99	3.43	1.95	1.30
29	.83	.62	.83	.99	3.43	1.50	4.55	------	8.72	3.30	1.95	1.36
30	.83	.62	.83	1.10	3.43	1.50	3.19	------	3.55	3.19	1.87	1.30
31	.88	.62	------	*10.7	------	1.57	5.89	------	4.79	------	1.87	------
TOTAL	29.36	24.04	21.84	48.30	160.29	91.99	86.09	104.51	187.89	90.10	150.38	44.93
MEAN												
MGD	0.947	0.775	0.728	1.56	5.34	2.97	2.78	3.73	6.06	3.00	4.85	1.50
CFS	1.47	1.20	1.13	2.41	8.27	4.59	4.30	5.77	9.38	4.65	7.50	2.32
AC-FT	90	74	67	148	492	282	264	321	577	277	462	138

CALENDAR YEAR 1961 : MAX 21.9 MIN 0.62 MEAN MGD 2.30 MEAN CFS 3.56 AC-FT 2,570
FISCAL YEAR 1961-62: MAX 43.2 MIN 0.62 MEAN MGD 2.85 MEAN CFS 4.41 AC-FT 3,190

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0500	3.75	110	170	3-12	0730	4.72	228	353
11- 2	0700	4.31	172	266	3-14	1900	4.39	182	282
11-11	1630	3.93	131	203	3-28	2100	4.11	148	229
1-31	1630	3.82	116	179	4- 9	1830	3.92	125	193
3- 8	1400	3.74	109	169	5- 5	0100	5.17	297	460

* Discharge measurement made on this day.

2739. Kamooalii Stream at Kaneohe

Location.--Lat 21°24'50", long 157°48'13", on right bank at Kaneohe, 450 ft upstream from bridge on Kamehameha Highway and 0.2 mile south of Parker School.

Drainage area.--4.34 sq mi.

Records available.--January 1959 to June 1962.

Gage.--Water-stage recorder and combination masonry diversion dam and culvert control. Datum of gage is 37.82 ft above mean sea level (levels by City and County of Honolulu).

Extremes.--Maximum discharge during year, 952 mgd (1,470 cfs) Mar. 12 (gage height, 6.62 ft), from rating curve extended above 31 mgd on basis of slope-area measurement at gage height 5.64 ft; minimum, 2.56 mgd (3.96 cfs) Sept. 15, 17, 18.

1959-62: Maximum discharge, 1,230 mgd (1,900 cfs) May 13, 1960 (gage height, 6.16 ft), from rating curve extended above 72 mgd on basis of slope-area measurement at gage height 5.69 ft; maximum gage height, 6.62 ft Mar. 12, 1962; minimum discharge that of Sept. 15, 17, 18, 1961.

Flood of Oct. 23, 1958, reached a stage of 8.3 ft, from floodmarks (discharge, 4,270 mgd or 6,610 cfs, from rating curve extended above 72 mgd as explained above).

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

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Oct. 31		Nov. 1 to June 30			
3.6	2.56	3.6	1.30	4.0	29.0
3.7	5.90	3.7	4.85	4.2	55.0
3.8	12.5	3.8	10.7	4.5	110
3.9	23.2	3.9	18.8		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.50	5.47	3.32	4.65	*58.3	6.90	4.85	9.40	8.10	9.40	7.50	7.50
2	6.40	5.05	3.32	4.28	29.8	6.90	4.85	8.70	7.50	8.10	8.10	7.50
3	5.47	5.47	3.32	4.65	10.7	6.90	4.85	7.50	7.50	8.10	8.94	7.50
4	5.47	4.65	3.32	4.65	8.70	6.90	4.40	7.50	8.70	8.10	10.7	7.50
5	5.90	5.05	3.92	4.65	8.70	9.40	4.00	7.50	11.4	7.50	32.8	6.90
6	5.47	4.28	*3.92	12.9	14.7	10.0	4.00	7.50	10.0	8.10	10.0	*8.70
7	5.47	4.28	3.92	8.46	10.0	8.10	13.3	8.10	7.50	8.10	17.2	6.90
8	5.47	3.92	3.62	5.47	8.70	8.70	6.40	12.5	23.8	7.50	12.8	6.90
9	5.05	3.92	3.32	5.05	8.10	8.70	20.4	8.10	13.8	12.9	10.0	7.50
10	4.65	4.28	3.32	5.05	7.50	7.50	8.10	8.10	8.70	10.0	9.40	7.50
11	3.92	3.92	3.32	9.23	31.4	6.90	6.90	7.50	9.40	7.50	8.70	7.50
12	4.28	3.92	3.32	10.1	11.4	6.90	6.40	7.50	*94.3	7.50	8.70	7.50
13	3.92	3.92	3.32	6.40	9.40	6.40	8.10	7.50	12.9	8.10	8.10	7.50
14	4.28	4.65	3.32	6.95	10.0	6.90	7.50	8.10	*41.8	9.00	8.70	7.50
15	4.28	3.92	3.06	10.9	10.7	6.40	5.35	7.50	15.1	11.4	12.6	7.50
16	4.28	3.62	3.32	9.77	9.40	5.85	*6.48	14.1	11.4	8.10	9.40	7.50
17	6.95	3.92	2.80	5.05	8.70	5.85	6.90	9.40	10.7	7.50	8.70	7.50
18	5.47	3.92	2.80	6.40	8.70	6.40	6.90	8.10	10.0	9.40	8.70	7.50
19	5.47	3.92	*3.06	5.05	8.70	7.50	6.90	7.50	10.0	8.10	8.70	7.50
20	5.05	3.92	3.32	3.92	7.50	7.50	6.90	7.50	9.40	7.50	8.70	6.40
21	5.05	3.92	3.32	3.92	8.10	6.40	6.90	7.50	9.40	7.50	8.70	6.40
22	4.65	3.92	3.32	3.62	7.50	5.85	7.50	7.50	8.70	7.50	8.10	6.40
23	5.47	3.92	3.62	3.06	7.50	5.35	7.50	8.70	9.40	*7.50	8.10	6.40
24	5.47	3.92	4.65	* 5.05	7.50	5.85	7.50	7.50	8.70	7.50	8.10	6.40
25	*4.65	3.92	5.90	5.47	8.10	5.85	7.50	8.10	10.0	13.3	8.10	6.40
26	5.90	3.92	5.05	5.90	7.63	5.85	7.50	*19.2	8.10	9.40	7.50	5.85
27	5.47	3.92	4.65	6.95	8.10	5.35	6.90	8.70	6.90	8.70	6.90	5.85
28	5.47	4.65	3.92	6.95	6.90	5.35	19.1	7.50	9.04	8.10	6.90	6.40
29	5.47	3.92	4.28	6.40	6.90	5.35	12.1	--------	17.3	8.10	6.90	6.40
30	5.47	3.32	5.47	6.40	* 6.90	4.85	8.70	--------	9.40	8.10	6.90	6.40
31	5.47	3.62	---------	15.2	---------	4.85	12.7	--------	10.7	---------	6.90	---------
Total	163.29	128.95	111.12	202.50	356.23	207.50	247.38	244.30	439.64	257.60	301.54	211.20
Mean												
Mgd	5.27	4.16	3.70	6.53	11.9	6.69	7.98	8.72	14.2	8.59	9.73	7.04
Cfs	8.15	6.44	5.72	10.1	18.4	10.4	12.3	13.5	22.0	13.3	15.1	10.9
Ac-ft	501	396	341	621	1,090	637	759	750	1,350	791	925	648

Calendar Year 1961:	Max	58.3	Min	2.80	Mean mgd	6.98	Mean cfs	10.8	Ac-ft	7,820
Fiscal Year 1961-62:	Max	94.3	Min	2.80	Mean mgd	7.87	Mean cfs	12.2	Ac-ft	8,810

* Discharge measurement made on this day.

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	0830	6.62	952	1,470

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 1962.

Gage.--Water-stage recorder. Datum of gage is 271.9 ft above mean sea level (levels by City and County of Honolulu). Prior to Apr. 28, 1914, staff gage and Apr. 29, 1914 to October 25, 1919, water-stage recorder, at same site at different datums.

Average discharge.--19 years (1943-62), 1.24 mgd (1.92 cfs).

Extremes.--Maximum discharge during year, 247 mgd (382 cfs) Mar. 12 (gage height, 3.14 ft), from rating curve extended above 37 mgd as explained below; minimum, 0.13 mgd (0.20 cfs) Sept. 17.

1914-19, 1939-62: Maximum discharge, 2,730 mgd (4,220 cfs) Mar. 26, 1951 (gage height, 5.39 ft), from rating curve extended above 37 mgd on basis of slope-area measurement at gage height 3.87 ft; minimum, 0.13 mgd (0.20 cfs) July 20, 1957, Sept. 17, 1961.

Remarks.--Records fair 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.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Apr. 19 to June 6, June 10-16)

0.89	0.19	1.3	2.46
.9	.21	1.5	5.0
1.0	.46	1.8	11.3
1.1	.88	1.9	15.0
1.2	1.52		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.32	0.40	0.27	0.31	9.49	0.46	0.31	0.88	0.40	0.73	0.77	0.68
2	.88	.40	.27	.31	6.28	.46	.31	.88	.40	.68	.82	.68
3	.80	.40	.27	.31	1.62	.46	.46	.77	.40	.60	.82	.68
4	.80	.37	.27	.31	.88	.64	.68	.77	.40	.56	.88	.68
5	.90	.64	.27	.31	.73	.93	.68	.73	.46	.53	1.23	.64
6	.80	.49	.27	2.08	1.65	.93	.68	.77	*1.61	.53	1.25	*.66
7	.80	.43	.24	1.05	1.30	.93	1.17	.60	1.18	.53	1.17	.56
8	.80	.40	.24	.77	.93	.99	.86	2.74	3.09	.60	1.17	.31
9	.70	.40	.24	.68	.68	.99	3.10	1.11	2.30	2.31	1.05	.31
10	.60	.40	.24	.64	.64	.88	1.17	.46	.82	1.45	.99	.32
11	.50	.37	*.24	.64	2.18	.73	.88	.43	.97	.93	.99	.34
12	.54	.31	.24	.68	.82	.46	.82	.43	14.0	.49	1.05	.40
13	.50	.34	.24	.68	.73	.43	.77	.43	2.46	.55	1.05	.37
14	.54	.71	.24	.73	.73	.46	.77	.46	5.76	.64	.93	.37
15	.54	.46	.24	1.15	.82	.53	*.73	.46	2.85	1.74	.93	.34
16	.54	.37	.22	1.19	.77	.43	.77	1.26	1.45	1.05	.82	.35
17	1.0	.31	.19	.60	.68	.40	.73	.82	.88	.60	.73	.31
18	.80	.31	.21	.49	.64	.43	.73	.56	.73	.68	.73	.31
19	.80	.31	.22	.46	.60	.43	.73	.49	.60	.54	.73	.34
20	.70	.29	.22	.46	.60	.43	.73	.46	.60	.43	.73	.37
21	.70	.29	.22	.43	.56	.40	.73	.43	.60	.49	.73	.34
22	.60	.29	.22	.37	.56	.40	.73	.40	.56	.53	.73	.34
23	.80	.29	.22	.37	.56	.40	.73	.40	.56	*.48	.73	.34
24	.80	.27	.29	.37	.49	.37	.73	.40	.64	.43	.73	.34
25	*.64	.29	.34	*.37	.49	.37	.68	.40	.73	1.17	.73	.34
26	.60	.29	.40	.46	.49	.37	.68	.46	.82	1.21	.73	.34
27	.34	.27	.34	.64	.60	.34	.68	.43	1.11	.93	.73	.34
28	.34	.27	.31	.68	.64	.34	1.15	.43	2.38	.77	.73	.34
29	.34	.24	.29	.60	.46	.34	1.30	------	5.19	.77	.73	.40
30	.34	.27	.37	.60	*.46	.34	.99	------	1.49	.77	.68	.37
31	.37	.27	------	1.33	------	.31	.88	------	.82	------	.64	------
TOTAL	20.73	11.15	7.84	20.07	38.08	16.38	26.38	18.86	56.26	23.72	26.73	12.51
MEAN												
MGD	0.669	0.360	0.261	0.647	1.27	0.528	0.851	0.674	1.81	0.791	0.862	0.417
CFS	1.04	0.556	0.404	1.00	1.96	0.817	1.32	1.04	2.61	1.22	1.33	0.645
AC-FT	64	34	24	62	117	50	81	58	173	73	82	38

CALENDAR YEAR	1961:	MAX	9.49	MIN	0.19	MEAN MGD	0.697	MEAN CFS	1.08	AC-FT	780
FISCAL YEAR 1961-62:		MAX	14.0	MIN	0.19	MEAN MGD	0.764	MEAN CFS	1.18	AC-FT	856

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-1	1430	2.90	168	260	3-12	0800	3.14	247	382

* Discharge measurement made on this day.
Note.--No gage-height record July 3-24.

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.--0.28 sq mi.

Records available.--March 1940 to June 1962.

Gage.--Water-stage recorder and concrete control. Datum of gage is 320 ft above mean sea level (transit levels by U. S. Navy).

Average discharge.--21 years (1940-42, 1943-62), 0.394 mgd (0.610 cfs).

Extremes.--Maximum discharge during year, 15.6 mgd (24.1 cfs) Mar. 29 (gage height, 1.54 ft), from rating curve extended above 4.0 mgd as explained below; minimum, 0.21 mgd (0.32 cfs) Jan. 6, Feb. 6, 25, 27, 28, Mar. 2.

1940-62: Maximum discharge, 71 mgd (110 cfs) Oct. 23, 1958 (gage height, 2.43 ft), from rating curve extended above 4.0 mgd by rating for Columbus-type control and 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. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	0.20
.6	.36
.7	.64
.8	1.06
.9	1.75
1.0	2.70
1.1	4.00

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.90	0.34	0.28	0.30	2.44	0.26	0.25	0.28	0.22	0.43	0.22	0.26
2	.43	.30	.28	.30	1.62	.25	.23	.25	.21	.38	.23	.25
3	.32	.32	.28	.32	.57	.23	.25	.23	.22	.36	.23	.25
4	.30	.30	.28	.32	.38	.25	.25	.22	.22	.34	.23	.25
5	.28	.51	.28	.32	.32	.31	.25	.22	.28	.32	.79	.25
6	.26	.34	.26	.69	.47	.30	.25	.21	*.52	.32	.34	*.26
7	.26	.32	.26	.31	.34	.31	.80	.22	.31	.32	.30	.23
8	.26	.32	.26	.23	.30	.30	.28	1.08	1.19	.32	.26	.22
9	.26	.32	.28	.25	.26	.28	1.40	.32	.92	1.44	.26	.22
10	.26	.30	.28	.23	.26	.26	.46	.26	.43	.65	.26	.23
11	.38	.30	.28	.26	.32	.25	.34	.25	.47	.43	.25	.23
12	.28	.32	*.27	.25	.26	.25	.30	.23	2.96	.38	.25	.22
13	.30	.32	.25	.23	.25	.25	.28	.23	.96	.36	.23	.22
14	.30	.51	.25	.34	.32	.29	.26	.25	1.91	.36	.25	.22
15	.26	.26	.25	.57	.36	.28	*.28	.23	1.16	.86	.63	.23
16	.30	.26	.25	.44	.30	.26	.30	.79	.64	.38	.25	.25
17	.91	.28	.25	.32	.28	.26	.28	.36	.51	.34	.25	.25
18	.36	.26	.25	.30	.26	.26	.26	.28	.41	.38	.25	.25
19	.32	.30	.26	.28	.25	.28	.25	.25	.38	.32	.23	.26
20	.32	.28	.25	.26	.25	.26	.25	.23	.36	*.28	.23	.26
21	.30	.28	.25	.26	.26	.26	.25	.23	.36	.27	.23	.26
22	.30	.28	.26	.28	.25	.26	.25	.22	.34	.25	.23	.26
23	.30	.28	.26	.25	.25	.26	.25	.23	.32	.23	.23	.26
24	.42	.28	.30	.25	.23	.25	.26	.22	.32	.22	.25	.26
25	*.31	.28	.32	*.25	.23	.26	.26	.21	.34	*.53	.25	.26
26	.32	.28	.40	.39	.23	.25	.26	.22	.32	.28	.25	.26
27	.30	.30	.30	.44	.25	.25	.26	.21	.32	.25	.25	.28
28	.28	.28	.28	.30	.25	.25	.98	.21	.87	.23	.25	.28
29	.28	.30	.28	.28	.23	.25	.57	------	2.46	.23	.25	.32
30	.28	.28	.36	.28	*.25	.25	.38	------	.54	.22	.25	.30
31	.32	.28	------	.87	------	.25	.34	------	.51	------	.25	------
TOTAL	10.67	9.58	8.31	10.37	12.24	8.18	11.28	8.14	20.98	11.68	8.63	7.55
MEAN												
MGD	0.344	0.309	0.277	0.335	0.408	0.264	0.364	0.291	0.677	0.389	0.278	0.252
CFS	0.533	0.478	0.429	0.517	0.631	0.408	0.563	0.450	1.05	0.602	0.431	0.389
AC-FT	33	29	26	32	38	25	35	25	64	36	26	23

CALENDAR YEAR	1961	MAX	2.44	MIN	0.23	MEAN MGD	0.331	MEAN CFS	0.512	AC-FT	371
FISCAL YEAR	1961-62	MAX	2.96	MIN	0.21	MEAN MGD	0.350	MEAN CFS	0.542	AC-FT	392

* Discharge measurement made on this day.

Peak discharge (base, 15 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-29	0630	1.54	15.6	24.1

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 1962.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 191.66 ft above mean sea level (levels by Austin and Towill).

Average discharge.--26 years (1936-62), 6.28 mgd (9.72 cfs).

Extremes.--Maximum discharge during year, 72.5 mgd (112 cfs) Mar. 12 (gage height, 2.85 ft); minimum, 2.44 mgd (3.78 cfs) Jan. 2-6.

1935-62: Maximum discharge, 466 mgd (721 cfs) Oct. 23, 1958 (gage height, 5.69 ft), from rating curve extended above 50 mgd; minimum, that of Jan. 2-6, 1962.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	1.90
.7	3.80
1.0	8.00
1.5	18.5

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.16	a3.5	3.00	3.20	7.50	4.16	2.53	4.04	4.04	4.40	3.92	3.20
2	3.92	*3.50	3.10	3.20	7.50	4.16	2.44	3.92	3.80	4.28	3.80	3.20
3	3.92	3.50	3.10	3.10	5.14	4.16	2.44	3.80	3.80	*4.28	3.80	3.20
4	3.92	3.50	3.10	3.10	4.52	4.16	2.44	3.70	3.80	4.28	3.80	*3.20
5	3.80	a3.8	3.10	3.10	4.28	4.52	2.53	3.70	*4.04	4.16	5.71	3.20
6	3.80	a3.6	*3.00	3.75	4.64	4.76	2.53	3.70	5.74	4.04	4.40	3.10
7	3.80	a3.6	3.00	3.30	4.88	4.04	5.27	3.70	4.76	3.80	4.46	3.20
8	3.80	a3.5	3.00	3.20	4.40	3.75	2.90	3.92	5.62	3.80	4.40	3.10
9	3.80	a3.5	3.10	3.10	4.28	3.60	9.33	3.70	4.64	4.44	4.40	3.10
10	3.70	3.40	3.10	3.10	4.28	3.20	3.80	3.70	4.28	4.04	4.04	3.10
11	3.70	3.30	3.00	3.10	4.40	3.00	*3.36	3.70	4.64	4.04	3.80	3.10
12	3.80	3.30	3.00	3.20	4.28	2.90	3.30	3.70	*17.8	4.04	3.60	3.20
13	3.70	3.30	2.90	3.30	4.16	2.71	3.20	3.60	6.83	5.00	3.60	3.30
14	3.60	5.22	2.90	3.40	5.98	4.28	3.20	3.70	10.6	5.00	3.60	3.30
15	3.50	3.40	2.90	3.60	5.14	3.22	3.30	3.70	6.12	6.00	5.62	3.20
16	3.50	3.30	2.80	3.60	4.52	2.90	4.20	*4.58	4.64	4.76	3.92	3.30
17	5.42	3.30	2.80	3.50	4.40	3.00	3.50	4.04	4.28	4.64	3.80	3.40
18	4.04	3.20	2.80	3.60	4.40	2.80	3.50	3.80	4.16	*5.22	3.70	3.30
19	3.70	3.20	2.80	3.60	4.28	2.71	3.40	3.80	3.92	4.52	3.70	3.40
20	3.60	3.10	2.90	3.60	4.28	2.62	3.40	3.80	3.80	4.28	3.50	3.20
21	3.60	3.10	2.80	3.60	4.52	2.80	3.40	3.80	3.92	4.04	3.40	3.20
22	3.60	3.10	2.80	3.60	4.28	2.80	3.50	3.80	4.28	4.04	3.40	3.10
23	3.60	3.10	2.80	3.70	4.16	2.62	3.50	3.92	4.16	4.04	3.30	3.10
24	3.60	3.10	3.10	*3.70	4.16	2.62	3.50	3.80	4.16	4.04	3.30	3.00
25	3.50	3.10	3.10	4.04	4.16	2.53	3.50	3.80	4.40	5.17	3.30	3.00
26	3.60	3.20	3.10	3.92	4.16	2.53	3.50	4.31	4.16	4.52	3.20	2.90
27	3.50	3.10	3.10	4.40	4.40	2.53	3.50	3.80	4.16	4.16	3.20	3.00
28	*3.50	3.10	3.10	4.16	4.16	2.53	10.3	3.80	6.63	4.04	3.20	3.00
29	3.50	3.10	3.20	4.04	*4.16	2.53	5.61	--------	8.93	3.92	3.10	3.10
30	3.50	3.00	3.60	4.04	4.16	2.53	4.40	--------	4.88	3.92	3.10	3.10
31	a3.5	3.00	--------	5.44	--------	2.53	4.16	--------	4.76	-------	3.10	--------
Total	116.18	104.02	90.10	111.29	139.58	99.20	119.44	107.33	165.75	130.91	117.17	94.80
Mean												
Mgd	3.75	3.36	3.00	3.59	4.65	3.20	3.85	3.83	5.35	4.36	3.78	3.16
Cfs	5.80	5.20	4.64	5.55	7.19	4.95	5.96	5.93	8.28	6.75	5.85	4.89
Ac-ft	357	319	277	342	428	304	366	329	509	402	360	291

Calendar Year 1961: Max 16.0 Min 2.44 Mean mgd 4.55 Mean cfs 7.04 Ac-ft 5,090
Fiscal Year 1961-62: Max 17.8 Min 2.44 Mean mgd 3.82 Mean cfs 5.91 Ac-ft 4,280

Peak Discharge (base, 90 mgd).--No peak above base.

* Discharge measurement made on this day.
a No gage-height record.

2850. Waiahole tunnel at Waianu, near Waiahole

Location.--Lat 21°29'05", long 157°53'15", on left bank in Waiahole tunnel at intake No. 29 and 2.1 miles southwest of Waiahole.

Records available.--December 1950 to June 1962.

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.--11 years (1951-62), 24.2 mgd (37.4 cfs).

Extremes.--1950-62: 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. Tunnel diverts from headwaters of nearly all streams from Waiahole Valley to Kahana Valley for irrigation in central Oahu. Occasional diversions at various intakes above station.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21.8	29.9	*20.7	20.7	35.3	20.5	19.9	*20.3	22.2	23.7	22.0	21.8
2	23.3	21.8	19.9	20.5	24.4	20.1	19.9	20.1	20.5	22.2	22.0	21.8
3	21.4	20.9	20.1	20.5	21.6	20.1	19.9	20.1	20.3	22.0	22.0	21.8
4	23.1	20.7	20.3	20.1	20.7	20.5	19.9	19.9	20.1	24.7	22.0	21.8
5	23.4	29.5	20.1	19.9	20.5	22.5	19.9	19.9	23.5	26.8	32.0	21.8
6	21.4	21.4	19.7	23.7	23.1	24.5	20.1	19.7	35.3	22.4	24.0	21.8
7	*21.2	22.9	19.7	20.7	21.2	20.9	29.8	19.7	25.2	21.8	24.0	21.8
8	20.9	20.9	19.7	20.9	20.9	22.9	20.5	20.9	27.8	21.6	22.6	21.8
9	22.6	21.6	20.1	21.7	20.7	23.4	44.9	19.9	25.2	23.3	23.5	22.0
10	23.6	20.5	20.1	20.3	20.5	20.7	22.6	19.7	21.8	22.2	22.6	21.8
11	21.2	20.5	24.0	20.7	20.9	20.5	20.9	19.7	38.8	21.6	22.4	22.0
12	21.6	20.3	19.9	20.1	20.3	20.5	20.5	19.7	44.9	21.4	22.4	24.2
13	20.9	20.7	19.7	19.9	20.1	20.3	20.3	19.5	27.6	21.6	22.4	22.0
14	20.7	23.3	19.9	20.3	23.7	24.7	20.1	22.1	40.6	26.7	22.4	21.8
15	20.5	20.5	19.5	21.2	23.6	25.3	20.1	19.9	24.6	25.6	40.5	21.8
16	20.5	20.3	19.5	20.1	21.4	22.9	21.5	23.6	22.4	30.4	24.2	22.0
17	36.9	20.5	19.5	19.7	20.7	21.8	20.3	20.3	22.0	28.0	22.9	22.2
18	21.8	20.7	19.5	24.2	20.5	21.6	20.1	19.9	22.2	34.0	23.7	27.7
19	20.9	23.8	19.5	20.5	20.7	20.7	19.9	19.9	22.0	23.7	23.3	22.2
20	21.2	21.6	19.5	20.1	20.3	20.7	19.9	19.7	22.6	22.9	22.6	22.2
21	20.5	20.9	19.7	19.7	26.0	28.9	19.9	19.7	22.4	27.0	23.3	21.8
22	20.5	21.6	19.5	20.1	22.6	21.8	19.9	19.7	21.8	25.6	22.6	21.8
23	21.6	20.7	27.1	20.3	21.2	20.7	19.9	19.7	27.2	22.4	22.4	21.8
24	21.6	20.1	22.8	19.7	20.7	20.5	19.9	19.5	21.6	22.2	22.2	21.8
25	20.5	20.1	22.9	19.5	20.7	20.3	25.6	19.5	23.1	27.8	22.2	21.8
26	20.9	20.3	26.0	23.3	20.3	20.1	20.7	22.9	21.6	22.9	22.2	21.8
27	20.5	20.5	21.8	25.3	20.9	20.1	20.1	20.7	22.2	22.2	22.0	21.6
28	20.3	20.3	20.7	27.1	21.2	20.1	27.5	19.9	31.3	22.0	22.0	21.6
29	20.3	21.6	24.8	20.7	20.5	20.1	22.4	--------	37.4	22.0	22.0	23.7
30	20.1	20.1	30.7	20.3	20.3	20.1	20.7	--------	23.3	22.0	21.8	21.8
31	21.9	20.3	--------	28.8	--------	19.9	20.5	--------	26.8	--------	22.2	--------
Total	677.6	668.8	636.9	660.6	655.5	667.7	678.1	566.1	808.3	722.7	728.4	665.8
Mean												
Mgd	21.9	21.6	21.2	21.3	21.8	21.5	21.9	20.2	26.1	24.1	23.5	22.2
Cfs	33.9	33.4	32.8	33.0	33.7	33.3	33.9	31.3	40.4	37.3	36.4	34.3
Ac-ft	2080	2050	1950	2030	2010	2050	2080	1740	2480	2220	2240	2040

Calendar Year 1961: Max 52.2 Min 19.5 Mean mgd 22.6 Mean cfs 35.0 Ac-ft 25,330
Fiscal Year 1961-62: Max 44.9 Min 19.5 Mean mgd 22.3 Mean cfs 34.5 Ac-ft 24,970

* Discharge measurement made on this day.

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 of intake No. 31 of Waiahole tunnel and 2.2 miles southwest of Waiahole.

Records available.--January 1951 to June 1962.

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.--11 years, 0.743 mgd (1.15 cfs).

Extremes.--1951-62: Maximum daily discharge, 62.1 mgd (96.1 cfs) Dec. 1, 1957; no flow most of time.

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

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		(*)	(*)		*4.74	(*)		(*)	*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				4.99			
13					0				.83			
14					0				7.82			
15					0				.02			
16					0				0			
17					0				0			
18					0				0			
19					0				0			
20					0				0			
21					0				0			
22					0				0			
23					0				1.75			
24					0				.04			
25					0				.04			
26					0				0			
27					0				0			
28					0				0			
29					0		----------		0			
30					0		----------		0			
31			----------		----------			----------	0	----------		----------
Total	0	0	0	0	4.74	0	0	0	15.49	0	0	0
Mean												
Mgd	0	0	0	0	0.158	0	0	0	0.500	0	0	0
Cfs	0	0	0	0	0.244	0	0	0	0.774	0	0	0
Ac-ft	0	0	0	0	15	0	0	0	48	0	0	0

Calendar Year 1961: Max 4.74 Min 0 Mean mgd 0.013 Mean cfs 0.201 Ac-ft 15
Fiscal Year 1961-62: Max 7.82 Min 0 Mean mgd 0.055 Mean cfs 0.085 Ac-ft 63

* Discharge measurement or observation of no flow made on this day.

2870. Waiahole tunnel at north portal, near Waiahole

Location.--Lat 21°28'15", long 157°53'30", on right bank in Waiahole tunnel at the boundary of State and private lands and 2.6 miles southwest of Waiahole.

Records available.--January 1951 to June 1962.

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.--11 years, 26.1 mgd (40.4 cfs).

Extremes.--1951-62: 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 Waiahole Valley to Kahana Valley for irrigation in central Oahu. Occasional diversions at numerous intakes above station.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	25.8	34.2	*23.3	24.0	33.8	21.5	21.1	21.8	25.2	27.5	25.5	*25.3
2	26.5	24.5	22.5	23.8	27.5	21.3	21.3	21.8	23.0	*25.8	25.5	25.3
3	*24.5	23.8	22.8	23.3	23.0	21.3	21.8	21.8	23.0	25.3	25.5	25.3
4	26.0	23.5	22.8	23.0	22.3	21.8	22.8	21.8	22.5	27.6	25.3	25.0
5	26.2	33.8	23.0	22.8	22.3	23.8	22.3	22.3	25.7	30.9	27.5	25.0
6	24.3	24.5	22.5	26.8	25.8	27.1	21.3	22.0	37.3	25.8	28.0	25.0
7	24.3	26.0	22.5	23.5	23.0	22.5	33.0	22.5	29.2	25.5	27.2	25.0
8	24.0	24.0	22.3	23.5	22.3	28.7	22.0	24.0	31.0	25.3	26.0	24.8
9	25.1	24.5	22.8	24.8	22.0	25.4	49.1	23.0	26.9	28.0	26.8	25.3
10	26.5	23.8	22.5	23.3	22.0	22.3	24.3	23.0	23.3	26.0	26.0	25.3
11	24.3	23.5	26.5	23.3	22.5	22.0	22.5	23.0	40.4	25.5	25.8	25.0
12	24.3	23.5	22.3	22.5	21.8	21.8	22.3	22.8	45.0	25.3	25.5	27.4
13	24.0	24.0	22.0	22.5	21.5	21.8	22.0	22.8	29.1	25.5	25.5	25.3
14	23.5	28.8	22.3	23.3	26.1	26.9	21.8	25.7	34.9	31.3	25.5	25.0
15	23.5	23.8	22.0	24.5	25.8	27.2	21.8	23.3	27.0	30.5	45.5	25.0
16	23.5	23.5	22.0	23.0	23.0	24.0	23.7	26.9	24.3	35.5	26.3	25.3
17	41.8	23.8	22.0	22.3	22.0	23.3	21.8	22.3	23.5	33.6	25.3	25.5
18	24.5	23.5	21.8	26.6	22.0	23.3	21.8	21.8	23.8	38.1	27.0	31.0
19	24.0	26.5	22.0	23.5	22.0	22.0	21.5	21.8	23.8	28.3	26.5	25.8
20	24.0	24.3	21.8	23.0	21.5	22.0	21.3	21.5	24.5	26.8	25.8	25.5
21	23.5	23.8	22.0	22.5	28.3	30.1	21.3	21.1	24.3	30.7	26.5	25.0
22	23.5	24.3	21.8	22.5	24.5	23.3	21.3	21.1	23.5	30.0	25.8	25.0
23	24.3	23.5	29.1	23.3	22.3	22.3	21.3	21.1	27.2	26.0	25.8	24.8
24	24.5	23.0	25.2	22.3	21.8	21.8	21.3	20.8	23.8	25.8	26.5	24.8
25	23.3	23.0	25.5	22.5	21.8	21.8	26.5	20.8	25.0	32.8	25.5	24.8
26	24.0	23.0	27.5	26.2	21.5	21.5	22.0	25.7	24.5	27.0	25.5	24.8
27	23.3	23.3	24.5	28.3	22.0	21.5	21.3	23.8	25.5	26.0	25.5	24.5
28	23.3	23.3	24.0	31.2	22.3	21.3	29.5	22.8	35.4	25.8	25.5	24.5
29	23.3	24.3	26.4	23.8	21.8	21.3	24.3	------	41.9	25.8	25.3	26.8
30	23.0	22.8	34.9	23.0	21.5	21.3	22.0	------	26.8	25.8	25.3	24.8
31	24.9	23.0	------	32.0	------	21.1	22.0	------	29.6	------	25.5	------
TOTAL	771.5	765.1	712.6	750.9	700.0	717.3	732.3	633.1	870.9	843.8	833.7	764.9
MEAN												
MGD	24.9	24.7	23.8	24.2	23.3	23.1	23.6	22.6	28.1	28.1	26.9	25.4
CFS	38.5	38.2	36.7	37.5	36.1	35.8	36.5	35.0	43.5	43.5	41.6	39.3
AC-FT	2,370	2,350	2,190	2,300	2,150	2,200	2,250	1,940	2,670	2,590	2,560	2,340

CALENDAR YEAR	1961:	MAX	58.6	MIN	21.1	MEAN MGD	25.6	MEAN CFS	39.6	AC-FT	28,650
FISCAL YEAR 1961-62:		MAX	49.1	MIN	20.8	MEAN MGD	24.9	MEAN CFS	38.5	AC-FT	27,910

* Discharge measurement made on this day.

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 eastern boundary of Ewa Forest Reserve and 5.2 miles northeast of Waipahu Post Office.

Records available.--August 1956 to June 1962.

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.--5 years (1957-62), 31.4 mgd (48.6 cfs).

Extremes.--1956-62: 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 except those for period of no gage-height record, which are fair. Records represent entire flow of Waiahole water-development tunnel; water is used for irrigation of sugar cane in vicinity of Waipahu.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	31.8	*39.4	*28.9	28.9	*39.8	*26.8	26.2	*26.8	*30.1	33.1	*29.8	*29.3
2	31.5	30.2	27.7	*28.3	33.4	26.8	*25.9	26.8	28.3	*30.9	29.3	29.3
3	29.9	29.3	27.7	28.3	29.3	26.8	26.5	26.5	28.0	30.5	29.3	28.9
4	30.9	28.9	27.7	28.0	28.6	27.1	27.4	26.8	27.7	30.5	29.3	28.9
5	31.5	40.0	28.3	27.7	28.0	28.6	27.4	27.4	30.5	36.6	40.5	28.9
6	29.9	30.2	27.7	29.9	31.8	32.4	26.2	27.4	40.1	30.9	31.8	28.9
7	29.3	30.9	27.4	31.0	28.9	27.7	38.0	27.4	36.7	30.5	30.9	28.9
8	29.3	29.3	27.4	28.9	28.3	29.3	27.1	28.9	37.2	30.5	29.9	28.9
9	30.2	29.9	27.4	29.6	28.0	30.9	53.9	28.0	32.1	32.5	30.5	28.9
10	31.8	28.9	27.7	28.6	27.7	27.7	30.5	28.0	28.9	30.9	30.2	28.6
11	29.3	28.9	31.5	28.0	28.6	27.1	28.0	28.0	42.9	29.9	29.6	28.3
12	29.6	28.9	27.7	28.3	27.7	27.1	27.4	27.7	53.7	30.2	29.3	30.5
13	29.3	28.6	27.4	27.7	27.4	A27.1	27.4	27.7	34.7	30.2	29.3	28.6
14	29.3	33.4	27.7	28.0	31.6	A32.1	27.1	30.5	43.2	35.0	28.9	28.3
15	28.9	28.9	27.1	29.3	32.3	A32.5	27.1	28.3	33.7	35.4	48.9	28.6
16	28.9	28.9	27.1	28.6	28.6	29.3	29.3	31.7	30.2	39.7	30.9	28.6
17	50.0	28.9	27.1	27.4	27.7	28.9	27.1	27.7	29.3	34.7	29.9	28.9
18	31.2	28.9	26.8	30.9	27.4	28.6	26.8	27.1	29.6	46.5	31.2	34.0
19	30.2	30.9	26.8	29.3	28.0	27.4	26.8	26.8	29.6	32.8	30.5	29.3
20	30.2	30.9	26.8	28.3	27.1	27.4	26.5	26.8	29.9	31.5	30.2	29.3
21	29.6	29.3	26.8	27.7	33.4	34.2	26.5	26.5	29.6	33.0	30.5	28.9
22	29.6	29.6	26.5	27.7	30.2	29.3	26.5	26.5	29.6	35.0	30.2	28.9
23	29.9	29.3	32.9	28.6	28.0	27.7	26.5	26.5	33.0	30.2	29.9	28.9
24	30.9	28.3	29.9	27.7	27.7	27.4	26.5	26.2	28.9	29.9	29.9	28.6
25	29.3	28.3	30.2	27.4	27.7	27.1	31.2	26.2	30.9	36.3	29.9	28.6
26	29.6	28.6	32.0	30.1	27.1	26.8	27.4	30.5	29.9	31.2	29.9	28.6
27	29.6	28.6	29.3	34.9	28.0	26.5	26.5	29.3	30.9	29.9	29.6	28.6
28	29.3	28.6	28.6	35.8	28.0	26.5	33.4	28.0	39.1	29.9	29.6	28.3
29	29.3	29.3	30.6	29.6	26.8	26.5	30.2	------	49.1	29.6	29.6	30.2
30	29.3	28.3	39.1	28.3	26.8	26.5	27.1	------	32.5	29.6	29.3	28.6
31	30.5	28.0	------	34.7	------	26.2	27.1	------	33.4	------	29.9	------
TOTAL	949.9	930.4	859.8	907.5	873.9	876.3	891.5	776.0	1,043.3	977.4	958.3	872.1
MEAN												
MGD	30.6	30.0	28.7	29.3	29.1	28.3	28.8	27.7	33.7	32.6	30.9	29.1
CFS	47.4	46.4	44.3	45.3	45.1	43.7	44.5	42.9	52.1	50.4	47.8	45.0
AC-FT	2,920	2,860	2,640	2,790	2,680	2,690	2,740	2,380	3,200	3,000	2,940	2,680

CALENDAR YEAR 1961: MAX 70.5 MIN 26.2 MEAN MGD 30.6 MEAN CFS 47.3 AC-FT 34,260
FISCAL YEAR 1961-62: MAX 53.9 MIN 25.9 MEAN MGD 29.9 MEAN CFS 46.3 AC-FT 33,520

* Discharge measurement made on this day.
A No gage-height record.

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 1962.

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

Average discharge.--7 years, 4.65 mgd (7.19 cfs).

Extremes.--Maximum discharge during year, 171 mgd (265 cfs) Mar. 14 (gage height, 2.88 ft), from rating curve extended above 75 mgd as explained below; minimum, 1.90 mgd (2.94 cfs) Jan. 3-5.

1955-62: Maximum discharge, 625 mgd (967 cfs) Apr. 16, 1960 (gage height, 4.32 ft), from rating curve extended above 75 mgd on basis of field estimate at gage height 4.23 ft; minimum, 1.71 mgd (2.65 cfs) Sept. 9, 10, 16, 1957.

Remarks.--Records good except those for periods of no gage-height record, which are fair. During the fiscal year, an average of 1.4 million gallons a day was diverted above station by pumping into Waiahole tunnel for irrigation in central Oahu.

Rating table (gage height, in feet, and discharge in million gallons a day)

0.5	1.72	1.2	15.5
.6	2.73	1.5	28.5
.8	5.60		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	5.0	4.6	2.20	2.10	12.6	3.61	3.35	3.48	2.40	2.85	2.85	2.51
2	4.3	*3.3	2.20	2.10	6.23	3.61	3.35	3.48	2.40	2.73	2.62	2.40
3	3.5	2.62	2.20	2.20	4.32	3.61	2.62	3.48	2.20	2.73	2.62	2.40
4	3.0	2.51	2.20	2.20	3.87	3.61	1.90	3.48	2.20	2.73	2.73	2.40
5	3.3	2.85	2.20	2.10	3.74	*3.74	2.00	2.73	2.51	2.73	6.36	*2.40
6	2.8	2.62	2.20	2.84	5.21	4.64	3.48	2.97	2.62	2.79	3.74	2.40
7	2.6	2.51	2.30	2.40	4.48	3.74	7.93	2.40	2.86	2.62	3.22	2.40
8	2.5	2.51	*2.30	2.20	3.87	4.00	4.00	2.30	6.15	2.62	2.97	2.40
9	2.5	2.51	2.40	2.20	3.74	4.32	10.6	2.10	4.48	4.36	2.97	2.30
10	2.5	2.40	2.51	2.10	3.74	3.74	4.48	2.10	4.00	3.22	2.85	2.30
11	2.5	2.30	2.62	2.07	3.74	3.61	3.74	2.10	6.43	2.73	2.73	2.20
12	2.6	2.20	2.51	2.44	3.74	3.61	*3.61	2.10	25.7	2.62	2.51	2.20
13	2.4	2.30	2.51	2.10	3.61	3.61	3.48	2.10	7.67	2.62	2.62	2.20
14	2.3	3.75	2.51	2.10	4.16	4.00	3.48	2.30	19.6	2.90	2.51	2.30
15	2.3	2.40	2.62	2.30	4.48	4.00	3.48	2.20	5.98	2.90	6.15	2.30
16	2.3	2.30	2.62	2.30	4.16	3.74	3.74	3.48	4.96	3.48	4.48	2.30
17	4.0	2.30	2.51	2.41	3.74	3.74	3.61	3.61	4.48	3.10	3.56	2.40
18	3.22	2.20	2.51	2.51	3.74	3.74	3.61	3.48	4.32	3.74	2.62	2.20
19	2.73	2.51	2.51	2.20	3.61	3.61	3.48	3.48	4.16	2.97	2.73	2.40
20	2.73	2.30	2.62	2.30	3.61	3.74	3.48	3.48	4.16	*2.83	2.62	2.30
21	2.73	2.30	2.62	2.30	3.87	3.74	3.48	*3.35	4.16	2.73	2.62	2.20
22	2.85	2.30	2.62	2.30	4.16	3.74	3.61	3.35	4.16	2.85	2.51	2.20
23	2.85	2.20	2.73	*2.40	3.74	3.74	3.48	3.61	5.57	2.85	2.51	2.20
24	2.73	2.20	2.62	2.30	3.61	3.61	3.48	3.48	4.39	2.85	2.51	2.20
25	2.85	2.20	2.73	2.30	3.61	3.61	3.48	3.48	4.73	4.03	2.40	2.10
26	3.09	2.20	3.22	2.40	3.74	3.61	3.35	2.85	3.22	3.61	2.40	2.10
27	2.73	2.20	2.73	2.51	3.74	3.61	3.48	2.51	2.30	3.09	2.40	2.10
28	2.62	2.40	2.10	3.25	3.61	3.61	5.67	2.30	3.45	2.85	2.51	2.20
29	2.62	2.30	2.30	2.85	3.61	3.48	4.32	------	4.49	2.73	2.40	2.20
30	2.5	2.30	2.20	2.62	3.61	3.35	3.74	------	3.48	2.73	2.40	2.20
31	3.0	2.20	------	5.70	------	3.35	3.74	------	3.09	------	2.40	------
TOTAL	89.65	77.79	74.12	76.10	127.69	115.47	121.25	81.78	162.32	89.59	92.52	68.41
MEAN												
MGD	2.89	2.51	2.47	2.45	4.26	3.72	3.91	2.92	5.24	2.99	2.98	2.28
CFS	4.47	3.88	3.82	3.80	6.58	5.76	6.05	4.52	8.10	4.62	4.62	3.53
AC-FT	275	239	227	234	392	354	372	251	498	275	284	210

CALENDAR YEAR 1961:	MAX	12.9	MIN	2.07	MEAN MGD	3.08	MEAN CFS	4.77	AC-FT	3,450
FISCAL YEAR 1961-62:	MAX	25.7	MIN	1.90	MEAN MGD	3.22	MEAN CFS	4.98	AC-FT	3,610

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-12	0830	2.74	150	232	3-14	0200	2.88	171	265

* Discharge measurement made on this day.
Note.--No gage-height record July 1-17, July 30 to Aug. 2.

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.--2.25 sq mi.

Records available.--December 1959 to June 1962.

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

Extremes.--Maximum discharge during year, 689 mgd (1,070 cfs) Nov. 1 (gage height, 5.54 ft), from rating curve extended above 74 mgd as explained below; minimum, 0.84 mgd (1.30 cfs) Sept. 6, 7, 16.

1959-62: Maximum discharge, 1,530 mgd (2,370 cfs) May 12, 1960 (gage height, 7.45 ft), from rating curve extended above 74 mgd on basis of slope-area measurement at gage height 4.88 ft; minimum, that of Sept. 6, 7, 16, 1961.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.3	0.43	1.7	6.00
1.4	1.07	1.9	13.0
1.5	2.13	2.1	23.5
1.6	3.70	2.5	54.0

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.95	5.34	1.07	1.33	44.3	2.13	1.87	3.02	3.45	5.54	3.7	2.28
2	3.02	2.71	1.07	1.33	11.2	2.13	1.87	2.71	2.71	4.62	3.0	2.28
3	2.28	2.00	1.15	1.43	5.31	2.13	1.87	2.56	2.28	4.39	3.0	2.13
4	2.00	1.64	1.25	1.43	5.31	2.13	1.87	2.42	2.13	4.16	3.3	2.13
5	2.13	3.14	1.15	1.33	3.53	*3.93	1.87	2.28	*2.64	6.16	20	2.13
6	1.87	1.87	*1.01	1.33	5.99	5.68	2.00	2.13	4.16	3.93	9.0	2.13
7	1.75	1.87	.91	1.43	4.62	3.36	11.5	2.13	3.89	3.70	7.0	2.13
8	1.64	1.75	1.07	1.25	3.53	3.02	3.36	4.45	14.1	3.53	6.0	1.87
9	1.64	1.64	1.07	1.43	3.19	3.36	41.6	2.85	10.9	7.50	6.0	1.75
10	1.64	*1.64	1.15	1.33	3.02	2.71	7.50	2.42	6.00	5.08	5.2	1.75
11	1.64	1.54	1.15	2.33	3.70	2.56	4.85	2.28	14.6	3.93	4.5	1.75
12	1.75	1.54	.99	3.27	3.02	2.56	*3.93	2.13	26.2	3.53	4.0	2.27
13	1.54	1.54	.99	1.64	2.71	2.42	3.53	2.13	15.0	3.70	5.0	1.64
14	1.43	2.13	.99	1.87	4.25	2.71	3.19	3.69	*48.6	5.03	4.0	1.54
15	1.43	1.64	.99	3.19	4.85	2.56	3.19	2.56	*15.2	7.38	17	1.64
16	1.43	1.54	.99	2.71	4.16	2.56	4.67	5.35	10.3	13.5	10	1.64
17	*4.60	1.64	.99	1.87	3.53	2.56	3.53	3.70	8.48	*5.77	8.0	1.64
18	2.00	1.75	1.07	8.01	3.19	2.56	3.02	2.85	6.62	8.0	4.5	1.64
19	1.64	2.22	1.15	4.10	3.19	2.42	2.85	2.56	5.77	5.0	5.0	1.54
20	1.54	1.64	1.15	2.56	2.85	2.56	2.71	2.56	5.77	4.0	4.5	1.64
21	1.43	1.25	1.25	2.28	4.01	2.98	2.56	2.28	4.85	3.5	4.8	1.54
22	1.43	1.25	1.15	2.00	3.19	2.56	2.71	2.13	4.62	3.8	3.5	1.54
23	1.54	1.25	1.15	*2.00	2.71	2.28	2.56	2.42	5.08	4.0	3.5	1.54
24	1.64	1.15	1.43	1.64	2.42	2.13	2.56	2.13	4.39	4.2	3.5	1.54
25	1.33	1.15	2.42	1.43	2.42	2.13	3.50	2.00	5.08	7.0	2.6	1.54
26	1.75	1.25	5.80	1.54	2.42	2.00	2.71	2.95	3.93	6.0	2.6	1.43
27	1.43	1.25	2.42	2.28	2.42	1.87	2.42	2.28	3.70	4.5	2.6	1.54
28	1.43	1.25	1.54	1.75	2.56	1.87	6.61	2.13	17.6	4.0	3.5	1.64
29	1.43	1.25	1.55	1.54	2.28	1.87	5.51	---------	19.4	3.2	*2.56	1.75
30	1.33	1.15	1.75	1.54	2.28	1.87	3.36	---------	6.62	3.2	2.28	1.43
31	1.75	1.07	---------	3.36	---------	1.87	3.02	---------	6.31	---------	2.28	---------
Total	60.41	54.05	41.82	66.53	152.16	79.48	148.30	75.10	290.38	151.85	166.42	53.01
Mean												
Mgd	1.95	1.74	1.39	2.15	5.07	2.56	4.78	2.68	9.37	5.06	5.37	1.77
Cfs	3.01	2.70	2.16	3.32	7.85	3.97	7.40	4.15	14.5	7.83	8.31	2.73
Ac-ft	185	166	128	204	467	244	455	230	891	466	511	163

Calendar Year 1961:	Max	44.3	Min	0.91	Mean mgd	2.97	Mean cfs	4.60	Ac-ft	3,330
Fiscal Year 1961-62:	Max	48.6	Min	0.91	Mean mgd	3.67	Mean cfs	5.68	Ac-ft	4,110

* Discharge measurement made on this day.
Note.--No gage-height record Apr. 18 to May 28.

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-1	1500	5.54	689	1,070	3-14	0230	4.88	484	749

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 East Branch, 1.1 miles southwest of Kahana, and 2.2 miles southwest of Kaaawa Post Office.

Drainage area.--3.74 sq mi.

Records available.--December 1958 to June 1962.

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

Extremes.--Maximum discharge during year, 11,800 mgd (18,300 cfs) Nov. 1 (gage height, 6.69 ft), from rating curve extended above 350 mgd by logarithmic plotting; minimum, 6.50 mgd (10.1 cfs) Sept. 17, 18, 20.

1958-62: Maximum discharge, that of Nov. 1, 1961; minimum, that of Sept. 17, 18, 20, 1961.

Remarks.--Records fair. Approximately 6 mgd is diverted by Waiahole Water Co. at 800 ft elevation, 2.3 miles above station.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	13.9	*23.4	A8.0	19.1	490	13.1	10.8	12.1	14.6	17.6	*13.1	12.1
2	14.4	14.6	A7.7	18.0	35.2	12.6	10.5	11.6	13.1	15.7	12.6	11.2
3	12.1	10.5	A8.1	*16.8	24.3	12.1	10.8	11.2	12.6	*14.6	12.1	10.8
4	16.2	8.85	A8.4	*15.1	20.8	14.9	10.5	10.8	12.1	15.6	11.6	10.8
5	19.3	19.6	A8.8	13.6	19.1	22.4	10.5	10.5	17.3	30.6	46.0	10.0
6	14.1	11.6	A8.2	30.0	19.1	*24.2	10.5	*10.0	49.3	15.1	22.2	10.0
7	*12.6	14.4	*7.80	17.4	17.4	15.1	32.3	10.0	27.1	15.1	23.6	10.8
8	12.1	*11.2	7.45	15.9	16.2	21.3	13.1	16.3	31.7	14.1	16.8	10.0
9	13.4	12.1	9.43	15.2	15.7	24.3	87.7	12.6	26.6	17.0	17.6	10.5
10	17.5	10.8	10.1	*13.1	15.1	16.8	17.4	11.2	19.7	18.0	15.7	10.5
11	*13.1	10.0	18.5	16.0	25.1	15.1	*15.1	10.8	177	16.8	14.6	9.65
12	14.7	8.85	10.0	19.5	15.1	*14.6	14.6	10.5	164	15.1	14.1	*13.5
13	12.6	8.85	8.85	12.6	14.6	13.6	13.6	10.0	45.3	14.6	13.1	11.2
14	11.6	17.1	8.50	13.9	18.3	20.7	12.6	15.7	159	19.8	12.6	9.25
15	10.8	*10.8	7.45	18.2	19.0	33.0	12.1	11.6	34.4	19.1	78.0	10.5
16	10.8	8.85	7.15	14.1	16.8	19.2	14.2	18.1	25.0	20.1	*19.7	10.5
17	*39.2	9.65	6.80	12.6	14.1	18.0	13.1	14.6	21.5	*25.2	16.8	12.4
18	15.1	*10.5	6.80	*34.1	14.6	18.4	12.6	12.6	21.3	30.9	18.3	47.1
19	13.6	13.1	*7.80	16.5	15.1	16.2	11.6	12.1	19.9	18.8	17.7	14.1
20	13.1	13.5	7.15	*14.6	13.6	*16.2	11.2	*12.6	19.7	17.4	15.1	13.1
21	12.6	12.8	8.85	13.1	*26.2	47.3	10.8	11.6	18.6	41.0	15.2	12.1
22	12.1	12.1	7.28	12.6	16.2	18.9	10.8	10.8	17.4	25.2	15.1	11.2
23	14.8	11.2	45.8	14.8	15.7	17.4	*10.8	11.6	27.1	18.0	14.6	10.8
24	15.4	8.85	18.5	12.1	14.1	16.8	10.5	10.8	16.8	16.2	13.6	10.5
25	11.6	9.25	16.5	*11.6	14.8	15.1	20.1	10.0	19.0	27.3	13.6	10.0
26	13.1	A10	*54.9	17.6	13.6	14.6	12.8	15.1	16.2	17.4	13.6	*9.65
27	10.8	A10	33.2	23.8	14.6	*13.1	11.6	12.6	18.7	15.7	12.1	10.0
28	10.8	A10	21.8	313	14.6	12.6	19.2	11.2	23.3	14.6	11.2	11.2
29	10.8	A9.5	30.1	34.3	*14.1	12.6	15.6	------	46.5	14.1	*11.6	14.3
30	9.65	A9.0	70.1	22.2	13.1	12.6	13.1	------	18.0	13.6	11.2	10.8
31	*11.9	A8.5	------	44.7	------	11.6	12.6	------	21.4	------	11.6	------
TOTAL	433.75	359.45	480.01	866.1	996.2	554.4	492.7	338.6	1,154.2	574.3	554.7	368.55
MEAN MGD	14.0	11.6	16.0	27.9	33.2	17.9	15.9	12.1	37.2	19.1	17.9	12.3
CFS	21.6	17.9	24.8	43.2	51.4	27.7	24.6	18.7	57.6	29.6	27.7	19.0
AC-FT	1,330	1,100	1,470	2,660	3,060	1,700	1,510	1,040	3,540	1,760	1,700	1,130

CALENDAR YEAR	1961	MAX	490	MIN	6.80	MEAN MGD	18.7	MEAN CFS	28.9	AC-FT	20,890
FISCAL YEAR 1961-62		MAX	490	MIN	6.80	MEAN MGD	19.7	MEAN CFS	30.5	AC-FT	22,000

* Discharge measurement made on this day.
A No gage-height record.

Peak discharge (base, 800 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-28	1700	5.15	3,840	5,940	3-12	0900	4.34	1,730	2,680
11- 1	1330	6.69	11,800	18,300	3-14	0230	5.11	3,710	5,740

3020. Punaluu ditch near Punaluu

Location.--Lat 21°33'40", long 157°54'10", on right bank 800 ft downstream from intake, 1.7 miles southwest of bridge on Kamehameha Highway at Punaluu, and 3.3 miles southeast of Hauula Post Office.

Records available.--May 1953 to June 1962.

Gage.--Water-stage recorder. Altitude of gage, 200 ft (from topographic map).

Average discharge.--9 years, 7.28 mgd (11.3 cfs).

Extremes.--1953-62: Maximum daily discharge, 21.6 mgd (33.4 cfs) Jan. 14, 1960; minimum daily, 0.02 mgd (0.03 cfs) Jan. 9, 14, 1955, Nov. 8, 9, 1957, Nov. 3, 4, 9-13, 1961.

Remarks.--Records good. Ditch diverts from Punaluu Stream for irrigation of sugar cane in the Punaluu district.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	12.5	12.1	12.8	10.5	6.71	2.24	1.80	8.16	3.03	1.20	8.62	11.3
2	11.1	10.6	9.74	10.0	.03	2.10	1.58	6.62	2.95	1.20	2.97	11.1
3	11.6	10.5	9.88	10.2	.02	2.03	1.68	2.80	2.95	1.20	1.80	10.9
4	11.7	10.2	9.74	10.5	.02	*2.17	1.62	2.65	2.95	1.20	3.50	10.9
5	11.9	12.4	9.60	9.74	.03	2.24	1.74	2.72	3.03	1.20	3.84	10.8
6	11.1	10.5	9.46	10.9	.03	2.17	1.62	2.80	3.18	1.20	3.51	10.8
7	10.8	11.1	*9.46	10.6	.03	2.10	1.57	2.80	3.03	1.20	10.1	10.8
8	10.2	10.5	9.60	9.74	.03	2.10	*1.45	2.88	3.11	1.11	12.6	10.8
9	10.5	10.5	10.0	10.0	.02	2.10	2.39	2.72	3.11	1.60	12.8	10.8
10	11.6	10.2	10.3	9.60	.02	2.10	1.79	2.65	3.03	1.85	12.2	10.6
11	10.8	10.2	10.3	9.88	.02	1.97	1.79	2.72	3.46	1.85	11.9	10.6
12	10.8	9.88	9.60	9.60	.02	1.97	1.79	2.72	1.11	1.85	11.7	10.8
13	10.5	10.0	9.60	9.46	.02	1.97	1.85	2.80	1.11	1.85	11.7	10.9
14	10.5	11.3	9.46	10.5	.18	2.10	1.86	2.80	1.28	1.85	11.6	10.8
15	10.3	10.0	9.46	11.3	.42	1.85	1.62	2.80	.83	1.74	17.0	10.9
16	10.5	9.88	9.46	8.12	.14	1.85	1.51	2.88	.79	*1.79	13.8	11.1
17	13.6	10.2	9.32	5.62	.11	1.74	1.30	2.88	.75	5.56	12.9	11.3
18	11.1	10.2	9.46	5.72	.12	1.79	1.35	2.88	.67	13.8	12.6	11.1
19	10.8	11.1	9.46	*5.93	.14	1.79	1.57	*2.88	.68	12.9	13.1	10.6
20	10.6	10.5	9.46	5.93	.16	1.85	1.54	2.95	.63	12.4	12.2	10.6
21	10.3	10.8	9.60	7.85	.20	1.85	1.83	2.95	.60	12.4	11.9	10.5
22	10.2	10.5	9.32	10.0	.40	1.85	1.79	2.95	.60	12.4	11.6	10.5
23	11.6	10.0	9.74	10.6	.43	1.85	1.79	2.95	.56	11.9	11.6	10.5
24	11.3	9.46	9.88	9.88	.40	1.91	1.85	2.95	.56	11.7	11.4	10.5
25	10.5	9.88	10.2	10.0	.40	1.91	2.03	2.95	.49	13.3	11.4	10.3
26	*10.6	10.0	10.5	11.1	1.68	1.85	2.30	2.95	1.32	12.2	11.3	10.3
27	10.5	9.74	10.6	13.1	3.18	1.91	1.91	2.88	2.17	11.7	11.1	10.5
28	10.3	10.5	10.5	17.4	2.72	1.97	1.79	2.88	2.03	11.6	*11.3	10.3
29	10.3	10.0	10.6	9.91	2.24	2.03	1.45	------	1.62	11.6	11.4	10.5
30	10.0	9.74	13.2	7.64	2.17	2.03	5.42	------	1.45	11.4	11.3	10.2
31	10.6	10.7	------	10.1	------	1.97	5.54	------	1.25	------	11.1	------
TOTAL	338.7	323.18	300.30	301.42	22.09	61.36	61.12	88.57	54.33	188.75	325.84	321.6
MEAN												
MGD	10.9	10.4	10.0	9.72	0.736	1.98	1.97	3.16	1.75	6.29	10.5	10.7
CFS	16.9	16.1	15.5	15.0	1.14	3.06	3.05	4.89	2.71	9.73	16.3	16.6
AC-FT	1,040	992	922	925	68	188	188	272	167	579	1,000	987

Calendar Year 1961:	Max	17.4	Min	0.02	Mean mgd	7.96	Mean cfs	12.3	Ac-ft	8,920
Fiscal Year 1961-62:	Max	17.4	Min	0.02	Mean mgd	6.54	Mean cfs	10.1	Ac-ft	7,330

* Discharge measurement made on this day.

3030. Punaluu Stream near Punaluu

Location.--Lat 21°33'35", long 157°54'05", on left bank at Punaluu ditch diversion dam, 1.8 miles southwest of Punaluu, and 3.5 miles southeast of Hauula.

Drainage area.--2.78 sq mi.

Records available.--May 1953 to June 1962.

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

Average discharge.--9 years, 8.17 mgd (12.6 cfs).

Extremes.--Maximum discharge during year, 2,570 mgd (3,980 cfs) Nov. 1 (gage height, 6.06 ft), from rating curve extended above 110 mgd; no flow for many days.

1953-62: Maximum discharge, that of Nov. 1, 1961; no flow at times.

Remarks.--Records fair except those for period of no gage-height record and those below 0.5 mgd, which are poor. Records do not include flow of Punaluu ditch (see preceding page).

