UNITED STATES DEPARTMENT OF THE INTERIOR
HAROLD L. ICKES, Secretary

GEOLOGICAL SURVEY
W. C. MENDENHALL, Director

Water-Supply Paper 740

SURFACE WATER SUPPLY *of* HAWAII

JULY 1, 1931, *to* JUNE 30, 1932

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Prepared in cooperation with the
TERRITORY OF HAWAII

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SURFACE WATER SUPPLY OF HAWAII JULY 1, 1931, TO JUNE 30, 1932

AUTHORITY FOR INVESTIGATIONS

This volume contains results of measurements of the flow of streams and ditches in the Territory of Hawaii made during the year ending June 30, 1932. The data presented in this report were collected by the United States Geological Survey in cooperation with the Territory of Hawaii, under the general sanction of the organic law of the Geological Survey (20 Stat.L., p. 394), which contains the following paragraph:

Provided, That this officer [the Director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

As water is the most abundant and most valuable of the minerals, the investigation of water resources is authorized under the provision for examining mineral resources. Since the fiscal years ending June 30, 1895, successive appropriation bills passed by Congress have carried the following item:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

For the fiscal years ending June 30, 1929, and thereafter the appropriation bills have carried, in addition to the above provisions, the following proviso:

No part of this appropriation shall be expended in cooperation with States or municipalities except upon the basis of the State or municipality bearing all the expense incident thereto in excess of such an amount as is necessary for the Geological Survey to perform its share of general water resources investigations, such share of the Geological Survey in no case exceeding 50 per centum.

The legislature of the Territory of Hawaii approved on March 22, 1909, "An act to promote the conservation and development of the natural resources of the Territory", which provided in substance as follows: A special tax of 2 percent shall be levied, assessed, and collected annually on all incomes in excess of $4,000; and all amounts so collected shall constitute a special fund to be expended only for the encouragement of immigration and the conservation of natural resources in the proportion of three fourths for immigration and one

fourth for conservation. The conservation fund shall be used for the development, conservation, improvement, and utilization of the natural resources and shall be available for expenditure at such times and in such manner as a board of three persons appointed in accordance with section 80 of the organic act shall, with the approval of the Governor, determine.

An act of April 26, 1911, amended the original act so as to extend it until December 31, 1913.

On April 4, 1913, the Governor of the Territory of Hawaii approved Act 56 for the creation and maintenance of a division of hydrography under the board of agriculture and forestry, and Act 57 appropriating the revenues from water licenses for the use of the board of commissioners of agriculture and forestry toward forest protection and hydrographic surveying.

Since June 30, 1915, the funds for the use of the division of hydrography have been supplied by successive appropriations from the general revenues of the Territory.

On March 23, 1917, an act (Act 27) by the legislature of the Territory of Hawaii was approved transferring the control of the division of hydrography from the board of commissioners of agriculture and forestry to the commissioner of public lands.

COOPERATION

COOPERATION WITH THE TERRITORY OF HAWAII

Under the authority conferred by the Federal and Territorial legislation, the Director of the United States Geological Survey and the Governor of the Territory of Hawaii entered into a cooperative agreement, dating from July 1, 1910, for "the gaging of streams and the determination of the water supply of the Territory of Hawaii." [1]

The principal features of this agreement were:

1. The United States Geological Survey assumes the responsibility of gathering, analyzing, and publishing the data.

2. During the progress of the work all notes, maps, and data gathered as a result of field studies were at all times open to inspection by the representative of the Territory, and if they were not satisfactory the agreement could be terminated.

3. Accounts for payment of salaries, travel, and subsistence, supplies, or other expenses necessary to the completion of the work should be rendered in the manner required by the laws and regulations of the contracting parties, and vouchers should be proffered to either party for payment according as it might be convenient or according to the balance remaining in the respective allotments.

[1] The U.S. Geol. Survey also cooperated with the Territory of Hawaii in mapping the eight largest islands.

4. The cost of publication was borne entirely by the Geological survey.

In July 1930 a new cooperative agreement for "the investigation of the water resources of the Territory of Hawaii during the fiscal year July 1, 1930, to June 30, 1931", was entered into, in which the amounts of money to be contributed by each party were specifically stated, these amounts to include the cost of publication; and which provided that "expenses incurred in the performance of the work herein provided shall, so far as may be practicable, be paid in the first instance by the party of the first part with appropriate reimbursement thereafter by the party of the second part, all accounts to be rendered in conformity with the laws and regulations of the party of the second part."

The provisions regarding responsibility for and supervision of the collection of the data, availability of records etc., however, remained essentially the same.

A similar cooperative agreement was made for the fiscal year 1931–32 differing from that of 1930–31 chiefly in the amounts of money to be spent.

Until June 30, 1913, the Territory of Hawaii was represented in cooperation by the board of conservation; from July 1, 1913, to March 23, 1917, by the board of commissioners of agriculture and forestry; and since this date by the commissioner of public lands.

OTHER COOPERATION

Some of the data in this paper have been obtained in cooperation with the City and County of Honolulu, the city of Hilo, and private persons and corporations, under one of the plans indicated in the following paragraphs:

1. Expense of work, equipment, or installation paid entirely or in part by the cooperating party.

2. Records collected by employees of a cooperating party but under supervision of and by methods of the Geological Survey.

3. Assistance given in the collection of records, such as furnishing transportation, subsistence, or equipment.

4. Records furnished by a cooperating party, collected by his methods and under his supervision.

Cooperation in the collection of records for whose accuracy responsibility has not rested with the Geological Survey has been acknowledged in the descriptions of the stations. Special acknowledgment is due to the following organizations cooperating under plans 1, 2, and 3: Island of Kauai—Kekaha Sugar Co., Gay & Robinson, McBryde Sugar Co., East Kauai Water Co., and B. P. Bishop Estate; Island of Oahu—Wahiawa Water Co., B. P. Bishop Estate, and Honolulu Board of Water Supply; Island of Maui—Pioneer Mill Co. and East

Maui Irrigation Co.; Island of Hawaii—Kohala Ditch Co. and Hilo Waterworks.

SCOPE OF WORK

Since the beginning of stream-gaging work in Hawaii in 1910, records of flow of streams and ditches have been obtained at about 425 stations for periods ranging from a few months to 23 years. In addition, hundreds of miscellaneous measurements have been made, and rather extensive studies of ground water have been made in Kau, Hawaii,[2] and in Honolulu, Oahu.

In this volume are given the records of daily flow that were obtained at the 92 stations that were operated during the year ending June 30, 1932, and the results of miscellaneous measurements of stream flow made during that year. The results of ground-water studies will be published in separate water-supply papers. See "Publications" on page 7 for a record of other water-supply papers pertaining to Hawaii.

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated more or less definitely with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as "second-feet", "gallons a minute", "gallons a day", "miner's inches", and "run-off in second-feet a square mile", and (2) those which represent the actual quantity of water, as "run-off in inches", "million gallons", and "acre-feet." Those used in this report may be defined as follows:

"Second-foot" is an abbreviation for cubic foot a second and is a unit for the rate of discharge of water flowing in a stream 1 square foot in cross section at a rate of 1 foot a second. It is generally adopted as the fundamental unit in the measurement of flowing water and is the "natural" unit, as the foot and the second are the units used in making the physical determinations.

An "acre-foot" is equivalent to 43,560 cubic feet and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

In the Territory of Hawaii the unit most commonly used in measuring water is the "million gallons." This is used with two meanings—(1) to indicate a rate of flow and (2) to express an actual quantity of water. In the former sense "million gallons a day" is inferred, 1,000,000 gallons being taken as the unit of quantity and 24 hours as the unit of time. With this meaning the term is generally used in connection with pumping and irrigation. In the latter

[2] Stearns, H. T., and Clark, W. O., Geology and water resources of the Kau District, Hawaii: U.S. Geol. Survey Water-Supply Paper 616, 1930.

sense "million gallons" as an absolute quantity is used in the measurement of storage capacities of reservoirs.

The following convenient approximate relations exist between second-feet, million gallons a day, and acre-feet: 1 second-foot flowing 24 hours equals about 2 acre-feet; 1,000,000 gallons equals about 3 acre-feet; and 1 second-foot equals approximately two thirds of 1,000,000 gallons a day.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily discharge. The records of stage used in computing discharges in this paper are obtained from water-stage recorders that give continuous records of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. Occasionally, discharge is determined from a weir or rating flume using standard formulas.