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 28 to Nov. 18, Dec. 5-13)

0.02	0	0.8	10.2
.1	.13	1.0	21.0
.2	.55	1.2	39.0
.3	1.27	1.5	82.0
.4	2.35	1.8	145
.6	5.40		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.46	0.96	2.81	0.01	126	A8.6	5.80	1.13	8.46	10.5	3.25	0.87
2	.44	.04	0	0	22.1	A7.0	5.80	2.53	6.20	9.50	7.66	.80
3	.19	.01	0	.01	13.6	A6.8	5.80	6.00	5.80	9.20	8.65	.73
4	.93	0	0	.01	11.3	*A8.0	5.60	6.00	5.40	9.50	7.45	.73
5	.71	1.20	0	0	10.2	9.42	5.80	6.00	7.21	9.50	28.8	.67
6	.22	.08	0	1.31	9.50	10.4	6.00	5.80	12.4	8.90	13.8	.67
7	.13	.26	*0	.52	9.50	6.80	14.9	6.00	8.21	8.90	5.41	.67
8	.13	.02	0	0	8.40	6.96	*6.92	10.3	14.9	8.90	2.16	.67
9	.16	.02	.17	.04	8.15	8.40	52.7	6.80	13.8	13.4	2.35	.67
10	.71	0	.08	0	8.15	6.60	13.0	6.40	8.90	10.5	1.77	.61
11	.16	0	.15	0	11.2	6.20	10.5	6.20	102	8.90	1.57	.61
12	.19	0	0	0	7.90	6.20	9.85	6.00	121	8.65	1.37	.67
13	.13	0	0	0	7.68	6.00	9.50	6.00	35.5	8.65	1.47	.73
14	.06	.34	0	.33	7.90	12.2	9.20	8.55	89.2	11.9	1.27	.67
15	.04	0	0	.31	8.83	16.3	8.90	6.60	25.8	11.5	35.4	.80
16	.06	0	0	1.07	7.68	7.68	9.85	10.4	17.8	*10.7	3.90	.80
17	2.81	0	0	2.70	7.68	8.15	8.90	7.45	14.8	10.5	2.60	.99
18	.26	0	0	3.34	9.06	7.20	8.40	6.80	13.6	6.99	2.10	.80
19	.13	.55	0	*2.93	A8.4	7.00	8.40	*6.20	13.0	2.75	2.60	.61
20	.10	.07	0	3.90	A7.4	6.80	8.15	5.60	16.0	2.00	1.77	.55
21	.02	.15	0	1.90	A10	9.31	8.15	5.40	12.5	2.27	1.66	.50
22	.02	.03	0	.02	A8.6	7.00	8.40	5.24	11.3	2.23	1.47	.50
23	.64	0	.02	.11	A7.6	8.67	8.15	5.40	13.2	1.57	1.37	.50
24	.48	0	.02	0	A6.6	7.00	8.15	5.24	10.5	1.37	1.27	.50
25	.03	0	.10	0	A6.8	6.80	8.65	5.03	11.3	5.77	1.27	.50
26	*.07	0	.23	.50	A6.2	6.60	7.11	6.63	9.50	2.00	1.20	.50
27	.01	0	.21	2.98	A6.6	6.40	6.60	5.60	8.65	1.57	1.11	.50
28	0	.12	.21	109	A6.2	6.40	13.2	5.60	10.2	1.47	*.95	.50
29	0	.01	.24	11.6	A6.2	6.40	8.93	------	29.9	1.37	.80	.50
30	0	0	5.17	3.55	A6.0	6.20	3.17	------	10.9	1.37	.80	.50
31	.07	2.23	------	38.4	------	6.00	1.66	------	11.8	------	.80	------
TOTAL	11.36	6.09	9.41	184.54	381.43	239.49	296.14	170.90	679.73	202.33	148.05	19.32
MEAN												
MGD	0.366	0.196	0.314	5.95	12.7	7.72	9.55	6.10	21.9	6.74	4.78	0.644
CFS	0.567	0.304	0.485	9.21	19.6	11.9	14.8	9.44	33.9	10.4	7.39	0.996
AC-FT	35	19	29	566	1,170	735	909	524	2,090	621	454	59

CALENDAR YEAR	1961	MAX	126	MIN	0	MEAN MGD	5.15	MEAN CFS	7.89	AC-FT	5,760
FISCAL YEAR 1961-62		MAX	126	MIN	0	MEAN MGD	6.44	MEAN CFS	9.98	AC-FT	7,210

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-28	1500	3.36	660	1,020	3-11	2200	3.85	948	1,470
11- 1	1330	6.06	2,570	3,980	3-14	0200	3.98	1,030	1,590

* Discharge measurement or observation of no flow made on this day.
A No gage-height record.

ISLAND OF OAHU

3300. Kamananui Stream at Maunawai

Location.--lat 21°38'20", long 158°03'27", on right bank at Maunawai, 25 ft above 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 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Extremes.--Maximum discharge during year, 860 mgd (1,330 cfs) Mar. 14 (gage height, 7.72 ft), from rating curve extended above 180 mgd by logarithmic plotting; minimum, 0.07 mgd (0.11 cfs) Sept. 29.

1958-62: Maximum discharge that of Mar. 14, 1962; no flow at times.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Mar. 14)

1.1	0.02	1.9	7.00
1.2	.10	2.2	15.3
1.3	.33	2.5	28.3
1.4	.74	3.0	62.5
1.5	1.37	4.0	140
1.6	2.27	5.0	240
1.7	3.56		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	47.3	15.8	0.74	1.18	35.9	1.70	0.39	1.37	11.3	9.58	2.39	2.53
2	6.18	5.38	.85	.64	24.0	1.09	.36	2.07	5.34	5.29	2.07	3.79
3	2.78	2.78	.79	.33	7.46	.74	.33	1.23	3.48	4.02	1.97	1.78
4	4.68	1.97	.59	.20	2.91	.59	.30	.74	2.07	3.71	1.97	1.23
5	4.52	34.8	.64	.24	1.97	1.18	.30	.51	1.70	3.86	7.38	*1.03
6	3.76	7.91	.74	.64	2.07	74.5	.30	.33	12.4	3.86	7.31	.96
7	2.07	3.43	.39	5.02	2.65	7.97	15.4	.27	7.31	2.91	2.91	1.03
8	1.37	3.86	.27	2.41	1.88	3.17	4.03	17.6	19.6	2.52	2.39	1.16
9	1.09	2.17	.24	2.13	1.70	5.17	55.7	*6.55	25.6	2.39	2.07	.96
10	.90	1.70	.36	4.04	1.78	3.43	9.26	1.74	7.96	4.78	2.91	.85
11	.79	1.30	.90	2.28	1.03	1.88	3.04	.90	5.61	3.30	2.52	.79
12	.85	1.16	.59	.79	.79	1.45	1.78	.64	81.6	2.52	2.07	.74
13	.96	.96	.33	.64	.64	1.30	1.37	.47	*48.4	2.39	2.07	.64
14	1.61	5.15	.24	.51	.74	1.09	1.09	23.1	*233	6.82	1.88	.51
15	1.37	3.78	.27	2.66	1.23	10.5	.90	6.27	52.3	25.4	65.1	.47
16	1.23	*1.45	.33	2.52	*3.04	4.41	.90	16.9	*22.6	10.5	17.7	.64
17	43.8	.96	.20	1.30	3.04	2.92	1.30	14.5	14.7	5.10	5.86	1.03
18	11.2	.85	.12	.79	1.54	*3.76	1.16	6.41	10.2	33.4	4.48	.96
19	3.30	1.16	.18	.55	1.09	1.88	.74	2.78	11.0	11.5	3.71	.85
20	2.65	3.04	.94	.98	1.51	1.30	.69	1.88	8.20	10.1	4.02	.85
21	1.97	2.15	1.03	1.44	2.29	1.48	.55	1.78	7.00	4.63	2.91	.69
22	1.61	1.61	.59	.64	7.81	2.07	.59	.96	9.62	5.10	3.17	.43
23	1.54	1.54	.33	.43	4.17	1.23	.51	1.30	9.67	5.59	2.52	.33
24	2.07	1.23	.22	1.07	3.47	.90	.51	3.67	6.43	3.56	2.17	.24
25	1.70	.85	.18	.64	2.27	.79	.43	1.88	7.00	14.7	1.88	.20
26	1.23	.69	.39	2.43	2.94	.69	.64	1.58	7.96	*10.4	1.88	.16
27	1.09	.90	.47	10.9	1.70	.64	1.03	2.36	5.48	4.02	1.78	.18
28	1.03	3.71	*.20	14.2	2.21	.55	1.10	1.54	5.14	3.04	1.45	.24
29	1.03	2.36	.10	9.02	2.52	.51	8.59	------	60.4	2.65	1.30	1.20
30	.96	1.37	.09	3.04	1.78	.51	2.57	------	11.0	2.52	1.23	3.88
31	.96	.96	------	2.17	------	.43	1.23	------	6.05	------	1.09	------
TOTAL	157.60	116.98	13.31	75.83	128.13	139.83	117.09	121.33	720.12	210.16	164.16	30.35
MEAN												
MGD	5.08	3.77	0.444	2.45	4.27	4.51	3.78	4.33	23.2	7.01	5.30	1.01
CFS	7.86	5.84	0.686	3.78	6.61	6.98	5.84	6.70	35.9	10.8	8.19	1.57
AC-FT	484	359	41	233	393	429	359	372	2,210	645	504	93

CALENDAR YEAR	1961:	MAX	136	MIN	0.09	MEAN MGD	4.89	MEAN CFS	7.57	AC-FT	5,480
FISCAL YEAR	1961-62:	MAX	233	MIN	0.09	MEAN MGD	5.47	MEAN CFS	8.46	AC-FT	6,120

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-14	0130	7.72	860	1,330

* Discharge measurement made on this day.

3450. Opaeula Stream near Wahiawa

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

Drainage area.--2.98 sq mi.

Records available.--August 1959 to June 1962. See also Note below.

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

Extremes.--Maximum discharge during year, 1,020 mgd (1,580 cfs) Oct. 31 (gage height, 7.06 ft), from rating curve extended above 46 mgd on basis of slope-area measurement at gage height 6.74 ft; minimum, 0.31 mgd (0.48 cfs) June 26, 27.

1959-62: Maximum discharge (revised), that of Oct. 31, 1961; minimum, 0.24 mgd (0.37 cfs) Oct. 22, 23, 1959.

Revisions.--The maximum discharge for the fiscal year 1961 has been revised to 750 mgd (1,160 cfs) Feb. 13, 1961 (gage height, 6.25 ft), superseding figure published in Surface Water Records of Hawaii and other Pacific Areas (1961).

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

Note.--Published records for high-water periods in the fiscal year 1960 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Revisions.--The revised figure of discharge, in million gallons a day, for a day in the fiscal year 1961, superseding that published in Surface Water Records of Hawaii and other Pacific Areas (1961), is given herewith:

Feb. 13, 1961 129

Month	Mgd-days	Maximum	Minimum	Mean Mgd	Mean Cfs	Runoff in acre-feet
February 1961	425.87	129	0.79	15.2	23.5	1,310
Fiscal year 1960-61	2,819.60	129	.57	7.72	11.9	8,660

Revised peak discharge.--1960-61: Dec. 29 (7 p.m.) 522 mgd (808 cfs), 5.45 ft; Feb. 13 (4 a.m.) 750 mgd (1,160 cfs), 6.25 ft.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32.7	15.8	52.5	3.34	113	3.33	0.87	2.78	22.5	9.15	2.12	1.24
2	5.14	7.26	4.94	1.45	14.9	2.44	.79	1.34	5.79	3.98	1.50	2.22
3	3.59	3.46	3.60	1.65	6.41	1.60	.72	1.02	10.6	3.10	*2.34	1.34
4	4.24	3.59	7.38	3.59	3.85	2.18	.65	.72	2.54	2.92	1.60	.94
5	7.85	31.6	4.28	2.12	3.33	5.35	.62	*.57	10.8	3.01	45.4	.87
6	6.85	7.01	2.39	1.45	8.96	24.3	.79	.52	32.4	2.82	14.6	.87
7	2.12	9.91	1.40	23.5	7.51	4.70	40.7	.47	9.20	1.92	3.93	.79
8	1.73	5.54	1.14	2.97	4.26	a4.0	4.47	9.29	15.7	1.80	2.63	1.40
9	1.80	2.63	1.09	7.34	2.25	a11	79.4	6.74	22.7	2.36	4.71	1.09
10	2.10	2.63	3.67	15.0	1.86	a5.0	7.67	1.60	6.70	10.4	8.00	.76
11	3.42	1.67	2.22	3.46	1.80	a4.0	2.92	.87	14.0	3.58	3.18	*1.53
12	2.44	1.34	1.99	2.44	3.10	a3.0	1.80	.57	*206	1.73	5.69	1.05
13	2.54	1.19	1.19	1.40	1.60	a2.5	1.40	.47	*22.2	1.50	2.82	.65
14	3.82	11.8	.90	1.05	1.40	a2.1	1.19	12.9	178	13.4	2.82	.52
15	2.12	4.08	.94	11.2	8.40	a40	1.05	5.66	18.6	21.9	79.1	.52
16	1.99	1.55	.83	5.97	*8.88	a8.0	1.51	12.3	8.82	9.19	11.3	.81
17	54.9	*1.14	.62	1.92	6.42	a5.2	4.78	8.72	6.58	5.68	4.50	3.45
18	9.22	2.13	.60	1.40	2.18	a9.0	1.60	2.99	6.05	53.5	4.50	3.81
19	3.46	7.68	1.89	9.21	2.84	a5.0	1.02	1.29	12.5	7.74	6.28	1.92
20	3.59	14.6	7.57	4.38	4.97	a2.5	.87	.98	23.3	8.81	4.65	1.50
21	2.44	5.84	2.85	2.12	13.1	a3.5	.76	1.24	15.1	3.59	2.92	1.67
22	1.67	4.21	2.37	1.55	15.1	a9.2	1.29	.98	12.4	4.01	7.10	.76
23	1.80	4.65	1.05	5.24	10.3	a3.5	1.40	.87	15.4	4.76	2.63	.52
24	7.27	2.25	2.06	4.16	6.14	a2.5	.94	2.25	5.86	2.34	2.18	.41
25	4.02	1.55	2.62	1.55	4.02	a2.1	.72	1.40	11.0	32.6	1.67	.35
26	1.60	1.84	*2.88	7.52	4.13	a1.6	1.23	15.2	8.68	9.58	2.25	.31
27	3.38	4.37	1.24	35.4	4.45	*1.29	1.29	8.65	4.24	4.48	1.99	.31
28	1.86	6.18	1.34	97.3	7.34	1.19	9.11	3.43	23.3	2.34	1.50	.41
29	1.80	6.51	.98	25.7	4.39	1.09	17.4	---------	57.5	1.86	1.19	6.24
30	1.80	4.23	9.20	6.20	5.43	1.05	2.48	---------	7.62	1.73	1.05	5.07
31	1.34	1.60	---------	33.2	---------	.98	1.40	---------	4.50	---------	.94	---------
Total	184.60	179.84	127.73	324.78	282.32	173.20	192.84	105.82	800.58	236.18	237.09	43.33
Mean												
Mgd	5.95	5.80	4.26	10.5	9.41	5.59	6.22	3.78	25.8	7.87	7.65	1.44
Cfs	9.21	8.97	6.59	16.2	14.6	8.65	9.62	5.85	39.9	12.2	11.8	2.23
Ac-ft	567	552	392	997	866	532	592	325	2,460	725	728	133

Calendar Year 1961: Max 129 Min 0.60 Mean mgd 7.28 Mean cfs 11.3 Ac-ft 8,160
Fiscal Year 1961-62: Max 206 Min 0.31 Mean mgd 7.91 Mean cfs 12.2 Ac-ft 8,870

Peak discharge (base, 470 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	2330	7.06	1,020	1,580	3-12	0730	6.74	909	1,410
11-1	1500	6.30	756	1,170	3-14	0230	6.63	870	1,350
1-9	1130	5.24	470	727					

* Discharge measurement made on this day.
a No gage-height record.

4000. Halawa Stream near Halawa

Location.--Lat 21°09'30", long 156°45'53", on right bank 600 ft downstream from confluence of Hipuapua and Moaula Streams, 1.5 miles west of Halawa, and 6.0 miles northeast of Pukoo.

Drainage area.--4.62 sq mi.

Records available.--July 1917 to July 1932, November 1937 to June 1962.

Gage.--Water-stage recorder and log control. Altitude of gage is 200 ft (from topographic map). Prior to June 25, 1923, at site 350 ft upstream at different datum.

Average discharge.--39 years (1917-32, 1938-62), 19.4 mgd (30.0 cfs).

Extremes.--Maximum discharge during year, 2,800 mgd (4,330 cfs) Nov. 2 (gage height, 9.24 ft), from rating curve extended above 46 mgd on basis of slope-area measurements at gage heights 6.7 and 13.6 ft; minimum, 0.70 mgd (1.08 cfs) Feb. 7.

1917-32, 1937-62: Maximum discharge, 7,040 mgd (10,900 cfs) Jan. 1, 1961 (gage height, 13.6 ft), from rating curve extended above 46 mgd on basis of slope-area measurements at gage height 6.7 ft and of peak flow; minimum, 0.7 mgd (1.1 cfs) Oct. 26, 27, 1917.

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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	20.5	43.6	4.35	5.51	225	11.7	2.15	2.45	118	*31.1	32.6	7.52
2	8.62	10.6	4.06	4.82	412	7.00	2.07	2.30	28.1	14.7	31.2	5.90
3	8.62	7.26	10.2	4.99	33.6	7.26	2.89	1.74	24.6	15.2	45.6	6.76
4	8.80	4.99	13.8	5.15	*15.6	5.90	2.45	1.39	6.52	11.7	31.6	5.90
5	14.3	94.4	4.82	4.06	13.3	66.1	1.74	1.04	41.8	20.4	19.7	4.82
6	8.06	17.8	3.79	3.42	26.2	35.7	1.82	.75	118	15.6	17.0	4.66
7	10.2	39.2	27.5	3.20	24.4	8.62	99.1	2.65	23.0	10.6	69.4	8.76
8	8.90	15.6	5.88	7.55	50.3	7.26	93.5	138	8.90	9.95	26.1	6.52
9	15.8	9.23	13.0	41.1	14.2	16.4	218	23.2	221	50.5	8.90	5.34
10	20.4	5.90	29.3	17.3	11.0	5.52	*9.25	7.12	45.4	36.3	6.30	10.3
11	9.58	4.66	10.4	7.11	157	7.75	6.76	4.66	63.9	4.35	5.34	14.8
12	7.00	4.82	4.50	22.2	46.8	7.00	4.99	3.66	176	3.09	4.82	16.9
13	39.8	37.0	4.20	5.16	46.8	5.52	3.79	3.09	31.3	2.70	*4.99	6.10
14	18.8	20.2	4.06	50.0	55.8	21.1	3.66	2.79	270	10.1	7.56	4.50
15	8.06	5.16	7.32	248	46.4	9.95	5.71	2.53	564	18.3	190	3.09
16	40.0	4.66	4.90	26.5	17.0	9.60	3.42	*15.7	113	43.2	33.9	3.09
17	46.6	6.32	3.42	55.9	12.0	14.7	2.70	31.8	27.3	4.35	32.7	a2.89
18	9.60	7.62	3.98	16.1	10.6	19.6	2.30	6.52	21.5	19.5	59.2	a2.79
19	7.00	50.7	5.73	9.67	10.3	6.52	1.99	13.0	14.7	10.4	33.9	a2.53
20	5.34	12.3	26.0	6.83	8.06	5.52	1.91	59.5	21.4	8.11	20.9	a2.27
21	9.75	27.9	4.51	6.06	60.1	11.6	2.30	20.1	15.6	4.44	33.8	a2.07
22	5.90	24.7	56.5	5.54	103	7.32	1.82	5.74	17.0	6.30	22.6	*1.82
23	4.82	12.6	45.5	11.5	35.0	10.1	1.96	3.92	29.1	2.89	13.3	1.74
24	4.82	5.71	7.66	7.24	12.9	18.5	3.54	5.12	24.7	2.61	26.1	1.60
25	7.06	*5.16	5.90	12.4	*12.4	6.52	11.9	7.25	17.6	25.0	35.8	1.60
26	36.9	5.71	10.0	19.1	8.34	4.50	5.14	44.8	12.4	3.79	21.5	1.46
27	6.23	8.77	6.39	21.6	7.26	3.79	3.79	72.4	9.60	2.53	15.2	2.06
28	5.34	12.0	4.20	74.5	7.26	3.31	4.86	25.4	81.9	1.18	11.7	14.0
29	4.50	19.6	25.0	*9.09	8.90	3.42	49.3	---------	188	1.18	10.3	9.05
30	4.20	4.99	27.0	6.30	10.3	2.99	6.86	---------	116	2.30	8.34	5.34
31	11.6	4.20	--------	549	--------	2.53	3.20	---------	137	---------	8.34	---------
Total	417.10	533.36	383.87	1,266.90	1,501.82	353.30	564.87	508.62	2,587.32	392.37	888.69	166.18
Mean												
Mgd	13.5	17.2	12.8	40.9	50.1	11.4	18.2	18.2	83.5	13.1	28.7	5.54
Cfs	20.9	26.6	19.8	63.3	77.5	17.6	28.2	28.2	129	20.3	44.4	8.57
Ac-ft	1,280	1,640	1,180	3,890	4,610	1,080	1,730	1,560	7,940	1,200	2,730	510

Calendar Year 1961: Max 750 Min 1.32 Mean mgd 28.9 Mean cfs 44.7 Ac-ft 32,420
Fiscal Year 1961-62: Max 564 Min 0.75 Mean mgd 26.2 Mean cfs 40.5 Ac-ft 29,350

Peak discharge (base, 950 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-15	0830	6.30	1,030	1,590	11-11	2230	7.23	1,500	2,320
10-31	0630	9.23	2,790	4,320	3-12	1600	6.38	1,070	1,660
11- 2	1200	9.24	2,800	4,330	3-15	0330	9.08	2,690	4,160

* Discharge measurement made on this day.
a No gage-height record.

4055. Waikolu Stream at altitude 900 ft, near Kalaupapa

Location.--Lat 21°08'43", long 156°55'17", on right bank 2.3 miles upstream from mouth and 5.3 miles southeast of Kalaupapa Post Office.

Drainage area.--1.99 sq mi.

Records available.--May 1956 to October 1961 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 900 ft (from topographic map).

Average discharge.--5 years, 6.82 mgd (10.6 cfs).

Extremes.--Maximum discharge during period July to October, 281 mgd (435 cfs) Oct. 17 (gage height, 4.04 ft), from rating curve extended above 37 mgd; minimum, 1.72 mgd (2.66 cfs) Sept. 10-14.

1956-61: Maximum discharge, 790 mgd (1,220 cfs) Dec. 29, 1958 (gage height, 6.60 ft), from rating curve extended above 37 mgd; minimum, 1.28 mgd (1.98 cfs) Nov. 9, 1960.

Flood of Oct. 31, 1961, reached a stage of 13.62 ft, from floodmarks (discharge, 4,020 mgd or 6,220 cfs, by slope-area measurement of peak flow).

Remarks.--Records fair except those for periods of shifting control, which are poor. Water diverted above station, at times, either into or from Molokai water tunnel. Station destroyed by flood of Oct. 31, 1961.

Rating table, except for periods of shifting control (gage height, in feet, and discharge, in million gallons a day)

0.2	1.44	1.0	8.80
.3	1.84	1.2	13.0
.4	2.34	1.5	21.7
.6	3.70	2.0	45.0
.8	5.80	2.5	82.5

Discharge, in million gallons a day, July to October 1961

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.84	5.59	3.48	1.99								
2	3.55	4.96	3.10	1.99								
3	3.18	4.42	5.28	2.24								
4	3.18	4.06	3.88	4.57								
5	3.02	14.4	3.18	6.55								
6	3.02	13.6	2.64	2.46								
7	3.25	13.5	2.83	2.34								
8	2.95	7.46	2.83	3.83								
9	2.52	5.37	2.34	20.4								
10	2.89	5.08	1.72	11.5								
11	3.10	4.96	1.72	4.84								
12	3.02	4.91	1.72	4.23								
13	2.77	3.83	1.72	14.5								
14	3.94	3.18	1.84	15.3								
15	2.89	2.64	1.89	70.3								
16	6.88	2.77	1.89	8.95								
17	17.6	2.80	1.80	*34.8								
18	6.98	2.89	1.80	*7.52								
19	4.84	4.52	2.14	-								
20	4.42	4.30	3.22	-								
21	4.18	4.05	2.19	-								
22	3.71	3.70	1.89	-								
23	3.70	3.38	1.84	-								
24	3.70	3.10	1.94	-								
25	3.79	3.18	1.84	-								
26	3.97	*2.95	1.80	-								
27	3.70	2.89	1.94	-								
28	3.79	3.02	2.34	-								
29	3.79	2.89	2.09	-								
30	3.70	3.10	1.99	-								
31	3.79	2.83	----------	-								
Total	130.66	150.33	70.88	-								
Mean												
Mgd	4.21	4.85	2.36	-								
Cfs	6.51	7.50	3.65	-								
Ac-ft	401	461	218	-								

Calendar Year 1961:	Max	Min	Mean mgd	Mean cfs	Ac-ft
Fiscal Year 1961-62:	Max	Min	Mean mgd	Mean cfs	Ac-ft

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-15	0730	3.95	268	415	10-17	0900	4.04	281	435

* Discharge measurement made on this day.
Note.--Shifting-control method used July 1-16, Oct. 15-18.

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 1962. Prior to August 1931, published as "at pipeline crossing, near Kalaupapa."

Gage.--Water-stage recorder. Datum of gage is 253 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 0.49 ft higher.

Average discharge.--33 years (1919-30, 1938-47, 1949-62), 12.3 mgd (19.0 cfs).

Extremes.--Maximum discharge during year, 4,290 mgd (6,640 cfs) Oct. 31 (gage height, 12.75 ft from floodmarks), from rating curve extended above 25 mgd on basis of slope-area measurement of peak flow; minimum, 3.70 mgd (5.72 cfs) Oct. 8.

1919-32, 1937-62: Maximum discharge, that of Oct. 31, 1961; minimum, 1.3 mgd (2.0 cfs) Nov. 1, 2, 1925, June 5, 1926.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Water is diverted above station for domestic use in Kalaupapa, and since Nov. 16, 1960, water has been diverted above station both to and from Molokai water tunnel.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Oct. 30		Oct. 31 to June 30			
1.6	2.70	0.08	6.40	1.5	112
1.7	4.82	.1	6.85	2.0	177
1.9	11.2	.3	12.6	3.0	350
2.2	25.7	.6	27.2	4.0	580
2.6	59.0	1.0	59.0		
3.1	120				

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	10.1	7.70	6.50	4.37	A200	10.6	8.29	13.0	38.5	16.6	12.3	9.01
2	8.72	7.40	5.92	4.37	A400	9.59	8.77	17.5	39.3	14.6	12.3	8.77
3	7.70	6.80	8.10	4.60	*A40	9.92	9.26	10.6	19.3	14.2	16.5	8.77
4	7.40	7.10	6.80	6.60	12.6	9.92	9.26	8.53	11.6	13.0	17.6	8.53
5	7.70	16.1	5.92	8.79	13.3	16.2	9.26	8.53	13.7	12.6	17.7	8.53
6	7.70	15.3	5.37	4.82	24.8	19.7	9.59	8.29	18.1	12.3	15.4	8.53
7	7.70	14.8	5.65	4.82	24.2	10.6	38.1	8.29	11.6	12.3	13.0	8.53
8	7.40	9.40	5.65	5.46	43.5	10.9	16.2	54.4	10.6	12.6	12.6	8.53
9	7.10	7.40	5.37	22.3	15.6	10.9	*25.6	11.9	195	38.4	11.9	8.53
10	7.40	7.10	4.15	15.6	11.6	10.6	10.6	9.26	37.4	19.1	11.3	8.29
11	8.38	7.10	4.15	5.65	10.3	10.9	9.92	9.26	16.2	13.0	9.92	8.29
12	8.04	7.10	4.15	5.10	9.59	11.3	9.26	8.77	15.0	12.3	11.6	8.05
13	7.70	6.80	4.15	15.2	20.1	10.3	9.26	8.53	15.0	12.3	13.4	8.05
14	8.72	6.50	4.60	14.1	17.1	12.3	8.77	8.53	115	16.6	10.6	8.05
15	7.40	5.92	4.37	110	17.1	11.9	8.53	8.53	158	20.0	*28.8	7.81
16	11.1	5.92	4.37	15.3	33.7	10.3	8.53	9.92	21.0	21.5	13.4	7.81
17	19.4	5.92	4.15	52.5	13.4	9.92	8.53	*13.4	15.0	16.9	11.3	7.81
18	9.40	6.20	4.37	12.5	13.0	13.0	8.53	10.6	14.2	27.9	11.6	7.57
19	7.40	7.10	4.60	9.40	11.6	9.92	8.53	9.26	17.1	14.2	11.3	7.57
20	7.10	7.70	5.92	7.40	10.6	9.26	8.05	12.6	17.6	14.6	11.3	7.33
21	6.80	7.10	4.82	7.10	30.3	9.26	8.29	11.9	19.2	13.8	11.9	7.09
22	6.80	6.80	4.37	6.80	47.8	9.01	8.29	9.26	16.2	13.4	10.9	7.09
23	6.50	6.80	4.15	7.10	*35.5	8.77	8.29	8.77	21.9	12.6	10.6	*6.85
24	6.50	6.20	4.37	7.40	14.2	9.92	8.29	9.26	14.6	12.3	13.7	6.60
25	6.80	6.20	4.37	*8.28	11.6	9.26	8.29	9.01	14.2	16.7	15.4	6.60
26	6.80	*5.92	4.15	13.7	10.6	9.01	8.29	9.01	13.4	14.6	11.6	6.60
27	6.50	5.92	4.15	14.0	10.3	9.01	10.9	16.8	12.6	13.0	10.6	6.40
28	6.50	6.20	4.82	9.40	10.3	9.01	19.9	28.5	27.5	11.9	9.92	6.40
29	6.50	5.92	4.37	8.04	11.3	9.26	61.9	------	88.3	12.3	9.26	6.40
30	6.20	6.20	4.37	7.40	11.6	9.26	12.3	------	37.1	12.3	9.26	6.40
31	6.80	5.92	------	*A300	------	8.53	9.26	------	45.0	------	9.01	------
TOTAL	246.26	234.54	148.20	718.10	1,135.59	328.33	396.84	352.21	1,109.2	467.9	395.97	230.79
MEAN												
MGD	7.94	7.57	4.94	23.2	37.9	10.6	12.8	12.6	35.8	15.6	12.8	7.69
CFS	12.3	11.7	7.64	35.9	58.6	16.4	19.8	19.5	55.4	24.1	19.8	11.9
AC-FT	756	720	455	2,200	3,480	1,010	1,220	1,080	3,400	1,440	1,220	708

CALENDAR YEAR 1961:	MAX	400	MIN	4.15	MEAN MGD	16.3	MEAN CFS	25.2	AC-FT	18,300
FISCAL YEAR 1961-62:	MAX	400	MIN	4.15	MEAN MGD	15.8	MEAN CFS	24.4	AC-FT	17,690

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0530	12.75	4,290	6,640	3- 9	0330	3.87	570	882
11- 2	-	9.30	2,490	3,850	3-15	0400	4.80	827	1,280

* Discharge measurement made on this day.
A No gage-height record.

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 1962. 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.--12 years (1950-62), 1.05 mgd (1.62 cfs).

Extremes.--Maximum discharge during year 1,980 mgd (3,060 cfs) Oct. 31 (gage height, 9.30 ft), from rating curve extended above 400 mgd on basis of slope-area measurement of peak flow; no flow for many days.

1949-62: Maximum discharge, that of Oct. 31, 1961; no flow at times each year.

Remarks.--Records good.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Oct. 30

1.75	0	2.1	2.15
1.8	.32	2.4	4.90
1.9	.96	2.7	9.50
2.0	1.60		

Oct. 31 to June 30

1.29	0	2.2	4.70
1.3	.01	2.4	8.00
1.4	.05	2.7	17.0
1.5	.19	3.0	32.0
1.6	.41	3.3	53.0
1.7	.74	3.7	98.0
1.8	1.20	4.0	155
1.9	1.85	4.3	215
2.0	2.55		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				0	92.7		0	0	0	0.01		
2				0	*212		0	.26	0	0		
3				0	*11.2		0	.36	.07	0		
4				0	*1.84		0	0	0	0		
5				0	.08		*0	0	0	0		
6				0	0		0	0	0	0		
7				0	1.22		0	0	0	0		
8				0	0		0	0	0	0		
9				0	0		0	0	29.3	6.53		
10				0	0		0	0	2.59	2.90		
11				0	0		0	0	0	0	(*)	
12				0	0		0	0	0	0		
13				0	0		0	0	0	0		
14				0	0		0	0	41.0	0		
15				1.04	0		0	0	127	0		
16				.85	.24		0	0	10.8	0		
17				8.14	.44		0	0	2.17	0		
18				.64	0		0	0	.10	0		
19				0	0		0	*0	0	0		
20				0	0		0	0	0	0		
21				0	0		0	0	0	0		
22				0	2.16		0	0	0	0		
23				0	5.80		0	0	0	0		
24		(*)		0	.50		0	0	0	0		
25				0	0		0	0	0	0		(*)
26				*0	0		0	0	0	0		
27				0	0		0	0	0	0		
28				0	0		0	0	0	0		
29				0	0		24.4	---------	6.67	0		
30				0	0		.77	---------	*.70	0		
31	---------		---------	*131	---------		0	---------	1.12	---------		---------
Total	0	0	0	141.67	328.18	0	25.17	0.62	221.52	9.44	0	0
Mean												
Mgd	0	0	0	4.57	10.9	0	0.812	0.022	7.15	0.315	0	0
Cfs	0	0	0	7.07	16.9	0	1.26	0.034	11.1	0.487	0	0
Ac-ft	0	0	0	435	1,010	0	77	1.9	680	29	0	0

Calendar Year 1961: Max 212 Min 0 Mean mgd 1.81 Mean cfs 2.80 Ac-ft 2030
Fiscal Year 1961-62: Max 212 Min 0 Mean mgd 1.99 Mean cfs 3.08 Ac-ft 2230

* Discharge measurement or observation of no flow made on this day.

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0630	9.30	1,980	3,060	3-15	0730	5.58	574	888
11- 2	0830	9.11	1,900	2,940					

4150. Right Branch of 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 1962. Prior to July 1958, published as Right Branch of East Fork Kawela Stream near Kamalo.

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.--15 years (1947-62), 1.54 mgd (2.38 cfs).

Extremes.--Maximum discharge during year, 265 mgd (410 cfs) Oct. 31 (gage height, 5.25 ft), from rating curve extended above 3.8 mgd as explained below; no flow for many days.

1946-62: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 3.8 mgd by test on model of station site; no flow at times each year.

Remarks.--Records fair. Molokai Ranch diverts low flow from gage pool.

Rating table (gage height, in feet, and discharge, in million gallons a day)

2.34	0	3.0	3.14
2.4	.04	3.1	5.10
2.5	.19	3.2	8.10
2.6	.46	3.3	12.5
2.7	.86	3.5	25.5
2.8	1.43	3.8	54.0
2.9	2.15		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.64	2.43	0.45	0	47.5	0.72	0	1.63	4.77	0.57	0	0
2	.19	.59	0	0	39.9	.19	0	4.94	6.14	.07	0	0
3	.12	.12	1.69	.05	2.04	.23	0	.60	2.53	.03	.29	0
4	.56	.41	.90	.87	.46	.05	0	.03	.37	.13	2.25	0
5	.37	9.67	.07	.83	.26	2.73	0	0	2.40	0	.52	0
6	.26	5.07	0	0	2.67	3.17	*0	0	3.73	0	.34	0
7	.12	5.48	0	0	2.49	.43	11.0	0	.72	0	.06	.16
8	.15	.99	0	2.54	14.0	.43	2.73	1.37	.26	0	.04	.04
9	.06	.20	0	7.73	.37	.64	3.10	.40	7.18	7.10	0	0
10	.01	0	0	2.68	.01	.26	.52	.04	1.70	1.97	0	.09
11	.02	0	0	.40	0	1.35	.17	.01	.43	.24	0	0
12	.06	0	0	.01	0	1.55	.06	0	.83	0	*.68	0
13	1.24	0	0	.55	1.60	.56	.02	0	.91	0	1.47	0
14	1.53	.03	0	1.44	2.99	2.33	0	0	28.0	1.84	.28	0
15	.26	0	0	9.85	3.26	1.17	0	*0	29.2	3.70	8.50	0
16	3.74	0	0	1.62	9.10	.28	.03	.09	2.79	3.33	1.24	0
17	7.96	0	0	13.1	1.45	.50	.04	.28	.56	.52	.72	0
18	.97	0	0	2.10	1.42	1.67	.02	.31	1.18	1.75	1.53	0
19	.06	1.33	.88	.91	1.18	.26	0	.07	2.07	.50	1.30	0
20	0	1.01	1.94	.05	.49	.02	0	.35	2.86	.86	1.01	0
21	0	1.30	.07	0	10.2	.61	0	.60	3.12	.08	1.86	0
22	0	.61	0	.05	12.6	.04	0	.01	2.09	0	.55	0
23	0	*.18	0	1.01	8.86	0	0	.06	3.60	0	1.22	0
24	0	0	0	.29	1.24	1.21	0	.31	1.07	0	4.14	*0
25	0	0	0	2.53	1.48	.37	0	.01	1.54	1.96	2.98	0
26	0	0	0	*3.77	.46	.07	0	0	.61	.68	1.67	0
27	0	.32	0	2.59	*.43	0	1.61	2.86	.05	.37	.39	0
28	0	.40	0	1.49	.40	0	8.34	1.24	2.88	.02	0	.21
29	0	.10	0	.26	.76	0	17.8	--------	12.3	0	0	.22
30	0	0	0	0	1.01	0	1.96	--------	*4.27	0	0	.02
31	.21	0	--------	46.6	--------	0	.21	--------	3.79	--------	0	--------
Total	18.53	30.24	6.00	103.32	168.63	20.84	47.61	15.21	133.95	25.72	33.04	0.74
Mean												
Mgd	0.598	0.975	0.200	3.33	5.62	0.672	1.54	0.543	4.32	0.857	1.07	0.025
Cfs	0.925	1.51	0.309	5.16	8.70	1.04	2.38	0.840	6.68	1.33	1.65	0.038
Ac-ft	57	93	18	317	518	64	146	47	411	79	101	2.3

Calendar Year 1961: Max 47.5 Min 0 Mean mgd 1.91 Mean cfs 2.96 Ac-ft 2,140
Fiscal Year 1961-62: Max 47.5 Min 0 Mean mgd 1.65 Mean cfs 2.55 Ac-ft 1,850

* Discharge measurement made on this day.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0600	5.25	265	410	3-15	0300	4.33	120	186

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 1962. 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.--15 years, 0.816 mgd (1.26 cfs).

Extremes.--Maximum discharge during year, 262 mgd (405 cfs) Mar. 15 (gage height, 5.27 ft), from rating curve extended above 6.5 mgd as explained below; minimum, 0.03 mgd (0.05 cfs) June 23, 24.

1947-62: Maximum discharge, 330 mgd (511 cfs) Apr. 2, 1948 (gage height, 6.35 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 except those for period of no gage-height record, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.02	1.2	5.80
.5	.06	1.4	9.80
.6	.18	1.6	14.7
.8	.81	2.0	27.6
1.0	2.60		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.47	1.46	0.09	0.32	12.1	0.23	0.07	0.16	4.21	0.66	0.72	0.06
2	.25	.68	.08	.16	20.5	.15	.06	.39	1.44	.30	.56	.06
3	.21	.41	.40	.56	.86	.15	.11	.15	.96	.23	2.17	.07
4	.48	.21	.62	1.21	.41	.13	.07	.08	.19	.23	.80	.06
5	.45	4.01	.15	.44	.30	1.62	.06	.06	1.64	.62	.37	.05
6	.27	1.81	.09	.15	.38	1.72	.06	.06	3.59	.25	.38	.05
7	.35	1.20	.08	.11	.35	.30	1.94	.05	.44	.19	.16	.11
8	.38	.50	.08	.39	.23	.18	*2.40	1.31	.25	.18	.15	.08
9	.21	.32	.41	2.61	.19	.44	2.94	.23	4.90	.54	.10	.06
10	.50	.19	.46	.73	.16	.21	.32	.09	.50	1.31	.08	.08
11	.35	.15	.13	.23	1.83	.19	.15	.06	1.36	.23	.08	.15
12	.32	.12	.09	.32	1.12	.35	.11	.06	2.26	.18	.08	.57
13	2.00	.19	.08	.39	1.49	.23	.09	.05	.66	.16	.07	.09
14	.95	.35	.08	2.03	2.84	2.02	.08	.05	10.1	.46	*.08	.06
15	.27	.15	.11	8.31	1.75	.41	.07	.04	21.3	1.43	5.60	.06
16	1.05	.13	.13	.87	1.16	.47	.07	.14	A2.6	2.50	.35	.04
17	1.05	.21	.07	2.11	.44	1.09	.07	.48	A .5	.30	.74	.04
18	.45	.21	.06	.70	.30	.97	.06	*.08	A1.1	.79	1.02	.04
19	.27	3.04	.13	.27	.25	.32	.06	.04	A2.0	.32	.35	.04
20	.18	.84	.64	.18	.21	.19	.06	.05	A2.5	.35	.19	.04
21	.41	1.19	.13	.13	1.77	.32	.05	.18	A2.8	.18	.32	.03
22	.21	.66	.58	.13	2.54	.21	.05	.05	A1.7	.21	.21	.03
23	.15	.27	.66	.27	1.68	.15	.05	.04	A3.5	.15	.13	.03
24	.21	*.16	.23	.27	.54	.35	.06	.04	A .8	.11	.19	*.03
25	.21	.13	.12	.44	*.47	.21	.11	.04	A1.4	1.05	.35	.03
26	.32	.13	.23	.45	.23	.13	.24	.04	A .5	.23	.23	.03
27	.18	.21	.15	.66	.18	.11	.23	4.71	A .2	.21	.15	.03
28	.16	.18	.10	*1.80	.16	.10	.58	1.24	A2.0	.13	.10	.05
29	.15	.13	.99	.44	.19	.09	4.44	------	A9.0	.09	.09	.06
30	.11	.09	1.12	.19	.18	.08	.47	------	A7.0	.09	.08	.04
31	.18	.12	------	25.0	------	.07	.18	------	*A4.0	------	.07	------
TOTAL	12.75	19.45	8.29	51.87	54.81	13.19	15.31	9.97	95.40	13.68	15.97	2.17
MEAN												
MGD	0.411	0.627	0.276	1.67	1.83	0.425	0.494	0.356	3.08	0.456	0.515	0.072
CFS	0.636	0.971	0.427	2.59	2.83	0.658	0.764	0.551	4.77	0.705	0.797	0.112
AC-FT	39	60	25	159	168	40	47	31	293	42	49	6.7

CALENDAR YEAR 1961: MAX 25.0 MIN 0.05 MEAN MGD 0.901 MEAN CFS 1.39 AC-FT 1,010
FISCAL YEAR 1961-62: MAX 25.0 MIN 0.03 MEAN MGD 0.857 MEAN CFS 1.33 AC-FT 960

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	0700	4.68	216	334	2-27	0130	3.42	104	161
11- 2	1200	4.84	229	354	3-15	0500	5.27	262	405

* Discharge measurement made on this day.
A No gage-height record.

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 1962. 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.--27 years (1927-29, 1932-35, 1940-62), 36.4 mgd (56.3 cfs).

Extremes.--Maximum discharge during year, 2,140 mgd (3,310 cfs) Oct. 31 (gage height, 9.48 ft); minimum, 0.01 mgd (0.02 cfs) June 26, 27.

1927-29, 1931-62: Maximum discharge, 9,100 mgd (14,100 cfs) Dec. 20, 1955 (gage height, 17.5 ft, from floodmarks), from rating curve extended above 2,200 mgd on basis of critical-depth measurement of peak flow; no flow at times.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.07	0.01	0.7	4.80	2.5	90.0
.1	.02	.9	8.20	3.0	140
.2	.21	1.2	15.5	4.0	275
.3	.64	1.4	22.0	5.0	470
.4	1.30	1.6	30.5	6.0	720
.5	2.25	2.0	52.0	7.0	1,050

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	37.2	91.7	1.35	1.15	338	57.4	0.82	0.70	41.4	0.40	27.8	0.64
2	1.39	3.28	.28	.82	494	20.8	.64	11.7	.53	.28	59.4	.64
3	.64	.64	.58	.67	32.2	77.7	.64	3.12	1.95	.44	21.6	.94
4	60.4	.67	8.61	4.74	5.12	198	.54	.76	.15	.63	16.5	.44
5	22.2	106	.29	5.64	2.25	688	.49	.49	3.48	10.9	1.15	.40
6	17.8	58.7	.12	1.01	1.46	664	.24	.36	28.5	97.8	11.0	.44
7	7.49	53.4	3.27	4.62	1.08	35.8	1.74	.28	2.57	29.2	6.43	*7.57
8	1.67	55.5	.40	52.2	.76	4.87	7.83	.21	.32	3.35	1.23	3.49
9	11.2	33.3	10.0	102	.54	115	16.2	.18	.15	8.16	.49	21.9
10	11.2	4.23	113	205	.54	9.72	1.15	.12	.08	4.80	.36	21.4
11	15.4	1.15	29.2	20.5	11.6	97.8	.49	.10	56.2	.70	97.5	42.4
12	15.1	.64	.55	48.4	1.35	114	.40	.08	361	.64	77.5	7.23
13	9.40	10.8	.20	8.64	35.0	265	.24	.08	27.5	.44	150	1.38
14	11.2	15.5	* 1.41	2.90	32.2	872	5.54	.08	52.7	2.69	30.6	.88
15	.94	.76	.64	2.48	24.3	139	70.4	.12	172	19.7	668	.59
16	1.08	.40	.28	1.57	81.3	47.7	3.05	.18	9.31	18.7	145	.36
17	110	42.8	.10	.49	7.65	49.5	.76	.41	2.55	.70	105	.28
18	28.9	2.65	15.8	.36	15.9	36.6	.44	.28	201	.70	158	.61
19	6.61	45.2	50.8	.28	12.9	10.5	.32	.12	103	128	87.5	.21
20	1.08	33.7	27.0	88.2	1.73	12.7	.21	.10	210	61.0	36.3	.24
21	1.22	25.0	1.01	7.38	322	120	.40	.08	229	3.75	71.0	.10
22	.59	23.3	50.1	46.9	632	49.8	.53	.08	178	4.23	10.8	.06
23	.36	43.6	51.5	87.3	164	13.9	.76	.08	190	8.40	17.5	.03
24	.32	13.3	34.2	40.9	22.7	196	*11.2	.08	44.2	1.01	87.2	.02
25	.15	1.55	4.64	* 256	13.2	12.1	8.91	.08	19.1	.64	74.8	.02
26	.21	5.21	5.58	284	3.13	3.93	1.86	.12	4.58	.40	31.9	.01
27	*1.70	6.97	2.05	168	4.18	1.30	.79	.32	1.15	1.15	5.75	.01
28	2.36	12.1	6.64	658	1.23	3.88	159	12.2	.82	.36	3.24	.18
29	.43	12.2	26.9	81.5	2.69	3.49	96.6	------	1.51	.36	4.51	11.2
30	.08	.64	7.42	12.0	21.5	5.60	2.23	------	1.92	.40	1.55	.49
31	12.7	11.2	------	777	------	4.86	1.01	------	.44	------	1.01	------
TOTAL	391.02	716.09	453.91	2,970.65	2,286.51	3,930.95	395.43	32.51	1,945.11	409.93	2,010.62	124.16
MEAN MGD	12.6	23.1	15.1	95.8	76.2	127	12.8	1.16	62.7	13.7	64.9	4.14
CFS	19.5	35.7	23.4	148	118	196	19.7	1.79	97.1	21.1	100	6.40
AC-FT	1,200	2,200	1,390	9,120	7,020	12,060	1,210	100	5,970	1,260	6,170	381

CALENDAR YEAR	1961	MAX	872	MIN	0.01	MEAN MGD	45.6	MEAN CFS	70.6	AC-FT	51,060
FISCAL YEAR 1961-62		MAX	872	MIN	0.01	MEAN MGD	42.9	MEAN CFS	66.4	AC-FT	48,100

Peak discharge (base, 1,600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-25	2030	8.72	1,770	2,740	11-22	2100	8.47	1,660	2,570
10-28	1900	8.37	1,620	2,510	12- 6	0430	8.95	1,880	2,910
10-31	1700	9.48	2,140	3,310	12-14	0700	8.40	1,630	2,520

* Discharge measurement made on this day.

5020. Right Branch Kahalawe Stream 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 1962. Monthly discharge only May, June 1938, published in WSP 1319. Prior to July 1956, published as Right Branch Kahalawe Stream near Kipahulu.

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 same site at datum 8.0 ft lower.

Average discharge.--32 years (1927-34, 1935-36, 1938-62), 3.50 mgd (5.42 cfs).

Extremes.--Maximum discharge during year, 496 mgd (767 cfs) Mar. 15 (gage height, 3.84 ft), from rating curve extended above 54 mgd as explained below; minimum, 0.35 mgd (0.54 cfs) Feb. 25.

1927-62: 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 by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Dec. 18, 1929.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.8	0.35	1.4	4.80
.9	.62	1.5	6.80
1.0	1.01	1.7	12.4
1.1	1.54	1.8	17.4
1.2	2.30	2.1	35.7
1.3	3.30		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	4.43	6.85	1.25	1.60	16.6	2.07	1.54	0.75	8.72	1.30	6.87	1.35
2	1.47	2.10	1.15	1.60	31.4	1.54	1.25	7.00	.92	1.15	17.8	2.54
3	1.54	1.41	2.73	1.61	4.43	1.87	1.30	1.42	.87	1.45	5.51	2.96
4	3.71	2.92	2.16	1.61	2.65	3.47	1.35	.87	.62	1.31	2.40	1.60
5	2.42	9.60	1.20	2.05	2.05	16.7	1.25	.75	1.70	1.95	1.60	1.35
6	3.30	5.20	1.01	1.25	1.80	12.3	1.05	.71	4.00	5.35	5.81	1.56
7	2.87	6.11	4.94	2.16	1.60	2.10	2.57	.68	1.10	1.73	2.99	*2.65
8	1.47	6.43	1.25	6.00	1.47	1.60	5.41	.75	*.75	1.41	1.66	2.43
9	3.05	3.63	1.45	8.17	1.30	8.52	5.80	.65	.68	3.98	1.41	4.05
10	2.59	1.80	2.18	9.97	1.41	1.66	1.47	.58	.75	2.00	1.20	4.70
11	4.45	1.47	1.56	2.95	2.81	2.98	1.20	.55	2.08	1.15	4.54	4.15
12	3.81	1.30	1.15	7.98	2.08	3.40	1.10	.55	5.33	1.10	4.13	3.33
13	2.46	5.09	.92	2.59	6.14	2.85	.97	.50	2.72	1.10	3.39	1.47
14	4.36	2.67	*2.01	2.20	3.62	19.8	2.13	.50	1.83	1.20	1.95	1.30
15	1.60	1.54	1.80	1.60	11.2	4.94	7.31	2.15	11.2	2.72	19.0	1.20
16	1.54	1.30	1.25	1.47	6.96	3.20	1.25	1.13	1.47	4.86	8.14	1.10
17	5.43	3.92	1.01	1.30	1.95	7.47	1.01	.85	1.41	1.20	6.75	1.01
18	2.83	1.41	1.48	1.20	1.95	3.61	.87	.62	3.93	1.15	5.22	3.68
19	2.28	5.42	3.14	1.15	1.66	2.92	.83	.53	1.98	4.12	3.05	1.10
20	1.60	3.92	2.41	20.8	1.30	2.37	.79	.47	1.75	1.95	2.65	1.05
21	2.47	2.41	1.20	1.96	6.42	5.58	.99	.45	2.68	1.30	4.31	.97
22	1.47	2.35	6.37	4.47	16.1	2.56	1.21	.42	2.28	1.41	2.20	.87
23	1.25	8.04	15.9	5.98	3.55	1.87	1.68	.40	2.37	3.25	2.82	.83
24	1.25	2.48	5.59	5.81	2.05	5.85	*3.53	.40	4.00	1.91	4.93	.79
25	1.10	1.60	1.87	*11.4	2.21	1.73	1.87	.37	3.25	*1.50	2.81	.75
26	1.25	1.94	2.51	7.99	1.60	1.54	1.10	.68	1.35	1.20	2.55	.75
27	*1.79	2.33	2.05	3.30	1.47	1.41	.92	1.39	1.10	3.44	1.87	.84
28	1.66	1.66	3.33	16.6	1.35	1.35	6.70	3.26	1.01	1.20	1.73	1.67
29	1.30	2.21	6.52	4.26	2.31	1.30	6.81	------	1.44	2.59	1.66	1.86
30	1.10	1.47	3.06	9.18	1.95	5.81	1.10	------	1.25	1.70	1.54	1.41
31	4.01	1.66	------	16.1	------	4.79	.87	------	1.78	------	1.41	------
TOTAL	75.86	102.24	84.45	166.31	143.39	138.76	67.23	29.38	76.32	61.68	133.90	55.32
MEAN												
MGD	2.45	3.30	2.82	5.36	4.78	4.48	2.17	1.05	2.46	2.06	4.32	1.84
CFS	3.79	5.10	4.35	8.30	7.39	6.92	3.35	1.62	3.81	3.18	6.68	2.85
AC-FT	233	314	259	510	440	426	206	90	234	189	411	170

CALENDAR YEAR	1961	MAX	31.7	MIN	0.55	MEAN MGD	3.47	MEAN CFS	5.37	AC-FT	3,890
FISCAL YEAR	1961-62	MAX	31.4	MIN	0.37	MEAN MGD	3.11	MEAN CFS	4.81	AC-FT	3,480

* Discharge measurement made on this day.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
9-23	1800	3.03	212	328	10-25	1730	3.10	233	361
10-20	0230	3.31	298	461	3-15	1400	3.84	496	767

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 1962.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 1,300 ft above mean sea level (by vertical angles).

Average discharge.--14 years, 2.89 mgd (4.47 cfs).

Extremes.--1948-62: Maximum daily discharge, 7.8 mgd (12.1 cfs) Nov. 21, 1951; 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.28	1.50	2.10	1.36	4.72	3.98	1.93	0.80	2.18	4.38	1.50	2.46
2	2.21	1.50	2.04	1.31	4.72	3.98	1.88	.80	1.93	4.14	1.46	2.28
3	2.21	1.50	2.04	1.31	4.64	3.98	1.76	.76	1.88	3.90	1.60	2.15
4	2.21	1.55	1.98	1.31	4.47	3.82	1.66	.76	1.66	3.82	1.86	1.98
5	2.15	2.78	1.93	1.26	3.98	4.06	1.60	.72	1.84	3.58	1.46	1.88
6	2.10	3.18	1.88	1.22	3.74	4.57	1.55	.72	2.40	3.36	2.92	1.76
7	2.04	2.85	1.88	1.17	3.50	4.22	1.50	.69	*2.40	3.07	1.98	1.66
8	1.98	3.00	1.82	1.26	3.36	4.06	1.54	1.48	2.28	2.78	1.71	*1.60
9	1.88	3.00	1.76	1.68	3.07	3.90	1.87	.88	3.30	2.65	1.55	1.50
10	1.82	2.92	1.76	3.98	2.92	3.58	1.50	.72	4.64	2.46	1.46	1.46
11	1.76	2.85	1.71	2.10	2.72	3.50	1.41	.69	5.15	2.28	1.41	1.41
12	1.71	2.78	1.66	1.88	2.53	3.50	1.36	.69	5.15	2.15	1.36	1.31
13	1.60	2.65	1.60	1.82	2.72	3.43	1.31	.65	5.33	2.04	1.41	1.26
14	1.60	2.53	1.60	1.76	3.36	3.97	1.26	.65	4.98	1.98	1.36	1.22
15	1.55	2.40	1.60	1.76	3.21	3.98	1.22	.65	4.47	2.92	3.37	1.17
16	1.55	2.28	1.60	1.76	3.58	4.06	1.22	.62	4.14	2.59	3.66	1.12
17	2.06	2.15	1.60	1.76	3.43	4.06	1.17	.62	3.90	1.98	3.74	1.08
18	2.62	2.10	1.55	1.76	3.58	3.98	1.12	.62	3.74	1.93	3.82	1.04
19	1.82	2.15	1.60	1.71	3.58	3.74	1.12	.59	3.82	2.12	3.98	1.00
20	1.76	2.21	1.60	1.66	3.50	3.50	1.08	.59	3.90	2.65	3.58	.96
21	1.71	2.28	1.55	1.60	3.66	3.43	1.04	.59	3.98	2.28	3.43	.96
22	1.71	2.28	1.55	1.55	4.22	3.28	1.00	.56	4.06	2.21	3.21	.92
23	1.66	2.34	1.55	1.55	4.47	3.14	*.96	.56	4.14	2.15	3.07	.92
24	1.66	2.34	1.50	*3.40	4.56	3.50	.96	.56	4.14	2.15	3.58	.88
25	1.71	2.34	1.46	3.26	4.72	3.14	1.04	.59	4.14	2.04	3.90	.84
26	1.71	2.34	1.46	3.58	4.72	2.85	.96	.65	4.06	*1.93	3.43	.84
27	1.66	2.28	1.41	3.66	4.47	2.72	.92	1.58	3.90	1.76	3.07	.80
28	1.60	2.28	1.41	4.30	4.14	2.53	.88	2.16	3.82	1.71	3.00	.80
29	1.60	2.21	1.41	4.81	3.98	2.40	.88	--------	3.90	1.60	2.85	.76
30	1.55	2.21	1.36	4.38	3.98	2.21	.84	--------	4.30	1.55	2.78	.72
31	1.50	2.15	--------	4.80	--------	2.10	.84	--------	4.56	--------	2.59	--------
Total	56.98	72.93	49.97	70.72	114.25	109.17	39.38	21.95	114.09	76.16	80.10	38.74
Mean												
Mgd	1.84	2.35	1.66	2.28	3.81	3.52	1.27	0.784	3.68	2.54	2.58	1.29
Cfs	2.85	3.64	2.57	3.53	5.89	5.45	1.96	1.21	5.69	3.93	3.99	2.00
Ac-ft	175	224	153	217	351	335	121	67	350	234	246	119

Calendar Year 1961:	Max	7.00	Min	0.84	Mean mgd	2.59	Mean cfs	4.01	Ac-ft	2900
Fiscal Year 1961-62:	Max	5.33	Min	0.56	Mean mgd	2.31	Mean cfs	3.57	Ac-ft	2590

* Discharge measurement made on this day.

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 1962. 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.--41 years (1914-15, 1922-62), 14.6 mgd (22.6 cfs).

Extremes.--Maximum discharge during year, 2,710 mgd (4,190 cfs) Mar. 12 (gage height, 10.35 ft), from rating curve extended above 270 mgd as explained below; minimum, 1.15 mgd (1.78 cfs) Feb. 23-25.

1914-16, 1921-62: 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, 1.1 mgd (1.7 cfs) Feb. 19, 20, 1944.

Remarks.--Records good except those above 300 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.1	0.93	1.0	10.1	3.0	85.0
.2	1.38	1.3	15.3	3.5	125
.3	1.94	1.6	21.5	4.0	176
.4	2.60	2.0	34.0	4.5	250
.5	3.35	2.5	56.0	5.0	370
.7	5.30				

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.20	2.27	2.33	1.38	112	18.9	2.60	1.49	109	6.54	2.20	2.20
2	2.60	2.92	2.13	1.33	47.5	6.56	2.46	1.43	37.7	4.75	2.20	2.07
3	2.53	2.20	2.84	1.63	16.2	6.86	2.46	1.43	26.9	4.42	5.48	2.00
4	2.82	4.38	3.51	1.82	4.31	4.97	2.40	1.38	6.45	*3.69	6.57	1.94
5	2.46	18.6	2.27	1.43	3.12	8.55	2.27	1.38	31.6	*3.35	3.64	1.88
6	2.40	10.5	2.00	1.38	2.60	73.8	2.27	1.33	24.1	*3.12	13.3	1.82
7	2.27	8.52	2.07	1.72	2.40	9.09	2.20	1.33	3.78	2.97	3.83	1.82
8	2.13	4.53	1.94	4.76	2.99	5.30	3.40	15.3	2.82	2.90	2.75	*1.77
9	2.00	3.35	1.88	19.3	2.75	4.75	12.1	2.57	*166	3.43	2.46	1.88
10	1.94	2.82	3.08	49.5	2.46	4.20	2.53	1.60	82.7	2.97	2.33	1.77
11	2.00	2.53	2.13	3.77	2.33	5.04	2.27	1.49	10.0	2.75	2.33	1.66
12	2.20	2.33	1.88	2.27	2.07	30.0	2.20	1.38	260	2.75	2.46	1.60
13	2.27	3.13	*1.71	1.94	14.8	44.8	2.13	1.38	24.3	2.82	2.75	1.60
14	4.36	2.88	1.71	1.94	27.2	163	2.07	1.38	37.0	3.47	3.56	1.54
15	2.33	2.27	1.77	4.01	15.0	18.6	2.00	1.33	111	22.1	56.6	1.54
16	3.10	2.07	1.77	3.58	89.4	6.86	1.94	1.29	9.95	12.1	10.6	1.49
17	18.1	2.40	1.60	2.07	13.1	5.08	1.88	1.38	4.31	3.60	10.4	1.49
18	15.8	2.20	1.60	1.82	11.9	4.53	1.82	1.29	5.01	3.52	8.56	1.43
19	3.12	5.78	3.94	1.71	11.4	4.03	1.77	1.29	9.65	14.4	5.20	1.43
20	2.46	5.35	4.35	1.66	9.23	3.77	1.71	1.29	19.6	8.01	3.52	1.38
21	2.33	5.20	2.13	1.54	86.2	3.94	1.71	1.24	18.8	3.43	3.81	1.38
22	2.20	2.75	1.94	1.60	222	3.77	1.66	1.24	14.6	3.12	3.27	1.38
23	2.07	4.28	1.94	4.50	115	3.43	1.60	1.20	21.0	2.90	3.41	1.33
24	1.94	4.81	1.66	*62.1	27.0	6.75	1.54	1.15	17.4	2.75	8.93	1.33
25	3.41	2.75	1.60	86.7	10.8	3.77	*5.46	1.38	21.7	2.67	12.0	1.29
26	2.98	2.67	1.54	99.7	7.02	3.35	2.07	3.22	12.8	*2.53	6.05	1.29
27	2.20	3.43	1.49	20.1	7.25	3.20	1.71	22.1	5.19	2.46	3.52	1.33
28	2.52	4.37	1.43	29.2	6.07	3.12	1.66	74.4	3.86	2.40	2.90	1.33
29	2.13	2.75	1.43	9.81	9.08	3.05	1.60	------	51.3	2.40	2.75	1.43
30	1.98	2.46	1.38	3.52	14.2	2.82	1.54	------	48.1	2.27	2.53	1.33
31	1.88	2.60	------	180	------	2.67	1.49	------	23.6	------	2.33	------
TOTAL	105.63	129.10	63.45	607.79	897.38	468.56	76.52	148.67	1,220.22	140.59	202.24	47.73
MEAN												
MGD	3.41	4.16	2.12	19.6	29.9	15.1	2.47	5.31	39.4	4.69	6.52	1.59
CFS	5.27	6.44	3.27	30.3	46.3	23.4	3.82	8.22	60.9	7.25	10.1	2.46
AC-FT	324	396	195	1,870	2,750	1,440	235	456	3,740	431	621	146

CALENDAR YEAR 1961: MAX 599 MIN 1.33 MEAN MGD 15.7 MEAN CFS 24.3 AC-FT 17,610
FISCAL YEAR 1961-62: MAX 260 MIN 1.15 MEAN MGD 11.3 MEAN CFS 17.5 AC-FT 12,610

* Discharge measurement made on this day.