Rating tables giving the discharge for any stage are prepared from the discharge measurements. The application of the daily gage heights to these rating tables gives the discharge from which the daily, monthly, and yearly discharges are determined.

The data presented in this report comprise, for each gaging station, a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off. All rates of flow are expressed as million gallons a day.

The description of the station gives location, drainage area, records available, discharge corresponding to maximum and minimum recorded stages, and under "Remarks" notes on accuracy of the records, diversions that decrease the flow at the gage, and artificial regulation.

The table of daily discharge gives, in general, the discharge corresponding to the mean daily gage heights. But when, owing to sudden or rapid diurnal fluctuation, the discharge obtained from the rating table by applying the mean daily gage height would not be within 5 percent of the true mean, the mean has been obtained by averaging discharges for intervals during the day.

In the table of monthly discharge the column headed "Maximum" gives the flow for the day when the total discharge was greatest. This does not correspond to the rate of flow at the crest of the flood. The maximum rate of flow is given in the station description under the heading "Extremes", and the corresponding stage is always taken from the water-stage recorder graph unless otherwise noted. Likewise, in the column headed "Minimum" the quantity given is

the flow for the day when the total discharge was least. The columns headed "Mean" give the average flow in million gallons a day and cubic feet a second during the month. The "Total in million gallons" is the sum of the daily flows and "Total in acre-feet" is computed from the total monthly discharge in million gallons a day.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanency of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

Permanence of the stage-discharge relation will be affected by any change in the control due to growth of vegetation in the stream bed, effects of floods, or any artificial change, and it may be affected by changes in gage datum.

Observations of stage are taken from the water-stage recorder graphs, with a scale of gage heights so chosen as to give less than 2 percent of error. However, this accuracy may be interfered with by unsatisfactory operation of water-stage recorder or by plugged or sluggish intakes to stilling well.

In general, measurements of flow by current meter give less than 5 percent of error except where it is impossible to find suitable measuring conditions. Rating curves are usually well defined, except for extremely low or high stages, by current-meter measurements and are extended by the use of area and velocity curves, slope measurements, weir tables, logarithmic curves, comparison with previous curves, knowledge of the station, or any combination of these methods.

Unless otherwise noted daily discharges are ascertained by applying to rating tables mean daily gage heights obtained from the recorder graphs by inspection or, for days of considerable fluctuation in stage, by averaging discharges for intervals of the day. Computations are carried to not more than three significant figures. The discharges thus obtained are plotted, usually on semilogarithmic paper, for comparison with the flow of comparable streams, and any inconsistencies that appear are verified or corrected.

A general statement under "Remarks" gives the accuracy of records, based on the above information, the terms "excellent", "good", "fair", or "poor", indicating that the record is probably accurate within 5, 10, 15, and 20 percent respectively.

It should be borne in mind that the observations in each succeeding year may be expected to throw new light on data previously published.

DIVISION OF WORK

The data were collected and prepared for publication under the direction of M. H. Carson, district engineer, Honolulu, Hawaii,

by W. E. Armstrong, office engineer, K. N. Vaksvik, K. M. Kelley, Sam Wong, G. E. Ferguson, H. W. Palm, G. T. Hirashima, K. Kawamura, John Kaheaku, P. T. P. Goo, and Miss M. A. Davison. The manuscript has been prepared by W. E. Armstrong and reviewed by M. H. Carson.

PUBLICATIONS

The following table gives by years the serial numbers of the papers on the surface-water supply of Hawaii published from 1903 to 1932, and, used in conjunction with the list of stations maintained (see Water-Supply Paper 595), provides a convenient index for finding the data for any station. The data for any particular station will be found in the reports covering the years during which the station was maintained except when publication is delayed, owing to undeveloped rating curves. Occasionally data are revised and republished in later papers.

Miscellaneous discharge measurements made during any year at points other than regular gaging stations are published in the paper containing that year's data.

Numbers of water-supply papers containing data on the surface-water supply of Hawaii, 1903–32

Year	Number	Year	Number	Year	Number
1903	[a] 77	1918–19	515	1926–27	655
1909–1911 [b]	318	1919–20	516	1927–28	675
1912 [b]	336	1920–21	535	1928–29	695
1913 [b]	373	1921–22	555	1929–30	710
1913–1915	430	1922–23	575	1930–31	725
1915–16	445	1923–24	595	1931–32	740
1916–17	465	1924–25	615		
1917–18	485	1925–26	635		

[a] Water resources of Molokai, by Waldemar Lindgren.
[b] Calendar years; papers subsequent to Water-Supply Paper 373 cover the year beginning July 1 and ending June 30.

GAGING-STATION RECORDS

ISLAND OF KAUAI

WAIMEA RIVER BELOW KEKAHA DITCH INTAKE, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder in Waimea Canyon, 500 feet below Kekaha Ditch intake and 8 miles by trail north of Waimea.

DRAINAGE AREA.—45.0 square miles.

RECORDS AVAILABLE.—July 1921 to June 1932.

EXTREMES.—Maximum discharge during year, 5,450 million gallons a day (8,430 second-feet) Aug. 4 (gage height, 14.90 feet); minimum, 0.1 million gallons a day (0.2 second-foot) for several days during year.

1921–32: Maximum discharge, 10,700 million gallons a day (16,600 second-feet) Dec. 24, 1927 (gage height, 20.40 feet); no flow several days from July to November 1926 and from November to December 1929.

REMARKS.—Records good for medium stages; poor for all extremely high and low stages. Kokee Ditch and Kekaha Ditch divert above station, taking practically all water at low and medium stages for irrigation near Waimea and Kekaha. All records from July 24, 1921, to June 30, 1931, have been revised in this paper.

Discharge, in million gallons, 1921–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1921–22												
1	-------	1.4	0.6	263	2.4	1.4	48	1,790	28	2.9	0.8	0.7
2	-------	26	.6	100	11.2	1.2	31	882	12.0	2.9	.8	.6
3	-------	2.4	.6	27	5.2	1.1	22	480	7.3	3.0	.8	.6
4	-------	1.5	.6	4.2	1.6	7.1	17.5	227	17.1	2.7	.8	.6
5	-------	61	.6	1.2	1.2	1.9	90	168	32	3.3	37	.6
6	-------	4.6	.6	1.6	2.9	1.2	83	98	227	24	47	.6
7	-------	.6	.6	21	1.1	1.2	16.9	104	199	72	3.0	.6
8	-------	.6	.6	2.0	1.0	1.1	8.8	82	268	106	2.6	.6
9	-------	.6	.6	1.1	1.0	1.1	6.4	51	376	16.4	16.3	.8
10	-------	.6	.6	1.0	1.0	1.2	3.0	37	246	3.6	2.6	.8
11	-------	.6	.6	1.0	1.0	23	1.2	49	146	3.0	2.1	.6
12	-------	37	.5	1.0	1.1	211	1.2	125	183	29	.6	.5
13	-------	30	.5	1.0	1.4	115	1.1	48	72	4.1	10.6	.5
14	-------	.7	.5	1.0	1.2	88	1.2	86	30	35	.7	.5
15	-------	.6	.5	1.0	1.1	12.0	1.5	61	12.3	17.0	.7	.5
16	-------	.6	.5	1.0	1.1	280	1.5	24	8.0	3.3	.7	.5
17	-------	.6	.8	1.1	1.0	134	1.5	17.7	12.2	4.9	.7	.5
18	-------	.6	13.4	1.1	1.0	44	1.4	9.2	6.4	3.1	.6	.5
19	-------	.6	1.3	1.1	60	7.1	1.2	5.4	36	9.2	.6	.4
20	-------	.6	.5	1.1	5.0	2.9	40	4.2	4.9	131	.6	.4
21	-------	.6	.5	1.1	1.5	80	506	3.2	3.5	73	.6	2.3
22	-------	.6	39	1.1	51	1,400	191	12.0	3.0	3.4	.6	5.6
23	-------	.6	16.3	1.1	399	756	60	45	10.4	.7	56	.5
24	2.0	.6	1.2	1.8	72	1,060	32	4.7	3.4	.7	318	7.5
25	1.4	8.1	.6	5.4	8.1	474	134	3.2	3.2	1.1	78	7.0
26	1.3	1.5	.5	57	16.3	241	215	3.2	3.0	.9	160	1.2
27	1.3	.6	.5	2.3	3.8	115	189	205	2.9	.8	47	.4
28	1.8	34	8.6	1.1	3.7	60	479	126	2.9	.8	3.6	.4
29	23	.7	1.4	1.0	2.4	56	322	---------	2.9	.8	.8	.4
30	3.0	.6	16.7	8.2	1.4	54	555	---------	2.9	.8	.7	.4
31	1.7	.6	-------	4.1	-------	34	1,270	---------	2.9	-------	.7	------

Discharge, in million gallons, of Waimea River below Kekaha Ditch intake, near Waimea, Kauai, 1921–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1922–23												
1	0.4	0.4	14.2	-------	0.8	-------	-------	297	-------	719	-------	-------
2	.4	.4	5.9	-------	.8	-------	-------	189	-------	345	-------	-------
3	.4	.4	77	-------	2.9	-------	-------	-------	-------	224	-------	-------
4	.4	.4	19.2	-------	30	-------	-------	-------	-------	158	-------	-------
5	.4	.4	7.8	5.4	44	-------	-------	-------	34	129	-------	-------
6	.4	.4	.6	5.2	5.2	-------	-------	-------	28	108	-------	0.7
7	.4	.4	8.4	5.0	442	-------	-------	-------	92	95	-------	.8
8	.4	2.6	2.6	5.0	390	-------	-------	220	400	88	-------	.8
9	.4	5.9	4.5	5.0	66	-------	-------	234	424	82	-------	.8
10	1.6	1.1	1.4	4.8	15.4	-------	-------	-------	215	77	-------	.9
11	.6	13.8	-------	4.8	61	-------	-------	-------	224	-------	-------	.9
12	.4	1.4	-------	4.8	33	-------	-------	-------	115	-------	-------	.7
13	.4	.3	-------	4.5	53	-------	-------	-------	88	-------	-------	.7
14	.4	.3	-------	4.5	39	-------	-------	-------	65	-------	-------	.6
15	.4	.3	-------	9.9	7.2	-------	-------	-------	48	-------	-------	2.1
16	.4	.4	-------	4.8	38	-------	-------	-------	37	-------	-------	4.4
17	.4	.4	-------	4.8	88	-------	-------	-------	31	-------	-------	7.8
18	.4	.4	-------	4.5	129	-------	-------	-------	29	144	-------	10.0
19	.4	.4	-------	4.5	115	-------	-------	-------	25	-------	-------	3.8
20	.5	.4	-------	11.1	103	-------	471	-------	21	-------	-------	16.6
21	.5	.4	-------	65	57	-------	244	-------	16.7	82	-------	15.0
22	.4	.4	-------	8.2	15.4	-------	206	-------	13.4	-------	-------	4.9
23	.4	.4	-------	60	5.0	-------	150	270	13.8	-------	-------	.3
24	.4	.4	-------	224	1.4	-------	140	224	61	-------	-------	.3
25	.4	.4	-------	48	1.4	-------	215	197	108	338	144	.3
26	2.0	2.2	-------	5.5	1.5	-------	253	-------	71	136	-------	.3
27	.4	10.1	-------	1.0	1,890	-------	747	-------	265	-------	197	.3
28	.4	.4	-------	1.0	679	-------	515	-------	68	144	-------	.3
29	.4	.4	-------	.9	191	-------	253	-------	26	-------	-------	.3
30	.4	.4	-------	.8	100	-------	174	-------	333	-------	-------	.3
31	.4	19.7	-------	.8	-------	-------	820	-------	2,270	-------	-------	-------
1923–24												
1	2.5	.3	.2	401	49	.2	223	-------	-------	-------	-------	.7
2	.7	.3	.2	138	94	.2	-------	.4	-------	-------	-------	.7
3	.3	.3	.2	14.8	15.5	.2	-------	.4	-------	-------	-------	.6
4	.3	.3	.2	.3	59	.6	-------	.4	-------	-------	-------	.6
5	.3	27	.2	.2	158	11.6	-------	.4	-------	-------	-------	.6
6	6.0	.3	.2	.2	95	2.7	-------	.4	-------	306	-------	.6
7	.8	.3	.2	9.7	130	90	-------	-------	-------	16.1	-------	.6
8	.3	6.0	.9	2.6	39	4.6	-------	-------	-------	-------	1.0	.5
9	.3	7.0	.2	.4	11.3	.2	-------	-------	-------	-------	1.0	.5
10	.3	.3	.2	.3	52	470	-------	-------	-------	-------	1.0	.5
11	.3	.2	.2	.2	47	232	-------	48	-------	-------	1.0	.6
12	.3	10.4	.2	.2	.3	290	-------	176	8.5	-------	1.1	.6
13	-------	2.8	.2	.2	.3	348	-------	46	-------	-------	207	.5
14	-------	7.3	.2	.2	20	540	-------	5.0	-------	205	76	.5
15	-------	1.1	.2	.2	80	350	-------	2.2	-------	641	48	.5
16	-------	4.6	44	.2	14.5	331	-------	265	12.4	914	9.1	-------
17	-------	.3	29	.2	.4	115	-------	49	17.6	142	2.0	-------
18	-------	52	.3	19.3	.2	117	-------	5.6	-------	63	1.6	-------
19	45	124	6.1	86	.2	266	-------	3.0	-------	32	87	-------
20	8.6	46	133	12.9	.2	171	-------	1.7	13.9	27	2.8	-------
21	92	.7	112	2.0	.2	52	-------	1.0	18.0	632	1.1	-------
22	16.1	.3	164	8.4	.2	27	-------	-------	-------	190	76	-------
23	202	.2	15.7	.3	.2	1,010	-------	-------	-------	-------	41	-------
24	133	.2	.2	.2	.2	222	-------	20	17.8	-------	48	-------
25	[a] 13.8	.2	.2	.2	.2	253	-------	11.1	-------	-------	37	-------
26	[a] 1.5	.2	.2	.2	.2	166	-------	2.6	-------	-------	30	50
27	.3	.2	.2	66	.2	-------	-------	1.4	-------	156	9.8	[a] 5.9
28	.3	.2	.2	517	.2	-------	-------	-------	-------	-------	15.0	[a] 54
29	.2	.2	.2	299	.2	-------	-------	-------	-------	-------	2.3	77
30	.3	.2	13.6	53	.2	[b] 196	-------	-------	-------	-------	.9	49
31	.3	.2	-------	11.1	-------	[b] 168	-------	-------	-------	-------	.8	-------

[a] Estimated.

[b] Partly estimated.