Peak discharge (base, 850 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-31	1530	6.29	1,070	1,660	3-12	1330	10.35	2,710	4,190

5100. Kapaula Gulch near Nahiku

Location.--Lat 20°48'45", long 156°07'05", on right bank 40 ft upstream from Koolau ditch intake, 300 ft upstream from ditch trail, 1.9 miles southwest of Nahiku, and 4 miles southeast of Keanae.

Drainage area.--0.69 sq mi.

Records available.--November 1921 to June 1962. Prior to July 1958, published as Kapaula Stream near Nahiku.

Gage.--Water-stage recorder. Datum of gage is 1,346 ft above mean sea level (by vertical angles).

Average discharge.--40 years (1922-62), 10.7 mgd (16.6 cfs).

Extremes.--Maximum discharge during year, 1,620 mgd (2,510 cfs) Mar. 12 (gage height, 8.12 ft), from rating curve extended above 220 mgd as explained below; minimum, 0.29 mgd (0.45 cfs) June 23-27, 30.

1921-62: Maximum discharge, 1,800 mgd (2,790 cfs) Dec. 13, 1921 (gage height, 8.45 ft), from rating curve extended above 220 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) Nov. 23-25, Dec. 26, 31, 1933, Jan. 1, 1934, Oct. 2-5, 1938.

Remarks.--Records fair. No diversion above station. Water is diverted by Koolau ditch, 40 ft below station, for domestic supply and irrigation of sugar cane in central Maui.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Mar. 9 to Apr. 16, May 15-17)

0.39	0.33	1.5	16.8
.4	.38	2.0	44.0
.5	1.08	2.5	83.0
.7	3.35	3.0	140
.9	6.50	3.5	218
1.2	13.4		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.89	1.30	1.41	0.52	67.6	16.6	1.30	0.59	14.1	5.95	0.73	1.01
2	1.97	1.75	1.08	.52	23.6	5.14	1.30	.59	29.4	2.78	.73	.94
3	1.64	1.52	1.86	.89	13.9	4.80	1.19	.52	20.5	2.66	3.95	.87
4	1.86	3.07	3.00	1.08	3.78	3.78	1.08	.52	5.64	1.98	10.3	.87
5	1.52	18.0	1.64	.73	2.77	4.97	1.08	.45	27.4	1.75	4.26	.80
6	1.41	10.5	1.19	.66	2.31	30.8	1.01	.45	18.9	1.42	19.5	.80
7	1.19	9.84	1.30	.78	2.08	4.97	1.01	.45	3.12	1.19	4.36	.80
8	1.08	3.78	1.01	4.07	2.31	3.49	2.39	14.2	1.97	1.08	1.75	*.80
9	.94	2.43	.94	20.4	2.66	3.12	13.3	2.88	*98.4	1.75	1.08	.87
10	.87	1.86	1.75	37.6	2.31	2.66	2.31	.94	45.6	1.64	.94	.80
11	.94	1.41	1.30	4.01	2.08	3.12	1.52	.73	7.95	1.01	*.94	.66
12	1.01	1.08	1.01	2.20	1.75	19.5	1.30	.59	103	.73	1.01	.59
13	1.30	1.64	*.94	1.52	14.9	30.9	1.08	.52	12.2	1.01	1.64	.59
14	2.88	1.86	1.01	1.41	23.3	97.1	1.01	.45	17.0	1.86	2.53	.52
15	1.75	1.30	1.08	4.81	16.5	10.2	.94	.45	36.4	14.8	29.5	.52
16	2.66	1.08	1.01	4.12	70.4	4.65	.94	.38	9.71	9.75	11.6	.45
17	16.0	1.30	.87	2.08	9.60	3.49	.94	.73	3.00	2.89	10.6	.45
18	12.8	1.08	.80	1.52	9.51	3.12	.87	.59	5.25	2.43	8.43	.45
19	2.77	4.27	2.70	1.08	8.80	2.66	.80	.45	8.87	10.6	4.07	.45
20	1.86	5.14	4.57	.94	7.86	2.43	.80	.38	12.1	8.03	2.43	.38
21	1.52	4.22	1.97	.80	54.1	2.89	.80	.38	14.4	2.31	2.66	.38
22	1.19	2.20	1.64	.80	142	2.77	.73	.38	12.9	1.41	2.31	.38
23	1.01	2.77	1.41	3.27	91.4	2.43	.73	.38	16.0	1.19	2.36	.33
24	.94	3.64	1.01	40.3	20.8	5.79	.73	.33	15.7	1.01	8.70	.33
25	1.96	3.23	.87	54.5	7.35	2.66	*6.90	.66	18.0	.94	13.6	.33
26	2.20	1.64	.73	68.2	5.14	2.20	1.75	2.90	12.3	.87	5.82	.33
27	1.41	1.97	.73	17.2	5.65	1.97	.87	17.3	6.25	.87	2.77	.38
28	1.52	3.12	.66	17.8	4.97	1.75	.73	52.7	2.78	.80	1.97	.38
29	1.30	2.20	.66	6.31	7.04	1.64	.73	------	34.2	.80	1.52	.59
30	1.01	1.75	.59	3.23	11.9	1.52	.66	------	29.9	.80	1.19	.38
31	.94	1.64	------	52.6	------	1.41	.66	------	16.6	------	1.08	------
TOTAL	74.34	102.59	40.74	355.95	638.37	284.53	51.46	101.89	719.54	86.31	164.33	17.43
MEAN												
MGD	2.40	3.31	1.36	11.5	21.3	9.18	1.66	3.64	23.2	2.88	5.30	0.581
CFS	3.71	5.12	2.10	17.8	32.9	14.2	2.57	5.63	35.9	4.46	8.20	0.899
AC-FT	228	315	125	1,090	1,960	873	158	313	2,210	265	504	53

CALENDAR YEAR 1961:	MAX	315	MIN	0.52	MEAN MGD	9.89	MEAN CFS	15.3	AC-FT	11,080
FISCAL YEAR 1961-62:	MAX	142	MIN	0.33	MEAN MGD	7.22	MEAN CFS	11.2	AC-FT	8,090

* Discharge measurement made on this day.

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1400	8.12	1,620	2,510

5120. Koolau ditch at Mahiku weir, near Mahiku

Location.--Lat 20°48'55", long 156°07'15", on right bank between Kapaula and Waiohue Gulches, 1.8 miles southwest of Mahiku, and 3.8 miles southeast of Keanae.

Records available.--February 1919 to June 1962.

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.--43 years, 21.9 mgd (33.9 cfs).

Extremes.--1919-1962: Maximum daily discharge, 61.0 mgd (94.4 cfs) Nov. 22, 1961; no flow at times.

Remarks.--Records excellent. Ditch diverts water from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16.8	10.8	12.4	7.08	58.0	46.0	12.4	6.32	58.5	30.6	9.04	11.5
2	14.1	12.1	11.5	6.80	53.0	28.4	12.1	6.08	38.7	24.7	8.76	10.8
3	13.4	10.8	13.7	7.62	42.0	28.4	11.8	6.08	41.7	22.0	13.2	10.2
4	14.4	15.8	16.1	9.04	24.7	24.3	11.5	5.84	21.8	18.9	23.1	9.60
5	13.0	42.0	12.1	7.36	20.2	31.1	11.5	5.84	42.0	17.2	14.9	9.32
6	12.4	37.0	11.2	7.08	17.2	48.5	10.8	5.60	45.0	15.8	40.6	*9.04
7	12.1	31.9	11.5	7.63	15.4	33.0	10.5	5.60	20.2	14.7	16.8	9.04
8	11.5	22.8	10.5	17.6	16.5	25.5	15.7	27.7	15.8	14.1	12.1	8.76
9	10.5	18.7	10.2	32.6	16.1	22.8	28.9	11.4	57.0	15.4	11.2	8.76
10	10.2	16.1	13.4	53.8	15.1	20.9	13.4	7.36	60.0	14.1	9.91	8.20
11	10.2	14.7	10.8	18.7	14.4	22.0	11.5	6.56	48.0	12.7	9.60	7.92
12	10.2	13.7	9.91	13.4	13.0	51.0	11.2	6.32	58.5	12.1	10.2	7.36
13	10.5	15.1	9.60	11.5	24.6	50.5	10.5	6.08	46.0	12.1	11.8	6.80
14	14.7	15.1	9.32	11.2	45.5	60.5	10.2	5.84	46.5	13.6	11.4	6.80
15	11.2	12.7	9.32	18.0	42.0	50.5	9.91	5.84	50.0	44.0	57.6	6.56
16	13.0	11.8	9.04	16.8	57.5	34.5	9.32	5.60	27.5	33.8	38.5	6.32
17	28.4	12.4	8.76	12.1	39.5	27.5	9.04	6.08	21.6	15.8	37.5	6.08
18	28.7	11.8	8.48	10.8	36.6	24.3	8.76	5.60	25.0	15.4	36.0	6.08
19	14.7	22.2	13.7	9.91	33.8	21.6	8.48	5.36	34.5	26.3	26.3	5.84
20	12.4	22.8	16.8	9.04	29.9	19.8	8.20	5.36	42.6	29.0	19.8	5.84
21	11.8	21.6	10.8	8.76	42.0	20.5	7.92	5.36	47.0	16.5	19.1	5.60
22	11.2	15.1	10.2	8.48	61.0	19.8	7.92	5.12	42.0	14.7	16.8	5.60
23	10.2	18.0	10.5	16.2	60.0	18.3	7.92	5.12	46.0	13.4	17.6	5.60
24	9.91	19.4	9.04	47.4	53.5	30.6	7.64	4.88	45.0	*12.7	32.0	5.36
25	14.1	14.7	8.20	39.6	43.0	20.2	17.1	6.08	45.5	11.8	39.0	5.36
26	13.4	14.1	8.20	*60.5	33.0	17.6	9.04	12.6	38.5	10.8	26.7	5.36
27	10.8	15.1	7.64	51.5	30.2	16.5	7.64	31.8	25.5	10.2	18.7	5.36
28	11.8	18.3	7.64	53.0	26.3	15.4	7.08	44.5	20.9	9.60	16.1	5.36
29	10.5	15.1	7.36	38.0	31.1	14.4	6.80	---------	38.6	9.32	14.4	5.60
30	9.60	13.7	7.36	23.9	42.0	13.7	6.56	---------	55.0	9.04	13.4	5.36
31	9.60	13.4	---------	46.9	-------	13.0	6.32	---------	49.0	---------	12.4	---------
Total	405.31	548.8	315.27	682.[illegible]	[illegible]37.1	871.1	327.65	261.92	1,253.9	520.36	644.51	215.38
Mean												
Mgd	13.1	17.7	10.5	2[illegible]	4.6	28.1	10.6	9.35	40.4	17.3	20.8	7.18
Cfs	20.3	27.4	16.2	3[illegible]	3.5	43.5	16.4	14.5	62.5	26.8	32.2	11.1
Ac-ft	1240	1680	968	2090	[illegible]80	2670	1010	804	3850	1600	1980	661

Calendar Year 1961: Max 61.0 Min 6.30 Mean mgd 20.4 Mean cfs 31.6 Ac-ft 22870
Fiscal Year 1961-62: Max 61.0 Min 4.88 Mean mgd 19.4 Mean cfs 30.0 Ac-ft 21730

* Discharge measurement made on this day.

5150. Waiohue Gulch near Nahiku

Location.--Lat 20°49'05", long 156°07'45", on left bank 200 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 2.4 miles southwest of Nahiku, and 3.5 miles southeast of Keanae.

Drainage area.--0.32 sq mi.

Records available.--October 1921 to June 1962. Prior to July 1958, published as Waiohue Stream near Nahiku.

Gage.--Water-stage recorder. Datum of gage is 1,316.2 ft above mean sea level (by stadia traverse).

Average discharge.--40 years (1922-62), 7.44 mgd (11.5 cfs).

Extremes.--Maximum discharge during year, 669 mgd (1,040 cfs) Mar. 12 (gage height, 6.13 ft), from rating curve extended above 94 mgd as explained below; minimum, 1.46 mgd (2.26 cfs) Feb. 21-25.

1921-62: Maximum discharge, 702 mgd (1,090 cfs) Apr. 16, 1960 (gage height, 6.24 ft), from rating curve extended above 94 mgd on basis of slope-area measurements at gage heights 4.57 and 5.60 ft; maximum gage height, 6.24 ft Apr. 7, 1938, Apr. 16, 1960; minimum discharge, 1.36 mgd (2.10 cfs) Oct. 9, 10, 1953.

Remarks.--Records good. No diversion above station. Water is diverted by Koolau ditch, 200 ft below station, for domestic supply and irrigation of sugar cane in central Maui.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	1.12	1.2	11.1
.5	1.61	1.6	24.0
.6	2.23	2.0	43.5
.8	4.10	2.5	76.0
1.0	7.00		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.15	2.72	2.64	1.92	22.9	9.30	2.64	1.67	26.0	4.23	2.04	2.31
2	2.80	3.05	2.55	1.85	11.5	4.49	2.55	1.61	9.48	3.78	2.04	2.31
3	2.72	2.47	3.50	2.50	7.55	4.75	2.47	1.61	7.38	3.57	3.02	2.23
4	3.05	4.94	3.22	2.84	3.78	3.89	2.47	1.61	2.76	3.26	5.26	2.23
5	2.72	8.70	2.64	1.98	3.36	4.88	2.39	1.61	13.0	3.15	3.11	2.23
6	2.72	6.58	2.55	1.92	3.15	14.6	2.31	1.56	9.23	3.05	9.72	2.16
7	2.64	6.07	2.80	2.31	3.05	4.36	2.31	1.61	*2.64	2.88	2.80	2.10
8	2.55	3.68	2.47	4.17	3.43	3.78	4.42	8.74	2.39	2.96	2.31	2.10
9	2.47	3.15	2.55	8.63	3.26	3.57	8.65	1.98	64.6	2.96	2.23	2.16
10	2.39	2.80	3.35	20.8	3.26	3.36	2.64	1.73	24.4	2.72	2.10	2.04
11	2.47	2.64	2.64	3.05	2.96	*3.89	2.47	1.67	5.73	2.64	*2.16	1.98
12	2.39	2.55	*2.39	2.39	2.72	8.45	2.31	1.61	55.5	2.64	2.23	1.92
13	2.72	3.64	2.31	2.23	7.83	11.7	2.23	1.61	6.39	2.64	2.55	1.92
14	3.32	3.05	2.39	2.39	9.41	34.9	2.23	1.56	9.22	3.15	2.61	1.85
15	2.55	2.64	2.39	4.81	6.65	13.4	2.16	1.56	14.2	7.91	21.8	1.85
16	2.64	2.55	2.23	3.16	26.9	3.89	2.10	1.56	4.10	5.38	4.61	1.79
17	7.37	2.88	2.16	2.39	5.63	3.57	2.10	1.56	3.15	2.96	4.75	1.79
18	5.86	2.55	2.16	2.23	5.08	3.47	2.04	1.51	4.63	3.05	5.29	1.73
19	2.96	4.53	3.44	2.16	5.01	3.26	1.98	1.51	4.95	7.62	3.68	1.73
20	2.64	4.94	3.35	2.10	4.60	3.05	1.98	1	7.51	3.98	2.96	1.67
21	2.64	3.57	2.39	2.04	19.5	3.57	1.98	6	7.32	2.80	3.51	1.67
22	2.47	2.80	2.39	2.10	50.1	3.38	1.98	1.46	6.36	2.64	2.96	1.61
23	2.39	3.76	2.39	3.76	27.7	3.15	1.92	1.46	7.67	2.55	3.43	1.61
24	2.31	3.36	2.16	19.4	8.80	6.45	1.85	1.46	6.89	2.39	5.01	1.61
25	3.59	2.80	2.10	21.2	5.27	3.57	3.90	1.61	8.75	2.31	5.40	1.56
26	*2.72	2.80	2.04	*24.4	4.23	3.05	1.98	3.94	5.39	2.23	3.99	1.56
27	2.47	3.15	2.04	9.13	4.62	2.96	1.85	6.87	4.10	2.23	3.05	1.61
28	2.72	3.57	1.98	8.56	4.23	2.88	1.79	19.8	3.57	2.16	2.72	1.56
29	2.39	3.05	1.98	4.23	5.56	2.80	1.73	------	21.8	2.16	2.64	1.67
30	2.23	2.96	1.92	3.36	7.19	2.72	1.73	------	19.8	2.10	2.47	1.56
31	2.31	2.88	------	15.2	------	2.64	1.67	------	11.2	------	2.31	------
TOTAL	90.37	110.83	75.12	189.21	279.23	183.73	76.83	77.45	380.91	98.10	124.76	56.12
MEAN												
MGD	2.92	3.58	2.50	6.10	9.31	5.93	2.48	2.77	12.3	3.27	4.02	1.87
CFS	4.51	5.53	3.87	9.44	14.4	9.17	3.83	4.28	19.0	5.06	6.23	2.89
AC-FT	277	340	231	581	857	564	236	238	1,170	301	383	172

CALENDAR YEAR	1961	MAX	153	MIN	1.67	MEAN MGD	5.91	MEAN CFS	9.14	AC-FT	6,620
FISCAL YEAR	1961-62	MAX	64.6	MIN	1.46	MEAN MGD	4.77	MEAN CFS	7.38	AC-FT	5,350

* Discharge measurement made on this day.

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1430	6.13	669	1,040

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 1962. 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.--42 years (1914-15, 1916-17, 1922-62) 24.0 mgd (37.1 cfs).

Extremes.--Maximum discharge during year, 1,760 mgd (2,720 cfs) Mar. 12 (gage height, 8.45 ft), from rating curve extended above 420 mgd as explained below; minimum, 1.05 mgd (1.62 cfs) Feb. 7.

1914-17, 1921-62: 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 sugar cane in central Maui.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	9.26	3.41	3.28	1.86	115	21.3	2.79	1.37	136	10.7	2.56	2.89
2	6.20	5.31	3.06	1.81	41.3	9.82	2.65	1.51	64.0	8.26	2.83	2.76
3	5.12	3.14	5.61	7.54	29.5	8.35	2.58	1.29	43.8	7.12	8.80	2.69
4	4.79	6.82	7.72	10.7	9.82	7.18	2.46	1.24	12.5	*5.62	10.2	2.49
5	4.05	33.5	3.52	4.74	7.32	8.35	2.40	1.19	47.6	5.51	7.37	2.43
6	3.68	17.6	2.99	3.98	6.34	26.2	2.35	1.10	40.8	4.85	22.5	*2.37
7	3.41	12.6	3.13	2.93	5.96	8.35	2.29	1.15	*11.0	4.37	6.41	2.43
8	3.14	6.90	2.86	15.1	7.15	6.62	4.19	25.4	7.12	4.47	4.47	2.43
9	2.73	5.48	2.86	45.1	6.82	5.96	32.7	4.64	269	5.51	3.50	2.49
10	2.81	4.47	4.11	78.3	6.08	5.48	3.61	2.19	143	4.47	3.03	2.37
11	3.41	3.86	2.86	9.03	5.00	*6.03	2.72	1.69	16.1	3.66	*2.89	2.19
12	3.86	3.50	*2.46	5.84	4.31	23.8	2.40	1.53	164	3.82	3.03	2.08
13	3.68	4.84	*2.40	4.51	24.6	28.2	2.24	1.43	22.7	3.66	2.89	2.02
14	7.57	4.60	2.72	4.16	43.9	96.8	2.18	1.33	33.0	5.32	4.09	1.90
15	3.32	3.23	2.99	18.3	21.6	14.8	2.12	1.24	70.5	28.6	44.2	1.85
16	8.05	3.00	2.46	12.5	152	8.50	2.07	1.19	15.9	14.6	10.9	1.79
17	31.5	3.52	2.18	5.72	26.6	6.76	2.01	2.24	8.70	5.84	*11.0	1.74
18	23.4	2.92	2.07	4.51	16.8	5.96	1.96	1.79	7.25	5.73	9.18	1.64
19	5.48	10.7	8.36	4.02	17.6	5.36	1.91	1.33	7.25	12.0	5.84	1.64
20	4.26	9.97	12.6	3.44	19.8	4.90	1.81	1.38	7.82	7.77	4.37	1.64
21	4.05	7.25	3.44	3.13	69.0	4.60	1.96	*1.19	8.81	4.75	4.85	1.59
22	3.50	4.11	2.86	3.44	247	4.31	1.86	1.15	8.33	4.47	4.18	1.53
23	3.05	4.00	4.31	12.8	133	4.02	*1.76	1.15	12.5	3.90	*4.81	1.43
24	2.89	7.13	3.20	98.8	41.4	7.11	1.66	1.19	18.3	*3.58	11.2	1.38
25	7.33	4.02	2.58	120	16.3	4.02	20.8	3.60	24.2	3.34	12.7	1.38
26	*5.53	4.31	2.35	118	11.5	3.61	3.43	16.8	15.3	3.18	6.73	1.43
27	3.59	5.12	2.18	25.8	11.4	3.44	2.07	51.5	8.55	3.03	4.47	1.64
28	4.16	6.33	1.96	16.0	10.2	3.44	1.76	119	6.99	2.83	*3.90	2.14
29	3.23	4.02	1.96	9.43	12.3	3.20	1.61	------	86.8	2.83	3.58	2.08
30	2.73	3.69	1.91	6.90	17.0	2.99	1.51	------	68.9	2.83	3.26	1.59
31	2.65	4.11	------	80.0	------	2.86	1.37	------	35.7	------	3.03	------
TOTAL	182.43	203.46	106.99	738.39	1,136.60	352.32	119.23	251.81	1,422.42	186.62	232.77	60.03
MEAN												
MGD	5.88	6.56	3.57	23.8	37.9	11.4	3.85	8.99	45.9	6.22	7.51	2.00
CFS	9.10	10.2	5.52	36.8	58.6	17.6	5.95	13.9	71.0	9.62	11.6	3.10
AC-FT	560	624	328	2,270	3,490	1,080	366	773	4,370	573	714	184

CALENDAR YEAR	1961	MAX	786	MIN	1.39	MEAN MGD	20.2	MEAN CFS	31.3	AC-FT	22,630
FISCAL YEAR 1961-62		MAX	269	MIN	1.10	MEAN MGD	13.7	MEAN CFS	21.2	AC-FT	15,320

* Discharge measurement made on this day.

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1500	8.45	1,760	2,720

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 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 51 ft (from topographic map).

Average discharge.--27 years (1935-62), 2.32 mgd (3.59 cfs).

Extremes.--1934-62: Maximum daily discharge, 7.9 mgd (12.2 cfs) June 30, 1941, Feb. 10, 1955; minimum daily, 0.05 mgd (0.08 cfs) Mar. 5, 1939.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts from Palauhulu Stream for irrigation of taro at Keanae.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.29	1.86	1.72	1.77	3.31	3.02	2.24	1.99	4.00	2.5	2.1	1.95
2	2.14	1.86	1.72	1.77	3.14	2.65	2.24	1.99	2.99	2.4	2.1	1.95
3	2.04	1.86	1.72	1.77	3.08	2.59	2.24	1.95	3.01	2.4	2.1	1.95
4	1.99	1.86	1.68	2.31	2.59	2.54	2.19	1.95	1.90	2.4	*2.19	1.95
5	1.95	2.97	1.68	1.77	2.44	2.54	2.19	1.95	2.89	2.4	2.24	1.95
6	1.95	2.70	1.63	1.77	2.29	2.97	2.19	1.95	3.28	2.4	2.97	1.95
7	1.95	*2.32	1.63	1.77	2.24	2.59	2.19	1.95	2.29	2.3	2.29	1.90
8	1.95	2.04	1.63	2.41	*2.29	2.54	2.29	2.60	1.95	2.3	2.19	1.90
9	1.95	1.90	1.59	2.88	2.24	2.44	3.10	2.04	5.24	2.6	2.19	1.86
10	1.95	1.90	1.59	3.48	2.24	2.44	2.29	1.90	4.15	2.4	2.14	1.86
11	1.95	1.86	1.54	2.19	2.19	2.39	2.24	1.86	2.97	2.3	2.09	1.81
12	1.95	1.86	1.50	1.81	2.14	2.81	2.19	1.86	2.68	2.3	2.09	1.81
13	1.95	1.86	*1.54	1.77	2.50	*2.91	2.19	1.86	1.95	2.3	2.09	1.81
14	2.04	1.86	1.59	1.77	2.86	3.66	2.19	1.86	*2.97	2.4	2.09	1.86
15	1.95	1.81	1.59	2.78	2.65	2.81	2.19	1.81	2.81	3.2	3.49	1.90
16	1.95	1.81	1.59	2.65	4.02	2.65	2.19	1.81	2.70	2.6	2.54	1.90
17	2.37	1.81	1.59	1.95	2.97	2.54	2.14	1.77	2.59	2.4	2.65	1.86
18	2.79	1.81	1.59	1.90	2.54	*2.54	2.14	1.77	2.59	2.4	2.39	1.86
19	1.99	2.08	1.68	*1.90	2.54	2.49	2.14	1.77	2.59	2.7	2.24	1.86
20	1.95	2.04	1.72	1.90	2.54	2.44	2.14	2.04	2.59	2.4	2.19	1.86
21	1.95	1.86	1.54	1.90	3.03	2.39	2.09	2.09	2.59	2.3	2.14	1.81
22	1.90	1.81	*1.54	1.90	5.03	2.34	2.09	2.09	2.65	2.1	2.09	1.81
23	1.90	1.81	1.59	2.52	4.20	2.34	2.09	2.09	2.86	2.1	2.09	1.81
24	1.86	1.86	1.59	3.86	3.25	2.49	2.09	1.99	3.02	2.1	2.29	1.81
25	2.04	1.81	1.54	3.78	2.75	2.34	2.04	1.77	3.08	2.1	2.44	1.81
26	2.13	1.77	1.54	4.32	2.65	2.34	2.04	2.46	3.0	2.1	2.09	1.81
27	1.90	1.72	1.50	3.25	2.59	2.29	2.04	3.42	2.7	2.1	2.04	1.81
28	1.90	1.72	1.50	2.97	2.59	2.29	2.04	4.14	2.5	2.1	2.04	1.77
29	1.86	1.72	1.50	2.70	2.59	2.29	2.04	------	3.8	2.1	1.99	1.77
30	1.86	1.72	1.63	2.44	2.75	2.29	*1.99	------	2.9	2.1	1.99	1.77
31	1.86	1.72	------	2.49	------	2.24	1.99	------	2.6	------	1.99	------
TOTAL	62.21	59.59	47.99	74.45	84.24	79.20	67.45	58.73	89.84	70.3	69.56	55.73
MEAN												
MGD	2.01	1.92	1.60	2.40	2.81	2.55	2.18	2.10	2.90	2.34	2.24	1.86
CFS	3.10	2.97	2.47	3.72	4.34	3.95	3.37	3.25	4.49	3.62	3.47	2.87
AC-FT	191	183	147	228	259	243	207	180	276	216	213	171

CALENDAR YEAR	1961:	MAX	6.30	MIN	1.50	MEAN MGD	2.28	MEAN CFS	3.53	AC-FT	2,550
FISCAL YEAR	1961-62:	MAX	5.24	MIN	1.50	MEAN MGD	2.24	MEAN CFS	3.47	AC-FT	2,510

* Discharge measurement made on this day.
Note.--No gage-height record Mar. 26 to May 3.

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 1962.

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.--46 years (1910-12, 1918-62), 66.4 mgd (103 cfs).

Extremes.--1910-12, 1917-62: Maximum daily discharge, 172 mgd (266 cfs) Apr. 19, 1935; no flow at times.

Remarks.--Records good except those above 100 mgd, which are fair. Ditch diverts water 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	65.7	32.3	33.0	19.5	133	132	30.9	17.9	129	94.5	24.5	29.5
2	45.8	47.4	31.2	19.0	62.3	85.8	29.5	18.2	115	69.4	25.7	28.1
3	40.6	31.6	49.8	31.2	46.4	82.8	29.5	17.4	124	61.0	42.8	26.7
4	44.2	48.6	63.0	54.0	73.4	66.2	27.8	16.9	86.5	49.0	*86.6	25.4
5	37.0	135	33.8	28.1	54.0	87.0	27.0	16.4	106	46.6	48.0	24.8
6	*35.0	122	30.6	25.7	47.8	130	26.4	16.4	134	43.8	127	24.2
7	32.3	102	33.4	22.5	45.8	84.7	26.0	16.7	76.3	39.4	51.8	23.6
8	30.6	65.8	28.8	97.1	*55.8	63.8	42.1	82.2	51.0	39.8	35.0	23.3
9	28.4	49.0	28.8	117	49.8	57.0	92.1	38.1	105	45.8	30.2	24.2
10	27.8	41.8	44.0	131	46.2	51.0	35.0	21.2	124	37.8	27.0	23.0
11	32.0	37.4	30.6	68.7	40.2	59.8	29.5	18.7	131	33.8	26.0	21.5
12	33.4	34.2	26.7	41.8	35.4	131	27.8	17.7	130	33.4	27.8	20.0
13	33.8	51.2	25.7	35.0	72.5	122	26.4	17.4	115	33.4	30.2	19.2
14	63.6	45.4	27.0	33.4	135	133	26.0	16.7	*117	43.2	38.4	*18.7
15	32.0	32.6	28.8	101	130	126	25.1	16.2	139	133	142	18.4
16	54.2	30.6	25.4	82.8	121	87.8	24.5	16.0	110	104	102	17.9
17	92.6	35.4	23.3	41.4	129	69.0	23.3	21.5	63.8	47.0	113	17.4
18	99.8	30.6	23.0	34.2	119	63.0	22.7	18.2	64.2	47.4	102	17.2
19	45.4	73.3	63.0	30.9	128	52.2	21.8	16.2	83.7	71.1	67.8	16.9
20	36.2	94.3	76.6	28.1	113	47.8	21.8	17.4	98.1	76.1	46.6	16.7
21	35.8	67.9	31.6	26.4	100	50.2	21.8	15.5	109	43.4	53.2	16.2
22	32.0	39.4	*27.8	28.1	112	48.6	20.9	15.0	98.4	39.0	43.8	16.0
23	28.4	65.8	31.2	86.0	117	44.2	20.6	14.6	116	35.0	49.0	15.7
24	27.8	64.6	26.0	112	134	88.5	19.7	14.6	116	32.3	107	15.5
25	58.7	39.0	23.9	112	132	47.4	57.1	23.6	126	30.6	119	15.2
26	46.5	39.8	22.7	124	101	41.4	27.4	72.8	107	28.8	77.5	15.0
27	32.3	46.9	21.5	136	97	38.6	21.8	128	71.0	27.0	47.0	16.2
28	38.2	64.0	20.9	130	84.3	38.6	20.0	126	56.2	25.7	40.2	17.4
29	29.8	39.8	20.9	101	104	35.4	19.2	--------	111	25.7	37.0	17.7
30	26.7	37.8	20.0	63.8	130	33.4	18.4	--------	129	25.1	33.8	15.7
31	26.0	39.0	--------	108	--------	32.0	17.9	--------	131	--------	31.6	--------
Total	1292.6	1684.5	973.0	2069.7	2748.9	2230.2	880.0	847.5	3273.2	1462.1	1833.5	597.3
Mean												
Mgd	41.7	54.3	32.4	66.8	91.6	71.9	28.4	30.3	106	48.7	59.1	19.9
Cfs	64.5	84.0	50.1	103	142	111	43.9	46.9	164	75.4	91.4	30.8
Ac-ft	3,970	5,170	2,990	6,350	8,440	6,840	2,700	2,600	10,040	4,490	5,630	1,830

Calendar Year 1961:	Max	136	Min	16.0	Mean mgd	56.8	Mean cfs	87.9	Ac-ft	63,620
Fiscal Year 1961-62:	Max	142	Min	14.6	Mean mgd	54.5	Mean cfs	84.3	Ac-ft	61,050

* Discharge measurement made on this day.

5270. Honomanu Stream near Keanae

Location.--Lat 20°50'05", long 156°11'20", on left bank at Spreckels ditch intake, 3.3 miles southwest of Keanae School, and 4.5 miles southeast of Kailua.

Drainage area.--3.17 sq mi.

Records available.--November 1913 to June 1962. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and combination orifice and broad-crested weir control. Datum of gage is 1,733 ft above mean sea level (by plane-table traverse). Prior to Apr. 14, 1950, at site 500 ft upstream at different datums.

Average discharge.--48 years (1914-62), 15.1 mgd (23.4 cfs).

Extremes.--Maximum discharge during year, 487 mgd (754 cfs) Mar. 12 (gage height, 7.75 ft), from rating curve extended above 13 mgd as explained below; minimum, 0.25 mgd (0.39 cfs) June 25, 26.

1913-62: Maximum discharge, 2,310 mgd (3,570 cfs) Feb. 25, 1956 (gage height, 10.73 ft), from rating curve extended above 13 mgd by computation of flow through orifice and over dam; minimum, 0.08 mgd (0.12 cfs) Mar. 24, 1928.

Remarks.--Records fair except those above 15 mgd, which are poor.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.6	0.25	5.0	18.5
.7	.69	5.6	22.5
.8	1.25	5.8	32.0
1.0	2.68	6.0	50.0
1.5	7.40	6.5	120
2.0	10.3	7.0	238

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	5.66	2.21	1.51	1.13	52.9	13.5	1.38	0.60	53.2	4.92	2.48	1.25
2	3.09	6.52	1.44	.91	17.2	4.73	1.31	.64	23.9	3.69	2.13	1.19
3	2.44	2.60	5.04	6.20	11.0	3.88	1.25	.55	27.6	3.09	4.45	1.08
4	2.29	6.59	5.19	8.39	3.50	3.50	1.13	.51	5.30	2.36	3.00	.97
5	2.29	27.9	1.90	6.90	2.76	4.35	1.08	.51	30.0	2.21	14.4	.91
6	2.05	11.6	7.62	3.17	*2.52	4.83	1.02	.47	32.8	1.97	14.8	.85
7	1.90	8.86	3.59	2.28	2.52	3.69	.97	.51	5.22	1.90	23.5	.80
8	1.77	4.26	2.29	12.9	2.82	2.84	3.01	13.7	3.09	2.25	4.83	.85
9	1.77	3.33	2.13	33.5	2.76	2.52	20.5	2.79	101	3.09	1.83	.91
10	1.77	2.36	2.97	54.5	3.09	2.29	2.21	1.13	59.9	1.97	1.44	.91
11	2.36	1.97	1.70	6.71	2.76	2.92	1.44	.80	7.01	1.70	1.25	1.31
12	2.52	1.70	1.31	3.78	2.05	11.7	1.25	.69	46.4	1.83	1.25	.91
13	2.60	3.66	1.19	2.44	12.1	9.94	1.19	.60	8.98	1.70	1.19	.69
14	5.62	4.12	1.64	2.21	17.6	25.7	1.08	.55	7.62	3.42	4.89	.55
15	2.29	2.13	1.90	11.3	8.48	6.75	1.83	.55	*4.73	17.7	37.3	*.51
16	5.44	1.64	1.51	9.02	82.7	3.59	1.25	.51	3.17	7.60	9.97	.47
17	24.0	1.90	1.08	3.00	14.5	2.92	1.02	.85	2.60	2.68	6.71	.47
18	15.4	1.57	.97	2.44	6.70	6.16	.91	.85	2.36	2.92	4.73	.51
19	3.17	7.58	8.22	2.29	8.50	*3.64	.80	.60	2.29	5.77	3.25	.85
20	2.21	7.55	*9.14	2.13	8.21	2.36	.80	3.43	2.29	4.39	2.21	.69
21	2.29	4.35	3.17	1.90	35.2	2.13	.85	1.44	2.52	8.28	2.52	.51
22	1.77	2.29	4.28	2.55	145	1.97	.74	.74	3.30	3.82	1.97	.42
23	1.57	4.72	3.69	11.8	71.6	1.83	.69	.60	7.93	1.97	2.37	.42
24	1.44	5.14	2.60	51.6	20.6	4.71	.64	.55	12.7	1.57	2.80	.42
25	9.63	2.21	1.57	69.0	6.80	2.13	8.49	.74	14.5	1.38	7.94	.38
26	4.39	2.21	1.44	72.9	4.92	1.83	2.29	26.5	7.91	1.25	3.78	.38
27	2.21	3.00	1.13	13.5	5.40	1.77	1.25	49.6	4.64	1.19	2.29	.51
28	2.60	3.59	1.02	9.12	5.02	1.77	.91	60.6	3.97	1.08	1.90	.80
29	1.90	2.29	1.22	5.75	6.00	1.64	.74	------	35.2	1.33	1.64	.85
30	1.51	1.90	2.04	3.33	9.70	1.51	.69	------	32.1	2.15	1.51	.60
31	1.44	2.05	------	3.50	------	1.44	.60	------	18.6	------	1.38	------
TOTAL	121.39	143.80	84.50	420.15	574.91	144.54	63.32	171.61	572.83	101.18	175.71	21.97
MEAN												
MGD	3.92	4.64	2.82	13.6	19.2	4.66	2.04	6.13	18.5	3.37	5.67	0.732
CFS	6.06	7.18	4.36	21.0	29.6	7.21	3.16	9.48	28.6	5.22	8.77	1.13
AC-FT	373	441	259	1,290	1,760	444	194	527	1,760	311	539	67

CALENDAR YEAR 1961:	MAX	289	MIN	0.55	MEAN MGD	9.76	MEAN CFS	15.1	AC-FT	10,940
FISCAL YEAR 1961-62:	MAX	145	MIN	0.38	MEAN MGD	7.11	MEAN CFS	11.0	AC-FT	7,970

Peak discharge (base, 600 mgd).--No peak above base.

* Discharge measurement made on this day.

5310. Kula diversion from Haipuaena Stream near Olinda

Location.--Lat 20°48'24", long 156°13'27", on left bank 3.4 miles east of Olinda and 6.2 miles south of Kailua.

Records available.--July 1945 to June 1962.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,320 ft (from topographic map).

Average discharge.--16 years (1946-62) 0.439 mgd (0.679 cfs).

Extremes.--1945-62: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; minimum daily, 0.01 mgd (0.02 cfs) for several days in 1953-55, 1962.

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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.80	0.23	0.19	0.15	1.06	1.04	0.04	0.03	1.71	0.68	0.09	0.05
2	.41	.52	.14	.10	.62	.43	.03	a .02	1.28	.34	.09	.04
3	.26	.27	.35	.20	.79	.27	a .03	a .02	1.26	.24	.30	.03
4	.41	.25	.81	.64	.46	.23	a .02	a .02	.80	.19	.67	.03
5	.49	1.11	.27	.66	.30	.36	.02	a .02	1.00	.15	.28	.03
6	.27	.89	.60	.55	.23	.68	a .02	.01	1.64	.15	1.08	.03
7	.19	.91	.76	.26	.18	.43	.02	a .01	.76	.15	1.02	.03
8	.19	.85	.43	.94	.16	.24	.03	.23	.31	.12	.64	.03
9	.16	.59	.28	1.24	.16	.19	.82	.23	1.63	.19	.28	.03
10	.16	.30	.30	1.26	.24	.14	*.26	.09	.96	.15	.19	.03
11	.26	.19	.24	.87	.30	.15	.13	.05	.60	.10	.13	a .03
12	.38	.14	.15	.41	.19	1.06	.08	.03	.89	.07	.18	a .03
13	.38	.47	.12	.26	.47	.80	.05	.03	.92	.07	.16	a .02
14	.71	.83	.20	.20	1.24	1.28	.08	.02	.89	.12	.13	a .02
15	.33	.40	.41	.86	1.10	.78	.20	a .02	.76	.97	1.39	a .02
16	.81	.26	.24	1.04	1.47	.34	.11	a .02	.38	.83	.85	a .02
17	.76	.20	.14	.38	.89	.26	.07	.11	.24	.31	.82	a .02
18	.90	.16	.11	.26	1.08	.73	.05	.13	.16	.21	.54	a .01
19	.40	.74	.89	.23	1.08	.50	.04	.07	.14	.22	.43	.01
20	.24	.97	1.00	.20	1.02	.24	.03	.59	.12	.41	.26	a .01
21	.23	.64	.56	.24	1.04	.19	.03	.28	*.11	.51	.20	a .01
22	.19	.31	.38	.18	1.22	.16	.03	.13	.18	.56	.16	a .01
23	.14	.37	.40	*.56	.68	.16	.03	.07	.78	.24	.14	a .01
24	.11	.65	.27	1.08	.82	.18	.02	.05	1.02	.14	.28	a .01
25	*.52	.27	.18	.89	.66	.19	.53	.04	.98	.10	.76	a .01
26	.61	.30	.14	.48	.46	.13	.37	.39	.89	.07	.31	a .01
27	.27	.30	.11	.40	.43	.10	.15	1.22	.92	.06	.19	a .01
28	.21	.56	.09	.40	.38	.08	.09	1.29	.68	.04	.13	a .01
29	.16	.58	.24	.38	.46	.07	.05	--------	1.01	.07	.10	a .01
30	.12	.27	.30	.36	1.08	.06	.04	--------	1.40	.20	.07	a .01
31	.10	.23	--------	.41	--------	.04	.03	--------	1.39	--------	.06	--------
Total	11.17	14.76	10.30	16.09	20.27	11.51	3.50	5.22	25.81	7.66	11.93	0.62
Mean												
Mgd	0.360	0.475	0.343	0.519	0.676	0.371	0.113	0.186	0.833	0.255	0.385	0.021
Cfs	0.557	0.736	0.531	0.803	1.05	0.574	0.175	0.288	1.29	0.395	0.596	0.032
Ac-ft	34	45	32	49	62	35	11	16	89	24	37	1.9

Calendar Year 1961:	Max	1.47	Min	0.02	Mean mgd	0.408	Mean cfs	0.631	Ac-ft	455
Fiscal Year 1961-62:	Max	1.71	Min	0.01	Mean mgd	0.380	Mean cfs	0.588	Ac-ft	436

* Discharge measurement made on this day.
a No gage-height record.

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.--0.26 sq mi.

Records available.--January to April 1946 (fragmentary), May 1946 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,320 ft (from topographic map).

Average discharge.--16 years, 0.521 mgd (0.806 cfs).

Extremes.--Maximum discharge during year 35.4 mgd (54.8 cfs) Oct. 25 (gage height, 2.76 ft), from rating curve extended above 1.3 mgd as explained below; no flow for many days.

1946-62: Maximum discharge, 87 mgd (135 cfs) between Jan. 23 and Feb. 9, 1948 (gage height, 3.72 ft), from rating curve extended above 1.3 mgd by differential-curve method; no flow at times each year.

Remarks.--Records fair. Kula pipeline diverts all water from Haipuaena Stream at low flow.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.85	0	1.3	1.60
.9	.03	1.5	3.50
1.0	.18	1.8	7.60
1.1	.52	2.0	11.2

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.06	0	0	0	4.48	0.24	0	0	1.98	0.01	0	
2	0	0	0	0	1.59	0	0	0	.96	0	0	
3	0	0	.07	.26	.92	0	0	0	1.40	0	.19	
4	.02	.02	.18	.38	0	0	0	0	.06	0	.09	
5	0	1.11	0	.35	0	0	0	0	.64	0	0	
6	0	.39	.05	.02	0	.01	0	0	1.87	0	.22	
7	0	.15	.06	0	0	0	0	0	.03	0	1.72	
8	0	.09	0	.27	0	*0	0	0	0	0	.12	
9	0	.01	0	2.84	0	0	.86	0	3.88	0	0	
10	0	0	0	3.43	0	0	*0	0	3.48	0	*0	
11	0	0	*0	.03	0	0	0	0	.92	0	0	
12	0	0	0	0	0	.94	0	0	1.38	0	0	
13	0	.39	0	0	.73	.16	0	0	.22	0	0	
14	.04	.17	0	0	1.23	1.35	0	0	.28	0	0	
15	0	0	0	.30	.26	.15	0	0	.01	.21	.98	
16	.03	0	0	.56	6.68	0	0	0	0	.13	.05	
17	1.15	0	0	0	.67	0	0	0	0	0	.04	
18	.63	0	0	0	.25	.08	0	0	0	0	0	
19	0	.58	.34	0	.40	0	0	0	0	0	0	
20	0	.18	.32	0	.49	0	0	.04	0	0	0	
21	0	.02	.01	0	2.22	0	0	0	0	.04	0	
22	0	0	0	0	10.7	0	0	0	0	.01	0	
23	0	0	0	.04	4.58	0	0	0	0	0	0	
24	0	.01	0	2.53	.85	0	0	0	.01	0	0	
25	.25	0	0	6.42	0	0	.86	0	.39	0	0	
26	.03	0	0	4.88	0	0	0	.43	.15	0	0	
27	0	0	0	.99	0	0	0	1.79	.13	0	0	
28	0	.06	0	1.65	0	0	0	1.30	.01	0	0	
29	0	.01	0	.53	0	0	0	--------	2.04	0	0	
30	0	0	0	.06	.16	0	0	--------	1.06	0	0	
31	0	0	--------	0	--------	0	0	--------	.56	--------	0	--------
Total	2.21	3.19	1.03	25.54	36.21	2.93	1.72	3.56	21.46	0.40	3.41	0
Mean Mgd	0.071	0.103	0.034	0.824	1.21	0.094	0.055	0.127	0.692	0.013	0.110	0
Cfs	0.110	0.139	0.053	1.27	1.87	0.145	0.085	0.196	1.07	0.020	0.170	0
Ac-ft	6.8	9.8	3.2	78	111	9.0	5.3	11	66	1.2	10	0

Calendar Year 1961:	Max	17.1	Min	0	Mean mgd	0.515	Mean cfs	0.797	Ac-ft	577
Fiscal Year 1961-62:	Max	10.7	Min	0	Mean mgd	0.278	Mean cfs	0.430	Ac-ft	311

* Observation of no flow made on this day.

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.--1.19 sq mi.

Records available.--October 1913 to June 1962. 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. Datum of gage is 1,512.22 ft above mean sea level (East Maui Irrigation Co. bench mark).

Average discharge.--48 years (1914-62), 9.81 mgd (15.2 cfs).

Extremes.--Maximum discharge during year, 623 mgd (964 cfs) Mar. 12 (gage height, 5.48 ft), from rating curve extended above 150 mgd; minimum, 0.49 mgd (0.76 cfs) June 25.

1913-62: 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 during January, February, May, June 1945, October 1953.

Remarks.--Records good except those for period of no gage-height record, which are fair. Kula pipeline diverts water above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.5	0.49	2.0	5.60
1.6	1.00	2.3	12.5
1.7	1.75	2.6	25.5
1.8	2.86	3.0	53.0
1.9	4.00	3.5	107

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	5.45	2.12	1.75	1.28	25.3	11.3	1.35	0.73	40.7	5.79	1.4	1.51
2	3.43	4.55	1.59	1.21	11.1	4.96	1.28	.73	15.0	4.32	1.6	1.35
3	2.86	*2.22	3.72	4.17	8.00	4.00	1.21	.68	18.2	3.75	2.0	1.28
4	2.65	6.08	4.35	7.33	3.77	3.43	1.21	.68	4.96	3.13	2.5	1.14
5	2.32	22.4	1.84	6.58	3.20	3.88	1.14	.68	28.4	2.86	2.2	1.07
6	2.22	10.6	3.86	3.31	2.86	4.16	1.14	.63	26.2	2.43	13.0	1.07
7	2.02	8.93	3.20	1.88	3.08	3.31	1.07	.68	5.60	2.32	*7.8	1.07
8	1.84	4.16	2.12	10.9	3.08	2.86	3.50	10.8	3.77	2.32	3.11	1.00
9	1.75	3.43	1.93	24.6	2.86	2.43	17.3	2.62	100	3.50	1.67	1.14
10	1.67	2.54	3.04	39.3	2.97	2.22	1.93	1.14	48.9	1.75	1.43	1.07
11	2.02	2.22	1.75	6.15	2.54	2.65	1.43	.88	9.34	1.6	1.28	1.28
12	2.02	1.93	1.43	3.88	2.02	9.19	1.35	.83	50.7	1.5	1.43	.94
13	2.22	4.37	1.35	2.97	7.89	7.65	1.28	*.73	9.52	1.5	1.28	.88
14	4.57	4.13	1.59	2.86	11.6	25.7	1.21	.63	7.12	2.0	2.67	.78
15	1.84	2.12	1.84	12.6	7.04	6.35	1.59	.63	*5.12	12.5	26.1	*.73
16	3.69	1.84	1.51	8.72	55.5	3.65	1.21	.58	3.65	7.8	7.43	.68
17	16.8	1.93	1.28	3.54	10.0	3.08	1.07	.94	3.08	4.1	7.61	.68
18	12.7	1.67	1.14	3.08	5.98	4.42	1.00	.83	2.97	2.5	5.34	.68
19	3.20	6.59	6.83	2.54	7.59	*3.58	1.00	.63	2.86	5.2	3.54	.83
20	2.32	7.26	*8.17	2.32	7.19	2.32	.94	2.21	2.65	4.2	2.54	.73
21	2.43	4.13	2.54	2.12	27.2	2.22	.94	1.07	2.86	6.4	3.08	.68
22	1.93	2.32	4.71	2.43	107	2.02	.88	.73	3.58	3.2	2.32	.63
23	1.75	3.88	3.51	9.31	47.5	1.84	.88	.63	7.13	1.8	2.85	.58
24	1.59	4.24	2.32	40.1	14.6	5.75	.83	.58	9.81	1.6	6.55	.58
25	6.58	2.22	1.75	45.4	7.31	2.22	6.72	.68	10.7	1.5	7.12	.53
26	4.41	2.22	1.51	53.8	5.44	1.93	1.85	22.9	5.98	1.4	4.00	.53
27	2.12	2.86	1.35	13.1	5.28	1.75	1.07	33.8	4.16	1.3	2.65	.73
28	2.43	4.01	1.35	8.66	5.12	1.75	.88	51.7	3.88	1.3	2.22	1.14
29	1.84	2.65	1.28	6.26	5.79	1.59	.83	------	32.2	1.5	2.02	1.00
30	1.51	2.12	1.67	3.88	9.11	1.51	.78	------	25.9	2.1	1.75	.78
31	1.43	2.22	------	3.77	------	1.35	.73	------	18.3	--------	1.59	------
TOTAL	105.61	133.96	76.50	338.05	417.92	135.07	59.60	140.35	513.24	97.17	132.08	27.09
MEAN												
MGD	3.41	4.32	2.55	10.9	13.9	4.36	1.92	5.01	16.6	3.24	4.26	0.903
CFS	5.28	6.69	3.95	16.9	21.6	6.74	2.97	7.75	25.6	5.01	6.59	1.40
AC-FT	324	411	235	1,040	1,280	415	183	431	1,580	298	405	83

CALENDAR YEAR 1961:	MAX	214	MIN	0.78	MEAN MGD	7.93	MEAN CFS	12.3	AC-FT	8,880
FISCAL YEAR 1961-62:	MAX	107	MIN	0.53	MEAN MGD	5.96	MEAN CFS	9.22	AC-FT	6,680

Peak discharge (base, 350 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1600	5.48	623	964

* Discharge measurement made on this day.
Note.--No gage-height record Apr. 11 to May 7.

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, 3.3 miles southeast of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1962. 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.--39 years (1922-29, 1930-62), 13.5 mgd (20.9 cfs).

Extremes.--1922-62: Maximum daily discharge, 97 mgd (150 cfs) Feb. 10, 1955, Feb. 18, 1956; no flow at times.

Remarks.--Records fair. Spreckels ditch diverts water 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	18.6	8.54	6.20	4.38	40.4	36.4	4.72	2.65	60.1	20.2	3.06	4.55
2	10.7	19.1	5.75	4.05	36.0	17.7	4.55	2.78	34.7	13.9	3.20	4.21
3	9.08	*8.54	12.2	10.9	27.4	13.3	4.55	2.40	43.3	11.3	3.20	4.05
4	8.81	15.4	17.8	22.9	13.3	11.7	4.21	2.28	17.6	8.81	4.64	4.05
5	*8.54	49.0	6.65	19.5	10.7	14.7	4.05	2.28	44.8	8.27	3.31	4.05
6	7.78	34.5	13.3	12.0	9.35	17.7	3.90	2.17	51.3	7.32	16.8	3.90
7	7.32	28.7	13.1	7.47	9.35	11.3	4.05	2.28	20.1	6.88	12.7	3.90
8	6.42	15.9	7.55	33.0	11.0	9.08	13.1	27.2	12.6	7.13	4.44	3.90
9	6.20	12.0	7.10	49.4	9.89	7.78	34.8	10.7	82.2	9.54	2.92	4.05
10	6.42	9.08	11.9	60.3	9.89	7.32	7.78	4.21	61.6	6.20	2.52	4.05
11	8.00	7.55	6.65	22.4	8.54	8.27	5.52	3.48	32.0	5.10	2.52	4.72
12	8.00	6.65	4.90	12.9	7.10	26.9	4.72	3.06	38.2	5.75	2.52	3.48
13	8.43	16.2	4.55	9.62	19.9	25.9	4.55	2.65	25.3	5.75	2.40	3.20
14	18.2	15.4	5.75	9.68	34.4	47.6	4.55	2.52	25.9	10.9	5.49	2.92
15	7.10	7.55	7.10	40.7	26.9	22.2	6.16	2.40	19.2	3.95	32.9	*2.65
16	15.0	6.42	5.30	28.1	64.2	12.3	4.55	2.28	12.6	26.1	18.0	2.52
17	36.0	7.55	4.21	12.3	30.8	10.4	4.05	3.48	10.2	9.89	27.9	2.40
18	33.5	5.75	3.90	9.89	22.2	14.6	3.76	3.34	9.89	11.9	22.3	2.40
19	12.0	21.7	22.6	8.54	24.7	*11.7	3.48	2.52	10.4	17.3	12.5	3.06
20	8.54	28.5	*25.0	8.54	24.1	8.54	3.62	8.77	10.6	16.9	8.81	2.92
21	8.81	16.5	9.28	7.32	39.0	8.00	3.76	4.21	11.6	16.8	10.9	2.40
22	6.88	8.54	16.0	8.77	77.4	7.32	3.34	2.78	13.4	13.5	7.32	2.17
23	6.00	15.9	13.5	30.4	64.9	6.88	3.20	2.40	22.6	8.00	12.3	2.06
24	5.75	17.7	8.54	57.3	38.0	21.6	3.06	2.28	25.1	6.88	27.6	1.95
25	17.7	8.00	6.00	48.1	25.2	8.54	16.3	3.06	25.6	6.00	28.5	1.95
26	15.4	8.54	5.75	72.6	18.9	6.88	6.38	37.1	19.8	4.39	14.6	1.85
27	7.78	11.5	4.72	37.4	19.8	6.20	4.05	55.7	14.7	3.20	8.54	2.40
28	9.35	17.9	4.55	27.4	18.9	6.42	3.48	60.8	14.5	3.06	7.10	3.76
29	7.10	10.9	4.62	21.3	22.0	5.75	3.06	---------	43.9	3.20	6.20	3.76
30	5.52	7.78	6.65	12.9	34.0	5.10	2.78	---------	44.0	3.90	5.52	2.65
31	5.30	8.54	---------	12.3	--------	4.90	2.65	---------	37.6	--------	4.90	---------
Total	340.23	455.83	271.12	722.36	798.22	422.98	182.73	261.78	895.39	282.02	325.61	95.93
Mean												
Mgd	11.0	14.7	9.04	23.3	26.6	13.6	5.89	9.35	28.9	9.40	10.5	3.20
Cfs	17.0	22.7	14.0	36.1	41.2	21.0	9.11	14.5	44.7	14.5	16.2	4.95
Ac-ft	1,040	1,400	832	2,220	2,450	1,300	561	803	2,750	865	999	294

Calendar Year 1961: Max 83.0 Min 2.92 Mean mgd 15.8 Mean cfs 24.4 Ac-ft 17,680
Fiscal Year 1961-62: Max 82.2 Min 1.85 Mean mgd 13.8 Mean cfs 21.4 Ac-ft 15,510

* Discharge measurement made on this day.

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 1962.

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.--30 years, 78.6 mgd (122 cfs).

Extremes.--1932-62: Maximum daily discharge, 193 mgd (299 cfs) Jan. 17, 1946; 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 used for power, domestic supply, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	68.7	33.4	33.4	18.6	157	146	30.4	17.1	166	92.8	27.4	32.8
2	48.0	49.9	31.6	17.8	73.6	84.0	29.5	16.6	126	69.5	29.5	28.3
3	41.6	31.9	49.8	33.6	48.3	79.4	29.2	15.9	139	61.8	40.2	27.1
4	43.4	52.1	64.6	59.5	73.2	63.4	27.7	15.4	84.0	51.2	94.4	25.6
5	*37.0	158	34.0	36.3	55.0	81.5	27.1	15.2	140	48.8	54.5	24.7
6	35.2	129	33.1	25.9	49.2	123	26.2	15.0	157	45.6	145	23.8
7	33.1	110	34.6	20.8	47.2	84.2	25.6	15.2	74.3	41.0	68.0	24.1
8	31.3	65.5	29.5	104	54.5	63.4	40.6	95.8	52.3	41.0	42.4	23.5
9	28.9	51.2	29.8	132	51.5	57.4	112	40.3	167	47.2	33.4	24.4
10	28.0	42.5	44.0	163	46.4	52.3	35.5	20.2	168	39.0	30.4	22.9
11	31.9	37.8	31.0	70.3	40.2	58.3	29.5	17.3	136	34.0	28.9	21.2
12	34.0	34.6	26.8	42.5	34.9	131	27.7	16.3	146	34.0	31.0	19.9
13	34.9	50.0	25.9	34.0	74.5	122	25.9	15.6	123	34.3	32.5	18.9
14	62.9	49.1	26.8	32.5	141	160	25.9	15.0	119	42.8	37.1	18.4
15	32.5	33.4	28.9	124	127	124	24.4	14.7	139	148	169	17.8
16	54.6	31.0	25.6	91.1	170	86.6	23.5	14.5	109	116	116	17.1
17	105	36.1	22.9	41.6	138	68.5	22.9	20.6	64.2	48.4	113	16.6
18	103	31.0	22.6	34.6	112	61.4	22.0	16.6	63.5	50.0	100	*16.3
19	46.8	76.5	64.9	30.7	118	53.5	21.2	14.5	83.4	71.5	66.1	16.1
20	36.4	93.5	86.5	28.0	108	*49.2	21.0	16.1	94.8	82.1	48.0	15.9
21	35.8	69.0	31.0	25.9	118	51.2	21.0	13.8	105	50.0	54.4	15.4
22	31.9	40.6	28.7	28.0	186	46.9	19.9	13.1	96.0	41.3	45.2	15.0
23	28.9	63.9	31.9	94.8	176	43.7	19.7	12.9	124	35.5	50.2	14.7
24	28.3	65.0	25.6	142	156	92.8	18.9	13.1	130	32.8	108	14.5
25	64.8	39.4	23.5	138	134	48.4	56.0	22.5	140	31.3	121	14.0
26	48.9	40.6	22.0	154	97.0	41.6	29.2	97.4	115	30.4	76.6	13.8
27	32.5	48.0	20.7	142	91.5	38.2	20.7	151	73.5	30.4	48.8	15.2
28	39.8	64.9	20.2	132	81.7	38.2	18.9	166	56.7	28.9	41.9	16.8
29	30.4	41.3	20.2	100	98.0	34.9	18.1	--------	144	28.9	37.8	17.1
30	26.8	38.2	18.9	63.0	130	33.1	17.6	--------	177	30.4	34.6	14.7
31	26.8	40.2	--------	104	--------	31.6	17.1	--------	164	--------	31.9	--------
Total	1,332.1	1,747.6	989.0	2,264.5	2,987.7	2,249.7	884.9	917.7	3,676.7	1,538.9	1,957.2	586.6
Mean												
Mgd	43.0	56.4	33.0	73.0	99.6	72.6	28.5	32.8	119	51.3	63.1	19.6
Cfs	66.5	87.3	51.1	113	154	112	44.1	50.7	184	79.4	97.6	30.3
Ac-ft	4,090	5,360	3,040	6,950	9,170	6,900	2,720	2,820	11,280	4,720	6,010	1,800

Calendar Year 1961: Max 190 Min 16.8 Mean mgd 60.5 Mean cfs 93.6 Ac-ft 67,750
Fiscal Year 1961-62: Max 186 Min 12.9 Mean mgd 57.9 Mean cfs 89.6 Ac-ft 64,860

* Discharge measurement made on this day.