Discharge, in million gallons, of Waimea River below Kekaha Ditch intake, near Waimea, Kauai, 1921–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1924–25												
1	12.0	0.9	0.9	0.6	0.6			1.6		138	33	1.2
2		1.1	.8	.6	.6			1.5		81	27	1.2
3		1.0	.8	.6	.6			1.9		119	5.0	1.2
4		1.0	.7	.6	.6			1.9		84	1.4	1.3
5		1.0	.7	.6	119			1.5		45	1.3	1.2
6		1.0	.7	.6	39			1.5		681	1.3	1.2
7		.9	.7	.6	5.5			1.5		328	1.3	1.1
8		1.1	.7	.6	9.1		[b]182	1.4		118	1.4	1.1
9		92	.7	55	.7		256	133		139	1.7	1.1
10	[a]96	25	.7	145	73		[b]233	90		364	8.8	1.1
11	112	9.4	.6	72	500			202		165	3.0	1.0
12	127	3.1	.7	115	61			105		118	1.5	1.0
13	49	1.1	.7	46	[a]26		[b]252	62		118	24	1.0
14	16.1	1.0	.7	2.0				13.7	0.9	78	22	1.0
15	74	1.0	.7	77					.9	78	20	1.1
16	40	2.5	.6	45					1.1	45	10.0	1.1
17	3.5	1.5	.7	56					1.1	33	1.4	1.1
18		.9	.7	37					1.1	52	12.1	1.1
19	5.6	.9	.6	.9					1.1	76	4.4	1.2
20		.9	.6	1.4	193				5.4		1.3	1.1
21	284	.9	.6	5.8					99		1.3	1.1
22	115	.9	.6	36					176		1.2	1.1
23	23	.8	.6	2.5					789		1.2	1.1
24	5.9	.8	.6	.6					199		1.2	1.1
25	1.9	.8	.6	.7					56		1.2	1.1
26	1.2	.8	.6	.7					257		1.2	1.1
27	.9	.9	.7	3.6					393		1.1	1.2
28	.9	17.2	.8	10.1			1.5		1,240	1.5	1.1	10.3
29	.9	1.0	2.0	33			1.5		1,140	14.9	1.2	6.5
30	2.2	3.6	1.0	6.8			1.6		703	31	1.3	48
31	1.1	1.0		.6			1.6		199		1.2	
1925–26												
1	46	.9	.9	.6	.6	1.5		60	.2	.2		23
2	.9	.9	.8	.7	.6		[c]60	8.7	.3	.4		6.0
3	.9	1.0	.8	.6				4.8	.2	.3		.2
4	1.0	3.8	.8	9.1				1.4	.2	.3	[c]0.1	.2
5	1.0	256	.8	8.3				80	.2	.3		.1
6	1.0	16.5	.8	.6	[c].5	[c].1	[c]1.0	64	.2	.3		2.0
7	12.3	1.1	.8	.6				22	.2	.3	.05	.2
8	5.0	1.0	.8	.6				8.7	.2	.3	.07	326
9	.8	1.0	.8	.6	12.7			4.4	.2	.3	.1	90
10	.8	1.0	.8	.9	[a].5		10	109	.2	.3	.1	5.1
11	.9	1.0	.8	.8	[a].5	.06		36	.2	93	.1	.1
12	.9	1.7	.7	.6	10.0	.06		4.9	.2	38	.1	1.1
13	.9	2.2	34	.6	17.4	.04		.7	.2	.2	.2	3.1
14	2.2		39	.6	16.6	.06	[c].5	.2	.2	.1	.2	.04
15	21		.8	.5	35	.1		.2	.2	.1	.2	15.7
16	1.2		.7	.5	68	.06		.2	.4	.1	.2	118
17	.9		.6	.5		.06	24	68	.3	.1	.2	42
18	.9		.6	.5		271		16.5	.3	.1	.2	2.8
19	.9		.6	.5		181		.7	.3	.1	.2	.1
20	.9	[c].8	.7	.5	[c].5	90	[c]5	.2	.3	.1	.2	.06
21	16.3		.7	.6		279		.2	.4	.1	.3	.05
22	2.5		.7	.6		319		.2	.4	.2	60	.04
23	1.0		.7	.6		127		.2	.4	.1	6.2	.04
24	.9		.7	.7		61	.5	.2	.4	.1	.2	.04
25	1.0		.7	.6	5.4	38	[a].2	.2	.4	.1	.2	.04
26	40		1.8	.6	2.2	.4	3.4	.4	.1	.2	.03	
27	80	82	3.9	.6		[c]1.0	2.7	.3	4.0	.1	.2	.03
28	19.0	38	1.8	4.3	[c].5		1.4	.3	.2	.2	.2	.03
29	23	13.3	.6	121		[b]53	.4		.2	.1	.2	.03
30	2.6	9.8	.6	77		870	.3		.2	[a].1	.2	.03
31	.9	1.0		.8		360	146		.2		.2	

[a] Estimated. [b] Partly estimated. [c] Estimated mean.

Discharge, in million gallons, of Waimea River below Kekaha Ditch intake, near Waimea, Kauai, 1921–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1926–27												
1	0.01	0	0.7	0	0	0.04	19.6	0.5	3.3	46	0.6	14.6
2	.01	1.0	.05	0	0	.04	94	.5	1.6	35	.6	7.6
3	.01	.02	.01	0	0	.04	485	.5	22	26	.6	3.1
4	.02	.01	0	0	0	.04	291	.5	258	25	.6	
5	.03	0	0	0	0	.04	58	.5	1,110	19.4	.6	
6	.03	0	0	0	0	.04	34	.4	934	.7	1.7	
7	.03	.01	0	0	0	.04	21	.4	751	.7	3.2	
8	.03	0	0	0	0	.05	60	17.8	254	.6	92	
9	.03	0	0	0	0	14.3	24	64	165	.6	39	
10	.05	0	.07	0	0	100	179	25	100	.6	28	
11	.04	.01	.3	0	0	27	45	29	54	.6	7.3	
12	.04	.03	0	0	0	25	15.1	14.2	38	129	1.3	
13	.05	.03	0	0	0	1.9	4.2	.1	60	184	3.6	
14	.04	.03	6.1	0	304	5.6	1.7	.09	50	444	172	
15	.04	.03	14.8	0	23	2.1	1.5	629	91	892	478	[c]9.5
16	.1	.03	11.2	0	6.5	.07	1.3	454	170	125	985	
17	22	.03	.04	0	19.2	.04	1.2	106	65	56	916	
18	52	.03	.1	0	.1	7.3	.9	56	25	41	234	
19	83	.02	6.0	0	.2	.1	.5	37	15.7	45	81	
20	30	.02	.1	0	.09	594	.4	27	8.0	22	36	
21	[a]5.8	.01	.01	0	.06	577	84	22	9.2	11.1	22	
22	[a]47	0	0	0	.04	92	64	16.5	266	3.8	101	
23	61	0	0	0	.03	45	32	7.8	522	15.9	81	
24	9.2	0	0	0	.02	186	37	2.9	159	57	32	
25	4.4	.01	76	1.0	.02	238	221	3.5	101	9.1	14.6	
26	.6	.03	18.4	0	.03	114	138	3.6	81	1.4	10.0	17.5
27	.04	.03	48	0	.04	42	46	5.8	76	.6	8.7	1.2
28	.01	.6	30	0	.04	21	9.5	3.4	105	1.3	26	.4
29	.01	.08	.2	0	.04	11.1	34	-------	76	.6	40	.4
30	.01	118	0	0	.04[a]	9.6	9.1	-------	48	.6	25	.4
31	0	2.8	-------	0	-------	25	.8	-------	36	-------	8.1	------
1927–28												
1	.6	.6	.6	.4	.3	.1	53	118	.8	51	101	.6
2	.6	1.5	.5	.4	.3	.1	51	19.0	.9	20	18.3	.6
3	.6	1.1	28	.3	.3	.1	49	15.7	.9	107	11.0	.6
4	.6	.6	5.5	.4	.2	.1	44	15.7	.8	37	47	.6
5	.6	.5	.5	.3	2.3	.1	41	12.6	.7	10.6	189	.6
6	.6	.5	.6	.4	31	.1	40	2.4	.7	10.5	46	.7
7	8.8	.5	52	.4	14.5	8.6	34	.7	.7	27	33	.7
8	143	41	283	.4	1.6	6.8	27	.6	.7	18.2	22	.7
9	188	27	16.7	6.5	.3	.1	18.4	124	.7	42	1.8	.7
10	213	1.1	1.0	1.9	.3	.1	9.6	241	.7	29	.9	.7
11	69	.6	1.0	.4	.3	56	2.2	31	.7	26	181	.7
12	166	26	.7	.4	.3	112	1.2	20	.6	22	28	4.8
13	46	1.3	.5	.4	.2	252	103	15.7	.7	23	3.0	3.4
14	6.7	.6	3.8	.4	.3	33	327	3.2	.9	10.0	.9	.7
15	.9	.6	1.1	.4	.3	15.8	53	.8	.8	1.0	5.2	.7
16	.5	.6	.5	.4	.3	15.4	202	.7	.8	2.1	1.0	[c]2.0
17	.5	.6	.5	.4	.4	9.4	42	51	.8	14.2	3.2	
18	.5	.6	.4	.4	.4	7.9	21	20	.8	6.7	.9	
19	5.9	.6	.4	.3	2.8	10.2	49	16.3	.7	4.4	.8	
20	10.6	.6	.4	.4	176	9.6	81	1.0	.7	.9	.8	
21	.6	.6	.4	.4	35	99	48	.8	.6	.8	.7	[c].6
22	.5	59	.4	28	69	185	9.3	.8	.8	95	.7	
23	.5	12.0	.4	19.1	4.0	229	7.2	.8	169	44	.7	
24	9.4	34	.3	42	3.7	2,810	1.3	.8	274	5.1	.7	
25	1.3	2.3	.4	1.0	91	641	1.0	.9	513	94	.7	
26	21	2.9	.4	.5	23	210	1.0	.8	186	6.8	22	
27	5.0	5.5	.4	.3	124	126	48	.8	86	.9	10.7	[c]3.1
28	14.5	.6	.4	.3	26	132	4.3	.8	68	3.3	.7	
29	7.1	.5	2.9	.3	2.6	97	1.0	.8	91	178	.6	[c]1.0
30	.6	.6	3.2	.3	.2	72	19.5	-------	157	191	.6	
31	.7	.5	-------	.3	-------	58	89	-------	68	-------	.6	------

[a] Estimated.

[c] Estimated mean.