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, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Records available.--December 1917 to November 1924, January 1925 to June 1962.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (from topographic map).

Average discharge.--43 years (1918-24, 1925-62), 5.73 mgd (8.87 cfs).

Extremes.--1917-62: 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.55	0.48	0.42	0.18	10.8	3.96	0.42	*0.14	16.5	4.22	0.37	0.37
2	1.00	.54	.37	.18	9.05	1.53	.42	.14	1.11	2.66	.37	.37
3	.85	.37	.66	1.19	5.74	1.23	.42	.14	1.30	2.08	.37	.32
4	.85	*1.13	.85	1.46	1.80	1.07	.37	.14	.54	1.61	.93	.28
5	*.72	4.13	.42	2.76	1.45	1.15	.37	.14	16.4	1.38	.69	.28
6	.72	2.49	.32	.66	1.38	1.38	.37	.14	14.0	1.15	3.77	.23
7	.60	2.82	.42	.32	1.53	1.00	.37	.18	1.53	1.00	1.07	.23
8	.54	1.30	.37	.85	1.61	.85	1.60	2.07	.93	1.00	.62	.23
9	.48	.85	.42	3.64	1.38	.72	10.5	.54	64.2	1.07	.42	.28
10	.48	.60	.37	13.8	1.23	.66	.93	.23	29.2	.78	.37	.18
11	.48	.54	.28	1.15	1.00	.72	.72	.14	8.89	.72	.37	.14
12	.42	.48	.28	.72	.85	1.07	.66	.14	26.4	.66	.37	.11
13	.60	1.04	.23	.54	1.46	.85	.60	.14	11.9	.66	.37	.08
14	.85	.93	.28	.66	2.15	14.8	.54	.14	4.34	.66	.37	.08
15	.42	.48	.28	14.2	1.45	1.89	.48	.11	2.66	2.33	12.5	.08
16	.37	.42	.23	4.66	28.1	1.15	.48	.11	1.89	2.98	1.80	.08
17	5.11	.48	.18	1.99	2.54	1.00	.42	.14	1.45	.85	2.27	.05
18	2.25	.42	.18	1.45	1.70	1.23	.42	.14	1.45	.85	1.89	.05
19	.54	1.30	.81	1.15	1.61	1.00	.37	.11	1.70	1.66	1.30	.05
20	.37	1.89	1.10	.85	1.23	*.78	.32	.18	1.61	1.58	.93	.05
21	.77	1.23	*.37	.72	10.5	.85	.32	.14	1.45	.78	.93	.05
22	.42	.54	.89	.66	57.6	.93	.28	.11	1.99	.72	.72	.05
23	.32	1.00	1.34	1.70	17.6	.93	.32	.08	2.86	.60	.66	.05
24	.28	.93	.42	18.7	3.65	1.50	.28	.08	1.89	.54	1.23	.05
25	.48	.54	.28	21.5	2.99	.78	.32	.18	2.27	.54	1.38	.03
26	.66	.54	.28	25.1	2.08	.72	.32	4.09	1.53	.48	1.00	.03
27	.32	.60	.28	4.63	1.70	.60	.28	6.68	1.81	.42	.66	.05
28	.42	.85	.23	3.70	1.45	.60	.23	22.3	1.53	.42	.54	.14
29	.32	.72	.23	2.36	1.45	.54	.18	-------	32.5	.42	.54	.14
30	.28	.54	.23	1.70	2.51	.54	.18	-------	19.7	.48	.48	.11
31	.23	.66	--------	1.61	-------	.48	.14	-------	12.6	--------	.42	--------
Total	24.70	30.84	13.02	134.79	179.59	46.51	23.63	38.87	288.13	35.30	39.71	4.24
Mean												
Mgd	0.797	0.995	0.434	4.35	5.99	1.50	0.762	1.39	9.29	1.18	1.28	0.141
Cfs	1.23	1.54	0.671	6.73	9.27	2.32	1.18	2.15	14.4	1.83	1.98	0.218
Ac-ft	76	95	40	414	551	143	72	119	884	108	122	13

Calendar Year 1961:	Max	82.1	Min	0.18	Mean mgd	3.47	Mean cfs	5.37	Ac-ft	3,900
Fiscal Year 1961-62:	Max	64.2	Min	0.03	Mean mgd	2.35	Mean cfs	3.64	Ac-ft	2,640

* Discharge measurement made on this day.

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.--2.31 sq mi.

Records available.--June 1913 to June 1962. 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.--49 years, 21.4 mgd (33.1 cfs).

Extremes.--Maximum discharge during year, 955 mgd (1,480 cfs) Mar. 12 (gage height, 5.95 ft), from rating curve extended above 410 mgd as explained below; minimum, 0.65 mgd (1.01 cfs) June 27 (gage height, 0.58 ft).

1913-62: 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 diverts small amount of water above station at altitudes 4,300 and 3,200 ft for domestic supply.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.6	0.81	1.3	22.5
.7	1.86	1.6	44.0
.8	3.44	2.0	86.0
.9	5.62	3.0	252
1.1	12.4		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	11.9	4.42	3.06	1.86	39.9	24.7	2.42	*1.17	89.8	12.9	2.27	2.42
2	6.43	9.22	2.74	1.62	22.2	10.5	2.42	1.08	26.7	8.60	2.58	2.27
3	5.35	4.42	5.32	3.08	15.4	7.60	2.27	.99	37.2	7.29	3.06	2.13
4	5.10	*12.6	10.4	12.3	7.92	6.71	2.27	.99	10.1	5.62	3.79	1.99
5	4.42	49.9	3.60	10.6	6.71	7.60	2.13	.99	66.6	5.10	3.47	1.86
6	4.20	25.7	4.60	*5.82	5.89	7.92	1.99	.99	51.9	4.62	19.6	1.86
7	3.79	20.3	5.50	2.74	*6.16	6.16	2.13	1.08	12.0	4.20	12.6	1.74
8	3.60	10.2	3.79	21.8	5.89	4.85	6.67	20.5	10.5	4.20	5.44	1.74
9	3.44	7.00	3.24	44.8	4.85	4.42	35.3	5.23	217	4.62	2.58	1.86
10	3.44	5.35	5.60	74.6	5.10	4.20	3.99	1.86	96.9	3.60	2.13	1.86
11	3.79	4.62	3.06	13.1	4.62	4.62	2.90	1.38	22.0	3.06	1.86	1.86
12	3.99	3.79	2.42	7.85	3.79	16.6	2.42	1.28	107	3.24	2.13	1.49
13	4.20	7.08	2.27	5.35	11.1	15.8	2.27	1.17	23.3	3.06	1.86	1.38
14	9.37	8.88	2.42	4.79	20.0	51.9	2.27	1.08	17.1	3.90	6.25	1.28
15	3.60	4.20	3.06	26.8	14.5	12.7	2.42	.99	12.0	28.1	60.6	1.17
16	6.79	3.60	2.42	17.7	105	6.71	2.13	.99	*7.60	17.7	*16.6	1.08
17	40.2	3.99	2.13	6.43	20.1	5.62	1.99	1.38	6.16	5.10	16.1	1.08
18	27.3	3.06	1.86	5.10	12.9	7.78	1.86	1.28	5.89	5.35	10.9	*.99
19	6.43	11.1	13.3	4.20	15.4	6.81	1.74	.99	5.35	10.9	6.43	1.08
20	4.62	17.9	15.8	3.79	15.8	*4.42	1.62	2.72	5.10	8.74	4.42	1.08
21	5.00	9.83	*4.22	3.44	54.1	4.20	1.74	1.74	5.35	13.7	4.85	.99
22	3.99	5.10	7.80	3.79	206	3.79	1.62	1.08	7.18	8.07	3.99	.90
23	3.60	6.74	6.13	18.8	91.7	3.44	1.62	.99	16.5	3.99	4.93	.90
24	3.44	9.42	3.60	73.3	33.0	12.9	1.49	.90	22.9	3.44	13.2	.81
25	13.6	4.20	2.74	78.0	17.0	4.42	13.5	1.08	21.7	3.06	15.5	.81
26	8.95	3.99	2.27	114	13.3	3.60	4.04	60.7	12.4	2.74	7.60	.81
27	4.42	4.85	1.99	28.5	12.0	3.24	2.13	64.3	8.26	2.58	4.62	.99
28	4.62	8.47	1.86	18.4	11.3	3.24	1.74	106	7.60	2.27	3.60	1.74
29	3.79	4.85	1.86	13.5	12.0	3.06	1.62	------	69.4	2.42	3.24	1.49
30	3.06	4.20	2.13	8.26	20.7	2.74	1.49	------	53.5	3.24	2.74	1.17
31	2.90	3.99	------	8.60	------	2.58	1.38	------	38.3	------	2.58	------
TOTAL	219.33	282.97	131.19	642.92	814.33	264.83	115.58	284.93	1,093.29	195.41	251.52	42.83
MEAN												
MGD	7.08	9.13	4.37	20.7	27.1	8.54	3.73	10.2	35.3	6.51	8.11	1.43
CFS	10.9	14.1	6.77	32.1	42.0	13.2	5.77	15.7	54.6	10.1	12.6	2.21
AC-FT	673	868	403	1,970	2,500	813	355	874	3,360	600	772	131

CALENDAR YEAR 1961: MAX 388 MIN 1.62 MEAN MGD 15.8 MEAN CFS 24.4 AC-FT 17,710
FISCAL YEAR 1961-62: MAX 217 MIN 0.81 MEAN MGD 11.9 MEAN CFS 18.4 AC-FT 13,320

* Discharge measurement made on this day.

Peak discharge (base, 750 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1600	5.95	955	1,480

5528. Waikamoi Stream above reservoir at Kula pipeline intake, near Olinda

Location.--Lat 20°48'25", long 156°14'00", on left bank, 1,500 ft upstream from Kula pipeline at Waikamoi intake and 3.0 miles east of Olinda.

Drainage area.--2.49 sq mi.

Records available.--July 1953 to June 1962. 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.--8 years (1954-62), 1.63 mgd (2.52 cfs).

Extremes.--Maximum discharge during year, 415 mgd (642 cfs) Nov. 1 (gage height, 4.43 ft), from rating curve extended above 6.4 mgd as explained below; no flow June 22-26, 29, 30.

1953-62: 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 flow over dam; no flow at times.

Remarks.--Records good except those for period of no gage-height record and those above 10 mgd, which are fair.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.08	0	0.8	1.70
.1	.01	1.0	6.20
.2	.05	1.2	12.5
.3	.14	1.5	25.0
.4	.28	2.0	56.0
.6	.74		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.78	0.07	0.04	0.02	40.4	0.65	0.02	0.02	2.84	0.33	0.02	0.02
2	.30	.12	.03	.02	6.95	.18	.02	.02	1.26	.11	.03	.02
3	.12	.06	.13	.07	4.32	.08	.01	.01	2.02	.06	.08	.01
4	.10	.06	.26	.18	.41	.05	.01	.01	.27	.04	.12	.01
5	.11	.80	.07	.39	.18	.08	.01	.01	.72	.04	.05	.01
6	.08	.58	.16	.30	.08	.15	.01	.01	2.78	.04	.28	.02
7	.07	.36	.20	.08	.05	.18	.01	.01	.40	.04	.85	.02
8	.07	.35	.11	.44	.04	.07	.03	.08	.10	.04	.32	.02
9	.05	.26	.08	3.70	.04	.04	.42	.05	4.83	.05	.08	.02
10	.05	.08	.07	6.39	.04	.04	.07	.02	4.56	.04	*.05	.02
11	.08	.05	*.05	.56	.05	.05	.04	.01	.38	.03	.04	.02
12	.10	.04	.03	.18	.03	1.18	.02	.01	1.97	.03	.03	.01
13	.12	.28	.03	.08	.33	.52	.02	.01	.76	.03	.03	.01
14	.24	.42	.06	.06	1.69	2.66	.03	.01	.68	.05	.03	.01
15	.12	.12	.09	.55	.70	.61	.04	.01	.45	.33	.81	.01
16	.28	.07	.06	1.07	10.5	.15	.03	.01	.13	.24	.33	.01
17	1.48	.05	.03	.18	1.59	.08	.02	.07	.06	.08	.28	.01
18	1.39	.04	.02	.08	.77	.19	.02	.05	.04	.05	.14	.01
19	.19	.35	.36	.05	1.06	.16	.02	.04	.04	.07	.10	.01
20	.11	.50	.43	.05	1.05	.08	.02	.22	.03	.12	.05	a .01
21	.08	.25	.18	.04	3.66	.05	.02	.06	.03	.14	.04	a .01
22	.08	.09	.11	.04	16.9	.04	.02	.03	.04	.15	.04	a0
23	.06	.09	.08	*.12	10.0	.04	.02	.02	.22	.06	.04	a0
24	.05	.14	.06	2.59	1.72	.04	.02	.01	.32	.04	.08	a0
25	.21	.07	.04	9.76	.48	.04	.55	.01	.30	.03	.19	a0
26	.15	.07	.03	7.50	.25	.04	.10	.22	.37	.03	.08	a0
27	.07	.06	.02	1.41	.18	.03	.05	1.08	.43	.02	.04	a .01
28	.05	.09	.02	2.21	.13	.03	.03	1.63	.30	.02	.03	a .01
29	.04	.10	.04	.72	.12	.03	.04	--------	2.50	.03	.02	a0
30	.04	.05	.04	.23	.50	.02	.03	--------	1.36	.05	.02	a0
31	.04	.05	-------	.18	--------	.02	.02	--------	1.21	--------	.02	---------
Total	6.71	5.72	2.93	39.25	104.22	7.58	1.77	3.74	31.40	2.39	4.32	0.31
Mean												
Mgd	0.216	0.184	0.098	1.27	3.47	0.244	0.057	0.134	1.01	0.080	0.139	0.010
Cfs	0.334	0.285	0.152	1.96	5.37	0.378	0.088	0.207	1.56	0.124	0.215	0.016
Ac-ft	21	18	9.0	120	320	23	5.4	11	96	7.3	13	1.0

Calendar Year 1961: Max 40.4 Min 0.01 Mean mgd 1.07 Mean cfs 1.66 Ac-ft 1,200
Fiscal Year 1961-62: Max 40.4 Min 0 Mean mgd 0.576 Mean cfs 0.891 Ac-ft 645

Peak discharge (base, 130 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-1	1400	4.43	415	642

* Discharge measurement made on this day.
a No gage-height record.

5650. Kaaiea Gulch near Huelo

Location.--Lat 20°52'02", long 156°12'17", on left bank 700 ft upstream from Hamakua ditch trail crossing, 2 miles southeast of Kailua, 3.2 miles southeast of Huelo, and 3.5 miles west of Keanae.

Drainage area.--0.58 sq mi.

Records available.--December 1921 to June 1962. Prior to July 1958, published as Kaaiea Stream near Huelo.

Gage.--Water-stage recorder and concrete weir. Altitude of gage is 1,310 ft (from topographic map). Prior to Aug. 1, 1934, at site 40 ft downstream at datum 5.75 ft lower.

Average discharge.--40 years (1922-62), 4.37 mgd (6.76 cfs).

Extremes.--Maximum discharge during year, 416 mgd (644 cfs) Mar. 12 (gage height, 3.96 ft), from rating curve extended above 130 mgd; minimum, 0.27 mgd (0.42 cfs) June 23-27.

1921-62: Maximum discharge, 2,300 mgd (3,560 cfs) Nov. 18, 1930 (gage height, 7.93 ft, site and datum then in use), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.22 mgd (0.34 cfs) June 1, 1945.

Remarks.--Records good. No diversion above station. All low flow diverted into Wailoa ditch (see p.127) below station for domestic supply, power, and irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	1.0	15.3
.3	.63	1.5	42.0
.4	1.34	2.0	79.0
.6	4.05		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.57	1.09	0.87	0.50	8.64	6.18	0.58	A0.36	12.3	2.73	0.54	0.68
2	1.53	1.64	.80	.46	5.13	2.07	.54	A.36	2.58	1.93	.54	.63
3	1.25	.87	1.55	.83	2.73	1.63	.58	A.33	3.82	1.63	.58	.58
4	1.34	4.04	1.60	2.90	1.73	1.43	.54	A.33	1.25	1.25	.87	.54
5	1.01	8.63	.74	1.70	1.34	1.53	.50	.33	18.2	1.17	.80	.54
6	.94	5.07	.68	.94	1.25	1.63	.46	.33	10.6	1.01	5.70	.50
7	.87	5.34	1.02	.63	1.34	1.25	.64	.33	1.95	.87	.94	.50
8	.74	*1.95	.74	4.52	1.34	1.01	4.54	5.50	4.18	.94	.68	.50
9	.68	1.43	.80	8.50	*1.25	.94	11.2	.94	70.0	1.09	.58	.54
10	.68	1.17	1.37	9.65	1.17	.87	1.09	.46	20.7	.74	.54	.54
11	.68	1.01	.87	2.19	1.01	1.09	.80	.39	7.23	.63	.54	.46
12	.80	.87	.63	1.34	.80	2.15	.74	.36	48.2	.68	.54	.42
13	1.09	2.79	.58	1.09	1.44	2.03	.63	.36	4.68	.74	.50	.39
14	2.05	1.68	.63	1.23	2.07	20.8	.63	.33	3.45	1.15	.88	.36
15	.74	.94	.80	17.7	2.07	2.59	.58	.33	2.07	6.67	17.8	.36
16	.94	.80	.68	4.42	17.0	1.53	.54	.30	1.53	4.54	3.77	.33
17	7.98	.94	.54	1.84	2.98	1.34	.50	.46	1.17	1.09	4.46	.33
18	3.68	.74	.54	1.63	2.45	1.53	.50	.36	1.25	1.53	3.80	.33
19	1.34	2.80	3.16	1.17	2.19	1.25	.46	.30	1.43	3.78	1.95	.33
20	.94	4.11	3.90	1.01	1.84	.94	.46	1.02	*1.65	1.95	1.34	.30
21	1.34	2.07	.94	.87	8.70	1.09	.46	.42	1.53	1.55	1.53	.30
22	.87	1.09	1.49	.94	29.2	.87	.42	.33	2.77	1.17	1.17	.30
23	.74	1.63	2.11	4.38	13.6	.80	.46	.30	4.73	.94	1.61	.30
24	.68	1.85	.87	12.4	4.74	6.25	.42	.30	3.19	.80	4.03	.27
25	2.24	1.01	.68	13.7	3.65	1.17	2.81	.33	4.16	.74	3.35	.27
26	1.50	1.01	.63	18.3	2.19	.94	.68	7.90	2.07	.63	2.19	.30
27	.80	1.09	.58	4.90	1.95	.87	.46	7.10	1.73	.58	1.23	.33
28	.94	2.56	.54	5.13	1.63	.80	.42	18.7	1.80	.54	1.09	.50
29	.68	1.83	.54	2.45	2.19	.74	A.39	------	25.5	.63	.94	.50
30	.63	1.01	.54	1.95	4.14	.63	A.39	------	17.0	.68	.80	.39
31	.63	1.09	------	2.59	------	.63	A.36	------	11.1	------	.74	------
TOTAL	42.90	64.15	31.42	131.86	131.76	68.58	33.78	48.86	293.82	44.40	66.05	12.62
MEAN												
MGD	1.38	2.07	1.05	4.25	4.39	2.21	1.09	1.75	9.48	1.48	2.13	0.421
CFS	2.14	3.20	1.62	6.58	6.79	3.42	1.69	2.70	14.7	2.29	3.30	0.651
AC-FT	132	197	96	405	404	210	104	150	902	136	203	39

CALENDAR YEAR	1961 :	MAX	135	MIN	0.30	MEAN MGD	3.46	MEAN CFS	5.35	AC-FT	3,870
FISCAL YEAR 1961-62:		MAX	70.0	MIN	0.27	MEAN MGD	2.66	MEAN CFS	4.12	AC-FT	2,980

* Discharge measurement made on this day.
A No gage-height record.

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1530	3.96	416	644

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.--3.57 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 1962. 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, at present site at datum 0.50 ft higher.

Average discharge.--45 years (1914-18, 1920-24, 1925-62), 24.7 mgd (38.2 cfs).

Extremes.--Maximum discharge during year, 2,150 mgd (3,330 cfs) Mar. 12 (gage height, 8.84 ft), from rating curve extended above 390 mgd; minimum, 1.85 mgd (2.86 cfs) June 24-27.

1910-11, 1913-62: Maximum discharge, 4,140 mgd (6,410 cfs) Nov. 18, 1930 (gage height, 10.74 ft), from rating curve extended above 390 mgd; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.

Remarks.--Records good except those above 400 mgd, which are fair. No diversion above station since 1922. All low flow diverted into Wailoa ditch (see p.127) 200 ft below station for domestic supply, power, and irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.8	1.85	2.7	40.0
1.9	3.35	3.0	70.0
2.0	5.40	3.5	135
2.2	11.4	4.0	215
2.4	20.3	5.0	445

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	13.8	6.70	4.78	3.00	52.1	33.3	4.17	2.40	86.1	14.7	4.17	4.37
2	9.02	8.70	4.58	2.85	33.1	13.0	3.96	2.40	16.1	11.8	4.37	4.17
3	7.74	5.19	7.66	3.40	17.9	11.1	3.96	2.25	32.5	10.7	4.78	3.96
4	7.74	19.4	8.99	11.0	11.8	9.70	3.76	2.25	9.02	9.02	5.92	3.76
5	6.70	47.2	4.78	6.66	9.70	10.4	3.55	2.25	83.9	8.00	4.95	3.55
6	6.44	27.6	4.37	5.40	8.68	11.1	3.35	2.10	67.3	7.22	25.2	3.35
7	5.66	24.6	5.40	3.55	9.02	8.68	4.57	2.25	11.8	6.44	5.92	3.35
8	5.19	*10.4	4.37	23.1	8.34	7.74	22.6	28.5	30.3	6.44	4.58	3.20
9	4.78	8.34	4.78	53.0	*7.74	6.96	58.8	7.06	365	7.22	*4.17	3.35
10	4.78	6.96	7.86	65.1	8.92	6.70	6.44	3.35	116	*5.92	3.96	3.35
11	4.99	6.18	4.78	10.7	7.48	7.82	4.78	2.85	33.0	5.19	3.76	3.00
12	5.19	5.66	3.96	7.74	5.92	16.6	4.17	2.70	209	5.19	3.96	2.85
13	6.44	12.1	3.76	6.18	7.88	17.0	3.96	2.55	27.7	5.19	3.55	2.70
14	10.1	9.47	3.96	6.68	15.1	93.0	3.96	2.55	58.0	7.16	6.35	2.40
15	4.78	5.40	4.37	78.8	12.2	14.6	3.76	2.40	13.0	29.6	93.8	2.25
16	6.44	4.99	3.96	24.6	109	9.70	3.35	2.40	10.0	22.5	20.1	2.10
17	50.8	5.19	3.35	10.0	18.0	8.34	3.35	3.35	8.68	7.22	19.5	2.10
18	26.9	4.58	3.35	11.7	14.3	9.70	3.20	2.70	8.34	8.68	15.0	2.10
19	8.00	12.2	14.1	8.34	14.4	8.34	3.00	2.25	8.68	17.7	9.70	2.10
20	5.92	20.2	27.3	6.96	15.5	6.96	3.00	5.74	*8.68	11.5	7.22	*2.10
21	6.96	11.7	5.40	6.18	62.9	*6.70	3.00	2.85	8.00	22.4	8.00	2.10
22	5.40	6.18	6.05	6.70	216	5.92	2.85	2.25	13.1	10.2	6.70	2.10
23	4.78	7.93	8.00	25.0	95.1	5.40	2.70	*2.10	21.5	6.96	7.62	2.10
24	4.37	9.38	4.37	77.2	34.0	29.2	2.70	2.00	18.4	6.18	18.5	2.00
25	12.7	5.66	*3.76	82.7	21.6	7.22	24.2	2.10	18.9	5.40	18.5	2.00
26	9.46	5.66	3.76	121	15.1	5.92	4.99	55.8	11.4	4.99	11.8	2.00
27	5.40	6.18	3.55	29.2	13.9	5.40	3.35	49.6	10.0	4.78	7.74	2.10
28	5.92	12.1	3.35	28.5	12.2	5.19	2.85	113	9.43	4.58	6.70	2.85
29	4.78	7.60	3.35	15.1	15.5	4.78	2.70	------	*108	4.78	5.92	2.85
30	4.17	5.40	3.20	16.3	27.0	4.58	2.55	------	67.8	5.40	5.19	2.40
31	4.17	5.66	------	19.0	------	4.37	2.40	------	45.8	------	4.78	------
TOTAL	269.52	334.51	170.25	775.64	900.38	395.42	205.98	314.00	1,535.43	283.06	352.41	82.61
MEAN												
MGD	8.69	10.8	5.68	25.0	30.0	12.8	6.64	11.2	49.5	9.44	11.4	2.75
CFS	13.5	16.7	8.78	38.7	46.4	19.7	10.3	17.3	76.6	14.6	17.6	4.26
AC-FT	827	1,030	522	2,380	2,760	1,210	632	964	4,710	869	1,080	254

CALENDAR YEAR	1961:	MAX	625	MIN	2.60	MEAN MGD	20.1	MEAN CFS	31.1	AC-FT	22,520
FISCAL YEAR 1961-62:		MAX	365	MIN	2.00	MEAN MGD	15.4	MEAN CFS	23.8	AC-FT	17,240

* Discharge measurement made on this day.

Peak discharge (base, 750 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-9	0700	6.05	770	1,190	3-12	1600	8.84	2,150	3,330

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 1962. 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.--51 years (1911-62), 7.86 mgd (12.2 cfs).

Extremes.--Maximum discharge during year, 2,900 mgd (4,490 cfs) Mar. 12 (gage height, 5.68 ft), from rating curve extended above 92 mgd; minimum, 0.38 mgd (0.59 cfs) Oct. 1-3,7.

1910-62: Maximum discharge, 3,240 mgd (5,010 cfs) Apr. 27, 1950 (gage height, 5.94 ft), from rating curve extended above 100 mgd; 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 p.127) 250 ft below station for domestic supply, power, and irrigation.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 12

0.17	0.38	0.7	8.75
.2	.50	.9	17.2
.3	1.04	1.2	36.7
.4	1.96	1.5	65.5
.5	3.57	1.8	105
.6	5.80	2.0	140

Mar. 13 to June 30

0.1	0.20	0.6	5.95
.2	.55	.7	8.75
.3	1.15	.9	17.2
.4	2.20	1.2	36.7
.5	3.76		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.21	1.19	0.79	0.38	10.2	6.17	1.45	0.74	24.6	6.73	1.51	1.15
2	2.10	1.11	.74	.38	11.7	3.57	1.45	*.69	2.73	5.69	1.51	1.15
3	1.85	.97	.97	.46	5.55	3.20	1.45	.64	4.85	4.76	1.51	1.15
4	1.96	2.28	1.11	1.11	3.76	3.02	1.36	.64	1.75	4.13	1.51	1.07
5	1.75	8.17	.74	.59	3.20	3.20	1.27	.64	12.5	3.94	1.51	1.00
6	1.65	4.95	.69	.46	2.85	3.28	1.27	.64	14.5	3.39	4.00	1.00
7	1.45	3.44	.85	.42	3.02	2.68	1.27	.64	2.85	3.06	1.51	1.00
8	1.45	1.85	.74	1.70	2.53	2.24	3.66	4.03	3.26	2.90	1.24	.93
9	1.45	1.45	.79	5.94	2.24	2.10	11.1	1.11	105	3.31	1.15	1.00
10	1.36	1.36	.97	10.1	2.38	1.96	1.75	.69	45.5	2.74	1.15	.93
11	1.36	1.19	.74	1.55	1.96	2.53	1.55	.64	8.52	2.46	1.07	.87
12	1.36	1.11	.59	1.04	1.85	3.57	1.45	.59	130	2.46	1.07	.81
13	1.45	1.75	.59	.85	1.85	3.28	1.36	.54	13.4	2.20	1.00	*.75
14	1.65	1.55	.64	.91	2.68	16.2	1.36	.54	9.89	2.53	1.15	.75
15	1.27	1.11	.64	17.7	2.38	3.57	1.19	.54	6.73	5.85	14.7	.69
16	1.36	1.04	.54	4.89	20.9	2.53	1.19	.64	5.44	4.32	3.22	.64
17	6.08	1.04	.50	2.24	4.61	2.24	1.19	.91	4.54	2.33	3.33	.64
18	5.02	.97	.54	2.38	4.05	2.68	1.19	.59	4.13	2.74	2.60	.64
19	1.55	1.53	1.41	1.85	3.95	2.24	1.04	.50	*3.76	*4.03	1.95	.60
20	1.27	2.38	1.82	1.45	3.57	1.96	1.04	.79	3.58	3.07	1.61	.60
21	1.36	1.65	.69	1.27	11.7	1.96	.97	.59	3.39	7.38	1.61	.55
22	1.19	1.11	.74	1.27	64.7	*1.85	.91	.50	4.31	2.90	1.51	.55
23	1.11	1.19	.69	2.38	31.9	1.85	.91	.42	5.64	2.20	1.76	.51
24	1.04	*1.19	.50	10.9	13.8	7.44	.91	.46	4.76	1.95	3.06	.46
25	1.55	.97	.50	15.9	8.40	2.10	4.93	.46	5.20	1.83	3.58	.46
26	1.55	.97	*.46	27.2	6.05	1.85	1.27	2.98	3.76	1.72	2.20	.51
27	1.11	.97	.46	*8.47	5.05	1.75	.97	8.23	3.22	1.72	1.61	.55
28	1.11	1.45	.42	5.55	4.57	1.75	.85	15.9	3.23	1.61	1.51	.69
29	.97	1.04	.46	3.95	4.80	1.65	.79	------	31.2	1.83	1.42	.64
30	.91	.91	.42	3.20	5.80	1.65	.79	------	18.0	*1.72	1.33	.51
31	*.97	.85	------	3.95	------	1.55	.74	------	15.4	------	1.24	------
TOTAL	53.47	52.76	21.74	140.44	252.00	97.62	52.63	46.28	505.64	97.50	69.13	22.80
MEAN												
MGD	1.72	1.70	0.725	4.53	8.40	3.15	1.70	1.65	16.3	3.25	2.23	0.760
CFS	2.67	2.63	1.12	7.01	13.0	4.87	2.63	2.56	25.2	5.03	3.45	1.18
AC-FT	164	162	67	431	773	300	162	142	1,550	299	212	70

CALENDAR YEAR	1961:	MAX	130	MIN	0.38	MEAN MGD	5.11	MEAN CFS	7.91	AC-FT	5,720
FISCAL YEAR 1961-62:		MAX	130	MIN	0.38	MEAN MGD	3.87	MEAN CFS	5.99	AC-FT	4,330

* Discharge measurement made on this day.

Peak discharge (base, 400 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1700	5.68	2,900	4,490

ISLAND OF MAUI

5870. Honopou Stream near Huelo

Location.--Lat 20°53'20", long 156°15'20", on left bank just 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 1962. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,203 ft above mean sea level (by vertical angles). Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--51 years (1911-62), 3.13 mgd (4.84 cfs).

Extremes.--Maximum discharge during year, 518 mgd (801 cfs) Mar. 12 (gage height, 3.78 ft), from rating curve extended above 70 mgd as explained below; minimum, 0.15 mgd (0.23 cfs) Oct. 1-3.

1910-62: Maximum discharge, 3,690 mgd (5,710 cfs) Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by model studies of station site; minimum, 0.01 mgd (0.02 cfs) for several days in 1933, 1934.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.03	0.9	4.92
.5	.48	1.1	8.10
.6	1.26	1.4	14.5
.7	2.29	1.9	30.5

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.63	0.48	0.36	0.20	3.55	2.67	0.76	0.36	5.01	4.07	0.68	0.48
2	*1.00	.42	.42	.15	5.06	1.86	* .76	.36	7.97	3.50	.68	.48
3	1.00	.36	.48	.25	2.14	1.76	.68	.36	1.16	3.14	.68	.48
4	1.08	.75	.48	.60	1.96	1.66	.60	.36	.76	2.77	.68	.42
5	1.00	2.20	.42	.30	1.76	1.66	.60	.36	3.52	2.53	.68	.42
6	1.00	1.36	.42	.20	1.76	1.66	.60	.36	3.56	2.29	1.59	.42
7	1.00	1.00	.48	.20	1.76	1.46	.68	.36	1.26	2.06	.68	.36
8	.92	.60	.42	.48	1.56	1.26	1.88	1.07	1.26	1.96	.60	.36
9	.92	.48	.42	2.02	1.46	1.26	3.96	.54	28.5	1.86	.54	.36
10	.92	.42	.42	1.84	1.36	1.16	.92	.42	12.3	1.66	.48	.36
11	.84	.42	.36	.48	1.26	1.26	.76	.36	5.41	1.56	.48	.36
12	.84	.36	.30	.36	1.08	1.56	.76	.36	23.7	1.56	.48	.36
13	.92	.76	.30	.30	1.08	1.26	.68	.30	7.14	1.46	.42	* .36
14	.92	.60	.36	.36	1.36	6.73	.68	.30	5.38	1.46	.48	.36
15	.76	.36	.36	10.4	1.26	1.56	.68	.30	4.07	2.54	4.42	.36
16	.84	.36	.30	*1.90	4.16	1.26	.60	.36	3.26	1.86	1.08	.36
17	1.86	.36	.30	.92	1.66	1.16	.60	.42	2.77	1.36	1.00	.30
18	1.08	.30	.30	1.37	1.66	1.46	.60	.30	2.53	1.56	.84	.30
19	.68	.48	.60	1.30	1.56	1.16	.54	.25	2.29	1.77	.68	.30
20	.60	.60	.60	.84	1.36	1.08	.54	.36	2.18	1.46	.60	.30
21	.68	.60	.36	.68	3.60	1.08	.54	.30	2.06	1.47	.60	.30
22	.60	.36	.36	.68	12.5	1.00	.48	.25	2.58	1.16	.60	.25
23	.54	.42	.36	1.16	7.02	.92	.48	.25	2.79	1.08	.60	.25
24	.48	* .42	.25	3.75	4.21	3.52	.48	.25	2.29	1.00	1.00	.25
25	.60	.36	.25	6.16	3.50	1.08	1.98	.25	2.29	1.00	1.16	.25
26	.60	.36	.20	7.49	3.02	1.00	.60	.42	1.86	.92	.76	.25
27	.48	.36	.20	3.61	2.65	.92	.48	1.08	1.66	.92	.60	.25
28	.48	.54	.20	2.41	2.29	.92	.48	3.70	1.66	.84	.54	.30
29	.42	.36	.20	1.96	2.41	.84	.42	--------	12.7	.92	.54	.30
30	.36	.36	.20	1.76	2.65	.84	.42	--------	8.69	* .84	.48	.25
31	.42	.36	--------	1.96	--------	.76	.36	--------	7.57	--------	.48	--------
Total	25.47	17.17	10.68	56.09	82.66	47.78	24.60	14.36	170.18	52.58	25.13	10.15
Mean												
Mgd	0.822	0.554	0.356	1.81	2.76	1.54	0.793	0.513	5.49	1.75	0.811	0.338
Cfs	1.27	0.857	0.551	2.80	4.27	2.38	1.23	0.794	8.49	2.71	1.25	0.523
Ac-ft	78	53	33	172	254	147	75	44	522	161	77	31

Calendar Year 1961: Max 71.4 Min 0.15 Mean mgd 2.16 Mean cfs 3.34 Ac-ft 2420
Fiscal Year 1961-62: Max 28.5 Min 0.15 Mean mgd 1.47 Mean cfs 2.27 Ac-ft 1650

* Discharge measurement made on this day.

Peak discharge (base, 130 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-12	1700	3.78	518	801

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, 2.2 miles southwest of Huelo, and 2.5 miles west of Kailua.

Records available.--November 1922 to June 1962.

Gage.--Water-stage recorder. Datum of gage is 1,208 ft above mean sea level (by vertical angles).

Average discharge.--39 years (1923-62), 113 mgd (175 cfs).

Extremes.--1922-62: 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 Stream 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	148	67.5	59.0	36.2	186	186	54.2	30.2	187	182	48.8	54.2
2	*102	102	55.7	34.7	182	130	53.0	*30.2	167	153	50.0	51.2
3	86.8	66.0	86.9	42.0	145	106	52.7	28.1	176	137	58.9	48.8
4	90.3	87.4	117	122	140	74.3	49.4	28.1	136	108	122	46.1
5	76.6	187	62.2	81.6	110	141	47.6	27.2	160	101	74.4	44.3
6	72.4	183	66.0	67.9	95.8	154	46.1	26.0	186	91.8	180	43.1
7	66.0	168	76.0	43.4	99.0	132	46.1	26.6	142	82.0	120	43.1
8	63.0	132	57.5	161	103	104	90.9	111	125	80.8	76.4	41.6
9	58.4	*99.0	57.8	180	97.0	95.0	116	83.7	179	95.8	56.6	44.3
10	57.2	80.5	82.0	188	92.4	86.8	72.0	39.2	188	78.4	50.9	42.8
11	63.6	71.1	56.9	136	80.5	97.0	58.1	32.6	186	68.4	47.9	40.1
12	66.0	65.1	48.5	84.8	69.0	172	52.7	29.6	186	67.2	50.6	36.5
13	72.0	102	46.4	68.1	103	160	49.7	28.1	182	67.5	51.5	34.3
14	115	107	48.5	67.5	183	186	49.1	26.6	170	76.9	55.1	31.7
15	63.0	66.0	54.5	184	175	178	49.1	25.8	178	185	188	30.2
16	97.8	59.0	47.0	167	188	140	45.8	25.8	158	168	170	29.0
17	160	66.3	41.6	99.0	184	114	43.4	35.8	118	92.1	181	28.1
18	166	57.5	40.1	91.5	180	126	42.8	31.8	109	101	158	27.2
19	95.0	122	119	76.3	178	108	41.0	25.5	133	103	124	28.1
20	72.0	164	144	66.3	168	86.8	39.8	45.6	140	124	86.0	27.2
21	76.0	132	65.7	60.2	166	88.4	40.1	31.6	150	112	93.8	25.5
22	63.3	76.0	73.0	63.6	185	*80.2	38.0	25.2	151	110	78.4	25.0
23	56.0	105	87.0	150	187	76.9	37.4	23.8	182	74.8	78.8	24.2
24	53.6	121	56.0	178	188	148	35.3	23.5	185	66.9	166	23.2
25	83.8	71.1	47.3	186	187	88.8	98.2	32.6	185	62.6	181	23.0
26	108	72.4	43.7	187	181	74.4	65.1	105	170	57.8	140	23.0
27	64.2	82.0	40.7	187	171	69.6	42.5	184	134	55.1	88.0	25.0
28	74.0	124	38.9	185	156	68.4	37.7	186	112	52.1	75.2	32.3
29	59.8	84.0	38.9	174	175	64.2	34.4	--------	188	53.6	69.0	32.5
30	50.9	68.7	40.1	133	186	59.4	32.3	--------	188	59.5	63.3	26.0
31	49.7	72.0	--------	160	-------	56.6	30.5	--------	188	--------	58.1	--------
Total	2,530.4	3,060.6	1,897.9	3,661.1	4,540.7	3,451.8	1,591.0	1,349.2	5,039	2,867.3	3,041.7	1,031.6
Mean												
Mgd	81.6	98.7	63.3	118	151	111	51.3	48.2	162	95.6	98.1	34.4
Cfs	126	153	97.9	183	234	172	79.4	74.6	251	148	152	53.2
Ac-ft	7,770	9,390	5,820	11,240	13,940	10,590	4,880	4,140	15,460	8,800	9,340	3,170

Calendar Year 1961:	Max	188	Min	32.0	Mean mgd	101	Mean cfs	156	Ac-ft	112,800
Fiscal Year 1961-62:	Max	188	Min	23.0	Mean mgd	93.3	Mean cfs	144	Ac-ft	104,500

* Discharge measurement made on this day.

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, 2.1 miles southwest of Huelo, and 2.5 miles west of Kailua.

Records available.--January 1918 to June 1962.

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 15, 1921, to Mar. 18, 1962, at present site at datum 1.00 ft higher.

Average discharge.--44 years, 24.9 mgd (38.5 cfs).

Extremes.--1918-62: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; no flow at times.

Remarks.--Records good except those below 0.1 mgd, which are fair. Ditch diverts water from streams between Waikamoi and Halehaku Stream above Center and Lowrie ditches for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	26.9	0.35	0.29	0.15	57.8	3.28	0.43	0.23	83.3	29.0	0.39	0.32
2	1.15	1.57	.26	.13	70.6	24.3	.39	.23	45.6	4.90	.35	.29
3	.85	.32	.26	.13	14.7	30.1	.35	.23	70.7	3.86	.32	.26
4	.79	2.21	9.96	15.9	3.06	42.7	.32	.20	9.48	2.76	2.69	.23
5	.69	94.0	.29	6.52	2.17	1.60	.29	.18	48.7	2.36	.76	.23
6	.59	78.4	.26	1.07	2.34	25.7	.29	.15	74.0	1.99	51.0	.20
7	.51	40.8	.29	.18	2.07	2.43	.32	.13	24.4	1.76	2.55	.20
8	.47	6.97	.26	32.2	1.99	.86	7.92	29.3	16.4	1.45	1.22	.18
9	.35	.74	.29	55.3	1.84	.74	9.30	11.5	87.8	1.45	.51	.18
10	.35	.64	1.05	*94.6	1.29	.69	.26	.20	100	1.15	.39	.15
11	.32	.55	.23	10.7	1.22	.69	.23	.15	93.7	1.02	.32	.13
12	.30	.47	.20	.51	1.02	38.5	.23	.13	51.7	.90	.29	.11
13	.43	1.54	.20	.35	5.36	33.7	.20	.11	34.7	.85	.29	.08
14	7.64	6.96	.18	.35	63.0	48.1	.20	.13	46.4	.85	.26	.06
15	.35	.59	.15	89.0	21.3	18.6	.18	.11	40.9	68.0	90.3	.05
16	.39	.47	.13	54.0	87.6	1.86	.18	.15	17.5	54.7	35.8	.05
17	37.7	.47	.11	2.07	70.0	1.29	.15	.13	2.17	1.22	52.6	.04
18	50.5	.35	.11	2.14	21.2	1.45	.64	.11	1.99	1.08	24.7	.04
19	.64	18.0	12.4	1.86	41.9	1.29	.32	.10	5.60	12.6	4.26	.04
20	.43	30.4	35.2	.90	31.3	.96	.29	.11	4.82	44.9	2.17	.04
21	.51	9.00	.29	.74	34.3	.90	.29	.10	3.02	19.7	2.17	.04
22	.39	.43	1.60	.69	97.0	.85	.29	.08	11.6	8.35	1.76	.04
23	.35	1.03	3.85	40.4	97.0	.79	.26	.06	52.1	.74	1.29	.04
24	.32	5.89	.26	71.8	97.6	34.5	.26	.06	59.6	.64	28.5	.05
25	10.4	.35	.15	67.5	76.4	1.45	25.9	.06	56.4	.59	46.5	.04
26	15.5	.35	.15	100	12.9	.74	1.45	26.3	36.8	.51	4.32	.04
27	.32	.32	.15	91.0	5.95	.69	.32	78.2	6.16	.47	1.84	.04
28	.32	3.75	.15	58.1	5.04	.64	.29	82.2	4.34	.43	1.22	.06
29	.26	.43	.15	39.2	9.05	.59	.26	--------	74.7	.43	.55	.08
30	.20	.32	.15	2.46	46.4	.55	.26	--------	100	.47	.39	.05
31	.20	.32	--------	17.1	--------	.51	.23	--------	97.0	--------	.35	--------
Total	160.12	307.99	69.02	857.05	983.40	321.05	52.30	230.64	1361.58	269.13	360.06	3.36
Mean												
Mgd	5.16	9.94	2.30	27.6	32.8	10.4	1.69	8.24	43.9	8.97	11.6	0.112
Cfs	7.98	15.4	3.56	42.7	50.7	16.1	2.61	12.7	67.9	13.9	17.9	0.173
Ac-ft	491	945	212	2630	3,020	985	160	708	4,180	826	1,100	10

Calendar Year 1961:		Max	105	Min	0.08	Mean mgd	12.6	Mean cfs	19.5	Ac-ft	14,070	
Fiscal Year 1961-62:		Max	100	Min	0.04	Mean mgd	13.6	Mean cfs	21.0	Ac-ft	15,270	

* Discharge measurement made on this day.

5900. Old Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'31", long 156°15'16", on right bank 400 ft downstream from Honopou Stream and Wailoa ditch trail crossing in Honopou Gulch, 2.0 miles southwest of Huelo, 2.5 miles west of Kailua, and 5.0 miles east of Haiku.

Records available.--January 1918 to June 1922, November 1936 to June 1962.

Gage.--Water-stage recorder and modified Parshall flume. Datum of gage is 1,117 ft above mean sea level (by vertical angles).

Average discharge.--29 years (1918-22, 1937-62), 2.12 mgd (3.28 cfs).

Extremes.--1918-22, 1936-62: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow at times.

Remarks.--Records fair. Ditch intakes are at Hoolawanui and Honopou Streams, but Wailoa and New Hamakua ditches divert most of flow. Water stored in reservoirs to be used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.76	0.01	0.01	0.01	3.69	0.08	0.04	0.02	17.8	0.08	0.02	0.02
2	.04	.01	.01	.01	.43	.04	.04	.02	2.37	.07	.02	.02
3	.04	.01	.01	.01	.17	.04	.05	.02	10.1	.06	.03	.02
4	.04	.03	.01	.04	.09	.04	.05	.02	.08	.05	.03	.02
5	.04	2.12	.02	.04	.07	.04	.05	.02	7.08	.05	.03	.02
6	.04	1.58	.02	.03	.06	.05	.05	.02	9.65	.05	.22	.02
7	.03	.10	.03	.03	.06	.05	.05	.02	.40	.04	.05	.02
8	.03	.06	.02	.06	.06	.06	.07	3.57	.42	.04	.04	.02
9	.03	.04	.03	2.70	.06	.06	.12	.17	23.0	.04	.03	.02
10	.03	.02	.02	*3.55	.07	.05	.10	.03	7.87	.04	.03	.02
11	.03	.02	.02	.10	.06	.04	.09	.02	.20	.03	.02	.01
12	.03	.01	.02	.04	.06	.05	.09	.02	7.22	.03	.02	.01
13	.03	.03	.02	.04	.05	.06	.08	.02	4.28	.03	.02	.01
14	.03	.03	.02	.04	.15	.10	.08	.02	.12	.04	.03	.01
15	.03	.03	.02	17.3	.06	.05	.08	.02	.09	1.17	10.2	.01
16	.03	.02	.02	3.35	13.2	.05	.08	.03	.07	1.51	.16	.01
17	1.58	.02	.02	.08	1.43	.04	.08	.03	.06	.05	.10	.01
18	1.06	.02	.02	.10	.09	.04	.08	.02	.04	.04	.06	.01
19	.04	.03	.03	.19	.12	.04	.08	.01	.03	.61	.05	.01
20	.02	.07	.10	.10	.09	.04	.07	.03	.04	.89	.04	.01
21	.02	.04	.04	.06	6.49	.04	.07	.02	.04	1.51	.04	.01
22	.02	.03	.04	.06	23.6	.04	.06	.02	.05	.08	.04	.01
23	.01	.02	.04	.10	21.9	.03	.05	.02	.28	.04	.04	.01
24	.01	.02	.03	.78	11.0	.07	.05	.02	.09	.03	.05	.01
25	.02	.02	.03	.38	.43	.06	.06	.02	.12	.03	.10	.01
26	.03	.02	.02	.34	.10	.05	.03	3.75	.08	.02	.05	.01
27	.02	.02	.01	.32	.06	.04	.02	11.5	.04	.02	.04	.02
28	.02	.02	.01	.61	.05	.04	.03	14.6	.04	.02	.04	.02
29	.02	.02	.01	.28	.04	.04	.03	--------	10.2	.02	.03	.02
30	.01	.02	.01	.08	.14	.04	.03	--------	4.79	.02	.03	.01
31	.01	.02	--------	.08	--------	.04	.02	--------	.10	--------	.02	--------
Total	4.15	4.51	0.71	30.91	83.88	1.51	1.88	34.08	106.75	6.71	11.68	0.43
Mean Mgd	0.134	0.145	0.024	0.997	2.80	0.049	0.061	1.22	3.44	0.224	0.376	0.014
Cfs	0.207	0.224	0.037	1.54	4.33	0.076	0.094	1.89	5.32	0.347	0.582	0.022
Ac-ft	13	14	2.2	95	257	4.6	5.8	105	328	21	36	1.3

Calendar Year 1961: Max 23.6 Min 0.01 Mean mgd 0.505 Mean cfs 0.781 Ac-ft 565
Fiscal Year 1961-62: Max 23.6 Min 0.01 Mean mgd 0.787 Mean cfs 1.22 Ac-ft 883

* Discharge measurement made on this day.

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 1962. Published as "at Opana weir" 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.--48 years (1910-26, 1930-62), 27.1 mgd (41.9 cfs).

Extremes.--1910-27, 1930-62: 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 water from stream westward to Maliko Gulch for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	33.2	5.39	4.65	2.46	34.6	46.6	6.69	4.34	54.4	26.2	4.50	4.84
2	12.5	5.02	4.34	2.34	24.8	22.0	6.50	4.18	23.1	17.6	3.26	4.65
3	16.8	4.65	5.20	2.46	18.0	10.2	6.50	4.03	41.4	14.4	5.39	4.50
4	8.38	5.02	6.50	11.2	24.5	14.9	6.13	3.72	11.9	12.0	6.13	4.18
5	16.7	48.0	4.34	5.56	20.4	23.8	5.94	3.56	29.6	12.1	6.69	4.03
6	12.5	46.6	4.03	5.52	9.09	17.0	5.58	3.56	52.4	16.1	23.8	3.88
7	9.94	29.1	4.34	3.10	2.70	10.6	5.84	3.41	21.8	14.9	16.3	4.18
8	7.07	18.3	4.03	19.2	1.96	13.0	14.2	14.7	20.7	14.2	12.5	3.88
9	6.32	17.1	5.20	20.8	1.83	9.06	56.5	12.0	51.8	14.7	*11.0	4.18
10	6.69	15.9	4.84	51.6	1.71	8.40	17.6	12.4	60.9	15.6	10.7	4.03
11	6.32	11.7	3.88	29.0	1.60	8.40	10.8	12.3	53.9	13.7	5.02	3.72
12	5.94	5.39	3.56	23.3	1.49	15.8	10.6	10.0	29.5	9.94	5.02	3.41
13	6.88	5.94	3.56	13.2	1.76	14.2	8.84	3.26	11.2	10.6	4.65	3.10
14	6.88	7.83	3.56	11.1	1.83	38.8	7.83	2.97	21.9	9.50	4.65	2.97
15	5.94	5.20	3.72	49.1	1.49	42.4	12.3	2.85	13.0	29.8	39.0	2.85
16	5.94	4.65	3.41	47.1	9.36	15.9	11.6	3.41	8.21	36.5	24.1	2.72
17	14.6	5.20	2.97	19.2	2.11	14.0	11.8	3.72	7.07	17.1	24.5	2.59
18	34.6	4.65	2.85	19.2	1.60	14.3	10.8	3.10	6.88	18.3	15.6	2.59
19	13.7	10.6	7.53	21.4	1.30	12.7	9.72	2.59	6.88	17.3	19.0	2.46
20	11.6	11.1	14.8	18.3	1.13	11.8	8.62	3.88	6.50	25.1	13.2	2.46
21	11.3	9.28	13.0	12.0	4.85	*11.6	7.07	2.85	5.94	16.6	12.5	2.34
22	10.8	5.94	4.03	9.88	21.5	10.4	6.50	2.46	8.52	15.1	12.3	2.21
23	7.82	6.88	7.72	17.3	21.9	10.8	5.94	2.34	26.0	8.40	7.50	2.08
24	4.50	7.26	4.18	47.1	2.90	23.1	5.76	2.34	20.5	12.5	9.28	1.96
25	4.50	5.20	3.26	49.2	1.39	9.60	14.6	2.46	23.7	16.4	15.0	1.83
26	18.4	5.39	*2.97	61.2	1.30	12.4	9.70	8.60	17.1	7.60	8.84	1.83
27	8.32	5.20	2.85	53.4	1.21	13.5	7.64	42.6	13.0	6.32	7.07	1.83
28	5.02	7.83	2.72	40.6	1.13	12.3	6.32	48.6	10.9	6.13	6.13	2.34
29	4.34	5.76	2.85	21.8	.61	10.7	10.3	--------	44.4	5.94	5.76	2.34
30	3.88	5.02	2.72	10.2	11.2	7.45	5.02	--------	*58.6	6.69	5.39	2.08
31	*3.72	5.20	--------	20.9	--------	7.07	4.50	--------	57.6	--------	5.02	--------
Total	325.10	336.30	143.61	718.72	231.25	492.78	317.74	226.23	819.30	447.32	349.80	92.06
Mean												
Mgd	10.5	10.8	4.79	23.2	7.71	15.9	10.2	8.08	26.4	14.9	11.3	3.07
Cfs	16.2	16.7	7.41	35.9	11.9	24.6	15.8	12.5	40.8	23.1	17.5	4.75
Ac-ft	998	1,030	441	2,210	710	1,510	975	694	2,510	1,370	1,070	283

Calendar Year 1961:		Max	61.2		Min	0.61	Mean mgd	13.5	Mean cfs	20.9	Ac-ft	15,120
Fiscal Year 1961-62:		Max	61.2		Min	0.61	Mean mgd	12.3	Mean cfs	19.0	Ac-ft	13,800

* Discharge measurement made on this day.

5940. Haiku ditch at Honopou Gulch, near Huelo

Location.--Lat 20°55'05", long 156°14'55", on right bank of ditch and 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 1962. 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, water-stage recorder at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, water-stage recorder at site 2.9 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, water-stage recorder at site 0.9 mile downstream at different datum.

Average discharge.--48 years (1910-12, 1913-14, 1915-28, 1930-62), 18.8 mgd (29.1 cfs).

Extremes.--1910-28, 1930-62: 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 Mailiilihaele Stream and Maliko Gulch for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.0	0.37	0.40	0.24	19.2	30.7	1.29	1.00	55.7	19.6	2.48	0.80
2	.65	.37	.40	.24	34.3	7.94	1.29	.85	4.95	13.8	3.43	.75
3	.51	.37	.51	.26	24.7	7.90	1.29	.70	34.1	11.8	1.22	.75
4	.54	.37	.44	.84	4.78	6.43	1.29	.80	1.10	11.1	*1.10	.70
5	.51	50.0	.37	.37	4.06	2.10	1.22	.80	17.2	8.55	1.33	.70
6	.51	28.0	.26	.30	12.4	1.71	1.15	.85	51.4	4.30	5.49	.70
7	.48	11.5	.34	.30	19.9	1.78	14.9	.90	2.93	3.40	1.36	.75
8	.40	1.10	.34	1.00	20.2	1.71	2.53	3.53	3.03	3.30	1.15	.75
9	.34	.51	.44	11.1	18.4	1.75	2.36	1.20	52.7	3.35	1.10	.80
10	.34	.44	.44	*60.6	16.0	1.50	2.59	.90	41.0	2.80	1.05	.75
11	.30	.40	.37	2.95	14.0	1.50	2.28	.85	25.6	2.62	1.00	.70
12	.34	.34	.37	.70	12.5	1.57	2.10	.75	6.68	2.44	1.00	.65
13	.34	.40	.40	.58	13.8	1.50	1.94	.75	10.3	2.28	.95	.65
14	.30	.37	.44	.58	34.2	9.54	1.85	.70	10.1	2.36	.95	.62
15	.28	.30	.44	53.3	20.7	22.2	1.71	.75	12.2	11.6	55.8	.62
16	.37	.28	.28	34.3	57.2	2.53	1.71	.95	7.26	23.4	7.18	.58
17	4.20	.28	.24	2.80	47.9	3.80	1.64	.90	6.02	1.94	2.57	.58
18	29.9	.26	.22	2.36	19.3	*14.8	1.57	.80	5.74	1.94	1.43	.58
19	.48	.44	.30	2.02	19.6	10.8	1.50	.75	6.16	1.94	1.29	.58
20	.40	.40	.37	1.71	14.5	6.08	1.43	1.08	5.74	4.70	1.22	.54
21	.37	.37	.30	1.43	30.6	2.90	1.36	.75	4.66	5.35	1.15	.54
22	.37	.44	.26	1.36	65.6	2.53	1.36	.70	3.31	3.00	1.10	.51
23	.37	.62	.28	1.43	65.0	2.00	1.29	.65	3.98	1.57	1.05	.51
24	.40	.44	.24	40.5	61.1	7.26	1.29	.65	2.28	1.50	1.05	.51
25	.44	.28	.24	31.6	38.7	1.71	3.12	.65	2.25	1.43	1.05	.51
26	.51	.34	.22	60.3	24.7	1.64	1.43	2.96	2.27	1.36	1.10	.51
27	.40	.37	.20	23.7	18.1	1.57	1.22	40.2	1.85	1.29	1.00	.51
28	.37	.62	.20	15.0	16.9	1.50	1.15	54.2	2.19	1.22	.95	.51
29	.34	.37	.24	27.2	16.9	1.43	1.10	--------	35.1	1.29	.95	.51
30	.28	.34	.24	15.0	30.3	1.36	1.05	--------	39.0	1.29	.90	.51
31	.30	.40	--------	3.40	-------	1.36	1.00	--------	28.7	--------	.80	--------
Total	62.34	101.09	9.79	397.47	795.54	163.10	63.01	120.57	485.50	156.52	104.20	18.68
Mean												
Mgd	2.01	3.26	0.326	12.8	26.5	5.26	2.03	4.31	15.7	5.22	3.36	0.623
Cfs	3.11	5.04	0.504	19.8	41.0	8.14	3.14	6.67	24.3	8.08	5.20	0.964
Ac-ft	191	310	30	1,220	2,440	500	193	370	1,490	480	320	57

Calendar Year 1961: Max 65.6 Min 0.20 Mean mgd 7.65 Mean cfs 11.8 Ac-ft 8,570
Fiscal Year 1961-62: Max 65.6 Min 0.20 Mean mgd 6.79 Mean cfs 10.5 Ac-ft 7,600

* Discharge measurement made on this day.

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 Makavana, and 4.3 miles southeast of Honokohau.

Drainage area.--3.47 sq mi.

Records available.--July 1939 to August 1943, September 1947 to June 1962. 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.--17 years (1940-43, 1948-62), 11.2 mgd (17.3 cfs).

Extremes.--Maximum discharge during year, 596 mgd (922 cfs) Oct. 15 (gage height, 6.72 ft), from rating curve extended above 110 mgd on basis of slope-area measurement at gage height 8.35 ft; minimum, 2.91 mgd (4.50 cfs) Oct. 2, 3.

1939-43, 1947-62: 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 good except those for periods of no gage-height record, which are poor.

Rating table (gage height, in feet, and discharge, in million gallons a day)

2.7	2.47	3.6	29.0
2.9	4.93	3.8	44.5
3.0	6.55	4.0	64.0
3.2	11.0	4.5	125
3.4	18.5	5.0	210

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.4	6.52	3.36	3.14	*90	25	3.25	3.36	46	13.6	4.12	3.47
2	4.39	*8.00	3.36	3.02	*118	10	3.37	3.25	21	7.75	3.98	3.47
3	4.12	5.09	4.52	2.91	44	5.4	4.55	3.25	20	7.35	4.26	3.36
4	4.80	4.26	6.16	4.39	8.6	4.5	3.47	3.14	13	6.06	4.93	3.36
5	5.09	18.7	3.72	5.14	6.5	4.5	3.25	3.14	40	5.58	28.2	3.36
6	5.42	7.82	3.47	3.98	17	4.5	3.25	3.14	35	5.25	18.7	3.36
7	4.26	9.21	3.58	3.14	26	4.2	8.05	3.25	12	4.93	8.73	3.36
8	3.98	5.74	3.58	3.72	20	4.0	28.1	22.3	9.0	4.93	5.88	3.47
9	3.72	4.80	3.47	7.33	10	4.0	67.0	6.17	32	9.24	4.39	3.47
10	3.98	4.26	3.25	10.2	6.0	4.0	6.06	3.72	38	6.48	4.26	3.58
11	4.26	3.98	3.25	3.98	5.2	4.1	4.66	3.36	19	4.93	4.12	*3.36
12	9.32	3.72	3.14	3.58	4.5	4.2	4.26	3.25	*52.8	4.66	3.98	3.25
13	8.57	24.3	3.14	3.14	12	4.5	3.98	3.14	17.2	4.80	3.85	3.25
14	5.74	9.76	3.14	3.14	16	*11.9	3.85	3.14	40.0	4.52	3.98	3.14
15	4.26	4.52	3.14	134	18	6.38	4.39	3.02	41.7	12.6	31.9	3.14
16	10.1	4.12	3.14	25.9	22	4.26	3.72	3.14	9.53	10.9	5.58	3.02
17	12.3	3.98	3.02	10.1	11	3.85	3.58	5.56	6.55	5.25	4.52	3.02
18	7.06	3.85	3.02	5.74	13	5.51	3.58	3.72	5.90	11.2	4.26	3.02
19	5.90	4.78	*4.00	4.39	8.0	5.18	3.47	3.36	5.58	6.61	4.12	3.14
20	4.52	7.31	10.4	4.0	6.0	3.85	3.47	3.14	5.25	6.96	3.98	3.14
21	6.46	4.66	3.47	3.7	17	3.98	3.58	3.02	5.09	15.9	3.98	3.02
22	4.66	3.98	14.3	3.5	70	6.38	3.47	3.0	4.66	7.59	3.98	3.02
23	3.98	3.98	9.78	20	35	4.66	3.36	3.0	5.74	4.93	3.85	3.02
24	3.72	3.98	5.25	29	10	4.26	3.36	3.0	6.65	4.52	3.85	3.02
25	5.70	3.72	4.26	19	11	3.98	3.25	3.3	11.1	4.39	3.98	3.02
26	6.29	4.12	3.36	22	5.8	3.85	*3.36	5.2	5.42	4.26	3.85	3.02
27	3.85	3.98	3.02	11	6.4	3.58	3.25	7.0	4.66	4.12	3.72	3.02
28	3.72	4.66	3.02	5.0	5.2	3.47	3.36	14.0	4.52	3.98	3.58	3.25
29	3.72	4.52	5.22	4.5	6.1	3.36	9.26	--------	90.9	4.28	3.58	3.25
30	3.58	3.85	4.45	4.0	5.8	3.36	3.85	--------	64.2	5.45	3.58	3.14
31	3.76	3.58	--------	70	--------	3.36	3.36	--------	59.7	--------	3.47	--------
Total	173.63	189.75	133.99	436.64	634.1	168.07	212.77	131.07	732.15	203.02	199.16	96.52
Mean												
Mgd	5.60	6.12	4.47	14.1	21.1	5.42	6.86	4.68	23.6	6.77	6.42	3.22
Cfs	8.66	9.47	6.92	21.8	32.6	8.39	10.6	7.24	36.5	10.5	9.93	4.98
Ac-ft	533	582	411	1,340	1,950	516	653	402	2,250	623	611	296

Calendar Year 1961:	Max	192	Min	2.69	Mean mgd	9.38	Mean cfs	14.5	Ac-ft	10,510
Fiscal Year 1961-62:	Max	134	Min	2.91	Mean mgd	9.07	Mean cfs	14.0	Ac-ft	10,170

Peak discharge (base, 400 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-15	1800	6.72	596	922	3-12	1630	6.50	545	843
11- 2	0800	6.50	545	843					

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 20 to Nov. 1, Nov. 3 to Dec. 13, Feb. 22 to Mar. 11.

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 5 miles southeast of Honokohau.

Drainage area.--4.09 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 1962. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 950 ft (by barometer). Prior to Mar. 7, 1913, staff gage at site just below Honokohau ditch intake at different datum.

Average discharge.--47 years (1913-20, 1922-62), 26.3 mgd (40.7 cfs).

Extremes.--Maximum discharge during year, 1,360 mgd (2,100 cfs) Nov. 2 (gage height, 6.78 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 8.14 mgd (12.6 cfs) Feb. 23, June 27.

1911, 1913-20, 1922-62: 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 as explained above; 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.

Rating table (gage height, in feet and discharge, in million gallons a day)

1.9	7.30	2.9	67.0
2.1	13.2	3.2	102
2.2	17.1	3.5	147
2.5	34.5	4.0	250

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24.3	*26.8	13.2	8.98	165	50.3	10.1	9.54	71.8	19.1	10.4	8.98
2	12.3	23.0	10.4	8.70	189	13.6	10.7	8.98	27.6	12.6	10.1	8.98
3	11.6	12.3	31.6	11.8	20.7	12.9	10.4	8.70	31.9	14.0	10.7	8.98
4	16.4	34.7	18.1	17.2	14.0	12.3	10.1	8.70	11.3	12.0	12.6	8.70
5	16.3	91.8	10.4	12.0	12.6	13.2	9.82	8.70	69.2	11.3	21.2	8.70
6	19.2	39.4	10.1	8.98	21.3	13.2	9.54	8.70	66.8	10.7	29.5	8.70
7	12.0	42.8	11.6	8.70	47.6	11.6	59.9	8.70	13.2	10.7	11.6	10.4
8	11.6	16.9	10.7	26.5	37.4	11.3	27.7	23.2	10.7	11.0	10.7	9.54
9	12.3	13.9	15.7	60.5	15.4	11.3	70.8	11.2	66.1	15.2	10.1	13.3
10	17.2	11.3	21.0	40.7	12.9	11.3	12.3	8.98	66.1	11.6	9.82	10.7
11	15.0	10.7	14.7	10.7	12.3	12.2	10.7	8.70	24.0	10.4	10.4	8.98
12	19.1	10.4	10.1	9.54	11.3	12.9	10.4	8.70	50.9	10.4	11.6	*8.70
13	22.4	36.9	9.82	8.98	35.5	12.3	10.1	8.70	*18.9	11.6	11.3	8.70
14	22.6	18.1	10.1	8.98	39.2	20.1	10.4	8.42	55.0	17.3	10.7	8.70
15	12.3	11.3	10.7	96.5	24.4	*12.6	10.1	8.42	57.5	48.5	96.3	8.70
16	21.8	10.7	10.1	21.3	52.3	11.0	9.82	8.98	15.2	23.6	13.8	8.70
17	41.0	11.0	9.26	22.9	15.6	11.0	9.54	17.2	12.0	12.0	17.0	8.70
18	30.0	11.0	*8.98	11.0	18.8	22.9	10.1	9.82	13.4	24.9	15.4	8.70
19	15.4	24.3	24.7	9.54	16.0	13.4	10.1	8.98	14.4	36.7	13.2	8.70
20	12.0	22.7	23.8	9.26	12.9	11.0	9.82	8.70	17.6	17.8	13.2	8.42
21	16.7	15.4	11.8	8.98	35.7	13.2	9.54	8.70	22.3	28.9	13.8	8.42
22	12.3	10.7	64.0	8.70	157	12.3	9.26	8.42	36.6	15.3	10.7	8.42
23	11.3	15.9	26.3	39.8	64.9	11.0	9.82	8.42	27.9	11.0	9.82	8.42
24	11.0	13.3	11.3	65.2	18.6	12.3	9.54	8.42	23.4	10.7	12.3	8.42
25	22.5	10.4	9.82	39.0	22.0	11.3	15.8	8.42	28.8	10.7	14.3	8.42
26	15.5	12.2	9.26	61.0	14.0	11.0	10.1	38.8	12.9	10.4	11.3	8.42
27	11.3	11.6	8.98	17.3	17.7	10.4	10.1	42.2	12.3	10.1	10.1	8.14
28	11.0	22.7	8.70	11.3	13.3	10.1	17.1	67.3	12.3	10.1	9.26	12.0
29	10.7	13.8	12.9	10.4	20.0	10.1	*32.5	--------	81.3	19.3	9.26	12.0
30	11.0	10.4	10.1	9.54	17.1	10.1	11.0	--------	43.3	15.1	9.26	10.7
31	30.4	14.3	--------	172	--------	10.1	9.54	--------	52.4	--------	9.26	--------
Total	528.5	630.7	458.22	855.98	1,154.5	422.3	476.74	392.70	1,067.1	483.0	468.98	277.34
Mean Mgd	17.0	20.3	15.3	27.6	38.5	13.6	15.4	14.0	34.4	16.1	15.1	9.24
Cfs	26.3	31.4	23.7	42.7	59.6	21.0	23.8	21.7	53.2	24.9	23.4	14.3
Ac-ft	1,620	1,940	1,410	2,630	3,540	1,300	1,460	1,200	3,270	1,480	1,440	851

Calendar Year 1961: Max 226 Min 8.70 Mean mgd 23.8 Mean cfs 36.8 Ac-ft 26,630
Fiscal Year 1961-62: Max 189 Min 8.14 Mean mgd 19.8 Mean cfs 30.6 Ac-ft 22,140

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-2	0800	6.78	1,360	2,100

* Discharge measurement made on this day.

6290. Honokowai ditch near Lahaina

Location.--Lat 20°55'57", long 156°37'31", on left bank just 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 1962. 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 at different datum. Nov. 14, 1918, to May 27, 1921, water-stage recorder at site 1.5 miles downstream at different datum.

Average discharge.--46 years (1912-16, 1919-57, 1958-62), 5.84 mgd (9.04 cfs).

Extremes.--1912-62: Maximum daily discharge, 43 mgd (66 cfs) June 30, 1930; no flow at times.

Remarks.--Records good. Ditch diverts water for irrigation and domestic use from Amalu and Kapaloa Streams just above station.

Cooperation.--Records of daily discharge since July 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.64	7.93	5.12	3.27	16.7	3.39	3.04	3.39	13.6	5.65	3.75	3.15
2	4.35	5.99	3.76	3.19	11.5	3.39	3.30	3.39	6.31	4.21	3.75	3.15
3	4.13	4.22	8.94	3.15	5.13	3.39	3.39	3.39	8.09	4.76	3.75	3.15
4	5.29	8.23	5.91	4.89	5.29	3.39	3.39	3.39	4.11	4.37	3.75	3.15
5	5.34	19.7	3.99	4.05	5.29	3.39	3.39	3.10	14.3	4.11	3.68	3.15
6	6.22	11.1	3.84	3.39	4.68	3.39	3.39	2.92	12.6	3.75	5.92	3.15
7	4.37	10.4	3.75	3.39	7.42	3.39	13.4	2.92	4.75	3.75	3.68	3.15
8	4.23	5.99	3.75	9.00	8.16	3.39	6.45	3.77	4.00	3.75	3.63	3.15
9	4.23	5.40	3.75	13.8	9.80	3.39	10.8	3.67	6.89	3.74	3.63	4.18
10	5.14	4.20	5.34	12.1	7.95	3.39	3.99	3.23	9.44	3.87	3.49	3.74
11	5.00	3.99	4.61	4.23	7.17	3.10	3.55	3.15	4.17	3.87	3.39	3.13
12	5.51	3.99	3.81	3.60	5.91	2.92	3.22	3.12	4.80	3.75	3.39	3.15
13	6.13	6.09	3.75	3.39	3.75	2.92	3.15	3.15	4.75	3.75	3.65	3.15
14	6.90	5.77	3.75	3.39	3.75	3.04	3.15	3.15	10.6	5.76	3.55	3.15
15	4.35	4.16	3.75	7.89	3.75	3.04	3.02	3.15	11.1	11.7	19.7	3.15
16	6.19	3.99	3.75	5.69	13.8	3.04	3.04	3.15	4.11	6.65	5.45	3.15
17	11.7	3.99	3.71	7.30	3.75	3.04	*3.04	6.50	4.18	4.29	7.23	3.15
18	7.21	3.99	3.29	4.15	3.75	3.04	3.08	3.71	3.99	6.96	6.14	2.92
19	5.19	7.48	7.82	3.60	3.75	3.04	3.15	3.51	4.06	10.3	4.73	2.80
20	4.29	6.82	7.42	3.36	3.39	3.04	3.15	3.63	5.29	5.79	4.68	2.68
21	4.99	5.56	4.31	3.27	13.4	3.04	3.15	3.63	10.1	4.72	5.23	2.68
22	4.31	3.90	7.17	3.27	14.0	3.04	2.95	3.63	12.7	4.57	3.84	2.68
23	3.75	4.65	6.61	10.3	13.8	3.04	2.92	3.63	8.35	3.75	3.56	2.68
24	3.75	4.94	3.75	14.7	3.75	3.04	2.92	3.51	7.92	3.75	4.26	2.68
25	4.92	3.86	3.75	10.7	3.75	3.04	3.77	3.51	7.32	3.75	5.57	2.73
26	5.22	4.09	3.39	18.1	3.63	3.04	3.25	6.23	4.52	3.63	3.90	2.68
27	4.20	4.15	3.27	6.48	3.39	3.04	3.15	10.6	4.35	3.63	3.66	2.68
28	3.93	5.74	3.27	3.80	3.39	3.04	6.79	13.2	4.21	3.51	3.28	2.97
29	3.87	4.51	3.27	3.51	3.39	3.04	9.68	--------	11.2	4.02	3.27	3.82
30	3.87	3.80	3.27	3.41	3.39	3.04	3.96	--------	6.98	5.22	3.27	3.39
31	6.58	4.68	--------	18.7	--------	3.04	3.54	--------	8.45	--------	3.15	--------
Total	160.80	183.31	135.87	203.07	200.58	97.56	132.17	117.33	227.24	145.33	143.93	92.54
Mean												
Mgd	5.19	5.91	4.53	6.55	6.69	3.15	4.26	4.19	7.33	4.84	4.64	3.08
Cfs	8.03	9.14	7.01	10.1	10.4	4.87	6.59	6.48	11.3	7.49	7.18	4.77
Ac-ft	493	562	417	623	616	299	406	360	697	446	442	284

Calendar Year 1961:	Max	26.8	Min	2.27	Mean mgd	5.74	Mean cfs	8.88	Ac-ft	6420
Fiscal Year 1961-62:	Max	19.7	Min	2.68	Mean mgd	5.04	Mean cfs	7.80	Ac-ft	5640

* Discharge measurement made on this day.

6460. 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 1962. 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 of three stations about 1,000 ft downstream.

Average discharge.--46 years (1912-15, 1917-20, 1921-57, 1958-62), 4.84 mgd (7.49 cfs).

Extremes.--1911-62: Maximum daily discharge, 13.7 mgd (21.2 cfs) Apr. 17, 1935; no flow at times.

Remarks.--Records good. Ditch diverts water from Olowalu Stream at altitude of about 450 ft for irrigation 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.34	2.82	2.25	1.98	0.99	8.27	3.19	6.35	8.74	7.31	4.50	3.18
2	2.98	3.39	2.19	1.98	.49	6.60	3.19	5.44	7.26	6.42	4.73	3.19
3	2.86	2.74	3.40	2.33	.40	6.15	3.14	4.74	6.65	5.77	5.45	3.07
4	2.79	3.38	3.32	3.17	.36	5.92	3.06	4.32	4.95	5.20	6.83	3.00
5	2.75	9.04	2.43	2.54	.36	6.38	3.01	4.05	6.36	4.86	5.27	2.92
6	2.82	8.13	2.28	2.18	.56	6.62	3.00	3.82	9.01	4.58	6.14	2.91
7	2.64	7.06	2.28	2.03	.80	5.68	6.98	3.65	8.02	4.31	4.98	2.90
8	2.60	5.55	2.24	2.23	.72	5.34	8.31	4.09	6.48	4.18	4.58	2.85
9	2.56	*4.25	3.24	4.02	.50	5.06	7.95	3.62	5.48	5.44	4.29	2.88
10	2.74	3.61	2.51	6.37	1.69	4.78	7.49	3.32	5.17	5.05	4.04	2.80
11	2.66	3.22	2.42	3.43	7.35	4.67	6.29	3.24	4.51	4.27	3.91	2.79
12	3.27	3.00	2.21	2.83	4.00	4.50	5.40	3.19	5.77	4.33	3.82	2.73
13	3.44	3.92	2.17	3.08	4.39	4.40	4.84	3.06	6.73	4.26	3.78	2.70
14	3.68	4.05	2.17	2.50	4.93	4.49	4.51	2.93	8.33	4.26	3.83	2.61
15	2.82	3.14	2.20	2.99	5.14	4.29	4.47	2.92	8.65	6.93	7.47	2.59
16	3.27	2.90	2.18	3.65	5.52	4.18	4.36	3.11	7.86	6.95	6.04	2.57
17	4.91	2.82	2.10	6.60	5.62	4.11	*4.17	4.42	7.51	5.63	5.05	2.56
18	5.14	2.65	2.12	4.92	5.42	4.43	4.19	3.63	7.20	7.49	4.88	2.57
19	3.57	3.31	2.51	3.60	5.00	4.20	3.96	3.29	6.80	6.84	4.58	2.59
20	3.08	3.72	2.82	3.11	4.71	3.97	4.27	3.19	6.27	7.36	4.25	2.56
21	3.45	3.01	2.30	2.83	4.68	3.90	3.99	2.94	5.80	6.37	4.07	2.49
22	2.90	2.76	2.54	2.64	5.79	3.82	3.68	2.79	5.93	5.65	3.82	2.48
23	2.78	2.76	3.23	3.98	5.73	3.66	3.61	2.76	6.26	4.97	3.67	2.45
24	2.67	2.68	2.37	6.57	5.59	3.73	3.54	2.81	6.75	4.57	3.71	2.44
25	2.76	2.48	2.27	5.31	5.53	3.67	4.40	2.63	7.06	5.29	3.68	2.44
26	2.73	2.66	2.22	.66	5.35	3.57	4.14	2.94	6.43	5.22	3.46	2.43
27	2.50	2.48	2.18	.90	5.20	3.49	6.93	5.68	5.51	4.78	3.36	2.45
28	2.47	2.61	2.09	1.00	4.84	3.42	7.29	7.90	5.01	3.94	3.32	2.52
29	2.38	2.41	2.10	.63	4.82	3.41	8.17	--------	7.24	4.69	3.23	2.43
30	2.36	2.32	2.12	.45	6.07	3.31	7.95	--------	7.25	5.57	3.15	2.39
31	2.72	2.28	--------	1.19	--------	3.24	7.48	--------	7.60	--------	3.14	--------
Total	93.64	111.15	72.46	91.70	112.55	143.26	156.96	106.83	208.59	162.49	137.03	80.49
Mean												
Mgd	3.02	3.58	2.42	2.96	3.75	4.62	5.06	3.82	6.73	5.42	4.42	2.68
Cfs	4.67	5.54	3.74	4.58	5.80	7.15	7.83	5.91	10.4	8.39	6.84	4.15
Ac-ft	287	341	222	281	345	440	482	328	640	499	420	247

Calendar Year 1961:	Max	10.9	Min	0.36	Mean mgd	4.26	Mean cfs	6.59	Ac-ft	4,770
Fiscal Year 1961-62:	Max	9.04	Min	0.36	Mean mgd	4.05	Mean cfs	6.27	Ac-ft	4,530

* Discharge measurement made on this day.

7000. Waiakea Stream at middle flume house, near Mountain View

Location.--Lat 19°38'25", long 155°10'35", on left bank at middle flume house, 800 ft upstream from Olaa Sugar Co. main flume, and 7.5 miles northwest of Mountain View.

Drainage area.--Not determined.

Records available.--September 1930 to June 1962.

Gage.--Water-stage recorder and combined Parshall flume and concrete weir control. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--31 years (1931-62), 7.50 mgd (11.6 cfs).

Extremes.--Maximum discharge during year 96.0 mgd (149 cfs) Oct. 28 (gage height, 3.77 ft), from rating curve extended above 19 mgd as explained below; minimum, 0.08 mgd (0.12 cfs) Feb. 24, 26.

1930-62: Maximum discharge, 166 mgd (257 cfs) Mar. 14, 1942 (gage height, 4.43 ft), from rating curve extended above 40 mgd on basis of weir formulas; no flow at times.

Remarks.--Records good except those for period of no gage height record, which are fair. No diversion above station. Large part of flow comes from 3 tunnels.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.09	0.09	1.0	5.06
.1	.11	1.5	9.60
.2	.38	2.0	15.3
.3	.73	2.5	24.0
.4	1.16	3.0	41.0
.6	2.24	3.5	73.0

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.26	1.78	2.79	2.86	21.6	17.2	7.41	1.03	0.44	3.83	2.86	11.1
2	1.16	1.72	2.73	2.67	19.0	16.0	6.94	.98	.32	3.75	4.05	10.5
3	1.07	1.67	2.67	2.55	17.2	16.3	6.49	.89	.32	3.60	5.75	9.60
4	1.23	1.67	2.61	2.42	15.7	15.4	6.07	.81	.29	3.46	4.90	8.70
5	1.16	2.66	2.55	2.36	13.9	15.9	5.81	.73	*.26	3.39	4.74	7.97
6	.98	2.84	2.67	2.24	12.6	20.0	5.48	.66	.23	3.26	4.82	7.32
7	.89	2.42	2.42	2.12	11.6	17.8	5.14	.58	.18	3.06	4.82	6.75
8	.98	2.67	2.30	2.93	10.7	16.7	4.74	.51	.16	3.06	4.43	6.75
9	1.32	2.55	2.93	3.10	9.60	17.2	4.35	.47	.16	3.36	4.28	6.54
10	1.03	2.42	2.67	5.05	8.80	16.3	4.05	.38	.23	3.67	4.05	6.58
11	.98	2.55	*2.42	4.28	7.97	14.9	3.75	.32	.16	2.99	4.37	5.98
12	.89	2.36	2.42	4.20	7.22	16.1	3.53	.29	.77	2.92	6.32	*5.56
13	.89	2.30	2.30	5.33	*9.47	25.6	3.39	.23	1.10	2.79	7.32	5.22
14	1.33	2.18	2.24	5.39	7.51	35.2	3.26	.23	.38	2.73	7.41	4.82
15	.98	2.12	2.12	5.06	7.22	35.2	*3.12	.21	.35	2.79	11.1	A4.6
16	*.89	2.05	2.01	4.67	7.71	35.2	2.99	.21	.29	2.79	13.5	A4.5
17	1.37	2.93	1.95	4.43	12.2	31.3	2.79	.21	.29	2.48	13.6	A4.4
18	3.50	2.24	1.84	7.68	10.5	26.8	2.55	.18	1.67	*2.30	14.0	A5.0
19	2.73	2.42	3.28	7.97	11.3	22.4	2.42	.18	1.74	3.04	14.3	A4.7
20	2.55	2.42	2.42	7.70	12.1	19.0	2.24	.14	3.19	5.25	14.8	A4.5
21	2.42	2.24	9.33	7.41	13.9	17.3	2.12	.14	5.56	4.28	14.8	A4.3
22	2.24	2.42	6.75	8.06	24.5	16.3	2.01	.11	5.12	3.68	14.1	A3.9
23	2.24	2.74	5.78	12.8	46.0	14.2	1.84	.09	6.15	3.60	14.1	A3.6
24	2.06	3.06	5.06	12.9	42.0	13.1	1.72	.11	6.58	3.26	14.2	A3.3
25	2.01	3.49	4.43	13.5	38.0	12.6	2.91	.11	5.73	3.06	15.1	A3.1
26	2.06	3.26	4.05	14.7	33.2	11.7	1.84	.14	4.82	2.86	15.3	A3.0
27	2.01	3.26	3.68	16.0	26.8	10.9	1.56	1.58	4.43	2.73	14.6	A2.8
28	1.89	3.12	3.39	31.6	22.0	10.6	1.41	.88	4.43	2.73	14.1	A2.6
29	1.84	3.12	3.19	26.8	18.8	9.82	1.31	--------	4.13	2.73	13.5	A2.5
30	1.78	3.06	3.06	25.6	18.0	8.80	1.21	--------	4.13	2.67	12.5	A2.7
31	1.84	3.06	---------	24.6	---------	8.24	1.12	--------	4.20	--------	12.5	---------
Total	49.58	78.80	98.06	278.98	517.10	564.06	105.57	12.40	67.81	96.12	306.22	162.89
Mean												
Mgd	1.60	2.54	3.27	9.00	17.2	18.2	3.41	0.443	2.19	3.20	9.88	5.43
Cfs	2.47	3.93	5.06	13.9	26.6	28.2	5.27	0.685	3.38	4.96	15.3	8.40
Ac-ft	152	242	301	856	1590	1730	324	38	208	295	940	500

Calendar Year 1961:	Max	46.0	Min	0.08	Mean mgd	7.48	Mean cfs	11.6	Ac-ft	8,380
Fiscal Year 1961-62:	Max	46.0	Min	0.09	Mean mgd	6.40	Mean cfs	9.90	Ac-ft	7,180

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-18	1600	3.26	56.6	87.6	11-23	1900	3.44	68.8	106
10-28	2200	3.77	96.0	149	12-13	1600	3.21	53.6	82.9

* Discharge measurement made on this day.
A No gage-height record.

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.

Records available.--May 1957 to June 1962.

Drainage area.--97 sq mi, approximately, of which 79 sq mi is probably noncontributing.

Gage.--Water-stage recorder. Altitude of gage is 380 ft (from topographic map).

Average discharge.--5 years, 3.83 mgd (5.93 cfs).

Extremes.--Maximum discharge during year, 600 mgd (928 cfs) Nov. 23 (gage height, 5.50 ft), from rating curve extended above 110 mgd as explained below; no flow for many days.

1957-62: Maximum discharge, 790 mgd (1,220 cfs) Aug. 30, 1957 (gage height, 5.88 ft), from rating curve extended above 110 mgd by logarithmic plotting; no flow at times each year.

Remarks.--Records fair. Hawaii Board of Water Supply diverts about 25,000,000 gal per year above station at 1,500-ft elevation.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.46	0	1.0	0.25	2.5	16.5
.5	.01	1.1	.38	3.0	40.0
.6	.02	1.3	.80	3.5	81.0
.7	.05	1.5	1.50	4.0	150
.8	.09	1.8	3.20	4.5	255
.9	.16	2.1	6.80		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1			0	0	12.3	18.6	0					
2			0	0	6.00	4.04	0					
3			0	0	2.54	4.45	0					
4			0	0	.51	.81	0					
5			0	0	0	6.99	0		(*)			
6			0	0	0	22.8	0					
7			0	0	0	9.94	0					
8			0	0	0	2.53	0					
9			0	0	0	4.38	0					
10			0	0	0	1.84	0					
11			0	0	0	.05	0					
12			*0	0	0	7.07	0					
13			0	0	2.76	92.2	0					
14			0	0	*.26	95.3	0					(*)
15			0	0	0	48.4	0					
16			0	0	0	48.4	0					
17			0	0	6.90	43.5	*0					
18	(*)		0	0	.06	35.9	0			(*)		
19			0	0	0	20.6	0					
20			0	0	.08	10.8	0					
21			27.7	0	.70	6.84	0					
22			4.07	0	51.3	4.17	0					
23			0	11.1	246	1.78	0					
24			0	2.31	64.7	1.20	0					
25			0	.58	59.6	.01	.05					
26			0	1.79	50.5	0	.04					
27			0	3.81	35.8	0	0					
28			0	140	20.3	0	0					
29			0	86.5	10.4	0	0	--------				
30			0	25.5	6.86	0	0	--------				
31			------	18.3	------	0	0	--------		--------		---------
TOTAL	0	0	31.77	289.89	577.57	492.60	0.09	0	0	0	0	0
MEAN												
MGD	0	0	1.06	9.35	19.3	15.9	0.003	0	0	0	0	0
CFS	0	0	1.64	14.5	29.8	24.6	0.005	0	0	0	0	0
AC-FT	0	0	97	890	1,770	1,510	0.3	0	0	0	0	0

CALENDAR YEAR	1961	MAX	246	MIN	0	MEAN MGD	4.20	MEAN CFS	6.50	AC-FT	4,700
FISCAL YEAR	1961-62	MAX	246	MIN	0	MEAN MGD	3.81	MEAN CFS	5.89	AC-FT	4,270

* Discharge measurement or observation of no flow made on this day.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
9-21	2000	4.37	222	343	11-23	0700	5.50	600	928
10-28	2330	5.32	518	801	12-13	1700	4.62	285	441

7040. Wailuku River above Hilo Boarding School ditch intake, near Hilo

Location.--Lat 19°42'55", long 155°09'10", on left bank 1,000 ft upstream from intake of Hilo Boarding School ditch, 0.8 mile west of reservoir 1, and 4 miles west of Hilo.

Drainage area.--125 sq mi.

Records available.--July 1928 to July 1940, October 1940 to December 1947, April 1948 to June 1962. Monthly discharge only July 1928, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--32 years (1928-40, 1941-47, 1948-62), 177 mgd (274 cfs).

Extremes.--Maximum discharge during year, 13,400 mgd (20,700 cfs) Nov. 23 (gage height, 19.90 ft), from rating curve extended above 3,400 mgd; minimum, 1.45 mgd (2.24 cfs) Feb. 17.

1928-62: Maximum discharge, 41,000 mgd (63,400 cfs) Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 3,400 mgd; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.

Remarks.--Records good. Board of Water Supply, County of Hawaii, diverts about 1 mgd above station for domestic supply. Since March 1938, Kapehu ditch (see p.140) diverts water from Kapehu Stream into Wailuku River above Pukaaui Falls. Water passing station is used for power by Hilo Electric Light Co.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.0	1.23	3.0	70.0	8.0	900
1.1	1.73	4.0	155	10.0	1,590
1.3	3.30	5.0	282	12.0	2,700
1.5	6.00	6.0	446	14.0	4,300
2.0	19.0	7.0	650	16.0	6,680
2.5	40.0				

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	12.4	26.3	30.5	18.7	474	671	48.0	6.20	15.8	41.0	42.5	71.4
2	8.46	17.4	24.5	15.8	292	381	42.5	5.84	9.38	32.3	377	58.8
3	6.00	12.9	21.8	14.1	226	522	37.0	5.20	7.00	29.7	472	57.0
4	7.80	12.5	23.3	12.6	232	371	33.7	5.20	4.88	26.5	193	42.5
5	10.6	56.3	18.4	18.1	143	434	30.1	4.29	*3.63	22.5	113	36.0
6	11.9	55.9	16.8	15.0	106	1,600	26.9	3.74	2.94	22.2	116	32.8
7	8.69	34.6	16.1	11.6	84.0	546	25.3	3.12	2.40	23.7	171	29.7
8	7.60	30.5	14.4	94.3	66.5	333	23.7	2.67	13.6	25.7	93.6	33.5
9	14.9	36.5	45.7	63.9	55.2	589	32.3	2.49	4.40	123	80.5	52.7
10	21.1	28.5	45.6	277	60.2	330	26.9	1.99	7.00	176	83.8	77.1
11	15.2	34.5	22.5	241	105	296	20.8	1.73	11.9	40.0	72.4	68.1
12	13.2	28.1	*16.8	147	84.7	775	18.0	1.67	33.3	32.8	299	40.0
13	10.8	26.9	15.2	120	247	3,430	17.1	1.67	64.2	25.7	447	32.3
14	14.1	30.1	12.6	88.0	143	5,610	16.4	1.67	28.7	21.5	268	*27.3
15	*12.4	20.1	12.1	58.2	96.0	1,300	24.1	1.62	15.8	19.4	677	25.7
16	9.61	18.0	10.8	146	94.7	688	*19.7	1.55	11.6	45.6	675	45.0
17	9.79	105	9.61	366	326	494	15.8	1.62	10.3	23.7	604	32.3
18	630	31.9	9.84	399	166	432	14.4	3.30	95.9	*17.4	372	126
19	165	39.5	91.2	204	205	330	28.1	2.67	322	322	282	45.0
20	113	35.0	38.5	118	436	237	15.8	2.26	165	401	233	34.6
21	63.0	27.3	57.3	77.0	1,020	222	12.6	1.73	317	117	291	29.7
22	44.0	29.7	88.3	64.4	3,700	222	11.3	1.62	272	77.0	253	25.7
23	33.7	52.2	84.9	568	4,680	228	11.9	1.62	711	82.7	172	22.2
24	27.3	63.7	52.2	466	1,140	183	12.9	1.62	308	48.0	283	20.4
25	23.3	70.2	39.0	418	638	149	26.3	1.73	155	38.5	442	18.0
26	23.7	42.5	30.5	639	427	121	28.0	1.73	104	32.8	318	16.8
27	23.7	37.5	25.7	597	316	96.0	13.8	24.2	84.3	28.5	234	15.2
28	20.6	32.8	23.3	2,960	257	110	11.1	30.0	112	39.0	150	15.8
29	18.7	60.7	22.5	1,660	194	79.1	9.15	------	60.0	35.0	129	20.0
30	18.4	35.0	23.7	500	322	66.5	8.00	------	52.8	47.9	113	26.5
31	15.8	57.5	------	296	------	58.8	7.00	------	60.6	------	92.0	------
TOTAL	1,414.95	1,189.6	925.65	10,673.7	16,336.3	20,904.4	668.65	124.75	3,064.43	2,018.1	8,148.8	1,178.1
MEAN												
MGD	45.6	38.4	30.9	344	545	674	21.6	4.46	98.9	67.3	263	39.3
CFS	70.6	59.4	47.7	533	842	1,040	33.4	6.89	153	104	407	60.8
AC-FT	4,340	3,650	2,840	32,760	50,130	64,150	2,050	383	9,400	6,190	25,010	3,620

CALENDAR YEAR 1961: MAX 5,610 MIN 0.62 MEAN MGD 209 MEAN CFS 323 AC-FT 233,700
FISCAL YEAR 1961-62: MAX 5,610 MIN 1.55 MEAN MGD 183 MEAN CFS 283 AC-FT 204,500

* Discharge measurement made on this day.

Peak discharge (base, 5,600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-28	2230	17.94	9,480	14,700	12-14	0530	19.43	12,500	19,300
11-23	0430	19.90	13,400	20,700					

7070. Kapehu ditch diversion near Hilo

Location.--Lat 19°43'45", long 155°11'05", on left bank 40 ft downstream from gate on Kapehu ditch, 3.1 miles northwest of Piihonua, and 6.2 miles west of Hilo.

Records available.--May 1954 to June 1962 (discontinued).

Gage.--Water-stage recorder and de Fabritis type-H flume. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--8 years, 1.51 mgd (2.34 cfs).

Extremes.--1954-62: Maximum daily discharge, 11.0 mgd (17.0 cfs) Apr. 25, 1957; no flow at times.

Remarks.--Records good. Since landslide upstream from station is diverting all flow from ditch beginning about December 1961, no water at present is used for fluming of sugar cane.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.25	1.90	1.67	1.28	0							
2	2.13	1.86	1.67	1.25	0							
3	2.06	1.75	1.63	1.22	0							
4	2.13	1.78	1.63	1.22	0							
5	2.13	2.06	1.59	1.18	0							
6	2.09	1.98	1.52	.47	0							
7	1.94	1.90	1.48	.02	0							
8	1.98	1.94	1.52	.02	0							
9	2.13	2.02	1.71	.03	0							
10	2.09	2.02	1.59	.03	0							
11	2.06	2.13	1.56	.03	0							
12	2.02	2.02	*1.51	.01	0							
13	1.98	1.94	1.48	.01	0							
14	2.02	1.82	1.45	.01	*0							
15	*2.02	1.78	1.45	0	0							
16	1.98	1.78	1.45	.01	0		(*)					
17	2.08	2.16	1.41	.01	0							
18	3.67	1.78	1.41	.03	0					(*)		
19	2.45	1.86	1.72	.01	0							
20	2.66	1.78	1.65	0	0							
21	2.13	1.71	2.03	0	0							
22	2.06	1.75	1.56	0	0							
23	2.02	1.78	1.56	.04	.01							
24	1.98	1.82	1.41	.02	0							
25	1.94	1.82	1.41	.03	0							
26	1.94	1.75	1.38	.02	0							
27	1.94	1.71	1.38	.03	0							
28	1.90	1.78	1.35	.04	0							
29	1.90	1.82	1.32	0	0			---				
30	1.86	1.75	1.32	0	0			---				
31	1.82	1.75	---	0	---			---		---		---
Total	65.36	57.70	45.82	7.02	0.01	0	0	0	0	0	0	0
Mean												
Mgd	2.11	1.86	1.53	0.226	0.0003	0	0	0	0	0	0	0
Cfs	3.26	2.88	2.37	0.350	0.0005	0	0	0	0	0	0	0
Ac-ft	201	177	141	22	0.03	0	0	0	0	0	0	0

Calendar Year 1961: Max 6.32 Min 0 Mean mgd 1.84 Mean cfs 2.85 Ac-ft 2060
Fiscal Year 1961-62: Max 3.67 Min 0 Mean mgd 0.482 Mean cfs 0.746 Ac-ft 541

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Dec. 4 to Jan. 15.

7080. Kapehu ditch near Hilo

Location.--Lat 19°43'40", long 155°11'00", on left bank 0.9 mile downstream from intake on Kapehu Stream, 3 miles west of Piihonua, and 6 miles west of Hilo.

Records available.--March 1938 to June 1941, July 1942 to June 1948, September 1948 to April 1951, June 1951 to September 1952, November 1952 to February 1953, June 1953 to June 1962 (discontinued). Monthly discharge only for some periods, published in WSP 1739.

Gage.--Water-stage recorder and de Fabritis flume. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--20 years (1938-41, 1942-48, 1949-50, 1951-52, 1953-62), 1.40 mgd (2.17 cfs).

Extremes.--1938-62: Maximum daily discharge, 7.56 mgd (11.7 cfs) Nov. 1, 1959; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverted water from Kapehu Stream 0.6 mile northwest of station for domestic use in Hilo. Flow sometimes diverted into Kapehu diversion ditch. A landslide in December 1961 completely closed the ditch at a point above the diversion ditch, diverting all flow.

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.03	0.02	0.03	0.03	0.26	0.59	0	0	0	0	0	0
2	.02	.03	.02	.03	.19	.49	0	0	0	0	.11	0
3	.02	.03	.02	.03	.18	.47	0	0	0	0	.08	0
4	.02	.03	.02	.03	.07	.45	0	0	0	0	.01	0
5	.02	.03	.02	.03	.05	.59	0	0	0	0	0	0
6	.02	.03	.03	.81	0	.72	0	0	0	0	.02	0
7	.02	.03	.03	1.23	0	.54	0	0	0	0	.02	0
8	.02	.03	.03	1.42	0	.49	0	0	0	0	.01	0
9	.02	.03	.03	1.42	0	.54	.01	0	0	0	0	.01
10	.02	.03	.03	1.59	.01	.45	.01	0	0	.02	0	.04
11	.02	.03	.03	1.75	.05	.43	0	0	.02	0	.01	.02
12	.02	.03	*.03	1.03	0	.57	0	0	.01	0	.06	.01
13	.02	.03	.03	1.00	.21	1.23	0	0	0	0	.06	0
14	.02	.03	.03	.95	.03	1.74	0	0	0	0	.04	0
15	*.02	.03	.02	.90	0	.78	0	0	0	0	.14	0
16	.02	.04	.02	.96	.04	.56	*0	0	0	0	.12	0
17	.02	.03	.02	1.30	.08	.56	0	0	0	0	.13	0
18	.04	.03	.02	1.66	.02	.47	0	0	.05	*0	.09	.05
19	.02	.02	.03	1.03	.02	.41	0	0	.01	.11	.05	.01
20	.02	.03	.03	.95	.09	.37	0	0	.03	.05	.05	0
21	.02	.03	.04	.90	.30	.35	0	0	.03	0	.07	0
22	.02	.03	.02	.87	.56	.24	0	0	.05	0	.04	0
23	.02	.03	.02	2.35	2.01	.11	0	0	.07	.02	.03	0
24	.02	.03	.02	1.55	.78	.22	0	0	.02	0	.05	0
25	.02	.03	.02	1.63	.56	.18	.01	0	0	0	.09	0
26	.03	.03	.02	1.68	.47	.04	0	0	0	0	.05	0
27	.03	.03	.02	1.75	.41	.02	0	.01	0	0	.04	0
28	.03	.03	.02	2.24	.37	.12	0	0	.01	0	.02	0
29	.03	.03	.03	.67	.27	.02	0	---------	0	.01	.01	0
30	.03	.03	.03	.37	.64	.02	0	---------	0	.01	.02	0
31	.03	.03	---------	.28	---------	.01	0	---------	0	---------	.01	---------
Total	0.71	0.92	0.76	32.44	7.67	13.78	0.03	0.01	0.30	0.22	1.43	0.14
Mean												
Mgd	0.023	0.030	0.025	1.05	0.256	0.445	0.001	0.0004	0.010	0.007	0.046	0.005
Cfs	0.036	0.046	0.039	1.62	0.396	0.689	0.002	0.0006	0.016	0.011	0.071	0.008
Ac-ft	2.4	2.8	2.3	100	24	42	0.09	.03	0.9	0.7	4.4	0.4

Calendar Year 1961:	Max	5.45	Min	0	Mean mgd	0.257	Mean cfs	0.399	Ac-ft	288		
Fiscal Year 1961-62:	Max	2.35	Min	0	Mean mgd	0.160	Mean cfs	0.248	Ac-ft	180		

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Apr. 3-17.

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 1962.

Gage.--Water-stage recorder. Altitude of gage is 1,940 ft (by barometer).

Average discharge.--15 years (1939-52, 1960-62), 1.25 mgd (1.93 cfs).

Extremes.--Maximum discharge during year, 195 mgd (302 cfs) Feb. 25 (gage height, 4.45 ft), from rating curve extended above 2.4 mgd by test on model of station site; minimum, 0.11 mgd (0.17 cfs) Sept. 6-8.

1939-52, 1959-62: Maximum discharge, that of Feb. 25, 1962; minimum, that of Sept. 6-8, 1961.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.1	0.11	0.6	2.06
.2	.33	.9	4.38
.3	.64	1.3	8.80
.4	1.04		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.31	0.48	0.13	0.17	0.48	2.46	0.33	0.28	3.51	0.55	0.67	0.23
2	.26	.31	.13	.17	.68	.88	.33	.28	*2.47	.45	.39	.23
3	.31	.19	.22	.17	.63	.61	.36	.28	2.70	.91	.39	.23
4	.98	.94	.32	.14	.33	.52	.33	.28	.76	.57	1.06	.23
5	.36	.60	.13	.13	.31	.48	.31	.28	2.19	.39	.48	.23
6	.67	.44	.13	.13	.78	.76	A .30	.28	.96	.39	2.91	.23
7	.28	.23	.13	.17	.90	.52	A .28	.31	.55	.95	.83	*.25
8	.23	.21	*.12	1.88	.98	.42	A6.0	4.06	.52	.75	.39	1.38
9	.21	.19	.17	.73	.36	.42	A4.0	.77	8.37	.84	.33	.86
10	.21	.19	.14	1.29	*.39	.39	A1.0	.39	4.34	.39	.31	.65
11	.21	.74	.14	.36	.33	.39	A .50	.33	.96	.33	.28	.33
12	*.19	.23	.14	.31	.28	1.04	.39	.33	.68	.31	.31	.28
13	.19	.19	.14	.23	.31	4.03	.39	.31	.64	.31	.42	.28
14	.23	.17	.17	.27	.39	3.17	1.92	.98	.58	.28	.33	.28
15	.26	.17	.17	.68	.70	.64	.69	.49	.48	.28	.94	.28
16	.21	.19	.14	.33	7.13	.55	.42	.33	.42	.28	1.06	.72
17	.23	.17	.14	.31	5.35	1.23	.39	.31	.36	.26	.50	.36
18	4.48	.14	.13	.23	.76	1.06	.39	.28	.33	.26	.31	.49
19	.39	.26	.19	.31	.58	.80	.39	.28	.33	.43	.26	.39
20	.26	.28	.14	.31	1.83	.48	.36	.28	.33	.36	.28	.28
21	.23	.21	.14	.23	1.32	.83	.33	.28	.31	.28	.28	.26
22	.23	.17	1.33	.21	7.71	.52	.50	.28	.28	.26	.26	.26
23	.21	.21	.98	1.44	4.78	.42	1.06	.26	1.07	.23	.27	.26
24	.21	.45	.19	2.03	2.06	.42	.42	.36	.72	*.23	.72	.26
25	.23	.50	.17	.57	1.13	.39	.51	8.51	.64	.28	1.09	.26
26	.21	.19	.17	.80	.76	.39	.39	1.28	.76	.28	1.35	.26
27	.19	.23	.17	.51	.64	.42	.33	5.25	.61	.47	.48	.26
28	.17	.35	.17	1.67	.58	.45	.33	2.42	.53	.83	.28	.26
29	.17	.14	.17	.74	.58	.45	.31	------	5.16	1.53	.26	.23
30	.17	.13	.17	.39	1.35	.39	.31	------	3.03	1.26	.36	.23
31	.51	.13	------	.33	------	.33	.28	------	.97	------	.26	------
TOTAL	13.00	9.03	6.78	17.24	44.41	25.86	23.85	29.77	45.56	14.94	18.06	10.75
MEAN												
MGD	0.419	0.291	0.226	0.556	1.48	0.834	0.769	1.06	1.47	0.498	0.583	0.358
CFS	0.649	0.451	0.350	0.860	2.29	1.29	1.19	1.64	2.27	0.770	0.901	0.554
AC-FT	40	28	21	53	136	79	73	91	140	46	55	33

CALENDAR YEAR	1961:	MAX	42.0	MIN	0.12	MEAN MGD	1.01	MEAN CFS	1.56	AC-FT	1,130
FISCAL YEAR	1961-62:	MAX	8.51	MIN	0.12	MEAN MGD	0.710	MEAN CFS	1.10	AC-FT	795

* Discharge measurement made on this day.
A No gage-height record.

Peak discharge (base, 30 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-16	2230	2.46	31.0	48.0	3- 9	2100	2.77	39.1	60.5
11-22	0400	2.44	30.5	47.2	3-29	1830	2.60	34.5	53.4
2-25	1930	4.45	195	302					

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 1962.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--32 years (1928-38, 1939-49, 1950-62), 11.8 mgd (18.3 cfs).

Extremes.--1927-62: Maximum daily discharge, 33 mgd (51 cfs) Jan. 8, 1935, Aug. 10, 1938; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. 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 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.80	12.7	2.18	0.45	7.0	19.4	4.19	1.88	*19.4	10.8	13.7	5.60
2	3.95	6.0	1.94	.40	14	14.8	3.88	1.78	17.2	7.90	9.00	4.46
3	3.33	4.0	3.19	.38	20	12.7	3.65	1.61	21.0	9.01	7.74	3.88
4	14.8	10	9.48	.36	10	9.00	3.58	1.50	13.7	13.8	18.6	3.35
5	14.0	18	4.09	.35	6.0	7.90	3.09	1.36	13.4	8.60	13.6	3.16
6	15.8	9.0	2.31	.35	14	12.0	2.96	1.27	16.2	6.60	12.6	*3.60
7	9.25	5.0	*1.41	.35	6.0	10.0	2.70	1.22	8.90	12.4	15.5	8.70
8	5.00	4.0	1.13	15	12	6.70	12.8	8.86	6.40	15.4	8.00	14.7
9	3.58	3.0	1.61	13	*10	5.80	14.7	12.7	14.7	14.7	5.20	18.0
10	2.90	2.5	4.96	20	8.20	7.30	*7.76	5.00	20.8	10.5	3.95	14.4
11	*2.88	2.5	2.70	15	6.85	6.20	6.50	3.16	11.8	6.80	3.35	8.50
12	2.38	2.3	1.88	13	4.02	14.5	5.50	2.70	8.90	5.20	8.12	5.30
13	2.05	2.1	1.50	10	5.52	21.8	4.55	2.38	11.3	5.40	17.3	3.88
14	2.70	2.1	1.45	6.0	11.2	19.7	8.93	5.12	11.2	5.20	9.86	3.35
15	5.70	2.0	1.61	10	15.9	11.5	13.6	10.2	9.22	4.19	20.6	3.02
16	4.28	2.0	1.56	13	18.6	9.66	6.90	4.79	7.10	5.80	19.5	8.73
17	3.76	2.0	1.00	15	20.7	11.5	4.91	7.90	5.80	5.30	17.0	5.30
18	20.9	3.72	.71	8.0	15.2	15.0	4.37	4.02	5.00	3.65	11.7	5.40
19	12.6	7.62	3.05	4.0	13.0	13.1	6.40	2.64	4.73	7.90	12.4	3.95
20	6.60	11.7	2.98	3.0	18.7	8.90	4.10	6.53	4.19	13.4	9.11	2.90
21	4.28	8.00	1.45	2.0	16.2	10.3	3.28	5.72	3.88	13.1	13.3	2.44
22	3.35	3.65	3.48	1.5	21.8	9.99	5.02	2.96	3.72	10.5	12.3	2.31
23	2.83	3.41	13.5	15	22.2	9.44	15.1	2.05	9.88	5.3	8.30	2.00
24	2.38	13.1	5.37	22	18.8	7.30	9.90	2.00	19.3	3.65	18.9	1.78
25	2.50	13.6	2.57	12	16.6	6.80	6.50	11.3	15.6	*2.96	21.0	1.61
26	2.50	8.00	1.56	16	13.7	9.00	6.20	16.4	14.1	2.57	21.0	1.45
27	2.12	4.71	1.09	10	11.7	6.60	4.02	20.8	14.9	2.64	16.5	1.56
28	1.83	10.9	.78	14	10.7	9.00	3.16	16.3	13.8	14.1	10.2	4.83
29	1.61	4.55	.88	15	10.9	9.44	2.64	--------	11.9	13.3	9.55	6.30
30	1.61	3.02	.50	8.0	13.1	6.80	2.31	--------	20.8	17.4	12.5	7.60
31	5.71	2.38	--------	4.5	-------	4.91	2.05	--------	17.8	--------	8.10	----------
Total	173.98	187.56	81.92	267.64	392.59	327.04	185.25	164.15	376.62	258.07	388.48	162.06
Mean												
Mgd	5.61	6.05	2.73	8.63	13.1	10.5	5.98	5.86	12.1	8.60	12.5	5.40
Cfs	8.68	9.36	4.22	13.4	20.3	16.2	9.25	9.07	18.7	13.3	19.3	8.36
Ac-ft	534	576	251	821	1,200	1000	569	504	1,160	792	1,190	497

Calendar Year 1961:	Max	24.9	Min	0.35	Mean mgd	8.21	Mean cfs	12.7	Ac-ft	9,190
Fiscal Year 1961-62:	Max	22.2	Min	0.35	Mean mgd	8.12	Mean cfs	12.6	Ac-ft	9,100

* Discharge measurement made on this day.
Note.--No gage-height record Aug. 2-17, Sept. 30 to Nov. 9.

7440. East Honokane Iki intake to Awini ditch at East Honokane Iki Gulch, 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 1962.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--29 years (1928-36, 1937-38, 1939-40, 1941-49, 1951-62), 1.17 mgd (1.81 cfs).

Extremes.--1927-49, 1951-62: Maximum daily discharge, 8.4 mgd (13.0 cfs) Aug. 6, 1957; no flow at times.

Remarks.--Records good.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.38	1.71	0.04	0	0.33	3.86	0.20	0.08	*4.68	0.63	1.40	0.29
2	.14	.41	.03	0	2.53	1.97	.17	.08	2.17	.41	.44	.23
3	.14	.23	.03	0	2.95	1.30	.17	.06	3.95	.75	.49	.20
4	1.63	1.10	.26	0	.63	.63	.14	.06	.96	1.34	2.43	.17
5	1.07	2.95	.12	0	.35	.48	.12	.06	1.87	.48	.83	.17
6	1.82	1.83	.06	0	2.07	1.62	.10	.06	1.56	.32	1.83	*.14
7	.44	.59	*.03	0	.48	.79	.10	.06	.55	1.04	1.19	.32
8	.20	.32	.03	3.21	1.16	.41	2.33	.79	.38	1.51	.35	2.02
9	.12	.23	.03	3.17	*.48	.32	1.95	.83	2.84	1.35	.23	2.70
10	.08	.12	.04	3.34	.35	.41	*.53	.35	1.38	.63	.14	.91
11	*.04	.12	.06	2.24	.29	.32	.44	.20	1.09	.29	.12	.38
12	.04	.10	.04	1.45	.20	3.05	.29	.14	1.20	.20	.65	.26
13	.04	.04	.04	.67	.26	4.61	.23	.12	1.63	.20	2.88	.17
14	.04	.04	.03	.38	.67	3.59	.59	.17	.79	.17	.67	.14
15	.08	.03	.03	1.17	2.69	1.50	.84	.51	.63	.12	4.53	.12
16	.10	.03	.01	1.67	2.96	1.06	.32	.46	.44	.14	2.95	.35
17	.06	.03	0	1.91	.52	1.10	.20	1.10	.38	.14	1.94	.20
18	4.46	.03	0	.59	.29	2.22	.75	.32	.32	.10	.67	.14
19	.91	.17	0	.38	.29	1.65	1.14	.17	.32	1.55	.71	.12
20	.26	.75	0	.23	.32	.79	.35	1.11	.26	1.02	.38	.08
21	.12	.41	0	.14	2.33	1.15	.23	.38	.20	1.68	.79	.06
22	.10	.12	0	.12	2.59	1.01	.64	.17	.20	1.14	.55	.06
23	.06	.06	.90	1.77	2.42	.75	1.69	.10	1.63	.29	.45	.04
24	.04	.87	.20	4.42	1.20	.48	.63	.12	2.96	.14	3.47	.04
25	.04	1.27	.08	1.36	.99	.55	.40	1.23	1.35	*.10	4.35	.04
26	.04	.41	.03	2.53	1.32	.75	.52	2.42	1.01	.08	4.39	.04
27	.03	.20	0	1.01	1.25	.38	.26	5.44	1.10	.10	1.92	.04
28	.03	1.35	0	1.97	1.01	.70	.17	3.49	.67	.44	.63	.14
29	.01	.23	0	2.10	.96	.67	.12	------	1.52	1.21	.55	.29
30	0	.10	0	.51	1.22	.38	.10	------	3.76	2.54	.59	.41
31	.52	.06	------	.32	------	.26	.10	------	2.39	------	.38	------
TOTAL	13.04	15.91	2.09	36.66	35.11	38.76	15.82	20.08	44.18	20.11	42.90	10.27
MEAN												
MGD	0.421	0.513	0.070	1.18	1.17	1.25	0.510	0.717	1.43	0.670	1.38	0.342
CFS	0.651	0.794	0.108	1.83	1.81	1.93	0.789	1.11	2.20	1.04	2.14	0.530
AC-FT	40	49	6.4	113	108	119	49	62	136	62	132	32

CALENDAR YEAR 1961: MAX 4.61 MIN 0 MEAN MGD 0.745 MEAN CFS 1.15 AC-FT 835
FISCAL YEAR 1961-62: MAX 5.44 MIN 0 MEAN MGD 0.808 MEAN CFS 1.25 AC-FT 908

* Discharge measurement made on this day.

7510. Kohala ditch at Pololu, near Niulii

Location.--Lat 20°10'20", long 155°44'15", on right bank of open section of ditch in Pololu Valley, 300 ft upstream from Pololu Stream, and 4 miles south of Niulii.

Records available.--August 1927 to June 1938, September 1938 to June 1962.

Gage.--Water-stage recorder. Altitude of gage is 1,100 ft (from topographic map).

Average discharge.--33 years (1928-38, 1939-62), 27.0 mgd (41.8 cfs).

Extremes.--1927-62: Maximum daily discharge, 65 mgd (101 cfs) July 16, 1958; no flow at times.

Remarks.--Records good. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 ft from Honokane Stream and all streams west. Water is used for irrigation in vicinity of Kohala.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	19.7	29.5	14.7	13.5	25.3	42.1	16.0	14.2	42.1	26.4	27.7	18.3
2	16.9	19.9	14.5	13.0	46.1	32.4	16.2	13.9	34.9	21.8	21.4	16.9
3	16.5	18.0	14.7	12.9	46.3	32.8	16.3	13.8	*40.8	20.7	23.0	16.2
4	29.2	20.5	19.1	11.8	25.4	24.8	16.3	13.6	29.5	27.8	44.3	15.6
5	32.6	45.1	16.0	11.4	19.4	22.5	15.6	13.5	26.9	21.8	29.6	15.4
6	36.0	40.1	13.5	11.2	29.5	31.1	15.3	13.3	32.2	19.1	26.0	15.6
7	24.6	27.2	12.6	11.4	19.4	27.8	15.3	13.2	22.1	23.5	31.5	19.9
8	18.6	21.8	12.9	39.1	27.9	21.2	30.7	21.7	19.1	29.3	21.9	*27.6
9	16.6	18.9	*15.9	45.1	22.1	19.7	37.2	28.9	30.2	28.9	18.6	39.4
10	*15.9	17.4	18.1	47.8	19.4	21.1	22.1	18.0	52.9	23.8	17.2	27.2
11	15.7	19.9	15.3	39.0	*18.9	20.2	19.9	15.7	32.3	19.2	16.5	21.1
12	15.1	18.4	14.4	35.1	16.8	34.0	*18.6	15.0	25.6	17.4	21.2	17.7
13	14.7	16.2	13.6	22.5	16.9	51.6	17.4	14.7	29.5	17.2	37.4	16.2
14	15.6	15.3	13.5	18.1	23.6	48.3	20.1	16.0	26.8	17.1	24.0	15.4
15	17.8	14.7	14.1	24.6	35.0	31.3	27.2	22.3	24.2	16.0	43.5	14.8
16	17.2	14.7	13.9	25.1	44.6	26.8	19.5	17.2	21.1	17.1	44.9	19.4
17	16.6	15.7	13.5	29.4	51.9	27.0	17.5	21.4	19.5	17.1	41.1	17.1
18	42.9	16.2	12.8	20.0	37.9	34.6	20.6	16.3	18.6	15.4	29.1	16.8
19	31.3	18.6	13.6	17.5	32.6	32.6	27.3	15.3	18.3	20.8	30.4	15.9
20	20.6	25.2	14.8	16.5	49.0	24.0	18.0	33.8	17.8	27.9	23.0	14.7
21	17.8	21.2	12.6	15.0	39.0	25.0	16.5	20.9	17.1	27.8	28.9	14.1
22	16.6	16.5	12.5	14.5	54.1	27.0	17.2	16.2	17.4	27.0	27.8	13.9
23	15.7	15.6	24.0	21.7	55.0	27.8	28.3	14.7	24.7	*17.9	22.3	13.5
24	14.8	27.4	16.6	42.8	47.3	21.6	23.2	13.2	44.1	15.9	43.8	13.3
25	15.3	28.3	13.9	31.7	40.0	20.9	18.7	27.7	33.9	14.8	49.7	13.2
26	15.1	21.1	12.8	40.4	37.2	23.8	19.5	37.3	31.7	14.2	47.8	13.2
27	14.8	16.9	13.0	28.9	30.4	20.0	16.8	50.8	31.7	14.1	38.5	13.5
28	14.7	24.6	13.2	27.4	28.0	22.8	15.6	40.8	28.5	23.2	24.6	16.2
29	14.4	17.1	13.3	35.6	27.4	23.2	15.0	------	28.9	24.2	24.0	19.4
30	14.1	15.1	13.9	21.9	30.0	19.7	14.7	------	46.2	32.2	26.4	20.7
31	15.5	14.8	------	18.4	------	16.9	14.4	------	40.9	------	21.4	------
TOTAL	602.9	651.9	437.3	763.3	996.4	854.6	607.0	573.4	909.5	639.6	927.5	532.2
MEAN												
MGD	19.4	21.0	14.6	24.6	33.2	27.6	19.6	20.5	29.3	21.3	29.9	17.7
CFS	30.1	32.5	22.6	38.1	51.4	42.6	30.3	31.7	45.4	33.0	46.3	27.4
AC-FT	1,850	2,000	1,340	2,340	3,060	2,620	1,860	1,760	2,790	1,960	2,850	1,630

CALENDAR YEAR 1961:	MAX	62.4	MIN	11.2	MEAN MGD	24.6	MEAN CFS	38.1	AC-FT	27,530
FISCAL YEAR 1961-62:	MAX	55.0	MIN	11.2	MEAN MGD	23.3	MEAN CFS	36.1	AC-FT	26,060

* Discharge measurement made on this day.

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 1962.

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.--35 years (1918-19, 1928-62), 7.59 mgd (11.7 cfs).

Extremes.--1917-19, 1928-62: 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 fair. Ditch diverts from 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 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.68	3.40	0.14	0	14.6	11.0	0.98	0	6.56	3.65	1.50	1.50
2	.84	2.06	.08	0	31.4	7.87	.84	0	4.72	1.68	2.06	.98
3	.56	1.32	1.20	0	29.6	7.87	.56	0	6.82	1.68	7.41	.70
4	7.87	2.09	3.84	0	6.16	3.95	.33	0	3.20	3.95	15.5	.44
5	9.51	18.4	.98	0	2.50	2.95	.23	0	1.50	2.06	5.59	.23
6	9.97	12.7	*.18	.16	4.55	8.95	.14	0	1.32	1.15	2.93	.23
7	3.45	7.22	.14	.03	1.87	5.71	.04	0	*.83	1.32	5.00	1.15
8	1.32	4.20	.08	12.4	*1.87	2.50	13.0	.10	.44	4.20	2.06	5.6
9	.84	2.95	1.80	18.7	1.68	2.06	*11.6	1.32	3.42	3.68	.98	3.5
10	.56	1.50	2.62	18.5	1.68	5.38	3.68	.33	24.8	2.50	.56	2.2
11	.56	1.32	.84	10.8	1.32	4.20	2.06	.14	5.87	1.32	.33	1.5
12	.33	.98	.33	7.25	.84	11.6	1.15	.04	3.36	.84	3.95	.80
13	*.23	.44	.23	5.13	.70	33.7	.84	0	7.71	1.50	8.94	.60
14	1.91	.33	.14	2.06	2.06	25.3	1.15	0	3.20	1.32	3.68	.70
15	2.28	.14	.08	1.68	8.89	6.31	1.68	.50	2.06	.70	15.5	.50
16	1.50	.14	.14	4.31	17.7	3.20	1.15	1.50	1.15	2.06	16.0	.80
17	1.15	.70	.03	5.86	29.6	2.50	.84	2.76	.70	1.50	13.0	.70
18	15.6	1.15	0	3.20	9.60	4.45	8.89	1.15	.44	.70	9.11	1.2
19	6.49	3.54	1.82	2.06	8.19	5.38	8.24	.56	.56	2.17	7.93	.76
20	2.06	5.00	1.32	1.15	30.7	2.95	1.87	23.7	.44	5.59	6.41	.40
21	1.32	1.87	.44	.70	15.8	2.50	.84	6.69	.33	*4.11	9.60	.35
22	.98	.70	.23	.33	35.1	5.62	.44	1.87	1.16	2.06	7.22	.30
23	.56	1.27	1.59	3.85	43.4	6.00	.84	.84	9.25	.98	5.54	.30
24	.33	6.89	1.15	12.6	22.4	2.72	1.50	.56	13.9	.44	19.4	.15
25	.23	5.99	.56	8.12	16.4	2.95	.70	1.26	11.1	.23	26.3	0
26	.23	2.95	.23	12.9	9.52	2.95	.56	6.22	8.85	.14	18.6	0
27	.14	1.50	.04	6.56	5.91	2.06	.33	16.4	7.41	.08	11.5	0
28	.14	2.28	0	5.88	4.72	3.20	.23	10.2	5.51	.14	5.00	.20
29	.14	.98	0	8.33	5.38	3.95	.14	------	3.95	.71	7.54	.20
30	.08	.44	0	2.72	5.91	2.28	.08	------	16.5	5.17	5.00	1.1
31	0	.33	------	1.50	------	1.32	0	-------	13.0	------	2.50	------
TOTAL	72.86	94.78	20.23	156.78	370.05	193.38	64.93	76.14	170.06	57.63	246.64	27.09
MEAN												
MGD	2.35	3.06	0.674	5.06	12.3	6.24	2.09	2.72	5.49	1.92	7.96	0.903
CFS	3.64	4.73	1.04	7.82	19.1	9.65	3.24	4.21	8.49	2.97	12.3	1.40
AC-FT	224	291	62	481	1,140	593	199	234	522	177	757	83

CALENDAR YEAR	1961:	MAX	47.0	MIN	0	MEAN MGD	5.36	MEAN CFS	8.29	AC-FT	6,010
FISCAL YEAR 1961-62:		MAX	43.4	MIN	0	MEAN MGD	4.25	MEAN CFS	6.58	AC-FT	4,760

* Discharge measurement made on this day.
Note.--No gage-height record June 8-30.