Discharge, in million gallons, of Waimea River below Kekaha Ditch intake, near Waimea, Kauai, 1921–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1928–29												
1	[a]110	1.01	0.87	0.82	0.64	7.8	4.1	0.43	36	0.29	0.27	127
2		1.9	.92	74	.62	3.9	.58	.43	8.8	.29	.27	6.9
3		.92	4.3	5.2	.62	1.03	14.9	.43	78	.29	.24	.27
4		.87	52	.87	2,160	.40	47	.43	76	.28	.24	.26
5	[c]3.0	.87	28	.82	1,100	55	6.0	.43	216	.28	.24	2.5
6		.87	1.1	.92	568	29	40	.43	69	19.8	.26	1.2
7		.87	.92	.87	370	14.5	.38	.43	129	22	.27	.27
8		.92	.96	.78	172	9.2	8.6	.43	137	.99	.28	.26
9		.87	1.5	.78	348	49	.38	.46	76	.29	.29	.26
10		.87	36	.78	608	43	.38	.48	56	43	.28	.24
11		.92	76	.78	424	9.0	.38	117	25	33	.27	.24
12		.92	3.0	.78	100	47	.38	97	10.2	68	.27	.24
13	[c]95	2.4	.96	.78	61	8.4	.38	63	4.3	33	.26	.24
14		4.9	.92	.82	62	4.1	.38	34	.99	.71	.26	.24
15		1.05	.92	.82	42	2.2	32	355	.48	79	.26	.24
16		.96	.92	.82	46	.40	62	500	.48	4.3	.26	.26
17		12.6	.87	.82	43	5.9	30	164	.48	.32	.26	.24
18		20	1.1	.87	76	.40	58	62	.46	.29	.26	.24
19		84	1.01	.82	31	.37	39	60	.46	35	.23	.24
20	[c]1.0	41	1.6	.78	4.2	.36	15.7	59	.48	10.5	.21	.23
21		18.4	4.0	.78	.60	.36	2.8	46	194	.31	.21	.23
22		1.01	.87	.73	16.6	.36	24	82	34	.31	.22	.23
23	[b]2.3	1.01	.78	.78	5.1	.36	106	29	5.9	.31	.22	.23
24	1.1	.92	.73	.73	.48	.36	12.1	9.4	.78	.31	.24	.23
25	.92	.87	.73	.69	.46	74	.41	5.5	.55	.31	.24	.24
26	.92	.87	.73	.69	.44	24	.37	42	.34	.31	.24	.26
27	69	.87	.73	.73	.43	.43	67	16.1	.31	.31	1.4	.27
28	186	.87	.78	.73	44	.38	199	13.3	.31	.30	6.2	.27
29	7.0	.87	1.05	8.8	38	35	20	-------	10.7	.29	4.7	.27
30	.96	.87	.92	2.4	14.8	5.4	1.6	-------	4.4	.29	28	.27
31	.92	.87	-------	.64	-------	1.3	.43	-------	.31	-------	33	-------
1929–30												
1	.27	.20	.26	3.3	16	42	72	82	88	51	27	.4
2	.27	.20	.26	.30	14	904	120	68	100	82	41	.6
3	.27	.20	.26	.26	.4	84	113	59	59	39	55	.9
4	.27	.23	1.35	1.4	715	45	51	45	44	25	58	36
5	.27	.33	.33	4.8	194	18.5	36	39	36	59	189	6.8
6	.28	.4	.20	30	141	6.1	29	34	80	48	46	.8
7	.30	.37	.20	.33	59	.13	22	31	68	158	15.5	.7
8	.31	.30	.20	.26	30	.09	17.5	25	79	128	7.6	.6
9	.31	.26	.20	.23	10.5	.06	16	21	128	88	[a]4.5	.6
10	.31	.26	.23	.20	11	.06	12	19	225	59	[a]22	.6
11	.31	.26	.23	.16	41	.04	7.9	13	376	261	[b]32	.6
12	.31	.30	.23	.13	6.4	.04	108	10	59	155	.8	34
13	.31	.30	.23	.13	0	.02	319	41	36	51	.8	2.7
14	.31	.30	.23	.09	0	1.4	63	17.5	24	25	.7	.8
15	.31	.30	.23	.09	0	212	336	12.5	15	19.5	.7	.7
16	.87	.37	.20	.09	12.5	63	77	9.1	9.1	15.5	.7	30
17	6.7	.37	.20	.09	148	34	51	7.6	8.5	10	.7	.9
18	.30	.33	.23	.13	18	10	40	6.5	7.6	9.7	.7	1.5
19	.29	4.9	.23	.13	.9	190	33	5.2	3.4	8.8	.7	.8
20	.28	1.9	.23	.13	0	715	22	2.7	.7	6.0	.8	.8
21	.29	29	.26	.09	0	218	15	4.2	.6	6.2	8.4	.8
22	34	4.1	.30	.09	0	865	12.5	2.7	35	6.0	2.7	.8
23	9.2	.37	.38	.09	7.7	644	9.1	2.0	485	4.1	15	6.5
24	.29	.33	4.0	.09	1.0	932	11.5	5.4	159	3.2	.8	38
25	.27	.30	.20	.09	44	400	13	63	222	.9	.6	44
26	234	.26	.6	.09	80	218	280	228	82	.9	.6	10.5
27	55	15	.30	8.5	28	106	63	1,680	59	.9	.6	50
28	10.5	12	.20	.33	49	97	36	150	46	.9	.6	58
29	.33	.33	21	.6	5.4	348	639	-------	39	.9	.5	3.2
30	.26	.23	35	.6	0	452	305	-------	34	.9	.4	.8
31	.23	.26	-------	.37	-------	150	135	-------	31	-------	.4	-------

[a] Estimated. [b] Partly estimated. [c] Estimated mean.