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 1962.

Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from topographic map).

Average discharge.--6 years, 6.94 mgd (10.7 cfs).

Extremes.--Maximum discharge during year 237 mgd (367 cfs) Nov. 22 (gage height, 4.05 ft), from rating curve extended above 21 mgd as explained below; minimum, 0.10 mgd (0.16 cfs) Oct. 5.

1956-62: Maximum discharge, 2,510 mgd (3,880 cfs) Aug. 7, 1958 (gage height, 10.76 ft), from rating curve extended above 21 mgd by test on model of station site; minimum, that of Oct. 5, 1961.

Remarks.--Records good except those above 20 mgd, which are fair. Parker Ranch pipeline diverts above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.3	0.04	1.0	7.20
.4	.13	1.2	13.8
.5	.27	1.4	23.2
.6	.54	1.6	36.0
.7	1.14	1.9	58.5
.8	2.50	2.2	82.0
.9	4.50		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.38	0.78	0.25	0.11	14.1	15.5	0.27	0.19	2.01	1.24	0.98	0.72
2	.33	.67	.23	.11	39.2	4.80	.25	.19	1.46	.67	1.58	.58
3	.49	.54	.25	.11	27.3	3.50	.23	.18	2.32	.74	9.15	.50
4	2.84	2.38	.43	.11	2.50	1.35	.23	.16	*.98	1.27	7.07	.43
5	3.02	15.8	.25	1.53	1.06	.98	.22	.16	.58	.67	1.58	.43
6	4.50	7.15	.22	.78	.72	2.75	.22	.16	.84	.50	.78	.58
7	1.35	2.17	.18	.38	.54	1.86	.22	.15	.54	1.10	.84	1.14
8	.62	1.35	.18	9.02	.54	.84	.25	.18	.38	2.63	.50	7.09
9	.43	.91	.18	14.0	.50	.67	.35	.31	.41	2.01	.40	7.88
10	.40	.54	.18	9.53	.54	.98	.25	.20	4.91	.91	.38	1.71
11	.38	.72	*.15	6.65	.46	.62	.23	.18	1.71	.54	.35	*.97
12	.33	.50	.14	3.45	.38	.72	.23	.15	1.69	.46	2.01	.58
13	.31	.40	.15	2.17	*.58	33.5	.22	.15	3.30	.54	3.21	.50
14	*.61	.38	.14	.91	.84	28.2	.23	.19	.98	.43	1.85	.43
15	.43	.33	.14	.58	4.55	2.68	*.27	.19	.62	.38	7.78	.40
16	.35	.33	.13	.50	16.6	.98	.25	.16	.46	.62	11.4	.54
17	.33	.38	.13	.54	27.2	.78	.23	.18	.38	.46	5.41	.43
18	15.1	.43	.12	1.90	3.04	1.06	.64	.15	.35	.35	3.89	.50
19	2.66	1.38	.18	1.06	1.46	3.94	.73	.15	.38	2.30	2.84	.40
20	.84	.91	.15	.91	25.8	1.06	.33	7.98	.33	*1.84	2.69	.35
21	.58	.50	.13	.58	7.19	.78	.29	1.59	.31	1.06	4.29	.31
22	.43	.35	.13	.50	61.8	.78	.27	.58	.29	.58	2.84	.29
23	.38	1.46	.27	5.65	75.0	.84	.35	.38	1.79	.46	1.89	.27
24	.33	4.30	.22	10.8	21.5	.62	.40	.33	4.02	.38	8.85	.27
25	.38	2.33	.18	3.93	12.0	.46	1.00	.31	3.60	.35	16.6	.27
26	.40	.84	.15	7.65	5.34	.40	.72	1.13	2.84	.31	18.4	.27
27	.35	.58	.14	2.01	1.86	.38	.35	5.79	2.50	.31	5.73	.27
28	.33	.72	.13	4.73	1.46	.43	.27	4.65	1.86	1.03	1.58	.29
29	.31	.40	.13	5.76	1.58	.43	.23	------	1.13	6.62	3.72	.38
30	.31	.33	.12	1.14	3.55	.35	.20	------	3.22	4.59	2.84	.46
31	.31	.27	------	.67	------	.29	.20	------	6.38	------	1.14	------
TOTAL	39.81	50.13	5.38	97.77	359.19	109.53	10.13	26.12	54.57	35.35	132.57	29.24
MEAN												
MGD	1.28	1.62	0.179	3.15	12.0	3.53	0.327	0.933	1.76	1.18	4.28	0.975
CFS	1.99	2.50	0.277	4.88	18.5	5.47	0.505	1.44	2.72	1.82	6.62	1.51
AC-FT	122	154	17	300	1,100	336	31	80	167	108	407	90

CALENDAR YEAR 1961:	MAX	123	MIN	0.11	MEAN MGD	4.34	MEAN CFS	6.71	AC-FT	4,860
FISCAL YEAR 1961-62:	MAX	75.0	MIN	0.11	MEAN MGD	2.60	MEAN CFS	4.02	AC-FT	2,910

* Discharge measurement made on this day.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-22	0600	4.05	237	367

7570. Waikoloa Stream near Kamuela

Location.--Lat 20°03'17", long 155°40'02", on left bank 350 ft downstream from Parker Ranch boundary and 2.1 miles north of Kamuela.

Drainage area.--0.78 sq mi.

Records available.--May 1947 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,580 ft (from topographic map).

Average discharge.--15 years, 4.81 mgd (7.44 cfs).

Extremes.--Maximum discharge during year, 97.0 mgd (150 cfs) Nov. 23 (gage height, 3.27 ft), from rating curve extended above 19 mgd as explained below; minimum, 0.70 mgd (1.08 cfs) Feb. 19.

1947-62: Maximum discharge, 860 mgd (1,330 cfs) Oct. 23, 1957 (gage height, 6.55 ft) from rating curve extended above 19 mgd by logarithmic plotting; minimum, that of Feb. 19, 1962.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.2	0.58	1.8	7.80
1.3	1.24	2.1	16.2
1.4	2.13	2.5	34.0
1.6	4.58		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.40	2.39	1.16	1.02	2.68	8.02	1.09	0.88	2.87	1.48	1.56	1.40
2	1.24	1.94	1.16	1.02	9.46	4.61	1.09	.82	2.53	1.16	2.04	1.24
3	1.53	1.56	1.40	1.02	9.28	3.31	1.02	.82	4.10	1.54	5.06	1.16
4	5.20	4.08	1.94	.95	2.31	2.24	.95	.82	*1.87	2.22	4.35	1.09
5	3.86	8.00	1.32	1.02	1.56	1.94	.95	.82	1.48	1.32	1.94	*1.09
6	A4.40	3.98	*1.16	1.02	1.48	3.24	.95	.82	1.94	1.02	1.84	1.75
7	A2.00	2.35	1.16	1.02	1.40	2.35	.95	.82	1.24	2.21	2.52	2.57
8	A1.60	2.04	1.09	4.51	*1.48	1.85	1.30	1.19	1.09	3.86	1.40	6.57
9	A1.35	1.85	1.16	5.94	1.85	1.75	*2.13	1.50	1.71	2.88	1.16	4.91
10	A1.35	1.48	1.09	4.14	1.94	1.85	1.40	1.02	9.22	1.48	1.02	2.24
11	A1.30	1.94	1.09	5.32	1.65	1.65	1.24	.88	2.74	1.09	1.02	1.48
12	A1.20	1.56	1.09	3.13	1.40	1.75	1.09	.82	2.30	1.02	3.35	1.24
13	A1.25	1.48	1.16	1.94	2.17	12.2	1.09	.88	3.19	1.09	3.53	1.16
14	*A1.24	1.40	1.09	1.48	2.68	10.7	1.24	1.09	1.48	.95	2.53	1.09
15	1.24	1.32	1.16	1.32	4.19	2.46	1.32	1.09	1.16	.95	6.03	1.09
16	1.24	1.32	1.09	1.24	11.3	1.94	1.16	.88	.95	1.40	6.49	1.24
17	1.32	1.48	1.09	1.16	12.8	1.94	1.09	.88	.88	1.02	3.34	1.16
18	6.42	1.75	1.02	1.40	3.00	3.17	1.26	.76	.82	.82	3.25	1.56
19	2.56	2.46	1.16	1.75	2.35	4.93	1.48	.82	.88	3.26	2.53	1.24
20	1.48	2.04	1.09	1.85	9.16	2.04	1.16	5.52	.82	*3.06	2.83	1.09
21	1.40	1.56	1.02	1.32	4.26	2.39	1.02	1.86	.76	2.16	3.67	1.02
22	1.24	1.40	1.09	1.24	19.0	2.24	1.09	1.09	.82	1.32	2.57	1.02
23	1.24	2.80	1.94	5.94	30.2	1.85	1.66	.82	2.58	1.02	2.24	.95
24	1.16	4.22	1.75	7.58	8.70	1.56	1.65	.76	3.85	.88	5.09	.95
25	1.40	2.35	1.24	3.64	5.36	1.56	2.96	1.19	3.72	.82	5.41	.95
26	1.65	1.65	1.16	3.90	3.92	1.48	2.47	4.14	3.41	.76	9.84	.95
27	1.40	1.71	1.09	2.46	2.46	1.32	2.35	5.16	2.87	.95	3.45	.95
28	1.24	2.13	1.09	4.66	2.46	1.48	1.09	3.65	2.37	2.71	2.04	.95
29	1.16	1.48	1.09	4.46	2.35	1.56	.95	------	1.82	8.34	3.68	.95
30	1.09	1.24	1.09	1.94	3.64	1.32	.88	------	5.83	4.38	3.17	1.66
31	1.44	1.24	------	1.48	------	1.16	.88	------	4.97	------	1.75	------
TOTAL	57.60	68.20	36.24	80.87	166.49	91.86	40.96	41.80	76.27	57.17	100.70	46.72
MEAN												
MGD	1.86	2.20	1.21	2.61	5.55	2.96	1.32	1.49	2.46	1.91	3.25	1.56
CFS	2.88	3.40	1.87	4.04	8.59	4.58	2.04	2.31	3.81	2.95	5.03	2.41
AC-FT	177	209	111	248	511	282	126	128	234	175	309	143

CALENDAR YEAR	1961:	MAX	61.5	MIN	0.84	MEAN MGD	3.04	MEAN CFS	4.70	AC-FT	3,410
FISCAL YEAR	1961-62:	MAX	30.2	MIN	0.76	MEAN MGD	2.37	MEAN CFS	3.67	AC-FT	2,650

Peak discharge (base, 100 mgd).--No peak above base.

* Discharge measurement made on this day.
A No gage-height record.

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 and 1.5 miles north of Kamuela.

Drainage area.--1.18 sq mi.

Records available.--May 1947 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,450 ft (from topographic map).

Average discharge.--15 years, 6.09 mgd (9.42 cfs).

Extremes.--Maximum discharge during year, 126 mgd (195 cfs) Nov. 23 (gage height, 3.48 ft), from rating curve extended above 14 mgd as explained below; minimum, 0.75 mgd (1.16 cfs) Oct. 3-5, 7, Mar. 21, 22.

1947-62: Maximum discharge, 1,180 mgd (1,830 cfs) Oct. 23, 1957 (gage height, 6.99 ft), from rating curve extended above 14 mgd by logarithmic plotting; minimum, 0.65 mgd (1.01 cfs) Dec. 1, 1954.

Remarks.--Records good. Diversion above station for livestock and domestic use.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.4	0.60	2.0	8.60
1.5	1.15	2.2	14.5
1.6	2.00	2.4	24.0
1.7	3.05	2.8	52.0
1.8	4.50		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.29	2.66	1.15	0.80	2.59	11.2	1.29	1.03	3.44	1.74	1.82	1.74
2	1.15	2.10	1.10	.80	13.1	5.36	1.22	1.03	3.05	1.29	2.40	1.58
3	2.02	1.66	1.22	.75	14.3	4.16	1.15	.96	5.21	1.66	8.10	1.43
4	5.69	4.90	1.82	.75	2.86	2.40	1.15	.96	*2.50	2.40	6.30	1.36
5	3.94	10.1	1.29	.80	1.82	2.10	1.15	.96	1.66	1.43	2.40	*1.36
6	3.70	4.80	*1.10	.85	1.66	3.60	1.10	.90	2.20	1.10	1.81	1.87
7	2.40	2.72	1.03	.75	1.50	2.72	1.10	.90	1.43	2.27	2.61	2.94
8	1.74	2.20	1.03	4.32	*1.50	1.82	1.44	1.38	1.15	4.67	1.50	8.98
9	1.58	1.74	1.10	6.05	1.82	1.74	*2.40	1.66	2.55	3.40	1.22	6.68
10	1.58	1.43	1.03	4.43	2.00	1.82	1.43	1.15	13.9	1.66	1.10	2.30
11	1.50	1.74	1.03	5.71	1.74	1.66	1.29	1.03	3.32	1.15	1.03	1.66
12	1.43	1.50	.96	3.27	1.50	1.66	1.22	.96	2.60	1.03	3.25	1.29
13	1.36	1.36	1.03	1.82	2.15	17.2	1.15	.96	3.98	1.10	4.50	1.15
14	*1.50	1.36	1.03	1.36	2.61	15.9	1.29	1.15	1.66	.96	2.99	1.15
15	1.43	1.29	1.03	1.15	4.33	3.05	1.43	1.36	1.29	.85	8.14	1.10
16	1.43	1.29	.96	1.10	14.4	2.20	1.22	1.10	1.03	1.22	8.37	1.22
17	1.43	1.36	.96	1.03	20.9	2.20	1.10	1.10	.90	.96	4.50	1.15
18	7.27	1.50	.90	1.15	3.65	3.25	1.26	.96	.85	.80	3.83	1.50
19	2.83	2.38	.96	1.43	2.50	6.35	1.58	1.03	.90	3.84	3.11	1.15
20	1.66	2.00	.90	1.66	13.1	2.40	1.22	7.05	.80	*3.72	3.19	1.03
21	1.43	1.50	.90	1.10	4.24	2.40	1.10	2.30	.80	2.53	4.59	1.03
22	1.36	1.29	.90	1.03	28.9	2.50	1.15	1.36	.85	1.36	3.05	.96
23	1.29	2.87	1.58	6.02	46.5	2.00	1.58	1.10	3.07	1.10	2.42	.96
24	1.29	4.43	1.50	8.86	12.8	1.66	1.58	.96	4.53	.96	6.45	.90
25	1.43	2.40	1.03	3.62	7.05	1.58	3.41	1.40	4.03	.90	7.99	.80
26	1.66	1.66	.90	4.09	4.67	1.50	3.01	5.36	3.92	.85	14.0	.80
27	1.36	1.70	.85	2.40	2.72	1.50	1.66	6.98	3.33	.96	5.70	.80
28	1.29	2.30	.85	6.07	2.72	1.58	1.36	4.51	2.61	2.51	2.72	.85
29	1.22	1.36	.85	5.73	2.50	1.66	1.15	------	1.98	11.1	5.23	.85
30	1.22	1.29	.85	2.00	3.96	1.43	1.10	------	8.14	6.91	4.40	1.43
31	1.44	1.22	------	1.43	------	1.29	1.10	------	7.25	------	2.40	------
TOTAL	61.92	72.11	31.84	82.33	226.09	111.89	44.39	51.60	94.93	66.43	131.12	52.02
MEAN												
MGD	2.00	2.33	1.06	2.66	7.54	3.61	1.43	1.84	3.06	2.21	4.23	1.73
CFS	3.09	3.60	1.64	4.11	11.7	5.58	2.22	2.85	4.74	3.43	6.54	2.68
AC-FT	190	221	98	253	694	343	136	158	291	204	402	160

CALENDAR YEAR 1961: MAX 87.2 MIN 0.75 MEAN MGD 3.76 MEAN CFS 5.82 AC-FT 4,210
FISCAL YEAR 1961-62: MAX 46.5 MIN 0.75 MEAN MGD 2.81 MEAN CFS 4.35 AC-FT 3,150

* Discharge measurement made on this day.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-23	0530	3.48	126	195

7590. Kauani Stream near Kamuela

Location.--Lat 20°02'28", long 155°39'05", on left bank 1,350 ft downstream from Hawaii County pipeline intake and 1.8 miles northeast of Kamuela.

Drainage area.--0.47 sq mi.

Records available.--March 1956 to June 1962.

Gage.--Water-stage recorder. Datum of gage is 3,117.42 ft above mean sea level (Hawaii County Board of Water Supply bench mark).

Average discharge.--6 years, 1.20 mgd (1.86 cfs).

Extremes.--Maximum discharge during year, 68.0 mgd (105 cfs) Nov. 23 (gage height, 2.55 ft), from rating curve extended above 24 mgd as explained below; no flow for many days.

1956-62: Maximum discharge, 325 mgd (503 cfs) Oct. 23, 1957 (gage height, 4.65 ft), from rating curve extended above 24 mgd by slope-conveyance study; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Diversion above station for livestock and domestic use.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.69	0	1.2	1.86
.7	.01	1.3	2.76
.8	.12	1.4	4.04
.9	.38	1.6	8.40
1.0	.74	1.8	15.3
1.1	1.23		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.06	0.08	0	0	0.05	1.41	0	0	0.14	0.12	0.21	0.14
2	.03	.03	0	0	.89	.66	.01	0	.14	.04	.18	.08
3	.12	.01	0	0	1.83	.50	0	0	.35	.17	.86	.06
4	.63	.69	.05	0	.12	.32	0	0	*.06	.24	.90	.03
5	.35	1.86	.03	0	.01	.26	0	0	.01	.03	.23	.04
6	.29	.68	.02	0	.01	.35	0	0	0	.01	.08	.26
7	.16	.32	.01	0	0	.29	0	0	0	.26	.08	.26
8	.06	.10	0	.26	0	.14	.04	.03	0	.57	.03	1.34
9	.04	.05	0	.41	0	.06	.14	.06	.07	.41	.01	.81
10	.04	.02	0	.24	0	.03	.02	0	3.35	.14	.01	.23
11	.06	.06	*0	.24	.01	.04	.01	0	.32	.01	.01	*.12
12	.02	.02	0	.08	0	.03	0	0	.16	.01	.06	.06
13	*.01	.01	0	0	*0	2.42	0	0	.35	.01	.44	.02
14	.04	0	0	0	.06	2.14	0	0	.06	0	.23	.01
15	.02	0	0	0	.21	.32	*0	0	.01	0	.89	.01
16	.01	0	0	0	2.16	.21	0	0	0	.01	.88	.01
17	.01	0	0	0	4.69	.16	0	0	0	0	.61	.01
18	.52	0	0	0	.44	.29	0	0	0	0	.35	.01
19	.18	.08	0	0	.23	.82	.01	0	.01	.88	.32	0
20	.04	.05	0	0	2.43	.23	0	.35	0	*.41	.23	0
21	.06	.03	0	0	.46	.21	0	.01	0	.18	.50	0
22	.03	.02	0	0	5.18	.21	0	0	0	.01	.35	0
23	.01	.05	.01	.38	13.4	.12	0	0	.67	0	.18	0
24	.01	.40	0	.41	3.35	.10	.02	0	.37	0	1.03	0
25	.01	.10	0	.10	1.56	.06	.42	0	.24	0	1.15	0
26	.06	.03	0	.18	.70	.03	.21	.57	.43	0	2.32	0
27	.02	.02	0	.01	.41	.02	.03	.56	.26	0	.91	0
28	.01	.07	0	.62	.38	.06	.01	.21	.14	.10	.32	0
29	0	.04	0	.32	.35	.08	0	------	.01	1.98	.77	0
30	0	.02	0	.01	.43	.02	0	------	1.71	1.82	.57	0
31	.01	.01	------	0	------	.01	0	------	1.11	------	.23	------
TOTAL	2.91	4.85	0.12	3.26	39.36	11.60	0.92	1.79	9.97	7.41	14.94	3.50
MEAN												
MGD	0.094	0.156	0.004	0.105	1.31	0.374	0.030	0.064	0.322	0.247	0.482	0.117
CFS	0.145	0.241	0.006	0.163	2.03	0.579	0.046	0.099	0.497	0.382	0.746	0.180
AC-FT	8.9	15	0.4	10	121	36	2.8	5.5	31	23	46	11

CALENDAR YEAR 1961: MAX 39.2 MIN 0 MEAN MGD 0.622 MEAN CFS 0.962 AC-FT 698
FISCAL YEAR 1961-62: MAX 13.4 MIN 0 MEAN MGD 0.276 MEAN CFS 0.427 AC-FT 311

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
11-23	0500	2.55	68.0	105

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Aug. 8 to Sept. 10.

7592. Right Branch Waiaha Stream near Holualoa

Location.--Lat 19°38'42", long 155°54'53", on right bank, 1,000 ft above Huehue Ranch water tanks, 2.6 miles east of Holualoa cemetery, and 4.6 miles southeast from Honokohau School.

Records available.--April 1960 to June 1962. See also Note below.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,300 ft (from topographic map).

Extremes.--Maximum discharge during year, 97.0 mgd (150 cfs) Oct. 25 (gage height, 3.89 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.

1960-62: Maximum discharge, 116 mgd (179 cfs), revised, Mar. 29, 1961 (gage height, 4.07 ft), from rating curve extended above 0.87 mgd on basis of slope-area measurement of peak flow; no flow at times each year.

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

Note.--Published records for a high-water period in the fiscal year 1960-61 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.06	0	1.6	1.14
1.1	.01	1.7	1.70
1.2	.07	1.9	3.40
1.3	.20	2.2	7.70
1.4	.40	2.5	14.5
1.5	.70		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.03	0.07	0.05	0.19	9.74	0.01	0.01	0.01	0	0.16	0.39	0.05
2	.03	.07	.04	.09	13.5	.01	.01	.01	0	.09	.43	.03
3	.03	.09	.05	.16	5.30	.01	.01	.01	0	.08	1.92	.02
4	.03	.07	.35	.31	.20	.01	.01	.01	0	.12	.35	.03
5	.03	.05	.11	.09	.09	.01	.01	.01	0	.10	.10	.10
6	.03	.12	.07	.05	.05	.15	0	.01	0	.07	1.09	.15
7	*.02	.32	.05	.03	.04	.05	0	0	0	.07	.58	.09
8	.02	.12	.03	.04	.03	.02	.07	.01	*0	5.64	.25	.11
9	.54	.07	a.07	.12	.02	.02	.23	.01	0	.47	.23	*.08
10	.63	.06	a.05	.55	.01	.05	.12	.01	0	.16	.32	.18
11	.55	.04	a.04	.20	.01	.05	.13	.01	0	.09	.16	.20
12	.11	.05	a.03	.16	.01	.02	.15	.01	0	.07	.28	.30
13	.08	.08	a.02	.12	.01	.01	.07	0	.01	.10	.81	.38
14	.05	.10	*.03	.05	.01	.02	.05	0	.01	.09	1.04	1.00
15	.03	.10	.03	.03	.01	.01	.03	.01	.01	.07	.40	.25
16	.02	.05	.05	.05	.01	.02	.02	.01	0	.05	.56	.18
17	.02	.03	.05	.05	.01	.01	.02	.01	0	.03	2.17	.13
18	.02	.05	.03	.05	.01	.01	.38	0	0	.02	.41	.07
19	.02	.04	.02	.05	.01	.01	.11	0	.01	.02	.23	.05
20	.08	.05	.02	.03	.01	.01	.04	0	.07	.07	.33	.03
21	.24	.07	.02	.03	.01	.01	.03	.01	.05	.07	.39	.04
22	.16	.12	.01	.03	.01	.25	.02	0	.03	*.06	.38	.03
23	.16	.09	.01	.13	.01	.05	.02	0	.03	.07	.37	.03
24	.07	.32	.02	1.38	.01	.03	.02	0	.17	.04	.31	.05
25	.05	.21	.05	6.14	.01	.02	.02	0	.07	.03	.23	.06
26	.03	.10	.08	.28	.01	.01	.33	0	2.44	.01	.23	.04
27	.02	.07	.05	.10	.01	.01	.12	0	1.09	.16	.15	.06
28	.03	.05	.03	.07	.01	.01	.05	0	.30	.09	.18	.06
29	.03	.05	.12	.05	.02	.01	.02	----------	.12	.03	.23	.17
30	.12	.05	.12	.04	.03	.01	.01	----------	.06	.06	.10	.10
31	.12	.05	--------	.05	----------	.01	.01	----------	.06	--------	.06	----------
Total	3.40	2.81	1.70	10.72	29.21	0.93	2.12	0.15	4.53	8.19	14.68	4.07
Mean												
Mgd	0.110	0.091	0.057	0.346	0.974	0.030	0.068	0.005	0.146	0.273	0.474	0.136
Cfs	0.170	0.141	0.088	0.535	1.51	0.046	0.105	0.008	0.226	0.422	0.733	0.210
Ac-ft	10	8.6	5.2	33	90	2.8	6.5	0.5	14	25	45	12

Calendar Year 1961:	Max	13.5	Min	0	Mean mgd	0.272	Mean cfs	0.421	Ac-ft	305
Fiscal Year 1961-62:	Max	13.5	Min	0	Mean mgd	0.226	Mean cfs	0.350	Ac-ft	253

Peak discharge (base, 25 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-25	1330	3.89	97.0	150	3-26	1530	2.82	25.3	39.1
11- 2	1430	3.50	64.0	99.0	4- 8	1700	3.48	62.6	96.9

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

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 Post Office, and 4.2 miles southeast of Honokohau School.

Drainage area.--7.30 sq mi.

Records available.--April 1960 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 2,580 ft (from topographic map).

Extremes.--Maximum discharge during year, 200 mgd (309 cfs) Nov. 2 (gage height, 3.92 ft), from rating curve extended above 2.0 mgd on basis of slope-area measurements at gage height 4.60 ft; no flow for many days.

1960-62: Maximum discharge, that of Nov. 2, 1961; maximum gage height, 4.61 ft Mar. 29, 1961; no flow at times each year.

Remarks.--Records good. Huehue Ranch diverts entire flow of a tributary above station for domestic use.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 25, Nov. 1-3,
Jan. 18, Mar. 26, Apr. 8, May 6, 17)

1.05	0	1.6	1.35
1.1	.02	1.8	3.00
1.2	.10	2.0	5.60
1.3	.26	2.2	9.20
1.4	.48	2.5	17.0
1.5	.84	2.9	32.5

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.01	0.04	0.08	0.64	23.6	0	0		0	0.19	0.40	0.02
2	0	.06	.02	.22	*32.5	0	0		0	.06	1.64	.01
3	.01	.06	.03	.10	12.2	0	0		0	.03	5.50	.01
4	.01	.06	.04	.39	.27	0	0		0	.13	.44	.01
5	0	.04	.10	.22	.10	0	0		0	.03	.13	.07
6	0	.10	.08	.10	.06	.06	0		0	.01	2.93	.15
7	.08	.30	.02	.03	.03	.01	0		0	.02	.60	.07
8	.03	.20	.02	.11	.01	0	0		*0	11.9	.26	.10
9	1.41	.08	.01	.12	0	0	.28		0	.78	.46	*.10
10	1.38	.05	.01	.95	0	0	.07		0	.19	.48	.22
11	1.14	.02	.01	.57	0	0	.09		0	.07	.26	.22
12	.26	.01	.03	.96	0	0	.16		0	.04	.81	.53
13	.10	.02	.01	.46	0	0	.03		0	.15	1.83	2.14
14	.06	.16	*.01	.13	0	0	.01		0	.07	1.64	1.96
15	.03	.10	.02	.07	0	0	.01		0	.02	.41	.37
16	.01	.03	.06	.06	0	0	0		0	.31	.77	.87
17	.01	.01	.02	.07	0	0	0		0	.07	4.33	.31
18	0	.05	.01	.06	0	0	2.22		0	.02	.45	.14
19	.01	.11	.66	.03	0	0	.23		0	.01	.26	.07
20	.01	.07	.24	.02	0	0	.04		.09	.39	.40	.04
21	.07	.06	.10	.04	0	0	.01		.01	.10	.84	.04
22	.10	.31	.04	.02	0	.05	.03		.05	*.05	.54	.03
23	.09	.19	.02	.08	0	0	.01		.09	.04	.57	.02
24	.05	.17	.03	4.03	0	0	0		.29	.02	.36	.07
25	.02	.39	.45	9.77	0	0	0		.05	0	.43	.10
26	.01	.18	.14	.46	0	0	1.65		3.42	0	.31	.04
27	0	.07	.08	.17	0	0	.22		.84	.44	.14	.08
28	.01	.06	.03	.09	0	0	.04		.26	.12	.39	.08
29	.01	.02	.25	.05	.01	0	.01	-------	.07	.02	.46	.21
30	.02	.04	.24	.03	0	0	0	-------	.01	.14	.16	.10
31	.11	.02	--------	.04	---------	0	0	-------	.07	--------	.07	---------
Total	5.05	3.08	2.86	20.09	68.78	0.12	5.11	0	5.25	15.43	28.27	8.18
Mean												
Mgd	0.163	0.099	0.095	0.648	2.29	0.004	0.165	0	0.169	0.514	0.912	0.273
Cfs	0.252	0.153	0.147	1.00	3.54	0.006	0.255	0	0.261	0.795	1.41	0.422
Ac-ft	16	9.5	8.8	62	211	0.4	16	0	16	47	87	25

Calendar Year 1961: Max 32.5 Min 0 Mean mgd 0.620 Mean cfs 0.959 Ac-ft 695
Fiscal Year 1961-62: Max 32.5 Min 0 Mean mgd 0.444 Mean cfs 0.687 Ac-ft 499

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-25	1430	3.62	137	212	4-8	1700	3.67	148	229
11- 2	1430	3.92	200	309					

* Discharge measurement or observation of no flow made on this day.

7595. Waiaha Stream near Holualoa

Location.--Lat 19°38'20", long 155°56'35", on left bank 1.2 miles north of Holualoa Post Office and 3.5 miles east of Kailua-Kona.

Drainage area.--7.68 sq mi (revised).

Records available.--December 1957 to June 1962. See also Note below.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,940 ft (from topographic map).

Extremes.--Maximum discharge during year 185 mgd (286 cfs) Nov. 2 (gage height, 2.58 ft); no flow for many days.

1957-62: Maximum discharge, 1,560 mgd (2,410 cfs), revised, Jan. 18, 1959 (gage height, 4.76 ft), from rating curve extended above 160 mgd on basis of slope-area measurement at gage height 3.80 ft; no flow for many days each year.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Diversion to offstream reservoir one mile above station for stock water.

Note.--Published records for high-water periods in the fiscal years 1959-61 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.23	0	0.8	3.40
.3	.03	.9	5.20
.4	.18	1.0	7.60
.5	.55	1.2	14.5
.6	1.14	1.5	32.0
.7	2.05		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	a0.02	a 0.1	a20		0	0.01	0	0.01	0.01	0.01
2	0	0	a.01	a.03	a30		0	.01	0	.01	2.37	0
3	0	0	a.01	a.01	*a12		0	0	0	.01	11.2	0
4	0	0	a.04	a.1	.04		0	0	0	.01	.28	0
5	0	0	a.03	.13	.01		0	0	0	.01	.02	0
6	*0	0	a.02	.01	.01		0	0	0	0	3.44	0
7	0	.01	a.01	0	.01		0	0	0	0	.39	0
8	.01	.02	a0	.01	a.01		*0	0	*0	11.1	.05	0
9	4.37	.01	a0	.01	a0		0	0	0	.35	.26	*0
10	2.21	.01	a0	.36	a0		.01	0	0	.02	.22	.01
11	1.45	0	a.01	.08	a0		.02	0	0	.01	.04	.03
12	.05	0	a.03	.56	a0		.18	0	0	0	.87	.25
13	.02	0	a.02	a.2	a0		.03	0	0	0	3.83	3.19
14	.01	.01	*a0	a.05	a0		.02	0	0	0	1.00	4.83
15	0	.01	0	a.01	a0		.01	0	0	0	.15	.22
16	0	0	0	a.01	*0		.01	0	0	.39	.13	.74
17	0	0	0	a.01	0		0	0	0	.01	8.39	.26
18	0	0	0	a.01	0		*4.42	0	0	0	.50	.33
19	0	.01	a.30	a0	0		.15	0	0	0	.03	.09
20	0	.01	a.08	a0	0		.02	0	0	0	.09	.02
21	0	.01	a.02	a.03	0		.01	0	0	0	.72	.02
22	0	.01	a.01	a.01	0		.01	0	0	*0	.46	.02
23	0	.01	a0	a.05	0		0	0	0	0	.40	.01
24	*0	.02	a0	a4.5	0		.08	0	0	0	.22	.01
25	0	a.03	a.20	a8.0	0		.02	0	0	0	.06	.01
26	0	a.01	.01	a.5	0		3.21	0	3.42	0	.06	.01
27	0	a.01	.01	.01	0		.09	0	.02	.08	.03	.01
28	0	a0	a.01	0	0		.01	0	0	.02	.08	.01
29	0	a0	a.03	0	0		.01	---------	0	.01	.40	.02
30	0	a.01	a.03	0	0		.01	---------	0	0	.02	.02
31	0	a.01	---------	0	---------		.01	---------	0	---------	.01	---------
Total	8.12	0.21	0.90	14.79	62.08	0	8.33	0.02	3.44	12.04	35.73	10.12
Mean												
Mgd	0.262	0.007	0.030	0.477	2.07	0	0.269	0.0007	0.111	0.401	1.15	0.337
Cfs	0.405	0.010	0.046	0.738	3.20	0	0.416	0.0011	0.172	0.620	1.78	0.521
Ac-ft	25	0.6	2.8	45	191	0	26	0.1	11	37	110	31

Calendar Year 1961: Max 63.7 Min 0 Mean mgd 0.903 Mean cfs 1.40 Ac-ft 1010
Fiscal Year 1961-62: Max 30 Min 0 Mean mgd 0.427 Mean cfs 0.661 Ac-ft 480

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-25	-	2.22	109	169	4-8	1730	2.29	123	190
11- 2	-	2.58	185	286					

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

7598. Kiilae Stream near Honaunau

Location.--Lat 19°24'52", long 155°50'56", on right bank 2.4 miles northeast of Kealia and 2.9 miles southeast of Honaunau Post Office.

Drainage area.--0.67 sq mi.

Records available.--April 1958 to June 1962.

Gage.--Water-stage recorder. Datum of gage is 2,898 ft above mean sea level (by stadia traverse).

Extremes.--Maximum discharge during year, 30.1 mgd (46.6 cfs) Oct. 24 (gage height, 1.98 ft), from rating curve extended above 3.7 mgd as explained below; no flow for many days.

1958-62: 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.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	0	1.0	0.79
.6	.03	1.1	1.40
.7	.08	1.2	2.30
.8	.18	1.3	3.60
.9	.40		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0.03	0.17	2.43	0	0	0	0	0.02	0.21	0.02
2	0	.03	.02	.07	2.54	0	0	.01	.27	.03	.72	.01
3	.02	.05	.10	.04	.78	0	.01	0	.50	.06	1.01	0
4	.02	.02	.30	.04	.07	0	0	0	.06	.12	.12	.01
5	0	.02	*.07	.07	.03	0	0	0	.35	.05	.03	.05
6	.02	.07	.03	.03	.02	.33	0	0	.10	.21	1.10	.10
7	.07	.34	.01	.02	.01	.04	0	0	.01	.03	.51	.09
8	.01	.06	.06	.09	0	0	.03	0	0	.66	.09	.48
9	.13	.05	.42	.45	0	.01	.45	0	0	1.23	.14	.30
10	.38	.03	.07	.77	0	.37	.29	0	0	.65	.15	.50
11	.34	0	.05	.93	0	.07	.32	0	0	.12	.06	.41
12	.07	0	.04	.52	0	.01	.36	0	.84	.08	.74	.21
13	.03	0	.14	.23	0	0	.08	0	.33	.34	.83	.39
14	.02	.01	.08	.07	.01	.14	.16	0	.02	.12	.57	.89
15	.02	.03	.10	.04	0	.03	.33	0	0	.72	.30	.41
16	0	0	.08	.03	0	.01	.12	0	0	*.50	.23	.27
17	0	0	.05	.33	.03	.01	.02	0	0	.11	.96	.24
18	0	.03	.03	.46	.05	.02	.18	0	0	.04	.31	.07
19	.08	.01	.05	.28	.01	.01	.08	0	.32	.03	.26	.02
20	.12	.14	.67	.13	.02	0	.01	0	.28	.39	.22	.02
21	.11	.10	.06	.09	.19	0	.02	0	.06	.07	.68	.02
22	.06	.11	.02	.63	.02	0	.05	0	.41	.02	.28	.02
23	.23	.06	.39	.51	0	0	.02	0	.10	.03	.42	.01
24	.05	.24	.32	2.55	0	.04	.18	0	.35	0	.42	.06
25	.03	.12	.09	.68	.03	.02	.06	0	.15	0	.39	.08
26	0	.04	.09	.21	.01	0	.40	*0	.04	0	.11	.09
27	.01	.38	.05	.11	.02	0	.07	0	.39	.14	.22	.26
28	.10	.06	.03	.05	.04	0	.01	0	.07	.08	.13	.09
29	.03	.01	.04	.03	.01	0	0		.02	.10	.19	.09
30	.03	.02	.06	.02	.04	.01	0		.05	.28	.13	.07
31	.02	.06		.02		.01	0		.04		.04	
Total	2.00	2.09	3.55	9.67	6.36	1.13	3.25	0.01	4.76	6.23	11.57	5.28
Mean												
Mgd	0.064	0.067	0.118	0.312	0.212	0.036	0.105	0.0003	0.154	0.208	0.373	0.176
Cfs	0.099	0.104	0.183	0.483	0.328	0.056	0.162	0.0005	0.238	0.322	0.577	0.272
Ac-ft	6.1	6.4	11	30	20	3.5	10	0.03	15	19	36	16

Calendar Year 1961: Max 2.55 Min 0 Mean mgd 0.136 Mean cfs 0.210 Ac-ft 153
Fiscal Year 1961-62: Max 2.55 Min 0 Mean mgd 0.153 Mean cfs 0.237 Ac-ft 173

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
10-24	1700	1.98	30.1	46.6

* Discharge measurement or observation of no flow made on this day.

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, 5.7 miles northwest of Inarajan, and 6.0 miles south of Agat.

Drainage area.--2.04 sq mi.

Records available.--September 1952 to June 1962.

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.--9 years (1953-62), 7.99 cfs.

Extremes.--Maximum discharge during year, 5,500 cfs Sept. 18 (gage height, 6.09 ft), from rating curve extended above 320 cfs as explained below; minimum, 0.56 cfs June 23.

1952-62: 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. Water diverted upstream at Piga Spring for domestic use at Umatac.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.56	0.7	19.6
.3	1.80	1.0	51.0
.4	4.00	1.2	85.0
.5	7.65	1.6	188
.6	12.5		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.25	31.6	9.00	6.45	25.8	57.5	3.00	6.85	1.97	1.32	1.32	1.63
2	4.00	4.95	75.6	5.65	24.6	8.93	3.00	3.75	1.80	1.32	1.18	1.06
3	4.45	3.50	11.5	7.25	11.5	4.95	2.75	68.0	1.80	1.32	1.32	.94
4	3.25	3.50	42.5	5.30	14.7	4.60	2.75	14.5	1.80	1.47	1.32	1.32
5	4.60	3.25	29.4	71.0	12.3	*4.00	2.55	10.0	1.80	2.35	1.18	*1.06
6	30.8	44.4	16.4	46.2	10.0	3.75	2.55	6.85	1.80	1.47	1.18	1.06
7	5.65	9.00	*11.0	84.7	12.8	3.50	2.55	7.25	1.80	1.32	1.18	1.06
8	25.4	8.70	8.50	22.3	12.5	3.50	2.55	5.30	1.80	1.32	1.18	1.18
9	22.6	15.5	12.4	77.4	8.50	4.60	2.35	4.60	2.15	1.47	1.06	1.32
10	9.50	12.9	8.50	26.8	7.25	3.75	2.35	4.00	1.80	1.18	1.06	1.47
11	5.65	9.00	37.7	16.5	8.05	3.50	2.35	3.50	1.63	1.06	1.06	1.06
12	4.30	70.2	26.1	13.7	6.45	4.30	2.15	3.50	1.63	1.06	1.06	.94
13	6.05	46.7	13.7	33.3	7.10	3.50	2.15	3.25	2.35	1.06	1.06	.84
14	6.05	26.1	9.50	23.2	15.7	136	2.15	3.25	2.15	1.18	.94	*.84
15	4.00	45.2	8.05	16.5	6.05	9.00	1.97	3.00	1.80	1.97	1.06	.94
16	4.00	28.0	16.2	11.5	5.65	6.05	1.97	3.00	1.80	1.32	1.06	.94
17	7.93	13.7	9.50	11.0	5.65	4.95	*1.80	3.00	1.63	*6.50	1.06	.84
18	8.33	12.4	*161	*8.50	5.30	4.95	1.80	2.75	1.63	4.00	2.15	1.80
19	4.60	9.00	20.9	10.1	9.56	4.60	1.80	2.55	1.63	5.83	1.32	1.06
20	3.50	88.7	11.5	12.9	6.05	4.30	1.80	2.35	1.63	3.25	1.32	.94
21	11.3	46.9	15.0	12.8	4.60	4.00	1.63	2.55	1.63	2.15	1.18	.94
22	4.30	17.2	55.1	29.4	4.60	3.75	1.63	2.35	1.63	1.80	1.32	.84
23	9.86	11.0	63.0	81.1	4.30	3.75	1.63	2.15	1.47	1.80	1.18	.74
24	4.95	27.3	14.3	67.4	4.00	3.50	1.63	2.15	1.47	1.47	1.06	.84
25	3.75	118	10.5	34.6	4.30	3.25	1.97	2.15	1.47	1.47	.94	2.27
26	*3.50	22.3	9.00	15.7	4.30	3.25	1.80	1.97	1.47	1.47	1.80	1.18
27	3.25	13.1	15.5	29.3	4.00	3.25	1.63	*2.15	1.63	1.32	1.63	19.8
28	3.00	44.3	8.05	13.1	3.75	3.50	1.47	2.15	1.47	1.32	1.47	3.50
29	2.75	32.1	7.25	11.0	3.75	3.25	1.47	--------	1.47	1.47	1.06	9.90
30	4.55	14.3	6.85	31.1	3.75	3.25	1.80	--------	1.32	1.47	1.06	3.50
31	2.75	9.50	--------	35.2	--------	3.25	10.8	--------	1.32	--------	1.06	--------
Total	225.87	842.30	743.50	870.95	256.86	318.23	73.80	178.87	52.75	57.51	37.83	65.81
Mean	7.29	27.2	24.8	28.1	8.56	10.3	2.38	6.39	1.70	1.92	1.22	2.19
Ac-ft	448	1,670	1,470	1,730	509	631	146	355	105	114	75	131

Calendar Year 1961: Max 161 Min 1.47 Mean cfs 11.6 Ac-ft 8,410
Fiscal Year 1961-62: Max 161 Min 0.74 Mean cfs 10.2 Ac-ft 7,380

Peak discharge (base, 850 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-12	0800	2.95	948	9-22	0430	3.13	1,100
8-20	2330	3.14	1,110	9-23	1230	3.14	1,110
8-25	1200	3.21	1,170	10- 5	1130	3.48	1,440
8-28	1600	3.06	1,030	10- 7	1330	2.92	916
9- 2	0500	3.90	1,920	12- 1	1230	3.16	1,120
9- 4	2100	2.85	850	12-14	0500	4.07	2,160
9-18	1700	6.09	5,500	2- 3	2000	3.05	1,020

* Discharge measurement made on this day.

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 1962.

Gage.--Water-stage recorder and broad-crested weir. Altitude of gage is 60 ft (from topographic map).

Average discharge.--9 years, 3.02 cfs.

Extremes.--Maximum discharge during year, 2,460 cfs Sept. 18 (gage height, 4.00 ft), from rating curve extended above 46 cfs as explained below; minimum, 0.12 cfs Apr. 14, May 14.

1953-62: Maximum discharge, 2,940 cfs Oct. 19, 1960 (gage height, 4.16 ft), from rating curve extended above 56 cfs on basis of slope-area measurements at gage heights 4.00 and 4.16 ft; no flow for part of each day July 17, 1953, May 4, 5, 1960.

Remarks.--Records good. Water is diverted half a mile upstream for domestic use and at station for irrigation.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.18	0.6	2.40	1.1	14.5
.3	.47	.7	3.52	1.4	34.0
.4	.93	.8	5.00	1.5	45.0
.5	1.57	.9	7.00	1.9	100
		1.0	10.0		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.51	1.54	1.82	1.82	14.1	24.1	1.04	3.28	0.51	0.28	0.34	0.25
2	1.36	.98	39.8	1.74	23.0	5.20	1.04	1.29	.47	.34	.31	.23
3	.98	.68	5.20	2.15	6.60	2.51	1.04	18.2	.51	.28	.31	.20
4	.82	1.10	9.62	1.57	3.88	*1.82	.98	15.4	.51	.34	.31	.31
5	1.88	.77	17.1	19.4	3.47	1.65	.93	3.17	* .43	.43	.25	*.28
6	1.50	16.1	9.50	21.6	3.74	1.43	.82	1.74	.43	.31	.28	.20
7	1.10	4.30	*4.15	53.9	3.52	1.43	.87	1.90	.43	.25	.25	.23
8	5.50	1.98	2.84	10.8	3.77	1.43	.87	1.43	.51	.31	.25	.31
9	5.28	6.39	4.81	37.3	2.73	1.43	.82	1.10	.51	.31	.25	.55
10	4.58	6.59	3.67	7.00	2.32	1.36	.82	.87	.43	.31	.37	.54
11	1.90	4.15	15.3	5.90	2.51	1.29	.82	.82	.40	.25	.28	.43
12	1.29	18.2	15.8	5.20	2.15	1.57	.82	.82	.40	.25	.25	.25
13	1.10	19.2	7.90	6.57	2.28	1.29	.77	.77	.63	.23	.25	.28
14	1.50	13.4	3.76	9.08	6.12	33.2	.77	.68	.51	.25	.23	.28
15	1.10	21.4	2.73	9.20	2.62	3.88	.77	.72	.40	.43	.20	.40
16	.98	10.4	8.56	4.80	2.15	2.23	*.72	.63	.40	.40	.23	.31
17	3.94	5.00	5.78	3.17	2.07	1.82	.72	.72	.34	*3.12	.25	.25
18	4.48	3.06	*97.9	*2.84	1.82	1.74	.63	.72	.37	1.10	.68	2.57
19	2.15	2.23	13.4	3.00	2.28	1.50	.59	.63	.37	2.16	.37	.47
20	1.36	10.5	4.45	2.73	1.98	1.43	.55	.63	.37	1.10	.28	.31
21	5.52	25.7	8.55	4.17	1.74	1.36	.59	.72	.34	.59	.23	.25
22	1.57	6.20	19.6	9.50	1.65	1.29	.55	.59	.34	.51	.20	.25
23	2.16	3.52	25.0	33.8	1.65	1.29	.51	.55	.34	.40	.23	.20
24	1.74	9.15	6.40	*33.9	1.57	1.16	.55	.51	.28	.40	.20	.28
25	1.10	37.4	3.64	17.0	1.43	1.16	.51	.55	.28	.40	.23	.77
26	.93	8.80	2.73	7.40	1.50	1.10	.51	.51	.31	.37	.72	.37
27	* .77	3.88	3.14	6.75	1.43	1.10	.43	.55	.34	.31	.47	3.83
28	.63	4.53	2.23	4.45	1.36	1.16	.47	.55	.34	.28	.25	1.43
29	.63	5.51	2.07	3.40	1.36	1.10	.47	--------	.37	.37	.23	3.14
30	.91	3.44	1.82	4.62	1.36	1.10	.55	--------	.34	.40	.20	1.43
31	.63	2.23	--------	12.1	--------	1.10	6.09	--------	.31	--------	.25	--------
Total	61.90	258.33	349.27	346.86	108.16	105.23	27.62	60.05	12.52	16.48	9.15	20.60
Mean	2.00	8.33	11.6	11.2	3.61	3.39	0.891	2.14	0.404	0.549	0.295	0.687
Ac-ft	123	512	693	688	215	209	55	119	25	33	18	41

Calendar Year 1961: Max 97.9 Min 0.37 Mean cfs 4.24 Ac-ft 3,070
Fiscal Year 1961-62: Max 97.9 Min 0.20 Mean cfs 3.77 Ac-ft 2,730

Peak discharge (base, 350 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
9- 2	0730	3.06	642	10- 7	0700	2.75	390
9-18	1700	4.00	2,460	12-14	0630	3.16	716

* Discharge measurement made on this day.

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 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

Average discharge.--9 years (1953-62), 15.6 cfs.

Extremes.--Maximum gage height during year, 12.65 ft Sept. 18 (discharge not determined); minimum discharge, 1.44 cfs May 12, 16, 17.

1952-62: Maximum gage height, that of Sept. 18, 1961; minimum discharge, 0.99 cfs July 6, 7, 1960.

Remarks.--Records good except those for periods of shifting control, which are fair. Stage-discharge relation not determined above gage height 11.0 ft owing to ungaged overbank flow. Village of Inarajan diverts about 40,000 gallons a day above station for domestic use.

Rating table, except for periods of shifting control (gage height, in feet, and discharge, in cubic feet per second)

0.4	1.65	1.1	28.0
.5	3.07	1.5	66.0
.6	5.12	2.0	148
.7	7.85	4.0	460
.9	16.0		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.38	4.42	9.67	12.0	108	143	7.25	*9.67	3.80	2.60	2.16	2.45
2	4.88	4.20	34.0	11.5	72.1	18.2	6.95	4.88	3.60	2.60	2.02	2.02
3	7.28	4.00	13.3	15.1	26.1	12.4	6.95	37.7	4.00	2.45	2.02	1.89
4	4.98	5.36	15.3	11.1	21.0	*11.1	6.95	33.0	3.60	2.45	2.02	3.60
5	9.21	4.20	69.9	194	18.8	10.0	6.38	12.0	3.42	3.07	2.02	*2.30
6	5.12	53.8	*16.0	101	47.3	9.67	6.12	8.58	3.42	2.75	2.02	2.02
7	4.42	10.3	11.5	263	38.4	9.31	6.38	10.0	3.42	2.75	2.16	2.45
8	21.6	8.94	10.0	47.0	53.4	8.94	6.38	6.95	3.42	2.91	2.02	2.60
9	7.70	21.0	10.4	214	34.4	19.0	6.12	6.38	3.80	2.75	2.02	2.60
10	6.95	24.2	13.8	41.9	18.2	8.94	5.86	5.86	3.42	2.75	2.02	2.45
11	5.12	15.2	55.9	101	22.2	8.21	5.60	5.36	3.24	2.60	2.02	2.75
12	4.42	54.2	37.5	32.8	16.0	11.1	5.60	5.60	3.24	2.60	1.89	2.16
13	4.64	72.5	18.2	31.7	15.6	8.21	5.36	5.12	4.64	2.45	1.89	2.16
14	5.60	51.6	13.3	57.8	43.3	246	5.36	4.88	4.20	2.16	2.02	2.60
15	4.00	55.8	12.0	39.2	16.6	16.6	5.36	5.12	3.24	3.60	2.02	2.75
16	5.67	28.2	70.2	22.2	15.6	12.9	*4.64	4.88	3.07	2.60	1.89	2.75
17	34.6	15.1	22.3	19.3	15.1	10.8	4.88	5.12	3.07	*14.1	2.02	2.16
18	14.6	14.7	367	*19.3	13.8	11.1	4.88	5.12	2.91	5.86	4.20	15.0
19	5.86	10.8	36.9	17.1	15.1	10.8	4.88	4.64	2.91	6.12	2.30	2.75
20	4.64	146	21.0	21.5	15.6	10.0	4.88	4.64	3.07	5.60	2.45	2.30
21	14.6	125	66.0	28.7	12.4	8.94	4.88	4.88	3.07	2.91	2.16	2.02
22	5.86	21.0	85.4	56.2	12.0	8.58	4.88	4.42	2.91	2.60	2.16	2.02
23	18.5	14.2	88.9	170	11.1	8.94	4.64	4.20	2.75	2.45	2.02	1.89
24	6.66	64.9	24.1	139	10.8	8.21	4.42	4.20	2.75	2.45	2.02	2.30
25	4.88	176	18.2	78.1	10.8	7.85	4.42	4.00	2.75	2.45	2.16	5.12
26	*4.42	29.9	15.6	36.0	10.8	7.25	4.42	4.00	2.60	2.16	3.80	2.45
27	4.42	17.1	15.6	50.0	10.8	7.85	4.20	4.00	2.91	2.16	2.60	34.6
28	4.20	18.1	14.7	28.8	10.0	9.67	4.20	*3.80	2.75	2.02	2.02	5.86
29	4.00	16.0	13.8	24.8	9.67	8.21	4.00	--------	2.75	2.75	1.89	27.1
30	6.14	11.5	12.0	21.0	9.67	7.55	4.88	--------	2.60	2.60	1.89	5.86
31	4.20	10.4	-------	74.2	--------	7.85	31.0	--------	2.60	--------	2.45	---------
Total	245.55	1108.62	1212.47	1979.3	734.64	687.18	192.72	219.00	99.93	99.32	68.35	150.98
Mean	7.92	35.8	40.4	63.8	24.5	22.2	6.22	7.82	3.22	3.31	2.20	5.03
Ac-ft	487	2200	2400	3930	1460	1360	382	434	198	197	136	299

Calendar Year 1961:	Max	367	Min	2.78	Mean cfs	21.2	Ac-ft	15320
Fiscal Year 1961-62:	Max	367	Min	1.89	Mean cfs	18.6	Ac-ft	13480

Peak discharge (base, 1,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-20	2030	9.97	1,590	11- 1	2300	9.90	1,580
9-18	1730	12.65	-	12- 1	1300	9.68	1,540
10- 5	1200	10.99	1,820	12-14	0700	12.51	-
10- 9	0500	10.07	1,620				

* Discharge measurement made on this day

Note.--Shifting-control method used Aug. 25 to Sept. 17, Dec. 14 to Jan. 30, Feb. 1-3.

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 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

Average discharge.--9 years (1953-62), 5.36 cfs.

Extremes.--Maximum discharge during year, 1,840 cfs Sept. 18 (gage height, 10.62 ft), from rating curve extended above 210 cfs as explained below; minimum, 0.39 June 23.

1952-62: Maximum discharge, 2,980 cfs Oct. 15, 1953 (gage height, 13.11 ft), from rating curve extended from 210 cfs to 300 cfs by test on model of station site, and extended above 300 cfs by logarithmic plotting; minimum, 0.16 cfs June 2, 1954, Apr. 27, May 1, 1955, May 18, 1956.

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

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.3	.36	0.9	11.3
.4	.80	1.1	23.5
.5	1.48	1.5	55.0
.6	2.50	2.0	106
.7	4.20	3.0	218
.8	6.95		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.65	1.64	3.80	3.80	21.5	33.6	*1.90	4.45	1.10	0.70	0.70	0.47
2	1.72	1.40	5.45	3.60	31.0	6.00	1.81	2.50	1.04	.70	.70	.43
3	1.92	1.32	4.95	4.20	7.70	3.60	1.81	8.81	1.10	.70	.65	.47
4	4.33	1.48	9.26	3.60	6.95	*3.40	1.72	8.38	1.04	.70	.60	.55
5	2.80	1.56	47.0	72.5	6.00	3.10	1.64	3.10	.98	.80	.60	*.55
6	2.10	24.2	7.70	*44.8	14.3	2.95	1.56	2.35	.98	.70	.60	.51
7	1.72	5.71	4.45	93.9	10.9	2.95	1.56	2.80	.98	.70	.65	.60
8	8.55	3.60	*3.60	21.1	27.8	2.65	1.56	2.10	.92	.70	.60	.70
9	2.50	5.45	4.20	72.0	11.4	9.90	1.56	1.72	.98	.70	.55	.65
10	1.64	4.78	5.78	18.6	5.70	3.25	1.56	1.64	.98	.65	.55	.51
11	1.48	7.38	29.8	*23.8	5.70	2.80	1.48	1.48	.92	.65	.55	.60
12	1.40	18.1	14.7	21.2	4.70	2.95	1.48	1.48	.92	.70	.51	.55
13	1.48	21.9	6.95	8.10	4.70	2.65	1.40	1.48	1.10	.65	.51	.51
14	2.00	16.8	5.20	24.8	10.9	118	1.32	1.40	1.24	.70	.51	*.51
15	1.72	23.1	4.70	12.3	5.20	5.20	1.32	1.40	1.04	.75	.51	.51
16	3.82	17.2	10.9	7.30	4.70	3.25	1.32	1.32	.92	.75	.51	.60
17	10.7	6.60	11.5	6.60	4.45	2.95	1.32	1.40	.86	*3.75	.47	.47
18	4.20	4.95	180	6.60	4.20	2.95	1.32	1.40	.86	3.10	.75	.76
19	2.20	4.45	17.3	6.00	4.20	2.95	1.32	1.40	.86	2.35	.70	.51
20	1.81	44.8	9.30	7.70	4.00	2.65	1.32	1.40	.92	2.20	.65	.51
21	4.20	70.4	28.8	8.50	3.60	2.35	1.32	1.40	.86	1.48	.60	.47
22	2.95	6.95	22.6	23.7	3.40	2.20	1.24	1.32	.80	1.04	.55	.43
23	9.17	4.95	34.9	*41.4	3.25	2.20	1.24	1.32	.80	.92	.60	.43
24	3.80	10.3	9.30	75.2	3.10	2.10	1.24	1.24	.75	.86	.47	.51
25	2.20	106	6.30	31.1	3.10	2.00	1.17	1.24	.75	.80	.55	.75
26	2.10	12.3	5.45	14.0	3.10	2.00	1.24	1.17	.75	.80	.65	.65
27	*1.81	6.95	5.45	24.1	3.25	2.00	1.17	1.17	.75	.75	.65	3.58
28	1.72	9.34	4.95	11.3	2.95	2.20	1.17	*1.10	.75	.70	.55	2.50
29	1.56	5.45	4.70	9.30	2.95	2.10	1.17	--------	.75	.75	.47	8.57
30	1.72	4.70	4.20	7.70	2.95	2.00	1.32	--------	.70	.75	.47	2.50
31	1.72	4.00	--------	14.8	---------	2.00	5.51	--------	.70	--------	.47	---------
Total	93.69	457.76	513.19	723.60	227.65	240.90	48.07	61.97	28.10	31.50	17.90	31.36
Mean	3.02	14.8	17.1	23.3	7.59	7.77	1.55	2.21	0.906	1.05	0.577	1.05
Ac-ft	186	908	1020	1440	452	478	95	123	56	62	36	62

Calendar Year 1961: Max 180 Min 0.75 Mean cfs 7.64 Ac-ft 5,540
Fiscal Year 1961-62: Max 180 Min 0.43 Mean cfs 6.78 Ac-ft 4,920

Peak discharge (base, 320 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-21	0030	4.56	449	10-5	1230	5.15	558
8-25	1230	5.61	646	12-14	0700	8.52	1,280
9-18	1800	10.62	1,840				

* Discharge measurement made on this day.

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 1962.

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

Extremes.--Maximum discharge during year, 2,220 cfs Dec. 14 (gage height, 7.81 ft), from rating curve extended above 37 cfs as explained below; minimum, 1.37 cfs June 17, 20, 21, 23, 24.

1960-62: Maximum discharge, 3,370 cfs Oct. 19, 1960 (gage height, 10.06 ft), from rating curve extended above 37 cfs on basis of slope-area measurements at gage heights 7.46 and 10.06 ft; minimum, 1.25 cfs July 7, 8, 1960.