Discharge, in million gallons, of Waimea River below Kekaha Ditch intake, near Waimea, Kauai, 1921–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1930–31												
1	90	305	123	77	5.6	3.0	26	0.4	0.4	35	0.5	0.1
2	226	10.5	166	7.0	8.6	179	25	.8	232	64	.7	.1
3	56	12.5	306	.6	.4	88	15	.5	138	39	.6	.1
4	3.7	2.2	124	.6	.4	13	17.5	.4	24	1.5	.4	.1
5	1.4	1.0	25	123	.4	1.5	19	.4	1.0	.4	.4	.2
6	1.1	7.8	6.0	128	.4	1.0	7.4	.4	.5	.4	.4	.1
7	.9	1.3	12	72	1.1	.6	32	.4	.4	.5	.4	.1
8	.9	.9	4.5	30	84	.4	.5	.4	.4	.6	.4	.1
9	.7	.9	.8	1.9	2.1	.4	.4	.3	.4	.4	.4	.1
10	.6	39	.8	6.0	.5	.4	.4	.3	.4	.4	.4	.1
11	.7	140	39	7.0	633	.4	.4	.3	.7	.4	.4	.1
12	.8	455	3.0	.7	441	.5	14.5	.3	.4	.4	.4	.1
13	8.0	24	.6	.6	164	.4	66	.3	.4	.4	.3	.1
14	.7	2.6	.5	.6	82	.4	24	.3	.3	.4	.2	.1
15	.5	2.4	2.5	.5	59	.5	1.4	.4	.3	.4	.4	.1
16	.5	1.0	1.1	.4	42	3.4	.4	.4	.2	.4	.3	.3
17	.5	1.8	6.3	.5	22	31	.4	.6	.2	.4	.2	47
18	.5	2.0	23	.8	587	43	.4	.4	.2	.5	.2	1.3
19	.6	24	2.4	.7	887	5.7	.4	.4	.3	30	.5	.1
20	3.8	17.5	12	.5	113	.4	.3	.5	.4	234	1.3	.1
21	.8	.8	15	.4	68	23	.3	.5	.3	4.6	.2	.1
22	2.4	1.1	5.2	.4	51	3.3	.3	13.5	.3	.4	.1	.1
23	.7	.6	35	.4	46	.4	.3	7.3	.3	.4	.1	.2
24	.6	.6	11	9.2	24	.6	.3	36	.3	.4	.1	.3
25	.6	.6	1.2	55	13	1.1	.4	66	.2	.4	.1	.2
26	.6	.6	.6	33	69	.6	.4	2.8	.3	.4	.1	1.5
27	.6	.6	.9	.5	46	5.5	.4	2.4	.4	.4	.1	.3
28	.6	.6	1.0	.4	15.5	30	.4	.4	.4	.4	.1	.2
29	.6	8.8	.5	.7	8.5	50	.4	-------	.4	.4	.1	.3
30	.6	.4	18.5	29	5.4	40	.3	-------	.9	.4	.1	.2
31	97	11.5	-------	1.6	-------	29	.3	-------	23	-------	.1	------
1931–32												
1	.1	.2	.2	.2	.2	.4	25	199	120	64	17.5	.1
2	.2	26	48	.2	12.5	.3	29	193	106	19.5	54	.1
3	.3	321	50	.2	258	209	8.7	45	100	9.9	7.9	.1
4	.2	581	154	.2	31	185	4.6	27	68	45	.2	.1
5	.1	22	5.3	.2	1.0	325	1.5	372	46	82	8.0	.1
6	.1	6.1	1.4	.2	.3	132	.6	120	43	18.5	29	.1
7	.1	4.4	46	21	.3	26	.4	169	27	2.8	24	.1
8	.1	1.3	115	4.4	3.3	47	.4	82	43	.7	9.7	.1
9	.1	10.5	5.1	.4	79	34	.8	161	50	2.7	7.6	.1
10	.1	2.4	27	40	47	32	8.2	142	38	69	14.5	.1
11	.2	11	11.5	73	5.2	71	16	88	27	28	9.1	.1
12	13.5	36	32	11.5	62	166	.8	1,310	17	144	21	.1
13	64	4.2	2.9	.4	20	209	.4	170	15	18.5	2.5	.1
14	9.1	43	.5	.2	.5	95	8.4	102	15	1.4	.1	.1
15	.3	6.1	29	.2	.3	577	1.4	51	301	.4	1.9	.1
16	.2	273	10	.2	17	150	.3	42	178	.3	23	.1
17	.1	43	40	.2	12	120	.3	895	66	4.6	.8	.1
18	.1	1.4	26	2.5	15.5	68	.2	295	34	1.5	.1	.2
19	.1	22	6.2	.3	.4	193	371	266	19	.2	.1	.2
20	.1	15	.6	1.5	.2	285	381	282	15	.2	.1	.2
21	6.3	46	.4	.4	.2	349	113	375	11.5	.1	10.5	.2
22	92	50	.4	27	.2	138	35	182	14	9.8	5.9	.1
23	15	1.2	23	.7	.2	128	17	186	38	231	.1	.1
24	.3	17	2.7	6.4	.2	62	10.5	825	38	154	.1	.1
25	.2	2.7	14.5	32	.2	34	23	935	37	62	.1	.1
26	.1	8.1	.7	90	.2	26	7.7	238	35	137	.1	.1
27	.1	7.7	.4	.6	.2	42	17.5	402	29	12	12.5	.1
28	.1	3.2	.3	2.0	.2	22	215	296	30	83	1.6	.2
29	.1	.4	.2	.2	.3	12.5	207	182	21	24	.6	.2
30	.3	.2	.2	.2	.4	8.7	34	---------	144	1.4	.1	.1
31	.5	.2	-------	.2	-------	57	114	---------	299	-------	1.3	------

Monthly discharge of Waimea River below Kekaha Ditch intake, near Waimea, Kauai, 1921–32

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1921–22						
July 24–31	23	1.3	4.44	6.87	35.5	109
August	61	.6	7.09	11.0	220	675
September	39	.5	3.68	5.69	110	339
October	263	1.0	16.7	25.8	517	1,590
November	399	1.0	22.1	34.2	662	2,030
December	1,400	1.1	170	263	5,270	16,200
January	1,270	1.1	140	217	4,330	13,300
February	1,790	3.2	170	263	4,750	14,600
March	376	2.9	63.4	98.1	1,960	6,030
April	131	.7	18.6	28.8	559	1,710
May	318	.6	25.7	39.8	796	2,440
June	7.5	.4	1.24	1.92	37.1	114
The period	1,790	.4	56.3	87.1	19,200	59,100
1922						
July	2.0	.4	.50	.77	15.6	48
August	19.7	.3	2.12	3.28	65.7	202
November	1,890	.8	147	227	4,400	13,500
1923–24						
July	202					
August	124	.2	9.47	14.7	294	901
September	164	.2	17.4	26.9	523	1,600
October	517	.2	53.0	82.0	1,640	5,040
November	158	.2	28.9	44.7	868	2,660
December	1,010					
February	265					
March	18.0					
April	914					
May	207					
June	7					
1924–25						
July	284					
August	92	.8	5.68	8.79	176	540
September	2.0	.6	.74	1.14	22.1	68
October	145	.6	24.4	37.8	758	2,320
November	500					
January	256					
February	202					
March	1,240					
April	681					
May	33	1.1	6.29	9.73	195	599
June	48	1.0	3.17	4.90	95.0	292
1925–26						
July	80	.8	9.28	14.4	288	883
August	256		14.3	22.1	443	1,360
September	39	.6	3.29	5.09	98.8	303
October	121	.5	7.60	11.8	236	723
November	68		5.95	9.21	178	548
December	870	.04	85.6	132	2,650	8,140
January	146	.2	13.1	20.3	405	1,250
February	109	.2	17.7	27.4	496	1,520
March	4.0	.2	.38	.59	11.9	36
April	93		4.54	7.02	136	418
May	60	.05	2.28	3.53	70.8	217
June	326	.03	21.2	32.8	636	1,950
The year	870	.03	15.5	24.0	5,650	17,300
1926–27						
July	83	0	10.2	15.8	316	970
August	118	0	3.96	6.13	123	377
September	76	0	7.07	10.9	212	651
October	1.0	0	.03	.05	1.0	3
November	304	0	11.8	18.3	353	1,090
December	594	.04	69.0	107	2,140	6,560
January	485	.4	64.9	100	2,010	6,170
February	629	.09	54.6	84.5	1,530	4,690
March	1,110	1.6	182	282	5,650	17,300
April	892	.6	73.2	113	2,190	6,740
May	985	.6	111	172	3,450	10,600
June		.4	8.47	13.1	254	780
The year	1,110	0	50.0	77.4	18,200	55,900

Monthly discharge of Waimea River below Kekaha Ditch intake, near Waimea, Kauai, 1921–32—Continued

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1927–28						
July	213	0.5	29.8	46.1	924	2,840
August	59	.5	7.26	11.2	225	691
September	283	.3	13.6	21.0	407	1,250
October	42	.3	3.48	5.38	108	331
November	176	.2	20.4	31.6	611	1,880
December	2,810	.1	168	260	5,200	16,000
January	327	1.0	47.7	73.8	1,480	4,540
February	241	.6	24.7	38.2	717	2,200
March	513	.6	52.5	81.2	1,630	4,990
April	191	.8	36.0	55.7	1,080	3,310
May	189	.6	23.7	36.7	734	2,250
June			1.23	1.90	36.9	113
The year	2,810	.1	35.9	55.5	13,200	40,400
1928–29						
July			46.6	72.1	1,450	4,430
August	84	.87	6.65	10.3	206	633
September	76	.73	7.51	11.6	225	691
October	74	.64	3.60	5.57	112	342
November	2,160	.42	211	326	6,340	19,400
December	74	.36	14.0	21.7	433	1,330
January	199	.37	25.6	39.6	794	2,440
February	500	.43	62.8	97.2	1,760	5,400
March	216	.31	38.0	58.8	1,180	3,620
April	79	.28	11.8	18.3	355	1,090
May	33	.21	2.58	3.99	79.8	245
June	127	.23	4.80	7.43	144	442
The year	2,160	.21	35.8	55.4	13,100	40,100
1929–30						
July	234	.23	11.5	17.8	357	1,090
August	29	.20	2.40	3.71	74.3	228
September	35	.20	2.27	3.51	68.0	209
October	30	.09	1.72	2.66	53.2	164
November	715	0	54.4	84.2	1,630	5,010
December	932	.02	218	337	6,760	20,700
January	639	7.9	98.9	153	3,060	9,410
February	1,680	2.0	95.8	148	2,680	8,230
March	485	.6	85.1	132	2,640	8,100
April	261	.9	44.1	68.2	1,320	4,060
May	189	.4	17.3	26.8	535	1,650
June	58	.4	11.1	17.2	333	1,020
The year	1,680	0	53.5	82.8	19,500	59,900
1930–31						
July	226	.5	16.2	25.1	503	1,540
August	455	.4	34.8	53.8	1,080	3,310
September	306	.5	31.6	48.9	947	2,910
October	128	.4	19.0	29.4	589	1,810
November	887	.4	116	179	3,480	10,700
December	179	.4	18.0	27.9	556	1,710
January	66	.3	8.23	12.7	255	783
February	66	.3	4.90	7.58	137	421
March	232	.2	13.8	21.4	428	1,310
April	234	.4	13.9	21.5	418	1,280
May	1.3	.1	.32	.50	10.0	30
June	47	.1	1.79	2.77	53.8	165
The year	887	.1	23.2	35.9	8,460	26,000
1931–32						
July	92	.1	6.58	10.2	204	626
August	581	.2	50.5	78.1	1,570	4,810
September	154	.2	21.8	33.7	654	2,010
October	90	.2	10.2	15.8	317	972
November	258	.2	18.9	29.2	568	1,740
December	577	.3	123	190	3,800	11,700
January	381	.2	53.3	82.5	1,650	5,070
February	1,310	27	298	461	8,630	26,500
March	301	11.5	65.3	101	2,020	6,210
April	231	.1	40.9	63.3	1,230	3,770
May	54	.1	8.52	13.2	264	810
June	.2	.1	.12	.19	3.6	11
The year	1,310	.1	57.1	88.3	20,900	64,200

KAWAIKOI STREAM NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder 2 miles northeast of Kokee ranger station and 12½ miles northeast of Waimea.

DRAINAGE AREA.—4.1 square miles.

RECORDS AVAILABLE.—April 1909 to June 1932. July 1917 to July 1919 not published.

EXTREMES.—Maximum discharge during year, 1,670 million gallons a day (2,580 second-feet) Aug. 3 (gage height, 11.49 feet); minimum, 2.1 million gallons a day (3.2 second-feet) July 29.

1909–32: Maximum discharge, 1,670 million gallons a day (2,580 second-feet) Dec. 13, 1924, and Aug. 3, 1931 (gage height, 12.11 and 11.49 feet respectively); minimum, 1.3 million gallons a day (2.0 second-feet) Sept. 15, 1921.

Highest known flood, 15.2 feet Dec. 18, 1916 (discharge not determined).

REMARKS.—Records good for ordinary stages; poor for extremely high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.8	20	4.4	5.7	10.5	8.0	25	97	27	53	16	12
2	3.9	17	7.1	5.1	68	6.0	18	83	23	29	18	6.2
3	3.0	192	85	4.8	114	184	12.5	24	21	33	11.5	4.9
4	2.7	93	72	5.2	25	82	10.5	17	16	29	9.5	4.7
5	2.8	14	21	4.9	11.5	121	9.8	91	23	48	9.3	4.7
6	2.9	12	19.5	4.5	9.1	37	9.1	28	17.5	19	11.5	4.9
7	2.5	8.8	33	24	9.5	27	8.0	56	12.5	15.5	15	4.7
8	2.5	7.7	37	8.7	21	44	7.7	25	25	19	14	4.9
9	2.4	11	10.5	5.4	24	29	7.7	40	20	44	18	4.2
10	2.7	16	16	5.8	14	39	8.0	34	22	63	15	4.1
11	24	26	11	14.5	8.4	43	7.3	18.5	14.	53	17	4.9
12	24	25	10	8.7	17	102	6.9	131	10.5	103	30	4.0
13	48	20	8.6	5.1	10.5	98	6.6	43	9.5	31	20	3.9
14	13.5	15.5	11	4.4	7.1	101	6.2	25	8.8	29	11	3.6
15	8.6	9.5	20	4.1	6.2	199	6.0	14.5	64	28	21	3.4
16	5.5	162	38	4.0	5.4	81	5.9	12	25	15.5	23	3.4
17	4.1	22	38	4.0	5.5	70	5.5	196	12.5	17	10	13
18	3.4	13	13	5.7	6.9	54	5.9	45	10	12.5	8.0	8.2
19	3.0	31	8.6	14	5.4	121	48	49	9.1	9.5	9.3	4.5
20	16.5	26	7.0	11	4.8	127	69	43	8.4	8.4	8.0	3.8
21	54	74	6.4	23	4.7	165	22	75	7.7	8.7	8.0	3.6
22	90	28	7.4	34	14.5	64	10	27	7.3	15.5	8.6	3.4
23	14	12.5	11	8.6	7.7	71	7.7	31	6.9	103	6.4	3.1
24	6.8	26	15	14	5.0	38	13	153	6.8	62	5.7	3.0
25	4.1	11	15	76	4.5	26	18.5	180	6.8	40	5.4	2.9
26	3.7	13.5	9.1	32	15.5	40	8.4	34	6.4	82	5.1	2.9
27	4.5	14.5	15	8.6	6.8	36	6.8	106	6.2	18.5	6.0	2.8
28	4.0	7.3	9.5	21	7.7	20	9.6	45	6.6	91	6.2	3.0
29	2.6	5.9	6.8	8.4	6.0	16	36	31	15	27	5.2	3.6
30	30	5.1	6.8	10	16.5	25	10.5	-------	96	17	21	3.2
31	12	4.7	-------	6.6	-------	38	69	-------	128	-------	13	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	90	2.4	13.1	20.3	408	1,250
August	192	4.7	30.5	47.2	944	2,900
September	85	4.4	19.1	29.6	573	1,760
October	76	4.0	12.6	19.5	392	1,200
November	114	4.5	15.8	24.4	473	1,450
December	199	6.0	68.1	105	2,110	6,480
January	69	5.5	16.0	24.8	495	1,520
February	196	12	60.5	93.6	1,750	5,380
March	128	6.2	21.7	33.6	673	2,060
April	103	8.4	37.5	58.0	1,120	3,450
May	30	5.1	12.4	19.2	386	1,180
June	13	2.8	4.65	7.19	140	428
The year	199	2.4	25.9	40.1	9,460	29,100

KOKEE DITCH NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder 1,000 feet west of road and 10½ miles north of Waimea.

RECORDS AVAILABLE.—September 1926 to June 1932.

EXTREMES.—Maximum discharge during year, 65 million gallons a day (101 second-feet) Aug. 3 (gage height, 2.63 feet); no flow for a short time on Feb. 17, 21.

1926–32: Maximum discharge, 68 million gallons a day (105 second-feet) Dec. 24, 1927, Nov. 4, Dec. 2, 1929 (gage height, 2.70 feet); no flow occasionally, when water was turned out of ditch just above weir.

REMARKS.—Records excellent. Kokee Ditch at elevation 3,400 feet diverts water from all streams tributary to Waimea River east of Mohihi Stream for irrigation near Kekaha. Regulated by head gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.3	15	6.6	7.6	10	10.5	34	56	34	60	27	17.5
2	5.1	21	8.8	6.8	19	8.3	30	56	30	41	28	11
3	4.4	39	17.5	6.5	32	52	22	35	31	41	21	9.3
4	4.0	37	53	6.8	30	56	20	27	28	38	21	8.8
5	3.8	21	23	6.8	17.5	60	18.5	54	32	49	17.5	9.3
6	3.8	15.5	32	6.3	12.5	49	17.5	35	35	31	20	9.2
7	3.8	11.5	35	10.5	12.5	35	16	54	34	26	21	8.4
8	3.7	9.9	38	8.2	22	54	15	36	38	27	24	8.8
9	3.5	11.5	17.5	7.9	24	42	15	43	41	45	24	7.9
10	3.5	12	19	7.9	19	45	15.5	38	41	56	24	7.4
11	18.5	26	15.5	11	11.5	54	14	29	34	45	21	8.4
12	18	28	13	11	17.5	54	13	34	30	60	32	7.6
13	37	38	11.5	7.9	15	47	12	34	28	43	28	7.3
14	15	17.5	12	6.6	10	49	11.5	27	27	38	18.5	6.9
15	8.8	13	21	6.0	8.4	47	11	27	46	38	21	6.6
16	6.3	45	34	5.7	7.6	47	11	26	50	26	34	6.5
17	5.2	34	41	5.6	7.1	49	10.5	20	33	26	18.5	14
18	4.5	16	18.5	7.1	9.2	51	10.5	21	30	24	14	13
19	4.1	28	11.5	9.2	7.3	47	38	30	28	20	14.5	8.3
20	8.4	26	9.3	11	6.5	43	53	30	26	17.5	13.5	7.3
21	38	47	8.1	13	6.2	49	39	27	24	16	12.5	6.9
22	52	38	7.6	22	14	53	21	26	22	24	14	6.5
23	19.5	17.5	12.5	12	10.5	47	16	24	21	38	12	6.0
24	10.5	26	12	13	7.1	41	18	30	20	56	10.5	5.7
25	7.3	16	19	21	6.3	27	28	27	20	51	9.9	5.6
26	6.6	12	11	22	16	46	16	22	18.5	53	9.5	5.2
27	6.9	20	15.5	13	9.9	51	13	47	17.5	31	10	5.2
28	6.6	11	12	26	9.9	34	14.5	37	17.5	52	11	5.6
29	5.2	8.4	8.8	13.5	8.3	28	37	24	26	42	9.5	6.2
30	25	7.4	8.4	15	18	30	21	-------	35	28	21	5.7
31	18	6.9	-------	10	-------	47	41	-------	60	-------	18.5	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	52	3.5	11.7	18.1	363	1,110
August	47	6.9	21.8	33.7	675	2,070
September	53	6.6	18.4	28.5	553	1,700
October	26	5.6	10.9	16.9	337	1,030
November	32	6.2	13.5	20.9	405	1,240
December	60	8.3	43.6	67.5	1,350	4,150
January	53	10.5	21.0	32.5	652	2,000
February	56	20	33.7	52.1	976	3,000
March	60	17.5	30.9	47.8	958	2,940
April	60	16	38.1	58.9	1,140	3,510
May	34	9.5	18.7	28.9	581	1,780
June	17.5	5.2	8.07	12.5	242	743
The year	60	3.5	22.5	34.8	8,230	25,300