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

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.38	1.50	1.1	42.4
.4	1.80	1.5	88.0
.5	4.00	2.0	163
.6	7.50	2.5	264
.8	18.7		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.90	3.25	8.50	6.70	13.2	64.4	3.75	8.0	2.55	1.95	1.95	*2.35
2	4.30	3.00	18.4	6.30	60.0	8.50	3.75	5.0	2.35	1.95	1.95	1.65
3	5.22	3.00	9.00	*7.28	11.5	6.30	*3.75	100	2.55	*1.95	1.95	1.65
4	3.50	3.50	11.5	6.30	13.9	6.70	3.50	20	2.35	2.15	1.80	2.35
5	3.50	3.25	14.5	81.5	10.0	5.20	3.50	12	2.35	3.25	1.80	1.80
6	4.69	49.1	17.9	35.9	9.50	*4.90	3.50	9.0	2.35	2.15	2.35	1.95
7	3.75	9.00	8.50	85.6	9.50	4.90	3.75	10	2.35	1.95	1.95	1.95
8	4.00	7.10	7.10	24.3	9.00	4.90	3.50	6.0	2.35	1.95	*1.80	1.95
9	10.0	6.30	11.2	37.9	8.50	7.71	3.50	5.0	2.75	2.15	1.65	1.80
10	6.30	7.69	8.33	24.1	8.00	4.90	3.50	4.5	2.35	1.95	1.65	1.65
11	*6.65	6.30	31.0	26.2	10.9	4.60	3.50	4.0	2.35	1.95	1.65	1.65
12	4.00	34.6	23.1	14.5	7.50	4.60	3.50	3.7	2.35	1.95	1.50	1.65
13	4.30	36.1	11.5	14.3	7.50	4.60	3.50	3.5	3.75	1.95	1.50	1.80
14	4.60	79.8	9.99	19.3	21.0	123	3.25	*3.3	2.75	2.15	1.50	1.95
15	3.50	51.7	8.00	13.8	8.50	8.50	3.25	3.50	2.55	2.55	1.65	1.95
16	3.50	20.3	10.0	10.5	7.50	6.30	3.25	3.25	2.35	2.55	1.50	1.65
17	3.50	10.5	13.9	10.5	8.00	5.20	3.25	3.50	2.35	6.36	1.80	1.50
18	3.50	9.00	*252	9.00	8.00	5.20	3.25	3.50	2.35	2.75	2.75	1.50
19	2.75	7.50	64.2	13.3	8.50	4.90	3.25	3.25	2.35	3.25	1.80	1.50
20	2.55	36.8	22.2	24.3	6.70	4.90	3.25	3.25	2.35	2.75	1.80	1.50
21	4.84	45.1	17.5	23.0	6.70	4.60	3.00	3.50	2.15	2.15	1.80	1.50
22	3.07	13.3	50.0	33.4	6.30	4.60	3.00	3.25	2.35	2.15	1.80	1.50
23	18.2	8.50	26.3	70.4	6.30	4.60	3.00	3.00	2.15	2.15	1.65	1.50
24	5.55	29.4	14.5	58.6	5.90	4.30	3.00	3.00	2.15	2.15	1.65	1.50
25	3.75	163	10.0	36.9	5.90	4.00	2.8	3.00	2.15	1.95	1.80	4.96
26	3.50	20.0	8.50	15.7	5.90	4.00	2.8	3.00	1.95	1.80	1.95	1.95
27	3.25	11.5	10.1	32.6	5.55	4.30	2.8	3.00	2.15	1.80	2.15	12.4
28	3.25	91.2	8.50	15.1	5.55	4.30	2.6	2.75	1.95	1.80	1.65	3.25
29	2.75	40.4	8.50	11.5	5.55	4.00	2.6	-------	1.95	2.15	1.50	21.7
30	9.11	11.5	7.10	10.5	5.90	3.75	4.0	-------	1.95	2.15	1.50	4.60
31	*3.50	*9.00	--------	12.5	--------	3.75	15	-------	1.95	--------	1.80	--------
Total	149.78	830.69	721.82	791.78	306.75	336.41	113.85	238.75	72.65	69.86	55.55	90.61
Mean	4.83	26.8	24.1	25.5	10.2	10.9	3.67	8.53	2.34	2.33	1.79	3.02
Ac-ft	297	1650	1430	1570	608	667	226	474	144	139	110	180

Calendar Year 1961: Max 252 Min 2.15 Mean cfs 11.3 Ac-ft 8,210
Fiscal Year 1961-62: Max 252 Min 1.50 Mean cfs 10.4 Ac-ft 7,500

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-13	2400	4.95	1,020	10- 5	1130	6.80	1,770
8-25	1030	6.81	1,770	11- 2	1300	5.14	1,100
8-28	1600	6.12	1,490	12-14	0700	7.81	2,220
9-18	1700	7.46	2,070				

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 25 to Feb. 14.

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 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 640 ft (revised) from topographic map.

Average discharge.--10 years (1952-62), 3.39 cfs.

Extremes.--Maximum discharge during year, 236 cfs Dec. 14 (gage height, 3.77 ft), from rating curve extended above 53 cfs as explained below; minimum, 0.01 cfs on many days.

1951-62: Maximum discharge, 760 cfs Oct. 15, 1953 (gage height, 5.02 ft), from rating curve extended above 53 cfs on basis of tests on model of station site; no flow at times.

Remarks.--Records good. Up to 3.9 cfs diverted above station for municipal use.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0	0	0.4	1.01	0.9	10.3
.1	.02	.5	1.93	1.2	21.8
.2	.14	.6	3.25	1.5	38.3
.3	.45	.7	5.10	2.0	73.0

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.04	0.02	6.30	3.10	6.78	6.18	0.02	0.16	0.02	0.04	0.03	0.04
2	.05	.04	17.7	2.53	17.4	1.72	.01	.07	.02	.03	.03	.03
3	.21	.27	10.6	2.29	10.6	1.01	.03	5.89	.02	.41	.04	.03
4	.05	.11	10.5	2.05	9.74	.94	.10	17.4	.02	.03	.04	*.04
5	.24	.27	17.8	18.0	7.26	.64	.09	5.82	.02	.06	.03	.04
6	1.76	14.8	17.2	16.3	5.82	.54	.10	2.29	.01	.03	.05	.03
7	.16	10.8	10.0	38.4	4.89	.45	.16	1.82	.01	.03	.04	.06
8	.03	6.06	*7.26	22.8	4.31	.30	.18	1.01	.01	.04	.04	.03
9	2.71	3.77	6.78	*21.6	3.95	.70	.21	*.59	.02	.04	.04	.03
10	7.00	2.95	4.69	20.5	3.25	.27	.21	.27	.01	.04	.03	.03
11	3.80	2.41	13.6	12.9	3.10	*.10	.16	.04	.01	.04	.03	.03
12	2.29	12.3	12.3	11.0	2.53	.12	.16	.02	.01	.04	.03	.03
13	1.24	16.1	9.46	8.62	2.41	.05	.10	.02	.02	.04	.03	.03
14	1.24	36.9	8.06	9.74	4.72	47.1	.10	.09	.02	.05	.27	.03
15	.88	36.8	6.78	9.74	2.66	12.6	.10	.14	.01	.04	.04	.04
16	.88	22.5	5.82	8.34	2.17	6.30	.52	.16	.01	.05	.04	.06
17	1.08	13.3	7.47	6.78	2.17	3.77	.06	.30	.01	.34	.04	.04
18	1.01	9.46	61.3	5.34	2.17	2.66	.06	.27	.01	.07	.06	.03
19	.59	7.26	34.7	5.58	1.72	2.05	.06	.24	.05	.05	.04	.05
20	.24	8.80	14.0	6.06	1.52	1.52	.06	.16	.05	.05	.04	.03
21	.28	23.6	9.74	7.26	1.33	1.16	.03	.16	.06	.04	.03	.03
22	.40	12.0	11.7	11.0	1.16	.82	.02	.14	.06	.04	.03	.03
23	4.36	8.06	22.9	19.5	.94	.76	.01	.09	.05	*.03	.03	.03
24	1.62	10.5	15.1	*39.6	.82	.54	.01	.06	.06	.03	.03	.03
25	.88	59.3	10.3	26.2	.70	.37	.01	.04	.07	.03	.03	.05
26	.37	30.2	8.34	17.4	.64	.24	.01	.02	.06	.03	.04	.04
27	.07	15.1	8.06	16.3	.59	.14	.01	.02	.06	.03	.03	1.29
28	.02	18.8	5.82	12.6	.45	.14	.01	.02	.05	.03	.03	.10
29	.24	20.2	4.69	10.0	.37	.03	.01	--------	.04	.03	.03	3.64
30	3.57	12.6	3.77	8.34	.33	.02	.01	--------	.05	.03	.03	.87
31	.25	8.62	--------	7.02	--------	.02	.36	--------	.04	--------	.04	--------
Total	37.56	423.90	382.74	406.89	106.50	93.26	2.98	37.31	0.96	1.84	1.34	6.84
Mean	1.21	13.7	12.8	13.1	3.55	3.01	0.096	1.33	0.031	0.061	0.043	0.228
Ac-ft	74	841	759	807	211	185	5.9	74	1.9	3.6	2.7	14

Calendar Year 1961:	Max	613	Min	0	Mean cfs	4.51	Ac-ft	3,270
Fiscal Year 1961-62:	Max	613	Min	0.01	Mean cfs	4.12	Ac-ft	2,980

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-14	0100	2.50	108	10- 5	1200	2.40	101
8-25	1230	3.20	162	10- 7	1400	2.20	87.0
9-18	1730	3.41	186	12-14	0730	3.77	236

* Discharge measurement made on this day.

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 1962.

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.--9 years (1953-62), 15.6 cfs.

Extremes.--Maximum discharge during year, 1,870 cfs Dec. 14 (gage height, 2.30 ft), from rating curve extended above 53 cfs on basis of broad-crested weir formula; no flow at times.

1951-62: Maximum discharge, not determined, occurred Oct. 15, 1953 (gage height, at least 4.5 ft); no flow at times.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Fena Valley Reservoir impounds flow for municipal use. Records represent only flow over spillway.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0	0	0.3	89.0
.1	16.9	.5	189
.2	47.8	1.0	535

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.78	0.54	22.2	9.90	48.2	89.3		0				
2	.54	0	79.0	9.90	139	44.3		0				
3	1.25	0	37.5	9.90	A66.9	16.9		11.5				
4	1.50	1.50	40.9	9.90	A40.9	16.9		66.9				
5	0	1.50	55.2	197	A31.1	12.1		19.5				
6	0	148	70.9	147	*28.0	*7.86		7.86				
7	.54	44.1	31.1	273	25.1	7.86		9.90				
8	1.50	22.2	*19.5	122	25.1	5.99		4.28				
9	7.75	16.9	22.2	147	19.5	14.4		1.50				
10	29.8	9.90	19.5	108	16.9	7.86		0				
11	29.6	14.4	108	91.1	22.2	4.28		0				
12	9.90	94.8	75.1	83.6	22.2	4.28		0				
13	5.99	110	51.5	44.3	14.4	2.78		0				
14	4.28	213	25.1	89.0	57.5	401		0				
15	1.50	205	31.1	79.3	34.2	55.9		0				
16	.54	93.7	31.1	40.9	16.9	22.2		0				
17	1.50	51.5	37.5	34.2	16.9	14.4		0				
18	2.78	31.1	497	28.0	22.2	12.1		0				
19	.54	22.2	178	37.5	19.5	9.90		0				
20	0	95.9	59.0	55.2	14.4	5.99		0				
21	1.62	171	34.2	66.9	9.90	5.99		0				
22	1.50	40.9	91.5	108	7.86	2.78		0				
23	44.6	25.1	221	186	7.86	4.28		0				
24	16.9	111	75.1	284	7.86	2.78		0				
25	1.50	448	34.2	170	7.86	.54		0				
26	0	114	28.0	83.6	9.90	.54		0				
27	0	47.8	34.2	108	9.90	0		0				
28	.56	78.3	25.1	79.3	7.86	0		0				
29	.54	93.7	25.1	44.3	7.86	0		--------				
30	37.9	40.9	16.9	34.2	9.90	0		--------				
31	7.86	25.1	--------	37.5	--------	.54		--------		--------		--------
Total	215.27	2372.04	2076.7	2818.50	767.86	773.75	0	121.44	0	0	0	0
Mean	6.94	76.5	69.2	90.9	25.6	25.0	0	4.34	0	0	0	0
Ac-ft	427	4,700	4,120	5,590	1,520	1,530	0	241	0	0	0	0

Calendar Year 1961:	Max	497	Min	0	Mean cfs	28.0	Ac-ft	20,290
Fiscal Year 1961-62:	Max	497	Min	0	Mean cfs	25.1	Ac-ft	18,130

* Discharge measurement made on this day.
A No gage-height record.

8500. Talofofo River near Talofofo

Location.--Lat 13°21'05" N., long 144°43'50" E., on left bank 1.5 miles southwest of Talofofo and 5.3 miles north of Inarajan.

Drainage area.--16.2 sq mi.

Records available.--November 1951 to June 1962 (discontinued as a continuous-record station; converted to a crest-stage and low-flow partial-record station).

Gage.--Water-stage recorder and steel weir. Altitude of gage is 20 ft (from topographic map).

Average discharge.--10 years (1952-62), 50.9 cfs.

Extremes.--Maximum discharge during year, 3,220 cfs Dec. 14 (gage height, 9.28 ft), from rating curve extended above 340 cfs as explained below; minimum, 1.90 cfs May 17.

1951-62: Maximum discharge, 8,560 cfs Oct. 15, 1953 (gage height, 12.69 ft), from rating curve extended above 340 cfs by test on model of station site; minimum, 0.52 cfs July 18, 1959.

Remarks.--Records good except those above 500 cfs, which are fair. An average of about 10 cfs is diverted from Fena Reservoir and springs above station for municipal use.

Rating tables (gage-height, in feet, and discharge, in cubic feet per second)

July 1 to Feb. 3

0.9	3.10	2.5	133
1.0	4.80	3.0	205
1.1	7.20	5.0	575
1.2	10.5	7.0	1,050
1.3	15.0	7.5	1,220
1.6	34.5	8.0	1,680
2.0	75.0		

Feb. 4 to June 30

0.7	1.85	1.4	20.0
.8	2.40	1.7	40.0
.9	3.80	2.0	69.0
1.0	5.90	2.5	129
1.2	11.2		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	38.8	21.8	50.0	41.3	111	94.8	13.2	7.86	5.27	4.01	2.82	26.2
2	25.1	17.2	165	37.9	228	57.4	11.9	5.76	5.06	3.66	2.68	5.48
3	35.1	*26.0	76.1	36.2	292	30.8	11.9	39.8	5.06	3.52	2.54	4.22
4	42.6	75.5	94.1	33.8	91.5	28.5	9.84	110	5.06	3.52	2.34	8.67
5	21.8	33.3	93.7	483	83.8	24.4	8.52	36.3	4.85	6.62	2.29	8.30
6	16.7	678	101	407	67.3	20.0	8.19	19.5	*4.85	6.14	2.34	5.27
7	20.5	120	58.5	938	*61.8	20.0	8.19	24.4	4.85	4.64	2.68	5.27
8	23.8	101	43.0	230	52.0	19.4	8.19	16.0	4.64	4.43	2.29	*5.69
9	50.1	62.9	43.0	318	45.0	60.4	7.53	12.0	5.27	4.43	2.23	8.33
10	82.3	39.6	42.2	403	40.5	25.7	6.72	9.75	5.06	4.22	2.23	5.48
11	122	49.0	278	277	46.0	19.4	6.24	8.30	4.85	4.01	2.12	4.85
12	52.1	518	148	241	41.3	20.5	5.76	8.06	4.64	3.66	2.07	4.22
13	33.0	308	103	95.9	34.5	*17.2	5.52	8.59	5.27	3.66	2.23	3.80
14	52.0	843	*62.8	233	77.3	1,220	5.28	7.34	6.86	3.80	2.12	3.80
15	28.5	788	87.3	274	56.3	106	5.28	7.10	5.06	4.01	2.01	4.43
16	38.2	225	94.5	105	35.4	52.0	5.52	6.86	4.64	4.22	2.01	4.22
17	27.8	125	110	93.7	33.0	37.9	6.24	7.10	4.43	39.3	2.07	4.43
18	33.8	82.7	1,460	73.9	44.0	33.0	5.76	7.82	4.43	12.3	7.98	3.52
19	23.1	66.2	661	83.8	33.8	31.5	5.76	8.30	4.85	19.0	6.38	51.3
20	17.8	275	133	124	30.8	26.4	5.28	7.10	4.64	20.6	4.85	15.0
21	28.1	614	92.6	118	30.6	25.1	5.04	7.82	4.64	10.0	4.01	6.14
22	25.1	112	181	182	22.5	21.2	5.04	7.34	4.43	8.59	3.38	4.64
23	99.9	71.7	637	368	21.8	20.5	4.80	6.62	4.22	6.38	3.10	3.66
24	53.7	173	161	1,240	22.5	18.9	4.63	6.14	4.22	*5.06	2.54	3.38
25	47.9	1,300	89.3	448	20.0	17.2	4.46	5.90	4.01	4.85	2.40	10.8
26	21.8	290	71.7	161	20.5	15.6	4.29	5.69	3.80	3.52	2.82	5.69
27	16.1	108	88.9	210	21.2	15.0	4.29	5.48	4.01	3.24	3.24	52.4
28	46.7	181	65.1	190	20.0	16.7	4.12	5.48	*4.01	3.10	2.68	17.6
29	24.4	141	62.9	104	20.0	13.7	3.95	--------	3.66	3.24	2.34	18.6
30	188	81.6	47.0	88.2	20.0	13.7	*4.12	--------	3.52	3.24	2.29	13.1
31	40.5	58.5	--------	93.7	--------	13.7	6.96	--------	3.80	--------	3.38	--------
Total	1,377.3	7,586.0	5,400.7	7,732.4	1,724.4	2,136.6	202.52	408.41	143.96	210.97	90.46	318.49
Mean	44.4	245	180	249	57.5	68.9	6.53	14.6	4.64	7.03	2.92	10.6
Ac-ft	2,730	15,050	10,710	15,340	3,420	4,240	402	810	286	418	179	632

Calendar Year 1961:	Max	1,460	Min	3.27	Mean cfs	83.3	Ac-ft	60,320
Fiscal Year 1961-62:	Max	1,460	Min	2.01	Mean cfs	74.9	Ac-ft	54,220

Peak discharge (base, 2,300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-25	1400	9.27	3,200	10-23	2400	8.61	2,310
9-18	2130	9.17	3,060	12-14	1030	9.28	3,220

* Discharge measurement made on this day.

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 (revised).

Records available.--June 1952 to June 1962.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3.23 ft above mean sea level.

Average discharge.--10 years, 27.5 cfs.

Extremes.--Maximum discharge during year, 4,200 cfs Sept. 18 (gage height, 11.74 ft), from rating curve extended above 910 cfs as explained below; minimum, 4.06 cfs June 23.

1952-62: Maximum discharge, 5,900 cfs Oct. 19, 1960 (gage height, 11.90 ft), from rating curve extended above 910 cfs on basis of slope-area measurements at gage height 11.30, 11.36, 11.87 and 11.90 ft; minimum, 3.19 cfs June 15, 1960.

Remarks.--Records good except those above 200 cfs, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.4	2.60	1.2	53.0
.5	4.80	1.5	97.0
.6	8.00	2.0	197
.7	12.2	5.0	580
.9	24.0		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19.5	9.50	26.4	28.0	82.0	118	18.2	*22.1	*8.80	6.60	5.60	5.32
2	13.3	8.40	52.5	25.6	129	33.0	17.5	14.9	8.80	6.25	5.60	4.80
3	24.9	7.65	30.4	31.2	48.6	24.8	17.5	77.2	8.80	6.25	5.60	4.54
4	19.0	8.40	30.4	25.6	46.4	24.0	17.0	62.6	8.00	6.25	5.32	5.60
5	16.8	8.00	87.4	*230	44.2	21.4	16.4	24.8	8.00	8.80	5.32	5.60
6	12.7	106	39.0	165	44.2	20.1	15.9	18.2	7.65	7.30	5.60	*4.80
7	10.8	24.0	27.2	*282	47.5	20.1	15.9	19.5	7.65	6.25	5.92	5.06
8	18.2	17.0	23.4	79.5	53.0	19.5	15.9	15.9	8.00	6.25	5.60	5.06
9	12.6	28.1	25.6	210	40.0	31.2	15.9	13.8	9.60	6.25	5.32	5.06
10	19.9	24.2	28.0	76.5	35.0	20.1	15.4	12.7	8.00	6.25	5.06	4.80
11	14.4	24.6	78.9	125	46.4	19.5	14.9	11.7	7.65	6.25	4.80	5.06
12	10.8	103	65.3	66.0	34.0	*18.8	14.9	11.7	7.65	6.25	4.54	4.54
13	13.3	110	42.1	50.8	32.0	17.5	14.3	11.2	9.20	6.25	4.80	5.32
14	13.8	62.3	28.8	109	65.7	234	14.3	11.2	10.0	5.92	4.80	5.06
15	10.8	113	27.2	59.5	35.0	40.0	13.8	10.8	8.00	6.95	4.80	5.60
16	13.9	82.7	32.0	48.6	31.2	28.8	13.3	10.8	7.65	6.60	5.06	5.32
17	23.1	32.0	40.0	50.8	31.2	25.6	13.3	10.4	7.30	21.0	5.06	4.80
18	17.0	26.4	*563	49.7	29.6	23.4	*12.7	11.2	7.30	*10.8	8.00	5.92
19	*12.2	22.1	93.1	50.8	31.2	26.4	12.2	10.8	7.30	13.3	5.92	5.06
20	10.0	97.7	48.6	56.9	28.8	24.0	12.2	10.4	7.30	11.2	5.32	4.54
21	18.6	177	82.0	53.0	26.4	22.7	12.2	10.8	7.30	8.00	5.06	4.54
22	11.7	42.0	142	103	24.0	20.8	12.2	10.0	6.95	7.30	5.06	4.54
23	31.1	33.0	173	211	24.0	20.8	11.7	9.60	6.95	6.95	4.80	4.29
24	15.9	55.0	49.7	*248	23.4	20.1	11.7	9.20	6.95	6.60	4.54	4.54
25	11.7	378	40.0	115	23.4	20.1	11.7	9.20	6.60	6.25	4.80	9.89
26	8.80	58.2	35.0	63.4	24.0	19.5	11.2	9.20	6.60	6.25	5.32	6.60
27	8.00	42.0	35.0	111	22.7	19.5	11.2	9.20	6.95	5.92	6.25	33.0
28	7.65	80.7	32.0	54.3	22.1	20.1	11.2	9.20	7.30	5.60	5.06	15.4
29	7.30	50.3	31.2	50.8	20.8	19.5	10.8	--------	6.60	6.60	4.54	40.9
30	8.40	*37.0	28.8	49.7	20.8	18.8	11.2	--------	6.25	6.25	4.29	15.9
31	7.65	28.0	---------	99.1	---------	18.2	37.3	--------	6.60	---------	5.32	---------
Total	443.80	1,896.25	2,038.0	2,978.8	1,166.6	1,010.3	453.9	468.30	237.70	226.69	163.08	241.46
Mean	14.3	61.2	67.9	96.1	38.9	32.6	14.6	16.7	7.67	7.56	5.26	8.05
Ac-ft	880	3,760	4,040	5,910	2,310	2,000	900	929	471	450	323	479

Calendar Year 1961: Max 563 Min 7.30 Mean cfs 35.4 Ac-ft 25,600
Fiscal Year 1961-62: Max 563 Min 4.29 Mean cfs 31.0 Ac-ft 22,450

Peak discharge (base, 1,400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-25	1300	11.36	2,020	10-5	1300	11.09	1,740
9-18	1900	11.74	4,200	12-14	0800	11.54	2,920

* Discharge measurement made on this day.

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 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Average discharge.--10 years, 23.5 cfs.

Extremes.--Maximum discharge during year, 3,000 cfs Sept. 18 (gage height, 14.40 ft), from rating curve extended above 620 cfs on basis of slope-area measurements at gage heights 11.24 and 15.87 ft; minimum, 1.51 cfs Apr. 3, 4.

1952-62: Maximum discharge, 4,040 cfs Oct. 15, 1953 (gage height, 19.36 ft), from rating curve extended above 270 cfs on basis of slope-area measurement at gage height 14.07 ft; minimum, 0.16 cfs, June 18-22, 1959.

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

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.98	1.2	28.5
.4	1.93	1.5	53.0
.5	3.30	2.0	129
.7	7.40	3.0	259
.9	14.0	6.0	760

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19.5	15.6	23.6	23.6	31.1	48.6	8.27	*6.25	3.30	1.61	4.70	68.2
2	14.8	13.6	52.2	22.5	41.5	16.4	7.69	4.70	3.15	1.61	4.50	11.0
3	15.2	21.0	25.8	22.0	28.5	12.5	7.69	38.9	3.00	1.51	4.70	8.27
4	15.0	21.0	70.8	21.0	26.9	14.0	7.40	25.5	2.85	1.51	4.10	27.2
5	13.3	16.8	30.5	107	26.3	11.0	7.40	11.4	*2.85	4.27	3.90	14.4
6	20.9	177	23.0	149	24.1	9.72	7.17	7.98	2.70	3.30	4.30	*10.3
7	15.6	35.0	21.0	216	24.1	*9.72	6.94	10.3	2.55	1.93	4.50	11.4
8	12.9	63.7	18.5	71.8	25.2	8.85	6.48	7.40	2.55	1.71	4.10	11.8
9	137	32.4	18.0	93.0	21.0	20.6	6.48	6.48	2.70	1.71	3.75	12.5
10	27.4	26.3	24.9	169	20.5	10.3	6.25	6.02	2.70	1.71	3.60	9.72
11	132	25.2	124	230	21.0	9.14	5.79	5.33	2.41	1.61	3.30	9.72
12	28.0	182	42.2	73.4	19.0	12.9	5.56	5.79	2.29	1.61	3.15	7.98
13	28.0	78.1	30.5	50.9	17.6	*9.43	5.10	5.56	2.70	1.61	3.00	7.17
14	30.5	366	37.6	51.5	35.3	319	5.10	4.90	3.90	1.61	3.00	7.17
15	22.5	*253	30.3	88.2	21.0	24.1	5.10	4.70	2.55	8.20	2.85	9.72
16	49.8	105	25.8	40.6	17.6	18.5	4.90	4.70	2.29	4.33	2.85	8.27
17	24.1	48.0	24.1	51.8	19.0	15.6	4.90	5.10	2.17	147	3.15	8.85
18	21.0	41.4	626	33.7	23.8	14.8	4.70	5.33	2.05	*23.6	14.7	8.56
19	18.5	34.4	*72.0	35.0	16.0	14.8	4.70	4.50	2.05	36.1	6.94	8.65
20	16.8	128	92.7	*52.5	14.8	14.0	4.30	4.30	2.05	29.0	5.56	10.4
21	34.6	120	43.0	41.4	14.0	12.9	4.30	4.70	2.17	16.0	6.02	6.94
22	17.2	50.4	53.3	61.4	12.9	11.8	4.10	4.30	2.05	11.8	5.10	6.48
23	34.9	33.1	109	249	12.2	11.0	3.90	4.10	1.93	9.43	4.70	5.79
24	18.5	41.4	50.0	355	11.8	10.7	3.90	3.75	1.93	7.98	3.90	5.56
25	75.0	*362	35.8	166	11.8	10.3	*3.60	3.60	1.81	6.94	4.30	8.46
26	21.5	68.1	32.4	58.6	11.4	10.0	3.45	3.60	1.71	6.48	12.5	6.71
27	*16.8	40.6	31.1	67.0	10.7	10.0	3.30	3.45	1.71	5.79	8.85	99.1
28	18.0	47.2	28.5	84.2	10.7	10.3	3.30	3.45	1.71	5.56	5.56	21.5
29	14.4	33.1	29.2	42.2	12.5	9.43	3.15	--------	1.61	5.56	4.50	38.2
30	62.3	28.5	25.2	36.6	10.0	9.14	3.30	--------	1.61	5.33	3.90	21.5
31	18.0	25.8	--------	35.0	---------	8.56	5.79	--------	1.71	--------	16.7	---------
Total	994.0	2533.7	1851.0	2798.9	592.3	728.09	164.01	206.09	72.76	356.41	166.68	491.52
Mean	32.1	81.7	61.7	90.3	19.7	23.5	5.29	7.36	2.35	11.9	5.38	16.4
Ac-ft	1,970	5030	3670	5550	1,170	1,440	325	409	144	707	331	975

Calendar Year 1961: Max 626 Min 2.29 Mean cfs 32.7 Ac-ft 23,650
Fiscal Year 1961-62: Max 626 Min 1.51 Mean cfs 30.0 Ac-ft 21,720

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-14	0130	12.22	2,310	9-18	2000	14.40	3,000

* Discharge measurement made on this day.

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.--6.18 sq mi.

Records available.--September 1951 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 25 ft (from topographic map).

Average discharge.--10 years (1952-62), 22.7 cfs.

Extremes.--Maximum discharge during year, about 4,200 cfs Sept 18; minimum, 0.90 cfs Mar. 29 to Apr. 5.

1951-62: Maximum discharge, 5,310 cfs Oct. 15, 1953 (gage height, 16.76 ft), from rating curve extended above 190 cfs on basis of slope-area measurements at gage heights 13.22 ft and 15.07 ft; no flow June 5-7, 10-23, 1959.

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

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

July 1 to Sept. 18

0.3	3.96	1.0	72.0
.4	7.90	3.0	455
.5	13.5	5.0	925
.7	30.5		

Sept. 19 to June 30

0.1	0.35	0.8	37.0
.2	1.55	1.0	67.0
.3	4.10	1.5	171
.4	7.70	2.0	256
.5	12.2	4.0	681
.6	18.2		

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.0	9.95	18.5	12.7	20.5	81.0	4.10	4.10	2.40	0.90	4.70	15.0
2	5.0	10.5	21.9	12.2	41.1	23.8	3.80	3.20	2.15	.90	4.40	7.70
3	6.0	8.90	19.3	11.7	15.6	9.85	3.80	78.1	1.95	.90	4.70	6.50
4	6.0	*9.40	180	11.2	10.3	8.50	3.80	25.6	1.95	.90	4.10	78.9
5	5.0	16.6	33.8	100	19.7	7.70	3.50	10.3	*1.95	2.90	4.10	18.9
6	14	211	21.9	146	15.6	*6.50	3.20	7.30	1.95	1.95	4.40	19.6
7	8.0	29.5	18.5	160	13.3	*6.10	2.90	7.30	1.95	1.20	4.70	15.6
8	5.0	47.6	16.3	55.1	12.2	5.40	2.90	5.75	1.95	1.20	4.40	*12.2
9	150	24.6	17.0	75.6	11.7	6.50	2.90	5.05	2.15	1.20	3.80	9.40
10	30	21.9	50.7	90.0	11.7	5.40	2.90	4.40	2.15	1.20	3.50	9.40
11	150	17.8	208	170	11.2	4.70	2.90	4.10	1.95	1.20	3.20	8.95
12	30	109	*51.1	56.8	10.3	5.40	2.65	4.40	1.95	1.05	3.20	7.70
13	30	64.1	32.7	63.0	9.85	4.40	2.65	4.10	2.15	1.05	2.90	6.90
14	34	395	54.9	32.6	23.5	122	2.40	3.80	2.90	1.20	2.90	*7.30
15	26	182	30.9	73.9	10.7	9.40	2.40	3.80	1.95	4.40	2.90	8.10
16	55	70.3	20.1	26.5	9.85	7.70	2.40	3.80	1.75	11.7	2.90	6.90
17	28	42.0	21.0	58.7	14.4	6.50	2.40	4.10	1.75	193	2.90	6.50
18	24	42.0	718	22.9	15.6	6.50	2.40	3.80	1.55	*78.6	8.90	8.10
19	20	58.9	61.4	21.3	9.85	7.70	2.40	3.20	1.55	58.1	5.40	7.30
20	17	95.0	80.0	25.6	8.50	6.50	2.15	3.20	1.55	37.5	4.10	6.90
21	40.1	105	29.5	32.6	8.10	6.10	2.15	2.90	1.55	15.6	5.05	6.10
22	17.0	60.4	29.5	65.2	7.70	5.40	2.15	2.90	1.55	10.7	4.10	5.75
23	41.8	33.8	68.6	527	7.70	4.70	2.15	2.65	1.35	8.50	4.70	5.40
24	19.3	38.4	35.9	387	6.90	4.70	1.95	2.65	1.35	7.30	3.50	5.05
25	129	344	22.1	190	7.70	4.40	*1.95	2.65	1.20	6.50	34.5	6.10
26	20.1	60.8	21.3	*53.2	6.90	4.40	1.95	2.65	1.20	5.75	25.1	6.50
27	14.9	38.4	18.2	*44.8	6.90	4.40	1.95	2.65	1.20	5.40	15.0	175
28	12.2	40.8	16.8	60.5	7.30	4.70	1.75	2.40	1.05	5.05	8.50	25.6
29	10.5	31.6	16.2	31.5	9.40	4.10	1.95	--------	.90	5.40	7.30	46.1
30	31.5	23.7	13.8	37.2	6.90	4.10	2.15	--------	.90	5.05	6.10	19.7
31	13.5	20.1	--------	23.8	--------	4.10	*4.10	--------	.90	--------	8.10	--------
Total	1,000.9	2,263.05	1,947.9	2,678.6	370.95	392.65	82.75	210.85	52.75	476.30	204.05	569.15
Mean	32.3	73.0	64.9	86.4	12.4	12.7	2.67	7.53	1.70	15.9	6.58	19.0
Ac-ft	1,990	4,490	3,860	5,310	736	779	164	418	105	945	405	1,130

Calendar Year 1961: Max 718 Min 1.90 Mean cfs 27.9 Ac-ft 20,170
Fiscal Year 1961-62: Max 718 Min 0.90 Mean cfs 28.1 Ac-ft 20,330

Peak discharge (base, 2,400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-11	1400	11.10	2,920	9-18	1930	-	About 4,200
8-14	0200	12.60	3,470				
8-25	1130	9.64	2,400	10-23	2130	11.30	2,980

* Discharge measurement made on this day.
Note.--No gage-height record July 1-20.

8840. 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 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Extremes.--Maximum discharge during year, 397 cfs Dec. 14 (gage height, 2.83 ft), from rating curve extended above 30 cfs as explained below; minimum, 0.11 cfs June 24.

1960-62: Maximum discharge, 655 cfs Oct. 19, 1960 (gage height, 3.39 ft), from rating curve extended above 30 cfs on basis of slope-conveyance study; minimum, 0.11 cfs June 24, 1962.

Remarks.--Records good except those above 30 cfs, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 20-30)

0.16	0.13	0.5	4.02
.2	.26	.6	6.85
.3	.86	.8	14.6
.4	2.05	1.0	26.0

Discharge, in cubic feet per second, July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.70	0.56	1.62	1.49	2.21	2.07	0.78	0.62	0.50	0.39	0.30	0.34
2	.62	.62	3.16	1.37	2.21	1.37	.78	.56	.50	.39	.30	.22
3	2.90	1.73	1.75	1.37	2.05	1.25	.78	1.54	.50	.30	.30	.22
4	.86	1.25	2.19	1.37	2.05	1.15	.78	.95	.50	.26	.30	.67
5	.62	1.15	1.90	*3.48	1.90	*1.05	.78	.62	.50	.39	.30	.30
6	2.54	6.71	1.75	5.99	1.90	1.05	.78	.62	.50	.30	.30	.30
7	.86	1.93	*1.49	6.11	1.75	1.05	.70	.78	.50	.26	.34	*.30
8	.70	1.49	1.37	2.92	1.75	1.05	.70	.62	.56	.26	.34	.30
9	3.38	1.15	1.37	4.66	1.75	1.64	.70	.62	.62	*.30	.34	.34
10	.86	1.05	1.62	7.78	1.62	1.05	.62	.56	.50	.30	.34	.34
11	2.22	1.05	4.91	2.72	1.62	1.05	.62	.56	.50	.22	.30	.34
12	.78	8.96	2.21	2.21	1.49	1.05	.62	.56	.50	.26	.30	.26
13	.78	3.79	1.75	2.46	1.49	.95	.62	.56	.56	.26	.34	.30
14	.86	9.68	1.75	3.49	1.90	11.9	.62	.56	.50	.26	.30	.34
15	.78	7.34	1.49	3.12	1.49	1.49	*.62	.50	.44	.30	.30	.34
16	1.15	3.30	1.75	2.21	1.49	1.25	.56	.50	.39	.41	.30	.34
17	.86	2.21	3.05	*2.05	1.49	1.15	.56	.56	.39	.81	.34	.34
18	1.05	2.05	23.4	2.05	1.49	1.15	.56	.56	.39	.44	.56	.30
19	.70	2.05	3.30	2.21	1.37	1.15	.56	.44	.39	.56	.30	2.24
20	.70	3.84	2.38	2.98	1.25	1.15	.56	.44	.44	.50	.30	.59
21	.86	4.63	2.21	2.38	1.15	1.05	.56	.50	.44	.34	.30	.22
22	.70	2.21	3.19	4.25	1.15	1.05	.56	.44	.39	.34	.26	.16
23	1.59	1.75	4.36	7.61	1.05	1.05	.56	.44	.39	.30	.22	.13
24	.70	2.85	2.55	7.28	1.05	.95	.56	.44	.44	.30	.22	.13
25	.62	12.5	2.21	6.02	1.05	.95	.56	.44	.44	.26	.22	.26
26	.56	2.92	1.90	3.12	1.05	.95	.56	.44	.44	.26	.26	.16
27	.56	2.21	3.41	3.56	1.05	.95	.56	*.44	.44	.26	.26	1.38
28	*.56	4.60	1.75	3.71	1.05	.86	.50	.50	.44	.26	.22	.30
29	.56	2.05	1.75	2.72	1.05	.78	.50	--------	.44	.30	.19	.53
30	.70	1.90	1.62	3.04	.95	.78	.56	--------	.39	.30	.19	.26
31	.62	1.90	--------	2.38	--------	.78	.62	--------	.44	--------	.26	--------
Total	31.95	101.43	89.16	108.11	44.87	45.17	19.40	16.37	14.37	10.09	9.10	12.25
Mean	1.03	3.27	2.97	3.49	1.50	1.46	0.626	0.585	0.464	0.336	0.294	0.408
Ac-ft	63	201	177	214	89	90	38	32	29	20	18	24

Calendar Year 1961: Max 23.4 Min 0.39 Mean cfs 1.54 Ac-ft 1120
Fiscal Year 1961-62: Max 23.4 Min 0.13 Mean cfs 1.38 Ac-ft 995

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-12	1230	2.33	229	9-18	1800	2.82	393
8-13	2400	2.80	385	10-10	1800	2.58	308
8-15	1000	2.56	301	12-14	0700	2.83	397

* Discharge measurement made on this day.

8880. 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 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 10 ft (revised) from topographic map.

Extremes.--Maximum discharge during year, 1,120 cfs Sept. 18 (gage height, 5.21 ft), from rating curve extended above 66 cfs as explained below; minimum, 0.26 cfs June 23.

1960-62: 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, 0.18 cfs May 15, 1960.

Remarks.--Records good except those for period of indefinite stage-discharge relation, which are poor. No diversion above station.

Rating table, except for period of indefinite stage-discharge relation
(gage height, in feet, and discharge in cubic feet per second)

0.18	0.33	0.6	12.0
.2	.50	.7	17.0
.3	1.82	.8	24.5
.4	4.30	.9	35.0
.5	8.00	1.1	68.0

Discharge, in cubic feet per second, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.22	1.31	*3.70	2.22	3.42	22.0	0.92	1.31	0.60	0.50	0.41	1.57
2	1.47	2.72	16.3	2.02	19.8	1.82	.92	1.04	*.60	.50	.41	.41
3	1.64	1.47	4.00	2.66	4.00	1.47	.80	37.6	.55	.50	.41	.41
4	1.31	1.31	20.3	2.02	7.05	1.82	.80	13.7	.55	.50	.41	.59
5	2.53	1.17	16.2	49.9	3.67	1.31	.80	4.60	.55	.80	.41	.41
6	9.04	8.14	6.40	28.9	2.90	1.31	.80	2.7	.55	.50	.59	.33
7	2.02	3.16	4.30	40.1	2.44	1.31	.69	2.9	.50	.50	.41	*.50
8	2.68	3.42	3.44	7.20	2.44	1.17	.80	1.8	.50	.50	.41	.41
9	14.1	2.22	11.9	20.5	2.22	3.77	.69	1.5	.59	.50	.41	.33
10	3.42	4.80	4.00	6.40	2.22	1.31	.69	1.3	.50	.50	.33	.41
11	2.02	2.44	14.6	4.60	2.02	1.17	.69	1.2	.50	.41	.33	.33
12	1.47	13.1	8.20	4.60	1.82	1.17	.69	1.1	.59	.41	.33	.33
13	3.06	8.03	4.95	9.53	2.02	1.04	.69	1.05	.92	.41	.33	.33
14	2.22	20.0	5.42	6.47	5.18	*61.6	.69	1.0	.69	.50	.33	.41
15	1.47	16.8	3.70	4.30	1.82	2.66	.69	.95	.59	.59	.33	.69
16	2.02	10.3	5.95	3.16	1.64	1.82	.69	.90	.59	.50	.33	.41
17	2.02	5.30	3.16	*2.90	1.82	1.47	*.69	.90	.59	1.98	.33	.33
18	1.82	4.60	66.8	2.90	1.47	1.47	.69	.85	.59	1.17	.80	.33
19	1.47	3.42	7.60	4.71	2.32	1.47	.69	.80	.50	2.16	.50	.33
20	1.31	26.2	4.60	10.1	1.47	1.47	.69	.80	.50	.80	.41	.33
21	6.49	15.5	4.30	9.20	1.31	1.17	.69	.75	.50	.50	.41	.41
22	1.64	6.00	14.3	12.7	1.31	1.17	.69	.75	.50	.41	.33	.33
23	4.23	3.42	14.9	32.6	1.17	1.04	.69	.70	.50	.33	.33	.33
24	2.02	6.53	4.60	18.0	1.17	1.04	.69	.70	.50	.41	.33	.33
25	1.47	44.0	3.42	18.1	1.17	1.04	.69	.65	.59	.33	.33	4.49
26	*1.47	7.60	2.90	6.00	1.17	1.04	.69	.65	.59	.33	.80	.69
27	1.31	4.60	10.3	12.8	1.04	1.04	.69	.65	.59	.41	.59	11.1
28	1.31	22.2	2.66	5.30	1.04	1.04	.69	.60	.59	*.41	.41	1.64
29	1.17	18.8	2.44	4.00	*1.17	1.04	.69	--------	.50	.50	.41	13.4
30	4.71	6.51	2.22	8.80	1.31	.92	.80	--------	*.50	.50	.41	2.22
31	1.47	4.00	--------	4.60	--------	.92	2.30	--------	.50	--------	.50	--------
Total	86.60	279.07	277.56	347.29	83.60	124.09	24.12	83.45	17.41	18.36	13.07	44.13
Mean	2.79	9.00	9.25	11.2	2.79	4.00	0.778	2.98	0.562	0.612	0.422	1.47
Ac-ft	172	554	551	689	166	246	48	166	35	36	26	88

Calendar Year 1961: Max 66.8 Min 0.53 Mean cfs 4.35 Ac-ft 3,150
Fiscal Year 1961-62: Max 66.8 Min 0.33 Mean cfs 3.83 Ac-ft 2,780

Peak Discharge (base, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
9-18	1700	5.21	1,120	12-14	0630	4.80	1,000
10- 5	1030	4.42	890				

* Discharge measurement made on this day.
Note.--Stage-discharge relation indefinite Feb. 6 to Mar. 8.

9060. Vaitolu Stream at Aoa
(Formerly published as Vaitolu Stream near Aoa)

Location.--Lat 14°17'50" S., long 170°35'45" W., on left bank 0.4 mile southwest of Aoa and 0.5 mile upstream from mouth.

Drainage area.--0.22 sq mi.

Records available.--March 1958 to June 1962. Prior to July 1961, published as "near Aoa."

Gage.--Water-stage recorder. Altitude of gage is 185 ft (from topographic map).

Extremes.--Maximum discharge during year, 51.7 mgd (80.0 cfs) May 17 (gage height, 3.92 ft), from rating curve extended above 2.1 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) Sept. 7, 8.

1958-62: Maximum discharge, 83.5 mgd (129 cfs) Feb. 5, 1959 (gage height, 4.75 ft), from rating curve extended above 2.1 mgd by logarithmic plotting; minimum, that of Sept. 7, 8, 1961.

Remarks.--Records good except those for periods of no gage-height record and those above 2.0 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.07	0.01	1.4	0.94
1.1	.03	1.5	1.49
1.2	.20	1.8	3.90
1.3	.50		

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.15	0.10	0.08	0.22	.14	0.10	0.19	0.11	0.30	.91	0.82	0.25
2	.15	.11	.08	.15	.11	.10	.18	.11	*.25	.30	.46	.30
3	.13	.13	.05	.08	.10	.08	.30	.11	.22	*.22	.33	.28
4	.13	.17	.03	.05	.06	.08	.70	.11	.53	.22	.27	.27
5	.13	.10	.03	.08	.05	.08	2.0	.13	.60	.20	.25	.27
6	.13	.08	.03	*.04	*.05	.08	1.4	*2.35	.27	.31	.25	.26
7	.13	.08	.01	.04	.05	.08	.94	1.12	.25	.20	*.47	.26
8	.13	.12	.01	.04	.06	.06	.64	.54	.22	.48	.25	.26
9	.17	.08	.02	.05	.08	.06	.45	.62	.25	.33	.25	.26
10	.13	.08	.04	.08	.07	.08	*.30	.76	.22	.25	.41	.26
11	.13	.08	*.05	.11	.35	.08	.22	1.06	.25	.47	.25	.25
12	.16	.13	.06	.47	.25	.06	.35	.59	.27	.30	.20	.25
13	.13	.08	.06	.22	.18	.10	.27	.65	.78	.22	.20	.35
14	.13	*.07	.05	.15	.25	.08	.22	1.31	.90	.20	.20	1.0
15	.20	.09	.06	1.49	.40	.11	.34	2.81	.62	.17	1.08	*.36
16	.15	.16	.06	1.87	.60	.27	.34	.88	.30	*.15	.62	.25
17	.13	.06	.06	*.25	.40	.68	.74	1.56	.25	.15	3.13	.17
18	.13	.28	.10	.11	.30	*.38	.39	2.24	.27	.15	2.14	.17
19	.13	.13	.13	.10	.20	.20	.29	1.9	*.24	.15	1.5	.15
20	.13	.06	.13	.17	.15	.11	.22	1.0	.25	.15	1.0	.15
21	.11	.06	.15	.17	.17	.10	.25	.82	.25	.15	.80	.15
22	.11	.05	.15	.11	.15	.10	.27	.70	.25	.15	.66	.15
23	.20	.05	.15	.08	.14	.13	.22	.64	.22	.15	.50	.13
24	.13	.05	.15	.08	.13	.14	.17	.56	.22	.15	.40	.15
25	.11	.06	.15	.06	.13	.11	*.17	.48	.20	.15	.33	.13
26	*.13	.05	.15	.37	.13	.25	.13	.43	.27	.34	.28	.13
27	.11	.05	.17	.15	*.11	.60	.13	.36	.20	.85	.50	.25
28	.11	.12	.20	.08	.13	.45	.17	.32	.20	2.22	.35	.79
29	.10	.05	.20	.06	*.11	.34	.13	--------	.30	2.42	.30	.20
30	.10	.06	.20	.05	.15	.27	.11	--------	.22	.74	*.27	.15
31	.10	*.06	--------	.05	--------	.21	.11	--------	.82	--------	.25	--------
Total	4.11	2.85	2.81	7.03	5.20	5.57	12.34	24.27	10.39	12.85	18.72	8.00
Mean												
Mgd	0.133	0.092	0.094	0.227	0.173	0.180	0.398	0.867	0.335	0.428	0.604	0.267
Cfs	0.205	0.142	0.145	0.351	0.268	0.279	0.616	1.34	0.518	0.663	0.935	0.413
Ac-ft	13	8.7	8.6	22	16	17	38	74	32	39	57	25

Calendar Year 1961:	Max	5.00	Min	0.01	Mean mgd	0.340	Mean cfs	0.526	Ac-ft	381
Fiscal Year 1961-62:	Max	3.13	Min	0.01	Mean mgd	0.313	Mean cfs	0.484	Ac-ft	350

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
2-6	1700	3.44	36.2	56.0	5-17	0500	3.92	51.7	80.0
5-15	0500	3.26	31.0	48.0					

* Discharge measurement made on this day.
Note.--No gage-height record Nov. 7-26, Dec. 24 to Jan. 9, Feb. 19 to Mar. 1, May 19-29, June 1-14.

9120. Afono Stream at Afono

Location.--Lat 14°16'55" S., long 170°39'10" W., on left bank at Afono and 1,500 ft upstream from mouth.

Drainage area.--0.67 sq mi (revised).

Records available.--October 1958 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Extremes.--Maximum discharge during year, 308 mgd (477 cfs) June 14 (gage height, 4.19 ft), from rating curve extended above 14 mgd as explained below; minimum, 0.16 mgd (0.25 cfs) Sept. 30.

1958-62: Maximum discharge, 486 mgd (752 cfs) Feb. 5, 1959 (gage height, 4.69 ft), from rating curve extended above 14 mgd by logarithmic plotting; minimum, that of Sept. 30, 1961.

Remarks.--Records good except those for period of no gage-height record, which are fair. About 0.04 mgd diverted above station for domestic use in Afono.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.4	0.14	1.9	4.83
1.5	.44	2.0	7.06
1.6	.99	2.1	10.0
1.7	1.86	2.4	22.5
1.8	3.17		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.68	0.32	0.48	0.20	0.48	1.06	1.21	1.41	1.21	1.14	2.07	1.14
2	.74	.32	.40	.73	.48	.86	1.14	1.06	1.21	.80	1.47	1.21
3	.68	.48	.36	.29	.70	.80	6.13	.92	1.14	.68	1.21	1.06
4	.62	1.14	.36	*3.77	.57	.80	4.83	.86	2.44	1.39	A1.1	.99
5	.57	.62	.32	1.14	.44	.74	10.3	.99	3.40	1.21	A1.0	.92
6	.57	.44	.40	.62	.44	.68	2.87	6.81	1.86	.92	A2.0	.86
7	.57	.40	.44	.40	.40	.62	2.72	5.16	1.56	.80	A5.0	.80
8	.57	.40	.36	.32	.69	.62	3.68	*3.19	*1.20	.99	A3.0	.80
9	.74	.44	.29	.29	1.29	.57	2.57	4.88	1.06	.92	A2.0	.86
10	.52	.40	.32	.74	1.21	.57	1.66	6.25	1.14	.87	*1.47	.80
11	.48	.40	.29	3.79	6.55	.57	*1.38	8.05	1.06	4.29	1.21	.80
12	.69	.80	.36	3.81	3.71	.52	1.21	3.47	1.06	*1.66	.99	.68
13	*.57	.68	.36	3.66	1.92	.48	1.14	3.17	1.86	1.14	.80	.92
14	.52	.52	.32	3.55	2.80	*.48	.99	5.47	2.25	.92	.74	*13.6
15	.80	.52	.29	10.6	2.44	.81	1.29	20.3	2.31	.86	3.27	10.5
16	.80	1.87	.26	14.5	4.93	2.01	1.47	5.76	1.47	.80	3.56	2.72
17	.57	.92	.26	2.57	3.34	10.5	3.25	4.28	1.14	.74	16.0	1.66
18	.52	4.10	.32	1.56	2.54	5.20	2.07	11.2	1.06	.68	16.7	1.56
19	.52	2.35	.32	1.21	2.19	2.72	1.38	10.6	.92	.68	5.90	1.47
20	.52	.99	.29	.99	1.47	1.47	1.29	6.10	.86	.80	3.17	1.47
21	.48	.68	.26	.92	1.47	1.14	2.94	4.28	.80	1.02	2.44	1.21
22	.44	.57	.26	.86	1.21	.99	2.55	3.47	.80	.74	1.86	1.14
23	.70	.52	.26	.80	1.14	.99	2.57	3.17	.80	.68	1.66	.99
24	.62	.48	.23	.74	1.06	1.14	1.56	2.31	.74	.62	1.38	1.14
25	.48	.44	.26	.68	.99	.99	1.58	1.96	.68	.62	1.29	.92
26	.52	.40	.26	1.52	.92	1.60	1.56	1.66	.68	3.51	1.21	.86
27	.62	.40	.23	1.21	.99	4.48	3.03	1.47	.62	1.99	4.06	1.25
28	.44	.62	.23	.80	.99	2.73	2.44	1.29	.68	5.04	1.66	6.51
29	.36	.44	.20	.62	.92	2.92	1.47	------	.91	7.04	1.38	1.76
30	.36	.40	.20	.57	1.21	1.47	1.21	------	.92	2.57	1.29	1.38
31	.36	.44	------	.52	------	1.21	1.14	------	1.06	------	1.14	------
TOTAL	17.63	23.50	9.19	63.98	49.49	51.74	74.63	129.54	38.90	46.12	92.03	61.98
MEAN												
MGD	0.569	0.758	0.306	2.06	1.65	1.67	2.41	4.63	1.25	1.54	2.97	2.07
CFS	0.880	1.17	0.474	3.19	2.55	2.58	3.72	7.16	1.94	2.38	4.60	3.20
AC-FT	54	72	28	196	152	159	229	398	119	142	282	190

CALENDAR YEAR	1961:	MAX	38.1	MIN	0.20	MEAN MGD	2.36	MEAN CFS	3.65	AC-FT	2,650
FISCAL YEAR 1961-62:		MAX	20.3	MIN	0.20	MEAN MGD	1.80	MEAN CFS	2.79	AC-FT	2,020

* Discharge measurement made on this day.
A No gage-height record.

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10- 4	1300	2.98	70	108	6-14	2300	4.19	308	477
5-17	2330	3.28	108	167					

9205. Aasu Stream at Aasu

Location.--Lat 14°19'00" S., long 170°45'35" W., on right bank at Aasu and 300 ft above mouth.

Drainage area.--0.97 sq mi (revised).

Records available.--October 1958 to June 1962.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 5 ft (by hand levels from high-tide mark).

Extremes.--Maximum discharge during year, 395 mgd (611 cfs) May 17 (gage height, 4.67 ft), from rating curve extended above 9.4 mgd by logarithmic plotting; minimum, 0.32 mgd (0.50 cfs) Sept. 29 to Oct. 1.

1958-62: Maximum discharge, that of May 17, 1962; minimum, that of Sept. 29 to Oct. 1, 1961.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Small diversion above station for domestic use.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.2	0.11	1.7	6.75
1.3	.54	1.9	13.4
1.4	1.37	2.2	28.0
1.5	2.70	2.7	66.0

Discharge, in million gallons a day, fiscal year July 1961 to June 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	0.74	1.63	0.37	1.7	2.16	17.6	5.31	4.32	6.0	3.96	2.03
2	1.8	1.86	1.37	2.13	2.0	1.90	8.89	3.78	3.96	4.0	3.24	2.79
3	1.5	11.2	1.17	*1.36	2.5	1.76	10.2	3.42	3.96	2.7	3.06	2.03
4	1.3	6.90	1.17	1.82	2.0	1.50	7.03	3.06	4.28	2.0	2.88	1.90
5	1.3	3.96	1.07	1.37	1.7	1.50	5.85	4.08	6.07	1.6	3.24	1.50
6	1.3	3.06	1.42	1.07	1.5	1.37	5.17	10.4	4.14	1.4	2.88	1.37
7	1.7	2.70	1.50	.74	1.4	1.17	4.50	8.95	3.78	1.3	3.06	1.27
8	1.3	3.24	1.17	.54	2.0	1.63	5.30	14.3	4.64	1.2	2.43	1.07
9	3.5	2.70	.98	.54	3.0	*1.20	4.32	14.0	5.90	1.2	2.16	1.27
10	1.5	2.43	.98	1.37	5.0	1.27	3.60	14.9	4.32	1.4	2.56	1.07
11	1.2	2.43	.90	1.63	11	1.07	3.42	16.6	3.78	2.5	2.16	.98
12	1.4	3.06	.90	5.74	4.0	.98	3.80	10.4	3.42	1.8	1.90	.90
13	1.3	2.43	.82	4.92	4.5	.90	3.42	9.03	3.06	4.0	1.63	4.38
14	1.2	2.16	.74	3.60	6.0	.82	2.88	9.74	4.66	8.0	1.63	9.42
15	1.5	2.72	.67	9.31	5.0	1.70	2.43	13.8	*3.96	6.0	2.65	7.86
16	2.0	5.26	.60	16.1	8.0	1.76	2.30	9.31	3.24	2.5	8.58	4.32
17	1.7	*4.7	.54	6.07	5.62	4.01	5.40	*7.39	2.70	1.3	58.3	3.06
18	3.0	25	.60	4.72	5.40	3.12	4.32	12.2	2.56	1.1	18.4	6.11
19	1.5	13	.99	*4.32	4.50	2.81	3.78	13.7	2.30	*.98	13.0	4.95
20	*.98	7.0	.67	3.0	4.32	1.76	3.24	13.4	2.30	.90	9.60	4.32
21	.90	*4.95	.54	3.5	4.50	1.27	5.13	11.5	2.16	.98	8.17	3.42
22	.90	4.32	.48	2.5	4.30	1.17	6.64	10.9	2.16	1.28	6.52	2.88
23	1.23	3.96	.42	3.0	4.32	2.24	9.48	7.60	2.29	1.07	5.62	2.70
24	1.50	3.42	.42	3.5	3.60	3.46	11.0	6.52	1.90	1.33	4.50	2.56
25	1.07	3.24	.42	4.5	3.24	3.65	10.6	6.07	1.76	.98	3.96	2.30
26	1.37	2.70	.42	6.0	2.70	2.16	7.32	6.75	1.90	4.38	3.42	*2.30
27	2.30	2.30	.42	4.5	2.56	1.90	6.75	6.75	1.63	3.46	3.42	2.43
28	1.37	2.84	.42	3.7	2.30	2.41	7.07	4.95	2.0	7.99	2.88	2.30
29	1.07	2.03	.37	3.0	2.43	4.01	5.40	--------	3.0	8.30	2.70	1.90
30	.90	1.76	.37	2.5	2.86	2.43	4.72	--------	6.0	5.85	2.70	1.76
31	.74	1.76	--------	2.0	--------	2.30	4.32	--------	5.0	--------	2.30	--------
Total	46.83	139.83	24.17	109.42	113.95	61.39	185.88	258.81	107.15	87.50	193.51	87.15
Mean												
Mgd	1.51	4.51	0.806	3.53	3.80	1.98	6.00	9.24	3.46	2.92	6.24	2.91
Cfs	2.34	6.98	1.25	5.46	5.88	3.06	9.28	14.3	5.35	4.52	9.66	4.49
Ac-ft	144	429	74	336	350	188	570	794	329	269	594	267

Calendar Year 1961:	Max	25	Min	0.37	Mean mgd	3.49	Mean cfs	5.40	Ac-ft	3,900
Fiscal Year 1961-62:	Max	58.3	Min	0.37	Mean mgd	3.88	Mean cfs	6.00	Ac-ft	4,340

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8- 3	1300	2.74	70.0	108	1-25	1800	2.81	76.0	118
8-18	-	2.88	84.8	131	2- 8	2000	3.46	158	244
11-11	-	3.17	117	181	2-10	2100	2.78	73.0	113
1- 1	1700	3.91	245	379	5-17	0430	4.67	395	611
1-23	2300	2.82	77.1	119					

* Discharge measurement made on this day.

Note.--No gage-height record July 1-19, Aug. 17-20, Oct. 20 to Nov. 16, Mar. 28 to Apr. 18.

9310. Atauloma Stream at Afao

Location.--Lat 14°21'05" S., long 170°47'45" W., on left bank at Afao, 100 ft upstream from bridge, and 500 ft upstream from mouth.

Drainage area.--0.59 sq mi.

Records available.--October 1958 to June 1962.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (by hand levels from high-tide mark).

Extremes.--Maximum discharge during year, 111 mgd (172 cfs) May 17 (gage height, 2.67 ft), from rating curve extended above 2.5 mgd as explained below; minimum, 0.11 mgd (0.17 cfs) Oct. 9.

1958-62: Maximum discharge, 170 mgd (263 cfs) Feb. 13, 1959 (gage height, 3.06 ft), from rating curve extended above 2.5 mgd by logarithmic plotting; minimum, 0.11 mgd (0.17 cfs) July 14, Aug. 22, 24, 25, 1959, Oct. 9, 1961.

Remarks.--Records good except those above 2.5 mgd, which are fair. Diversion above station for use at Atauloma School averages 10,400 gallons per day.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.08	0.9	2.95
.5	.26	1.0	4.35
.6	.60	1.2	8.20
.7	1.13	1.4	13.9
.8	1.89		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.39	0.15	0.31	0.16	*0.31	*0.60	0.60	0.44	0.60	1.42	1.00	0.60
2	.31	.31	.28	*.30	.34	.48	.51	.40	.64	*.78	.83	.51
3	.26	5.19	.26	.26	.37	.37	1.11	.37	.64	.55	.68	.48
4	.23	3.29	.26	1.27	.34	.37	1.12	.34	.93	.48	.68	.40
5	.23	.94	*.25	*.37	.40	.54	1.28	.90	*.83	.40	.77	.37
6	.23	.55	.31	.21	.46	.37	.94	2.35	1.13	.40	.60	.34
7	.28	.40	.31	.19	.31	.34	.83	*1.76	1.04	.40	.60	.34
8	.23	.71	.23	.15	*.53	1.58	1.06	5.43	1.10	.37	.48	.31
9	.61	.48	.21	.14	.60	.73	.78	3.26	.94	.37	*.48	.34
10	.31	.37	.21	*.19	.85	.51	.60	2.02	.73	*.41	1.06	.31
11	.26	.31	.19	1.04	3.85	.40	.51	2.87	.73	.62	.64	.31
12	*.28	.40	.19	2.61	1.66	.37	*.48	*1.51	.81	.34	.48	.26
13	.26	.31	*.19	1.35	1.59	.34	.44	2.39	.68	.34	.44	2.28
14	.23	.28	.17	.89	2.22	.31	.48	3.35	1.17	2.05	.48	5.19
15	.29	.51	.17	1.98	1.69	.47	.44	2.95	.83	1.41	1.60	2.13
16	.39	.84	.19	4.63	3.35	.51	.40	*1.66	.64	.89	2.67	*1.28
17	.31	.61	.19	1.00	1.13	4.10	3.42	1.35	.55	*.51	11.9	.94
18	.53	7.28	.21	.68	.94	1.20	1.20	2.98	.51	.53	2.91	2.08
19	.37	1.95	.33	.48	.73	.73	.84	1.99	.48	.40	1.66	1.62
20	.26	.89	.19	.40	*.64	.55	.64	1.68	*.40	.37	1.20	1.00
21	*.23	.64	.17	.65	.88	.48	1.45	2.22	.37	1.01	1.01	.83
22	.21	.55	.17	.48	.90	.40	*1.61	1.51	.34	.98	.83	.73
23	.23	.48	.15	*.37	.94	.51	3.02	1.13	.66	.60	.93	.68
24	.23	*.40	.15	.31	.64	.55	2.52	1.03	.48	.63	.68	.60
25	.21	.40	.17	.82	.55	.68	1.20	.94	.37	.55	.64	.55
26	.23	.37	.21	2.62	.48	.66	.83	.78	.37	1.48	.60	.51
27	.26	.37	.19	1.06	.40	*.73	.68	.73	.31	1.00	.60	.51
28	.19	.44	.19	.60	.40	.73	.68	.68	.34	2.86	.58	*1.42
29	.19	.34	.17	.44	.40	.89	.51	------	.58	2.87	.86	.60
30	.19	.31	.15	.37	1.54	.73	*.51	------	1.48	*1.51	.68	.51
31	*.17	.31	------	.34	------	.55	.51	------	1.13	------	.67	------
TOTAL	8.60	30.38	6.37	26.36	29.44	21.78	31.20	49.02	21.81	26.53	39.24	28.03
MEAN												
MGD	0.277	0.980	0.212	0.850	0.981	0.703	1.01	1.75	0.704	0.884	1.27	0.934
CFS	0.429	1.52	0.328	1.32	1.52	1.09	1.56	2.71	1.09	1.37	1.96	1.45
AC-FT	26	93	20	81	90	67	96	150	67	81	120	86

CALENDAR YEAR	1961:	MAX	7.28	MIN	0.14	MEAN MGD	0.801	MEAN CFS	1.24	AC-FT	897
FISCAL YEAR	1961-62:	MAX	11.9	MIN	0.14	MEAN MGD	0.873	MEAN CFS	1.35	AC-FT	977

* Discharge measurement made on this day.

Peak discharge (base, 40 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8- 3	1530	2.24	63.6	98.4	4-14	0130	1.94	40.8	63.1
8-18	1630	2.16	56.8	87.9	5-17	0530	2.67	111	172
1-23	2200	2.12	53.6	82.9	6-14	0830	2.58	99.6	154
2- 8	2030	2.33	72.0	111					

9480. Matuu Stream at Matuu

Location.--Lat 14°19'20" S., long 170°41'15" W., on left bank 0.4 mile (revised) northwest of Matuu and 0.5 mile upstream from mouth.

Drainage area.--0.24 sq mi.

Records available.--March 1958 to June 1962.

Gage.--Water-stage recorder. Altitude of gage is 75 ft (from topographic map).

Extremes.--Maximum discharge during year, 262 mgd (405 cfs) May 17 (gage height, 3.70 ft), from rating curve extended above 5.4 mgd by logarithmic plotting; minimum, 0.07 mgd (0.11 cfs) Sept. 29, 30.

1958-62: Maximum discharge, that of May 17, 1962; minimum, that of Sept. 29, 30, 1961.

Remarks.--Records good except those above 6.0 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	0.03	1.0	1.81
.6	.14	1.1	2.87
.7	.34	1.2	4.25
.8	.64	1.4	8.20
.9	1.09	1.6	14.1

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.27	0.12	0.19	0.09	0.23	0.39	1.07	0.59	0.54	1.01	1.00	0.42
2	.33	.43	.14	.99	.25	.25	.65	.36	.48	.42	.64	1.58
3	.27	.73	.12	.19	.27	.19	*3.55	.29	.44	.31	.54	.72
4	.21	1.24	.11	.31	.23	.19	2.73	.25	1.79	.27	.48	.48
5	.19	.39	.11	.21	.14	*.19	6.21	*.49	1.88	.27	.50	.36
6	.17	.23	.27	*.16	.14	.19	1.09	8.49	1.35	*.39	.52	*.31
7	.17	*.16	*.16	.12	*.14	.17	1.15	2.53	.82	.31	1.37	.29
8	.17	.30	.14	.11	.50	1.82	2.01	3.28	.68	.42	.48	.27
9	.87	.21	.11	.10	.76	.54	1.00	2.85	.82	.87	.39	.31
10	.29	.17	.12	.30	.39	.31	.73	2.91	.86	.42	.60	.27
11	.25	.21	.12	*.90	4.59	.25	.50	4.05	.68	2.06	.39	.25
12	.27	.29	.12	1.87	1.42	.23	.50	1.41	.75	.70	.39	.23
13	.23	.27	.11	1.04	3.35	.23	.42	2.35	*1.04	.39	.31	.79
14	.21	.23	.11	.68	3.21	.19	.34	2.80	1.31	.29	*.30	7.08
15	.93	.33	.11	5.19	1.17	.26	.50	6.45	1.46	.25	1.76	3.14
16	.64	*1.81	.10	6.51	6.23	1.40	.39	1.77	.56	.23	1.20	.82
17	.19	.80	.10	.92	1.76	3.84	2.19	1.63	.44	.21	13.7	.50
18	.14	5.77	.13	*.44	.90	1.53	.97	5.09	.36	*.19	6.06	.63
19	.12	1.50	.23	.31	.60	.84	.50	*3.40	.31	.21	*2.27	.81
20	.12	.54	.14	.27	.42	.44	.44	3.26	.27	.17	1.00	.56
21	.14	.36	.11	.35	*.36	.29	1.05	1.99	.27	.17	.85	.42
22	.14	.27	.11	.43	.34	.25	.89	1.45	.42	.16	.64	.34
23	.19	.23	.10	.29	.44	.27	1.45	1.20	.27	.17	.50	.29
24	.19	.21	.11	.25	.39	.46	1.09	.82	.23	.23	.44	.36
25	.14	.19	.10	.29	.29	.87	1.04	.64	.27	.16	.42	*.28
26	.19	.17	.10	1.35	.23	1.02	.54	.64	*.25	2.84	.39	.27
27	*.34	.18	.09	.68	.29	1.84	.42	1.02	.21	*1.06	.87	.29
28	.19	.30	.09	.29	.33	2.65	.57	.56	.23	10.2	.56	.48
29	.16	.17	.08	.19	.29	1.70	*.49	------	.33	5.50	.48	.27
30	.16	*.17	.08	.14	1.45	.64	.58	------	.54	2.53	.52	2.32
31	.12	.16	------	.12	------	.42	.57	------	1.12	------	.48	------
TOTAL	8.00	18.14	3.71	25.09	31.11	23.86	35.63	62.57	20.98	32.41	40.05	25.14
MEAN												
MGD	0.258	0.585	0.124	0.809	1.04	0.770	1.15	2.23	0.677	1.08	1.29	0.838
CFS	0.399	0.905	0.191	1.25	1.60	1.19	1.78	3.46	1.05	1.67	2.00	1.30
AC-FT	25	56	11	77	95	73	109	192	64	99	123	77

CALENDAR YEAR 1961: MAX 13.2 MIN 0.08 MEAN MGD 0.914 MEAN CFS 1.41 AC-FT 1,020
FISCAL YEAR 1961-62: MAX 13.7 MIN 0.08 MEAN MGD 0.895 MEAN CFS 1.38 AC-FT 1,000

* Discharge measurement made on this day.

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
11-13	2230	2.42	65.0	101	5-17	0500	3.70	262	405
2- 6	1830	2.47	70.0	108	6-14	2230	2.27	51.8	80.1
4-28	1930	2.72	98.4	152					

ISLAND OF TUTUILA

9600. West Branch Alega Stream at Alega

Location.--Lat 14°18'05" S., long 170°38'35" W., on left bank 500 ft above confluence with East Branch and 0.2 mile northwest of Alega.

Drainage area.--0.16 sq mi.

Records available.--March 1958 to June 1962.

Gage.--Water-stage recorder. Altitude of gage is 85 ft (from topographic map).

Extremes.--Maximum discharge during year, 29.7 mgd (46.0 cfs) May 17 (gage height, 2.58 ft), from rating curve extended above 3.5 mgd as explained below; minimum, 0.28 mgd (0.43 cfs) on several days.

1958-62: Maximum discharge, 55.2 mgd (85.4 cfs) June 23, 1958 (gage height, 3.15 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 except those for periods of no gage-height record and those above 3.5 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.8	0.15	1.2	1.90
.9	.38	1.5	4.90
1.0	.74		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1961 TO JUNE 1962

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.45	0.35	0.30	0.30	0.39	0.44	0.55	0.68	0.79	0.98	0.79	0.58
2	.50	.41	.30	.43	*.35	.38	.51	*.51	.79	.58	.66	.78
3	.45	.44	.30	.35	.43	.35	1.28	.51	.74	.55	.58	.58
4	.42	.44	.30	1.31	.35	*.53	1.74	.51	1.34	1.09	.58	.55
5	.41	.38	*.30	.38	.30	.38	3.85	.55	1.49	.74	.55	.48
6	.40	.32	.32	.30	.30	.35	1.45	2.14	.97	.62	.58	.48
7	.40	.32	.35	.28	.30	.30	1.20	1.39	.99	.55	1.14	.48
8	.40	.38	.38	.28	.35	.32	1.14	1.12	1.04	.69	*.58	.48
9	.70	.32	.38	.28	.41	.32	.94	1.26	.81	*.66	.55	.48
10	.45	.32	.44	.37	.38	.30	.84	1.18	.79	.62	.55	.44
11	.40	.32	.48	.51	1.18	.30	.70	1.84	.70	1.58	.51	.44
12	.62	.35	.35	*.86	.87	.30	.66	1.05	*.70	.89	.48	.41
13	.50	.32	.30	.76	*.58	.30	.62	1.14	.79	.66	.44	.53
14	.45	.32	.30	.75	1.01	.30	.58	*1.62	1.05	.62	.44	2.03
15	.80	.34	.30	3.03	1.03	.41	.72	3.97	.94	.58	.73	2.22
16	.60	.67	.30	3.88	1.75	.71	.82	1.90	.74	.55	.84	1.04
17	.45	.35	.30	1.04	1.13	2.84	1.10	1.58	.70	.55	4.09	.74
18	*.38	.98	.30	.70	.87	1.77	.84	2.99	.70	.58	3.71	.66
19	.38	.62	.30	.55	.70	1.04	.62	3.60	.62	.58	1.77	.58
20	.38	.38	.30	*.50	.58	.62	.63	2.70	.58	.55	1.32	.58
21	.38	.38	.30	.62	.62	.48	1.07	2.15	.58	.64	1.14	.55
22	.38	.35	.30	.44	.55	.44	.97	1.75	.66	.51	.89	.51
23	.70	*.32	.30	.38	.55	.44	.89	1.51	.62	.48	.79	.51
24	.50	.32	.28	.35	*.48	.44	.74	1.26	.58	.48	.74	.55
25	.45	.32	.28	.35	.48	.38	.62	1.09	.55	*.48	.66	.48
26	.47	.32	.28	.58	.48	.71	.59	1.04	.55	1.10	.62	.48
27	.54	.32	*.28	.44	.44	1.85	.88	.99	.51	1.03	2.11	1.56
28	*.38	.38	.30	.35	.48	*1.21	.82	.89	.51	2.31	*.89	3.56
29	.38	.32	.30	.32	.48	1.09	.62	------	*.66	2.58	.70	.99
30	.35	.32	.30	.30	.70	.70	.55	------	.61	1.14	.66	.89
31	.35	.32	------	.30	------	.58	.55	------	.87	------	.62	------
TOTAL	14.42	12.00	9.52	21.29	18.52	20.58	29.09	42.92	23.97	24.97	30.71	24.64
MEAN												
MGD	0.465	0.387	0.317	0.687	0.617	0.664	0.938	1.53	0.773	0.832	0.991	0.821
CFS	0.719	0.599	0.491	1.06	0.955	1.03	1.45	2.37	1.20	1.29	1.53	1.27
AC-FT	44	37	29	65	57	63	89	132	74	77	94	76

CALENDAR YEAR	1961:	MAX	7.57	MIN	0.28	MEAN MGD	0.882	MEAN CFS	1.36	AC-FT	988
FISCAL YEAR	1961-62:	MAX	4.09	MIN	0.28	MEAN MGD	0.747	MEAN CFS	1.16	AC-FT	837

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
5-17	2300	2.58	29.7	46.0	6-27	2330	2.51	28.0	43.3
6-14	2300	2.27	20.1	31.1					

* Discharge measurement made on this day.
Note.--No gage-height record July 1-17, 23-27, Aug. 2.

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 area 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 stream flow 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 1962

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Kauai					
110.	Waiakoali Stream at Kokee ditch diversion, near Waimea.	Lat 22°07'25", long 159°37'25", 0.3 mile upstream from mouth and 12 miles northeast of Waimea.	1.7	1909-12, 1919-25, 1961-62	9-18-61	0.685	1.06
120.	Kauaikinana Stream near Waimea.	Lat 22°07'45", long 159°38'05", 0.6 mile upstream from mouth and 12 miles northeast of Waimea.	1.2	1911-16, 1919-25, 1961-62	4-23-62	1.32	2.05
295.	Mokihana Stream near Waimea.	Lat 21°59'35", long 159°40'03", 500 ft upstream from mouth and 2.5 miles north of Waimea.	4.77	1962	4-13-62	2.07	3.20
		Island of Oahu					
2010.	Right Branch of North Fork Kaukonahua Stream near Wahiawa.	Lat 21°31'15", long 157°56'55", 200 ft upstream from intake of Wahiawa Water Co. tunnel and the confluence of Right and Left Branches.	1.2	1913-53, 1960-62	9-27-61 2-12-62	1.31 .749	2.03 1.16
2351.	Nuuanu Stream above Waolani confluence, at Honolulu.	Lat 21°19'20", long 157°51'33", at Liliuokalani Gardens, 0.3 miles west of Kawananakoa School, and 0.8 miles southwest of St. Francis Hospital.	4.48	1960-62	8-16-61 5-21-62	2.78 6.59	4.30 10.2
2356.	Waolani Stream at mouth, at Honolulu.	Lat 21°19'20", long 157°51'34", at Liliuokalani Gardens, 0.35 mile west of Kawananakoa School, and 0.8 mile southwest of St. Francis Hospital.	1.70	1960-62	8-16-61 5-21-62	.143 1.29	.221 2.00
2605.	Maunawili Stream above Kailua Road, near Kailua.	Lat 21°22'49", long 157°45'48", 800 ft upstream of Kailua Road, 0.7 mile west of Koolau Boys Home, and 1.7 miles southwest of Kailua Post Office.	5.62	1959-62	6- 3-60 6-30-60 7-29-60 3-27-61 5-10-61 6-16-61 8-16-61 9-15-61 6-26-62	4.93 3.09 1.94 3.79 2.36 1.98 1.80 1.31 3.32	7.63 4.78 3.00 5.86 3.65 3.06 2.79 2.03 5.14
2641.	Kahanaiki Stream at Kailua Road, near Kailua.	Lat 21°22'49", long 157°46'06", at Kailua Road, 1.1 miles west of the Koolau Boys Home, and 1.9 miles southwest of Kailua Post Office.	1.42	1959-62	6-30-60 7-29-60 3-27-61 5-10-61 6-16-61 7-24-61 8-16-61 9-15-61 6-26-62	.454 .449 .918 .586 .587 .586 .482 .379 .672	.702 .695 1.42 .907 .908 .907 .746 .586 1.04

Discharge measurements made at low-flow partial-record stations during fiscal year 1962--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Oahu--Continued					
2709.	Luluku Stream at altitude 200 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.	0.45	1959-62	1-19-60	0.328	0.507
					2- 9-60	.260	.403
					3-16-60	.672	1.04
					5- 6-60	.368	.569
					7-27-60	.449	.694
					8- 3-60	.436	.675
					10- 6-60	.579	.896
					11- 9-60	.605	.936
					1-24-61	.751	1.16
					3-27-61	.840	1.30
					5-10-61	.542	.839
					6-16-61	.488	.755
					8-16-61	.363	.561
					9-13-61	.301	.466
					9-15-61	.245	.379
					6-26-62	.471	.729
2744.99	Keaahala Stream at Kam Highway, at Kaneohe.	Lat 21°25'12", long 157°48'15", 35 ft upstream from bridge at Kamehameha Highway in Kaneohe.	.59	1959-62	6-26-62	2.42	3.74
2825.	Ahuimanu Stream near Kahaluu.	Lat 21°27'04", long 157°50'13", at bridge site on Ahuimanu Road and 0.8 mile south of Kahaluu.	2.25	1959, 1962	6-26-62	1.06	1.64
2831.	Kahaluu Stream left bank tributary near Kahaluu.	Lat 21°26'21", long 157°51'10", 3.5 miles northwest of Parker School, and 1.9 miles southwest of Kahaluu.	.12	1960-62	6-26-62	.112	.173
2834.	Kahaluu Stream near Kahaluu.	Lat 21°27'14", long 157°50'17", at bridge site, 600 ft upstream from confluence with Ahuimanu Stream, 0.6 mile south of Kahaluu, and 2.45 miles southeast of Waiahole School.	1.36	1962	6-26-62	.840	1.30
2845.	Waihee Stream above Kahaluu Stream, near Kahaluu.	Lat 21°27'31", long 157°50'26", at bridge site, 300 ft upstream from confluence with Kahaluu Stream, 0.1 mile southwest of Kahaluu, and 3.8 mile northwest of Parker School.	2.24	1960-62	8-10-60	7.63	11.8
					9-28-61	6.33	9.79
					6-26-62	5.91	9.14
2931.	Waianu Stream at Waiahole.	Lat 21°28'59", long 157°51'49", 0.6 miles southwest of Waiahole School and 2.3 miles southwest of Kahaluu.	1.65	1959-62	10-27-61	1.34	2.07
					6-27-62	.808	1.25
2959.95	Kahana Stream at mauka trail crossing, near Kahana.	Lat 21°32'17", long 157°53'29", 1.76 miles upstream from main bridge on Kamehameha Highway and 2.84 miles southwest of Kaaawa School.	3.21	1960-62	7-31-61	9.89	15.3
2970.	Kawa Stream near Kahana.	Lat 21°32'33", long 157°53'00", 1.1 miles southwest of Kahana, and 2.3 miles southwest of Kaaawa School.	2.11	1914-17, 1960-62	10- 6-60	1.69	2.61
					10- 4-61	2.75	4.25
3250.	Kamananui Stream at Pupukea Military Road, near Mauna Wai.	Lat 21°37'25", long 158°01'04", 3.5 miles southeast of Mauna Wai and 4.5 miles east of Kawailoa Camp.	3.15	1959-62	8-11-61	1.23	1.90
3350.	Kawainui Stream above Kamananui ditch, near Wahiawa.	Lat 21°35'00", long 158°00'22", 1000 ft upstream from Kamananui ditch intake and 5.4 miles north of Leilehua High School.	4.74	1960-62	8-11-61	2.97	4.60
		Island of Guam, Mariana Islands					
8010.	La Sa Fua River near Umatac.	Lat 13°18'25" N., long 144°39'45" E., 0.6 mile northeast of Umatac, 3.1 miles north of Merizo, and 5.5 miles south of Agat.	1.93	1953-62	3-15-62		.885
					4-25-62		.607
					5-15-62		.457
8100.	Right Branch Umatac River at Umatac.	Lat 13°17'50" N., long 144°39'50" E., 50 ft upstream from Left Branch and 0.3 mile southeast of Umatac Catholic Church.	.33	1960-62	3-15-62		.560
					4-25-62		.593
					5-15-62		.383
8120.	Left Fork of Left Branch Umatac River near Umatac.	Lat 13°17'25" N., long 144°39'50" E., 0.4 mile upstream from Right Fork and 1.2 miles southeast of Umatac Catholic Church.	.15	1960-62	4-25-62		.174
					5-15-62		.086
8130.	Piga Spring near Umatac.	Lat 13°17'55" N., long 144°40'47" E., at Umatac Village water diversion at the source of the Right Fork of Left Branch Umatac River, 1.4 miles due east of Umatac Catholic Church.	-	1955-62	3-15-62		.167
					4-25-62		.167
					5-15-62		.167

Discharge measurements made at low-flow partial-record stations during fiscal year 1962--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Guam, Mariana Islands--Continued					
8140.	Right Fork of Left Branch Umatac River at Umatac.	Lat 13°17'40" N., long 144°40'20" E., 50 ft upstream from Left Fork and 0.9 mile southeast of Umatac Catholic Church.	0.16	1960-62	3-15-62 4-25-62 5-15-62		0.187 .152 .083
8170.	Toguan River near Umatac.	Lat 13°17'05" N., long 144°39'35" E., at highway bridge, 1.0 mile south of Umatac Catholic Church.	.21	1951-62	3-15-62 4-25-62 5-15-62		.185 .135 .061
8200.	Geus River above Siligin Spring tributary, near Merizo.	Lat 13°16'45" N., long 144°40'55" E., upstream from pipeline diversion to village of Merizo and 2.0 miles northeast of Merizo School.	.20	1960-62	3-15-62 4-25-62 5-15-62		.155 .129 .097
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 mile northeast of Merizo School.	-	1954-62	3-15-62 4-24-62 5-15-62		.076 .056 .050
8207.	Geus River below Siligin Spring tributary, near Merizo.	Lat 13°16'41" N., long 144°40'55" E., above pool in back of Merizo water supply dam, 1.6 miles northeast of Merizo School, and 2.0 miles southeast of Umatac School.	.60	1962	3-15-62 5-15-62		.387 .315
8250.	Ajayan River near Inarajan.	Lat 13°15'16" N., long 144°42'56" E., above a large open field, 2.4 miles southwest of Inarajan School, and 3.8 miles southeast of Merizo School.	1.08	1962	5-24-62		.150
8280.	Agfayan River near Inarajan.	Lat 13°16'03" N., long 144°43'42" E., 1.2 miles southwest of Inarajan School and 4.5 miles east of Merizo School.	1.67	1962	5-24-62		.167
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, 1.6 miles northwest of Inarajan Catholic Church, and 5.4 miles southwest of Talofofo School.	.62	1960-62	3-21-62 5- 1-62 5-16-62		.859 .632 .476
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, 1.6 miles northwest of Inarajan Catholic Church, and 5.3 miles southwest of Talofofo School.	.44	1960-62	3-21-62 5- 1-62 5-16-62		.914 .638 .684
8330.	Right Fork of Left Branch Inarajan River near Inarajan.	Lat 13°17'25" N., long 144°43'45" E., above filter plant, 1.6 miles northwest of Inarajan Catholic Church, and 4.9 miles southwest of Talofofo School.	.27	1960-62	3-21-62 5- 1-62 5-16-62		.494 .453 .479
8340.	Left Fork of Left Branch Inarajan River near Inarajan.	Lat 13°17'10" N., long 144°44'10" E., upstream from confluence with Right Fork, 1.0 mile northwest of Inarajan Catholic Church, and 4.8 miles southwest of Talofofo School.	.17	1960-62	3-15-62 3-21-62 5- 1-62 5-16-62		.243 .201 .114 .134
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	1951-62	3-21-62 4-27-62 5-16-62		.377 .352 .234
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.	6.5	1951-62	3-26-62 4-23-62 5-22-62		1.24 3.31 1.91
8460.	Tolaeyuus River at mouth, near Agat.	Lat 13°21'30" N., long 144°42'30" E., upstream from confluence with Fena River, about 0.4 miles east of Fena Dam spillway, and 4.0 miles southeast of Agat School.	7.42	1962	3-23-62 4-23-62		2.39 3.58
8520.	Sarasa River near Talofofo.	Lat 13°20'20" N., long 144°44'05" E., 50 ft upstream from Talofofo River, 1.6 miles southwest of Talofofo School, and 4.5 miles northwest of Inarajan Catholic Church.	.42	1960-62	3-28-62 4-24-62		.241 .254
8540.	Left Branch Ugum River near Talofofo.	Lat 13°19'10" N., long 144°43'45" E., 50 ft upstream from Right Branch and 2.9 miles southwest of Talofofo School.	2.96	1961-62	3-22-62 5- 9-62		3.83 2.92
8545.	Right Branch Ugum River near Talofofo.	Lat 13°19'10" N., long 144°43'45" E., at confluence with Left Branch, 2.9 miles southwest of Talofofo School.	2.70	1961-62	3-22-62 5- 9-62		3.04 2.00

Discharge measurements made at low-flow partial-record stations during fiscal year 1962--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Guam, Mariana Islands--Continued					
8590.	Left Branch Ylig River above pumping station, near Yona.	Lat 13°24'05" N., long 144°45'05" E., 0.2 mile upstream from pumping station, 0.3 mile upstream from Ylig River, 1.7 miles southwest of Yona Catholic Church, and 3.2 miles north of Talofofo Catholic Church.	1.98	1960-62	3-23-62		0.499
					4-27-62		.413
					5-16-62		.978
8620.	Lonfit River near Ordot.	Lat 13°26'05" N., long 144°45'10" E., upstream from Sigua River, 0.9 mile south of Ordot, 2.6 miles south of Agana, and 3.5 miles southeast of Asan.	3.1	1951-62	3-20-62		.695
					4-26-62		2.17
					5-17-62		.952
8630.	Sigua River near Ordot.	Lat 13°26'10" N., long 144°45'10" E., upstream from Lonfit River, 0.9 mile south of Ordot, 2.6 miles south of Agana, and 3.5 miles southeast of Asan.	3.1	1961-62	3-20-62		.561
					4-26-62		2.92
					5-17-62		1.04
8670.	Janum Spring near Yigo.	Lat 13°30'56" N., long 144°54'49" E., in small cave at sea level in limestone cliff on edge of reef, 2.2 miles southeast of Yigo.	-	1953-62	5- 4-62		3.23
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	4- 9-62		.009
					5- 4-62		.012
8690.	Chunge Spring near Yigo.	Lat 13°32'07" N., long 144°54'52" E., about 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	10- 3-61		.057
					10-13-61		.063
					1- 5-62		.030
					1-12-62		.022
					1-19-62		.017
					1-26-62		.018
					2- 2-62		.021
					2-10-62		.032
					2-20-62		.025
					3- 1-62		.024
					3- 9-62		.023
					3-19-62		.020
					3-24-62		.015
					4- 6-62		.007
					4-20-62		.017
					5- 4-62		.007
					5-12-62		.004
					5-26-62		.004
					6- 1-62		.005
					6-15-62		.006
8750.	Agana River at Agana.	Lat 13°28'25" N., long 144°45'11" E., 0.15 miles south of Leary Junction on Marine Drive, and 0.2 miles east of the Guam Legislature building.	8.68	1962	2-19-62		1.01
					2-21-62		1.02
					3-30-62		.233
					5- 2-62		.519
					5-17-62		.326
8790.	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	1951-62	3-20-62		.166
					4-27-62		.145
					5-14-62		.105
8810.	Asan Spring at Asan.	Lat 13°28'11" N., long 144°43'04" E., on hillside 200 ft above upper street in Asan Village, 0.2 mile southeast of Marine Drive, and 0.8 mile southwest of Coontz Junction.	-	1962	1-11-62		.416
					1-19-62		.437
					1-26-62		.587
					2- 2-62		.758
					2- 9-62		.659
					2-16-62		.655
					2-23-62		.624
					3- 9-62		.680
					3-16-62		.492
					3-23-62		.431
					3-30-62		.445
					4- 6-62		.421
					4-13-62		.502
					4-20-62		.476
					4-27-62		.489
					5-11-62		.588
					5-18-62		.433
					5-25-62		.455

Discharge measurements made at low-flow partial-record stations during fiscal year 1962--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Guam, Mariana Islands--Continued					
8815.	Masso River at dam, near Piti.	Lat 13°27'21" N., long 144°41'43" E., at end of penstocks on downstream side of dam, 0.5 mile southeast of Schroeder Junction, and 0.7 mile south of approximate center of Piti Village.	0.74	1962	4-12-62 5-15-62		0.051 .400
8820.	Atantano River near Agat.	Lat 13°25'15" N., long 144°40'35" E., 500 ft upstream from highway bridge, 2.9 miles northeast of Agat School, and 5.6 miles northwest of Yona Catholic Church.	2.81	1958-62	3-20-62 4-26-62 5-17-62		.614 .663 .836
8830.	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	1-11-62 1-19-62 1-26-62 2- 2-62 2- 9-62 2-16-62 2-23-62 3- 2-62 3- 9-62 3-30-62		.248 .280 .153 .106 .229 .237 .207 .210 .191 .127
8850.	Taleyfac River near Agat.	Lat 13°21'40" N., long 144°39'00" E., 800 ft upstream from bridge on Agat-Umatac Road, 1.7 miles southwest of Agat School, and 5.0 miles northwest of Umatac Catholic Church.	.46	1959-62	3-20-62 4-26-62 5-17-62		.694 .658 .413
8878.	Right Branch Cetti River near Umatac.	Lat 13°18'58" N., 144°39'21" E., at confluence with Left Branch Cetti River, 50 ft upstream from gaging station on Cetti River, and 1.3 miles northwest of Umatac School.	.37	1961-62	3-30-62 4-28-62		.336 .255
8879.	Left Branch Cetti River near Umatac.	Lat 13°18'58" N., long 144°39'21" E., at confluence with Right Branch Cetti River, 50 ft upstream from gaging station on Cetti River.	.28	1961-62	3-30-62		.080
		Island of Tutuila, American Samoa					
9000.	Vailoa Stream at Tula.	Lat 14°17'12" S., long 170°34'36" W., 100 ft above old reservoir, at Tula.	.06	1958-62	9-21-61	.005	.008
9010.	Right Fork Vaisa Stream at Onenoa.	Lat 14°17'03" S., long 170°34'55" W., 10 ft below a 15-ft waterfall and 100 ft above a branch, at Onenoa.	.03	1958-62	9-21-61 9-28-61	.020 .014	.031 .022
9020.	Left Fork Vaisa Stream at Onenoa.	Lat 14°17'05" S., long 170°34'56" W., 6 ft above 8-ft waterfall and 20 ft below 30-ft waterfall, at Onenoa.	.09	1958-62	9-21-61 9-28-61	.072 .060	.111 .093
9030.	Afinuao Stream at Onenoa.	Lat 14°17'08" S., long 170°35'06" W., 10 ft below a branch, at Onenoa.	.07	1958-62	9-21-61 9-28-61	.010 .011	.016 .017
9040.	Laloulu Stream at Aoa.	Lat 14°17'34" S., long 170°35'09" W., 50 ft above reservoir and 100 ft below a branch, at Aoa.	.03	1958-62	9-21-61	.005	.008
9050.	Lepa Stream at Aoa.	Lat 14°17'49" S., long 170°35'32" W., 100 ft above two waterfalls and 100 ft downstream from lower bridge, at Aoa.	.06	1958-62	9-21-61 9-29-61	.014 .020	.022 .031
9070.	Panota Stream at Masausi.	Lat 14°17'16" S., long 170°36'23" W., 75 ft below 50-ft waterfall, at Masausi.	.05	1958-62	10- 4-61	.037	.057
9080.	Vaipito Stream at Masausi.	Lat 14°17'24" S., long 170°36'33" W., 10 ft above trail crossing immediately above an 8-ft waterfall, and 40 ft above a 40-ft waterfall, at Masausi.	.08	1958-62	10- 4-61	.008	.012
9090.	Tagau Stream at Masefau.	Lat 14°17'10" S., long 170°38'32" W., 50 ft below a 75-ft waterfall and 100 ft above reservoir, at Masefau.	.02	1958-62	10- 4-61	.032	.050
9100.	Tulaloa Stream at Masefau.	Lat 14°17'04" S., long 170°38'16" W., at Masefau.	.39	1958-62	10- 4-61	.189	.292
9110.	Pago Stream at Afono.	Lat 14°17'24" S., long 170°39'04" W., 25 ft above reservoir, at Afono.	.32	1959-62	10- 4-61	.057	.088
9130.	Gaga Stream at Vatia.	Lat 14°16'33" S., long 170°40'41" W., 15 ft below a branch, at Vatia.	.26	1958-62	10-28-61	.162	.251

Discharge measurements made at low-flow partial-record stations during fiscal year 1962--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Tutuila, American Samoa--Continued					
9140.	Leafu Stream at Vatia.	Lat 14°16'21" S., long 170°40'45" W., 70 ft above reservoir, at Vatia.	0.12	1958-62	10- 4-61 10-28-61	0.257 .125	0.398 .193
9160.	Leua Stream at Fagasa.	Lat 14°18'28" S., long 170°43'10" W., 100 ft downstream from U.S.M.C. reservoir, at Fagasa.	.14	1959-61	9-20-61 9-29-61	.151 .019	.234 .029
9170.	Leale Stream at Fagasa.	Lat 14°18'35" S., long 170°43'10" W., 40 ft above crossing of 2-inch galvanized pipe taking water from spring at roadside, at Fagasa.	.26	1959-62	9-20-61 9-29-61	.254 .102	.393 .158
9180.	Lesina Stream at Fagasa.	Lat 14°18'45" S., long 170°43'35" W., under crossing of 3-inch galvanized pipe carrying water from spring to Fagasa.	.30	1959-62	9-20-61	.003	.005
9190.	Fagafue Stream near Aasu.	Lat 14°19'33" S., long 170°45'11" W., upstream from three inflows on right bank, near Aasu.	.69	1959-62	10- 3-61	1.37	2.12
9192.	Upper Right Branch Fagafue Stream near Aasu.	Lat 14°19'28" S., long 170°45'08" W., at altitude 80 ft and about 2,100 ft from mouth of stream, near Aasu.	.15	1960-62	10- 3-61 12- 9-61	.332 .162	.514 .251
9194.	Lower Right Branch Fagafue Stream near Aasu.	Lat 14°19'25" S., long 170°45'07" W., at altitude 70 ft, about 1,800 ft from mouth of stream, near Aasu.	.17	1960-62	12- 9-61	.102	.158
9198.	Aaeu Stream at Aolau.	Lat 14°19'56" S., long 170°45'58" W., at altitude 1,050 ft, at Aolau.	.27	1960-62	9-26-61 10- 2-61	.034 .023	.053 .036
9200.	Aasu Stream near Aasu.	Lat 14°19'15" S., long 170°45'34" W., 300 ft below 100-ft waterfall in a pool 25 ft long, at Aasu.	.73	1959-62	10- 3-61	1.45	2.24
9220.	Vaisa Stream at Aoloau Tuai.	Lat 14°19'06" S., long 170°46'53" W., at Aoloau Tuai.	.29	1959-62	10- 3-61	.253	.391
9230.	Vailolo Stream at Aoloau Tuai.	Lat 14°19'15" S., long 170°47'14" W., 100 ft below branch, at Aoloau Tuai.	.67	1959-62	10- 3-61	.982	1.52
9240.	Matavai Stream at Fagaalo.	Lat 14°19'15" S., long 170°48'18" W., 25 ft upstream from 90° bend to right in stream, 5 ft above first small waterfall in a series of small waterfalls, at Fagaalo.	.81	1959-62	10- 3-61	.184	.285
9250.	Moloata Stream at Moloata.	Lat 14°19'44" S., long 170°48'16" W., 100 ft below 45° bend to right in stream, at Moloata.	.47	1959-62	10- 3-61	.885	1.37
9260.	Vaitele Stream at Poloa.	Lat 14°20'29" S., long 170°49'20" W., at Poloa.	.12	1959-62	9-25-61	.023	.036
9270.	Leafu Stream at Amanave.	Lat 14°20'50" S., long 170°49'28" W., 100 ft above reservoir, at Amanave.	.04	1959-62	9-25-61 9-30-61	.013 .013	.020 .020
9280.	Afutele Stream at Agugulu.	Lat 14°21'13" S., long 170°48'46" W., at mouth of pool, 30 ft downstream from branch, at Agugulu.	.15	1959-62	9-25-61 9-30-61	.095 .083	.147 .128
9290.	Utumea Stream at Utumea.	Lat 14°21'04" S., long 170°48'30" W., 50 ft above reservoir, at Utumea.	.14	1959-62	9-25-61 9-30-61	.116 .105	.179 .162
9298.	Utuanua Itiiti Stream at Seetaga.	Lat 14°20'49" S., long 170°48'14" W., at altitude 50 ft on right branch, 800 ft from mouth, at Seetaga.	.12	1960-62	9-25-61 9-30-61	.067 .057	.104 .088
9300.	Utuanua Tele Stream at Seetaga.	Lat 14°20'43" S., 170°48'12" W., 15 ft above first waterfall and 35 ft below second waterfall, at Seetaga.	.12	1959-62	9-25-61 9-30-61	.061 .069	.094 .107
9320.	Asili Stream near Asili.	Lat 14°20'45" S., long 170°47'29" W., 100 ft below branch, near Asili.	.38	1959-62	9-25-61 9-30-61	.330 .332	.511 .514
9325.	Asili Stream at Asili.	Lat 14°21'06" S., long 170°47'26" W., 30 ft above former gaging station control, at Asili.	.54	1959-62	9-25-61 9-30-61	.386 .354	.597 .548
9330.	Vaipuga Stream at Amaluia.	Lat 14°20'47" S., long 170°47'09" W., at Amaluia.	.19	1959-62	9-27-61 9-30-61	.018 .029	.028 .045

Discharge measurements made at low-flow partial-record stations during fiscal year 1962--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Tutuila, American Samoa--Continued					
9340.	Leafu Stream near Leone.	Lat 14°20'49" S., long 170°46'40" W., 30 ft above new reservoir, near Leone.	0.20	1958-62	9-27-61 10- 2-61	0.622 1.38	0.962 2.14
9350.	Fuafua Stream at Malaeloa.	Lat 14°21'02" S., long 170°45'51" W., 35 ft below branch, at Malaeloa.	.35	1959-62	9-27-61	.139	.215
9355.	Sigaloa Stream at Malaeloa.	Lat 14°21'23" S., long 170°45'53" W., 20 ft above reservoir, at Malaeloa.	.04	1959-62	9-27-61	.011	.017
9360.	Leaveave Stream at Mapusaga Fou.	Lat 14°20'16" S., long 170°45'08" W., immediately above reservoir, at Mapusaga Fou.	.05	1959-62	9-26-61 10- 2-61	.070 .111	.108 .172
9370.	Mapusaga Tuai Stream at Mapusaga Tuai.	Lat 14°20'44" S., long 170°44'54" W., 40 ft above reservoir, at Mapusaga Tuai.	.08	1959-62	9-25-61 9-29-61	.064 .057	.099 .088
9380.	Right Branch Taumata Stream near Mapusaga Tuai.	Lat 14°19'30" S., long 170°44'07" W., at Old Government Dairy, 1,000 ft above reservoir, and 1.8 miles northeast of Mapusaga Tuai.	.08	1959-62	9-22-61 9-29-61	.036 .048	.056 .074
9390.	Left Branch Taumata Stream near Mapusaga Tuai.	Lat 14°19'39" S., long 170°43'51" W., at Old Government Dairy, 75 ft below a small branch, and 1.7 miles northeast of Mapusaga Tuai.	.24	1959-62	9-22-61 9-29-61	.091 .070	.141 .108
9400.	Right Branch Vaitele Stream at Tafuna.	Lat 14°20'05" S., long 170°43'39" W., above reservoir and second pool, at Tafuna.	.25	1958-62	9-22-61 9-29-61	.180 .162	.279 .251
9410.	Left Branch Vaitele Stream at Tafuna.	Lat 14°20'09" S., long 170°43'29" W., at Tafuna.	.11	1958-62	9-22-61 9-29-61	.115 .107	.178 .166
9420.	Asofitu Stream near Nuuuli.	Lat 14°20'05" S., long 170°43'09" W., 50 ft below 20-ft waterfall, near Nuuuli.	.10	1959-62	9-22-61 9-30-61	.048 .055	.074 .085
9430.	Papa Stream near Nuuuli.	Lat 14°19'59" S., long 170°42'53" W., 20 ft above second waterfall above reservoir and 30 ft below 15-ft waterfall, near Nuuuli.	.16	1959-62	9-25-61 9-30-61	.306 .249	.473 .385
9440.	Tauese Stream near Nuuuli.	Lat 14°19'51" S., long 170°42'34" W., 200 ft below 100-ft waterfall, near Nuuuli.	.61	1959-62	9-25-61 9-30-61	.483 .381	.747 .589
9450.	Amaile Stream at Nuuuli.	Lat 14°19'54" S., long 170°41'55" W., 200 ft below 100-ft waterfall, at Nuuuli.	.14	1959-62	9-26-61 9-29-61	.139 .107	.215 .166
9460.	Avau Stream at Faganeanea.	Lat 14°19'37" S., long 170°41'45" W., above fourth waterfall abeve right branch, at Faganeanea.	.08	1959-62	9-26-61 9-29-61	.080 .078	.124 .121
9470.	Afu Stream at Faganeanea.	Lat 14°19'24" S., long 170°41'34" W., immediately below 60-ft waterfall, at Faganeanea.	.21	1958-62	9-26-61 9-29-61	.024 .012	.037 .019
9490.	Fagaalu Stream at Fagaalu.	Lat 14°18'43" S., long 170°41'58" W., immediately above Virgin pool waterfall, at Fagaalu.	.24	1959-62	9-23-61	.088	.136
9498.	Utumoa Stream at Pago Pago.	Lat 14°18'45" S., long 170°42'30" W., 50 ft above public works catchment and 250 ft above site of old gaging station, at Pago Pago.	.06	1959-62	9-20-61 9-28-61	.237 .115	.367 .178
9505.	Utumoa Stream near Pago Pago.	Lat 14°18'29" S., long 170°42'32" W., 20 ft above intake, near Pago Pago.	.13	1959-62	9-20-61 10- 2-61	.153 .341	.237 .528
9510.	Vaipito Stream at Pago Pago.	Lat 14°18'38" S., long 170°42'39" W., 50 ft above Steffany reservoir, at Pago Pago.	.09	1959-62	9-20-61 10- 2-61	.062 .320	.096 .495
9530.	Matagisaile Stream above reservoir, at Aua.	Lat 14°17'21" S., long 170°40'07" W., above reservoir, midway between upper and lower waterfalls, at Aua.	.09	1959-62	9-20-61 9-28-61	.083 .075	.128 .116
9535.	Lalolama Stream at Aua.	Lat 14°17'29" S., long 170°39'43" W., at trail crossing,,at Aua.	.10	1959-62	9-20-61 9-28-61	.071 .031	.110 .048
9550.	Ogesosopo Stream at Ogesosopo.	Lat 14°18'18" S., 170°40'01" W., 200 ft above catchment, at Ogesosopo.	.05	1959-62	9-20-61 9-28-61	.052 .039	.080 .060
9555.	Vaisina Stream at Laulii Fou.	Lat 14°18'37" S., 170°39'40" W., 40 ft above reservoir, at Laulii Fou.	.04	1959-62	9-20-61 9-28-61	.015 .010	.023 .016

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	
							Mgd	Cfs
		Island of Oahu--Continued						
2375.	Pauoa Stream at Lusitana Street, at Honolulu.	Lat 21°19'18", long 157°51'03", on upstream side of left abutment of Lusitana Street bridge, at Honolulu.	1.52	1958-62	2-26-62	1.72	(/)	(/)
2472.	Waialaenui Gulch at Honolulu.	Lat 21°16'51", long 157°47'04", on right bank 75 ft downstream from Kalanianaole Highway at Honolulu.	1.75	1957-62	12-30-60 10-31-61	3.4 3.70	*540 720	*839 1,110
2475.	Wailupe Gulch at Aina Hainn.	Lat 21°17'46", long 157°45'29", on right downstream wingwall at Ani Street bridge, at Aina Haina.	2.35	1958-62	12-30-60 10-31-61	1.48 2.86	*140 350	*217 542
2479.	Kuliouou Stream at Kuliouou.	Lat 21°17'44", long 157°43'33", at footbridge 0.4 mile upstream from Kalanianaole Highway brdige, at Kuliouou.	1.21	1958-62	5- 5-62	1.68	(/)	(/)
2488.	Unnamed tributary to Pacific Ocean at Waimanalo.	Lat 21°20'31", long 157°42'39", on upstream side of left wingwall of Hihimanu Street culvert, 0.8 mile northwest of Waimanalo Post Office.	1.21	1958-62	11- 1-61	4.64	300	464
2605.	Maunawili Stream above Kailua Road, near Kailua.	Lat 21°22'47", long 157°45'48", on upstream side of right pier of bridge on abandoned highway, 400 ft upstream from Kalanianaole Highway, and 1.7 miles southwest of Kailua Post Office.	5.62	1958-62	1-26-61 3-12-62	6.72 6.60	*560 540	*866 836
2644.	Kawainui Swamp drainage canal at Kailua Road, at Kailua.	Lat 21°23'47", long 157°44'54", on left bank upstream wingwall of bridge, 0.2 mile west of Kailua Post Office, and 1.4 miles south of Kainalu School.	-	1962	3-12-62	.51	(/)	(/)
2645.	Kawainui Swamp drainage canal at Wanaao Road, at Kailua.	Lat 21°23'30", long 157°44'00", on left bank about 100 ft upstream from bridge and 2.0 miles southeast of Kainalu School.	-	1962	5- 5-62	.55	(/)	(/)
2647.	Kaelepulu Stream at Lihiwai Road, at Lanikai.	Lat 21°24'00", long 157°43'48", on left bank upstream wingwall of bridge, 1.0 miles southeast of Kailua Post Office, and 1.8 miles southeast of Kainalu School.	-	1962	11- 2-61	1.39	(/)	(/)
2744.99	Keaahala Stream at Kamehameha Highway, at Kaneohe.	Lat 21°25'12", long 157°48'15", on left bank 36 ft upstream from bridge at Kamehameha Highway, at Kaneohe.	.59	1958-62	12- 4-60 11- 1-61	2.57 3.54	105 210	162 325
2835.	Kahaluu Stream at Kahaluu.	Lat 21°27'23", long 157°50'15", at private road bridge 0.45 mile above estuary, and 0.5 mile south of Kahaluu.	3.70	1960-62	3-12-62	4.07	(/)	(/)
2959.	Makaua Stream at Kaaawa.	Lat 21°33'36", long 157°51'24", on left downstream wingwall of Kamehameha Highway brdige, at Kaaawa.	.53	1958-62	11- 1-61	2.40	(/)	(/)
3045.	Kaluanui Stream at altitude 30 ft, near Hauula.	Lat 21°35'55", long 157°54'25" on left downstream wingwall of abandoned railroad bridge, 0.6 mile upstream from bridge on Kamehameha Highway, and 1.2 miles southeast of cemetery, near Hauula.	2.12	1958-62	11- 1-61	5.12	1,400	2,170
3105.01	Malaekahana Stream at altitude 30 ft, near Kahuku.	Lat 21°39'46", long 157°57'12", on right foundation and wingwall of plantation railroad bridge, 1.3 miles south of Sugar Mill, near Kahuku.	3.80	1959-62	*8-30-60 3-13-62	*8.01 9.74	*1,080 2,030	*1,670 3,140
3110.	Olo Stream near Kahuku.	Lat 21°41'32", long 157°59'48", on right bank 0.6 mile upstream from Kamehameha Highway bridge and 3.1 miles west of Sugar Mill, near Kahuku.	2.22	1958-62	3-13-62	5.02	520	805

* Revised.
/ Discharge not 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	
							Mgd	Cfs
		Island of Oahu--Continued						
3400.	Anahulu Stream near Haleiwa.	Lat 21°35'28", long 158°04'45", on right bank, 1.7 miles southeast from junction of Emerson Road and Kamehameha Highway, and 2.5 miles east of Waialua School, near Haleiwa.	11.9	1958-62	3-13-62	8.23	1,960	3,030
3500.	Opaeula Stream near Haleiwa.	Lat 21°35'08", long 158°05'58", on left bank 0.6 mile upstream from Kamehameha Highway bridge and 2.1 miles northeast of Waialua.	5.96	1956-62	2-13-61 3-13-62	4.43 5.90	*500 1,010	*774 1,560
		Island of Maui						
6070.	Iao Stream at Wailuku.	Lat 20°53'38", long 156°30'27", 560 ft upstream from Market Street bridge at Wailuku, and 1.9 miles above mouth.	8.24	1952-62	11- 2-61	5.68	3,680	5,700
		Island of Guam, Mariana Islands						
8790.	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 Village.	.60	1962	9-18-61	3.22		281

* Revised

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 1962

Stream	Tributary to	Location	Measured Previously (fiscal years)	Date	Measurements Discharge Mgd	Measurements Discharge Cfs
		Island of Kauai				
Kalalau Stream.	Pacific Ocean.	Lat 22°09'45", long 159°38'10", 5.5 miles southwest of Kauai Electric Co. powerhouse.	1932-55, 1956-61	6-23-62	3.33	5.15
Kalalau Stream tributary No. 4.	Kalalau Stream.	Lat 22°10'05", long 159°38'55", at mouth, 5.8 miles southwest of Kauai Electric Co. powerhouse.	1957-58, 1961	6-23-62	.259	.401
Kalalau Stream tributary No. 3.	Kalalau Stream.	Lat 22°10'30", long 159°38'55", at mouth, 6.0 miles southwest of Kauai Electric Co. powerhouse.	1946-49, 1956-61	6-23-62	1.11	1.72
Honopou Stream.	Pacific Ocean.	Lat 22°10'00", long 159°40'25", at mouth, 11 miles northwest of Mana.	1957-61	6-23-62	2.04	3.16
Milolii Stream.	Pacific Ocean.	Lat 22°08'55", long 159°43'30", at mouth, 8.3 miles northwest of Mana.	1946-48, 1951, 1954-61	6-23-62	1.56	2.41
		Island of Oahu				
Waihee Stream.	Pacific Ocean.	Lat 21°26'58", long 157°51'40", at altitude 200 ft, 3.5 miles northwest of Heeia, and 4.4 miles northwest of Kaneohe.		5- 3-62	3.09	4.78
Waihee Springs	Waihee Stream.	Lat 21°26'59", long 157°51'39", at altitude 200 ft, 3.5 miles northwest of Heeia, and 4.4 miles northwest of Kaneohe.		5- 3-62	.937	1.45
Waihee Stream.	Pacific Ocean.	Lat 21°27'07", long 157°51'35", at altitude 160 ft, upstream from Higa Ditch diversion, 3.5 miles northwest of Heeia, and 4.0 miles northwest of Kaneohe Post Office.		5- 3-62	5.96	9.22
		Island of Maui				
Right Branch West Wailuaiki Stream.	West Wailuaiki Stream.	Lat 20°47'22", long 156°09'35", at altitude 3,040 ft, 0.4 mile upstream from Left Branch, and 2.5 miles upstream from Koolau ditch trail crossing.		6-21-62 6-25-62	.063 .064	.097 .099
Left Branch West Wailuaiki Stream.	West Wailuaiki Stream.	Lat 20°27'26", long 156°09'48", at altitude 3,080 ft, 0.5 mile upstream from Right Branch, and 2.6 miles upstream from Koolau ditch trail crossing.		6-25-62	.095	.147
Middle Puohokamoa Stream.	Puohokamoa Stream.	Lat 20°49'25", long 156°13'04", at altitude 3,200 ft, downstream from diversion dam to lower flume, 3.7 miles southeast of Kailiili, and 4.4 miles south of Kailua.		4-10-62	.143	.221
Middle Puohokamoa Stream.	Puohokamoa Stream.	Lat 20°49'32", long 156°12'55", at altitude 3,080 ft, between lower flume and Haiku-uka trail crossing, 3.6 miles southeast of Kailiili, and 4.3 miles south of Kailua.		4-10-62	.284	.439
Middle Puohokamoa Stream.	Puohokamoa Stream.	Lat 20°49'42", long 156°12'52", at altitude 2,900 ft, 100 ft downstream from Haiku-uka trail crossing, and 4.1 miles southeast of Kailiili.	1920-27, 1932-34	4-10-62	.319	.493
West Branch Puohokamoa Stream.	Puohokamoa Stream.	Lat 20°49'50", long 156°13'05", at altitude 2,850 ft, 125 ft upstream from Haiku-uka trail crossing, 3.8 miles southeast of Kailiili, and 4.5 miles south of Kailua.	1920-28, 1933-34	8-30-61 4-10-62	.853 .284	1.32 .440
Kailua Stream.	Pacific Ocean.	Lat 20°50'10", long 156°14'26", at altitude 3,070 ft, at Haiku-uka trail crossing, 2.3 miles southeast of Kailiili, and 4.4 miles southwest of Kailua.	1919-28, 1933-34	8-31-61	.185	.287
Mahinahina Stream.	Pacific Ocean.	Lat 20°57'38", long 156°40'50", 600 ft downstream from Pioneer Co. ditch flume, 0.5 mile upstream from government road, and 1.5 miles west of Mahinahina.		11- 2-61	1,770	2,740

Discharge measurements made at miscellaneous sites during fiscal year 1962--Continued

Stream	Tributary to	Location	Measured Previously (fiscal years)	Date	Measurements Discharge Mgd	Measurements Discharge Cfs
		Island of Maui--Continued				
Honokowai Stream.	Pacific Ocean.	Lat 20°56'59", long 156°41'07", at altitude 60 ft, near Pioneer Mill Co. low level pump, and 0.6 mile upstream from mouth.		11- 2-61	1,670	2,580
Hahakea Gulch.	Pacific Ocean.	Lat 20°55'04", long 156°40'55", downstream from confluence with Waihuli Gulch, 600 ft upstream from Pioneer Mill Co. can-haul road crossing, and 0.8 mile upstream from government highway.		11- 2-61	941	1,460
Kahoma Stream.	Pacific Ocean.	Lat 20°53'28", long 156°40'15", 500 ft downstream from confluence with Kanaha Stream, 1.0 mile northeast of Lahaina, and 1.5 miles upstream from mouth.	1960	11- 2-61	2,200	3,400
Kauaula Stream.	Pacific Ocean.	Lat 20°52'09", long 156°39'43", at altitude 210 ft, 0.8 mile upstream from mouth, and 1 mile southeast of Lahaina.	1960	11- 2-61	937	1,450
Olowalu Stream.	Pacific Ocean.	Lat 20°48'28", long 156°36'58", downstream from irrigation flume crossing, 1.0 mile northeast of Olowalu, and 1.1 mile upstream from mouth.		11- 2-61	480	742
		Island of Hawaii				
Maili Stream.	Pacific Ocean.	Lat 19°45'20", long 155°10'05", 5.0 miles west of Honolii cove and 5.3 miles of Papaikou.		6-13-62	2.22	3.43
Unnamed tributary.	Maili Stream.	Lat 19°45'37", long 155°10'00", 0.8 mile upstream from confluence with Maili Stream, 4.8 miles west of Honolii cove, and 5.2 miles from Papaikou.		6-13-62	.827	1.28
Unnamed tributary Right Fork of Left Branch.	Maili Stream.	Lat 19°45'40", long 155°10'00", 0.9 mile upstream from Maili Stream, 4.8 miles west of Honolii cove, and 5.1 miles southwest of Papaikou.		6-13-62	.536	.829
Honolii Stream.	Pacific Ocean.	Lat 19°46'12", long 155°11'13", about 500 ft upstream from abandoned intake of Hilo Sugar Co. upper ditch intake, about 2 miles from end of Kaiwiki, and 10 miles west of Hilo.		6-13-62	3.91	6.05
Honolii Stream.	Pacific Ocean.	Lat 19°45'36", long 155°05'50", above old belt road near Hilo, 0.3 mile west of Honolii cove, and 1.9 miles south of Papaikou.	1959-61	3- 6-62	4.37	6.76
Hanawi Stream.	Pacific Ocean.	Lat 19°48'30", long 155°06'15", 2.2 miles south of Pepeekeo and 4.0 miles north of Honolii cove.	1959-61	3- 6-62	1.13	1.75
Kawainui Stream.	Pacific Ocean	Lat 19°49'20", long 155°06'36", 1.4 miles south of Pepeekeo and 4.5 miles north of Honolii cove.	1961	3- 6-62	3.39	5.25
Paheehee Stream.	Pacific Ocean.	Lat 19°52'37", long 155°06'45", 1.3 miles south of Hakalau and 2.6 miles north of Pepeekeo.	1961	3- 6-62	1.88	2.91
Kolekole Stream.	Pacific Ocean.	Lat 19°53'00", long 155°07'25", 0.6 mile northwest of Honomu and 1.3 miles southeast of Hakalau.		3- 6-62	3.93	6.08
Hakalau Stream.	Pacific Ocean.	Lat 19°54'00", long 155°03'10", 0.4 mile northwest of Hakalau and 2.4 miles southeast of Honohina.		3- 6-62	2.71	4.19
Wailoa Stream.	Pacific Ocean.	Lat 20°05'58", long 155°35'48", 1.6 miles west of Kukuihaele and 1.8 miles northwest of Lalakea Reservoir.		7-17-61	43.9	67.9

Discharge measurements made at miscellaneous sites during fiscal year 1962--Continued

Stream	Tributary to	Location	Measured Previously (fiscal years)	Date	Measurements Discharge Mgd	Measurements Discharge Cfs
		Island of Hawaii--Continued				
West Branch Honokane Iki Stream.	Pacific Ocean.	Lat 20°09'47", long 155°43'25", 2.3 miles upstream from mouth of Honokane Iki Stream and 4.3 miles southeast of Niulii Cemetery.		1-19-61	0.048	0.075
				3-16-61	.171	.264
				7-11-61	.046	.071
				9- 7-61	.020	.031
				11- 9-61	.367	.568
				1-10-62	.379	.587
				3- 1-62	2.37	3.66
				4-23-62	.262	.405
				4-25-62	.079	.122
				6- 6-62	.074	.155
West Branch Honokane Nui Stream.	Pacific Ocean.	Lat 20°08'45", long 155°44'23", 0.7 mile northwest of Awini weir, 3.9 miles south of mouth of Honokane Nui Stream, and 5.3 miles south of Niulii Cemetery.		1-18-61	.536	.829
				3-15-61	.639	.989
				7-10-61	.374	.579
Kohakohau Stream.	Keanuiomano Stream.	Lat 20°01'45", long 155°42'05", at bridge at junction of Kohala, Kawaihae and Waimea Roads, and 2.0 miles west of Kamuela Post Office.	1955-61	7-14-61	.228	.352
				9-11-61	.029	.045
				11-13-61	.391	.605
				1-15-62	.162	.251
				3- 7-62	.355	.550
				4-20-62	1.23	1.90
				6-11-62	.879	1.36
Unnamed Stream.	Pacific Ocean.	Lat 19°39'15", long 155°56'49", on Honuaula tract near Keopu, 0.8 mile east of Keopu Cemetery, and 2.6 miles southeast of Honokohau School.		1-13-62	.150	.230
Unnamed Stream.	Pacific Ocean.	Lat 19°28'33", long 155°54'10", at altitude 800 ft, about 200 ft upstream from road crossing at Napoopoo School, 1.4 miles east of Napoopoo, and 2.4 miles northwest of Honaunau Post Office.		10-24-61	564	872
Punaluu Springs.	Pacific Ocean.	Lat 19°08'00", long 155°30'50", 1.6 miles southeast of Hilea and 7.2 miles northeast of Naalehu.		7-23-61	26.9	41.6
		Island of Guam, Mariana Islands				
Maagas River.	Talofofo River.	Lat 13°21'20" N., long 144°43'10" E., 0.8 mile upstream from Mahlac River and 2.2 miles west of Talofofo.		3-26-62		2.62
Mahlac River.	Talofofo River.	Lat 13°21'10" N., long 144°43'45" E., 250 ft upstream from confluence with Maagas River and 1.5 miles west of Talofofo.		3-28-62		.141
Ugum River.	Talofofo River.	Lat 13°19'20" N., long 144°44'05" E., at Talofofo Falls and 2.3 miles southwest of Talofofo.		3-22-62		6.09
Ugum River.	Talofofo River.	Lat 13°19'35" N., long 144°44'50" E., 1.0 mile upstream from mouth and 1.6 miles south of Talofofo.		3-22-62		6.77
Canoa River.	Pacific Ocean.	Lat 13°32'00" N., long 144°54'40" E., upstream of diversion at Mt. Santa Rosa, and 1.7 miles east of Yigo.		2-15-62		.017
Faata Spring.	Finile	Lat 13°22'25" N., long 144°39'58" E., 0.4 mile southwest of Alifan Mountain and 1.0 mile southeast of Agat.		2-19-62		.244

Discharge measurements made at miscellaneous sites during fiscal year 1962--Continued

Stream	Tributary to	Location	Measured Previously (fiscal years)	Date	Measurements Discharge Mgd	Measurements Discharge Cfs
Island of Guam, Mariana Islands--Continued						
Finile River.	Pacific Ocean.	Lat 13°22'41" N., long 144°39'26" E., 0.6 mile upstream from mouth, and 0.4 mile southeast of Agat School.	1952-60	1-12-52		0.430
				2-13-52		.181
				3-26-52		.280
				5-15-52		.390
				6-12-52		.259
				7- 2-52		.305
				5-10-56		.192
				4- 9-57		.360
				5-27-57		.203
				10-25-57		.501
				3-20-58		.308
				5-14-58		.165
				6-26-58		.257
				12- 4-58		1.10
				1-21-59		.534
				3- 5-59		.322
				4- 9-59		.238
				6- 4-59		.182
				7-10-59		.159
Unnamed River.	Pacific Ocean.	Lat 13°19'56" N., long 144°38'48" E., 300 ft upstream from mouth between Asmafines and Madofon Rivers, and 2.5 miles north of Umatac.		2-29-62		.040
Asmafines River.	Pacific Ocean.	Lat 13°19'40" N., long 144°39'00" E., 250 ft upstream from mouth, 2.1 miles north of Umatac, and 3.5 miles south of Agat.		3-30-62		.126
Sella River.	Pacific Ocean.	Lat 13°19'37" N., long 144°39'02" E., 90 ft upstream from old Spanish bridge, 300 ft upstream from mouth, and 2 miles north of Umatac.		3-30-62		.401

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