WAIAHULU STREAM NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder in Waimea Canyon, half a mile above confluence with Koaie Stream and 8¾ miles north of Waimea.

DRAINAGE AREA.—20.0 square miles.

RECORDS AVAILABLE.—February to October 1916, October 1917 to June 1918, May 1925 to June 1932.

EXTREMES.—Maximum discharge during year, 1,810 million gallons a day (2,800 second-feet) Aug. 3 (gage height, 8.02 feet); minimum, 6.6 million gallons a day (10.2 second-feet) Nov. 30, Dec. 2.

1916, 1917–18, 1925–32: Maximum discharge, 2,550 million gallons a day (3,950 second-feet) Dec. 24, 1927 (gage height, 9.92 feet); minimum, 5.2 million gallons a day (8.0 second-feet) Nov. 4, 1927.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. Kokee Ditch diverts water for irrigation above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.9	11.5	9.6	8.0	11.5	7.4	15		50	47	14	13
2	9.9	12.5	9.8	8.2	30	7.0	15	[a]95	43	28	17.5	12
3	10	147	51	8.0	235	266	12		40	24	15	12
4	9.9	294	156	8.2	[b]39	130	11	16.5	34	23	14	12
5	9.6	17.5	16	8.4	16	242	11	187	33	36	13.5	12
6	9.6	14.5	13.5	8.2	15	64	10.5	24	29	25	13.5	12
7	9.9	14	16.5	21	13.5	16	10	67	19.5	23	14.5	11.5
8	10	13	40	15	13.5	41	10	19.5	32	23	14.5	11.5
9	10	12	13.5	10	17	20	10.5	20	29	28	14	11.5
10	10	12	11	14	18	24	11.5	14	26	85	15	11.5
11	10.5	15	11	23	11	27	11	16.5	22	45	13.5	11
12	12	17.5	10.5	14.5	10	166	10.5	291	19	190	17	11.5
13	30	16	11	10.5	12	196	10	61	19	34	15.5	11.5
14	16.5	18.5	10	9.1	9.1	121	10	31	18	27	13.5	11.5
15	13	18	11	8.6	8.2	391	9.8	18	155	26	13	11.5
[illegible]												
16	12.5	258	15.5	8.6	8.0	108	9.8	20	75	24	16.5	11.5
17	12	23	16	8.6	8.0	83	9.8	466	28	23	14.5	11.5
18	12	12	14.5	8.8	8.0	39	10.5	197	21	22	13	12
19	12	11.5	11	10.5	8.0	176	84	172	19	18.5	13	12.5
20	12	13	9.8	12	7.4	246	172	164	17.5	16	12.5	12
21	17	39	8.4	14	7.2	302	37	234	16.5	14	12.5	12
22	66	22	8.3	34	7.2	77	20	98	16	12	13	12
23	18	12	8.2	13.5	8.2	83	16.5	95	16	126	13	12
24	14	11.5	8.6	11.5	7.4	28	16	406	16	63	12.5	11.5
25	12.5	12	10.5	94	7.0	18.5	16.5	550	16.5	22	12	11.5
[illegible]												
26	11.5	10.5	9.8	62	7.0	17.5	15	165	16	73	12	11.5
27	11	12	9.1	14.5	8.0	22	13.5	224	16	12	11.5	11.5
28	10.5	10.5	8.8	25	7.2	15.5	20	122	16.5	83	12	12
29	10.5	10	9.4	12.5	7.0	13		67	18	19	12	12
30	11	9.8	8.2	12	7.0	12	[a]85	-------	131	12	12	11.5
31	13.5	9.6	-------	11.5	-------	27		-------	234	-------	13	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	66	9.6	14.1	21.8	437	1,340
August	294	9.6	35.8	55.4	1,110	3,400
September	156	8.2	18.2	28.2	546	1,610
October	94	8.0	17.0	26.3	528	1,620
November	235	7.0	19.0	29.4	571	1,750
December	391	7.0	96.3	149	2,990	9,160
January	172	9.8	27.9	43.2	863	2,650
February	550	16.5	139	215	4,040	12,400
March	234	16	40.0	61.9	1,240	3,810
April	190	12	40.1	62.0	1,200	3,690
May	17.5	11.5	13.6	21.0	423	1,300
June	13	11	11.8	18.3	353	1,080
The year	550	7.0	39.1	60.5	14,300	43,900

[a] Estimated mean. [b] Partly estimated.

KOAIE STREAM AT ELEVATION 3,700 FEET, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder at elevation 3,700 feet, 12½ miles N. 30° E. from Waimea.

DRAINAGE AREA.—3.4 square miles.

RECORDS AVAILABLE.—July 1919 to July 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 2,500 million gallons a day (3,870 second-feet) Feb. 12 (gage height, 4.59 feet); minimum, 1.0 million gallons a day (1.6 second-feet) July 19, 1931.

1919–32: Maximum discharge, about 3,750 million gallons a day (5,800 second-feet) Jan. 16, 1921 (gage height, 6.70 feet); minimum, 0.6 million gallons a day (0.9 second-foot) May 21, 22, 1929.

REMARKS.—Records good except those for high stages and estimated periods, which are poor. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	3.3	8.6	3.3	3.9	2.4	4.5	14	55	18	18.5	10.5	4.2	2.0
2	5.8	24	46	3.6	46	4.2	8.5	69	19.5	9.7	32	8.4	2.0
3	2.8	146	47	4.2	68	58	4.5	13.5	17	12.5	7.5	4.2	3.7
4	1.8	52	45	4.2	15.5	60	3.6	14	10.5	30	4.5	3.0	9.7
5	1.5	6.1	11	3.6	6.5	102	3.0	82	9.7	37	16	3.3	18.5
6	1.2	6.5	13	3.0	6.1	[a] 21	2.8	62	8.6	9.1	20	3.9	8.6
7	1.2	4.9	65	26	7.5		2.6	49	7.0	7.0	21	5.3	3.6
8	1.2	3.9	60	7.0	14	[b] 10	2.0	34	12	10	9.7	4.5	7.2
9	1.1	16	11	4.2	52		2.0	97	11.5	9.7	18.5	3.3	15
10	1.2	10.5	28	31	24		9.4	67	11	26	10.5	3.6	6.7
11	6.7	18.5	20	18	11.5		12	35	8.6	18	20	4.5	10.5
12	7.8	24	31	7.0	56	[b] 24	5.3	510	6.5	30	12.5	3.3	8.6
13	45	8.1	9.1	3.9	13.5		5.4	33	5.7	10.5	6.1	3.0	66
14	6.5	38	7.5	3.0	6.5		16	22	4.5	7.0	4.5	2.8	18.5
15	4.2	8.6	32	2.8	5.3	[b] 44	6.0	10.5	82	5.7	17	2.4	9.1
16	2.2	113	15.5	2.8	29		3.3	11	16	4.2	12.5	2.4	8.1
17	1.6	21	37	3.0	25		2.6	115	5.7	14.5	4.9	7.7	6.5
18	1.2	10.5	31	11	11.5	[b] 20	8.4	25	4.2	5.7	3.6	7.0	9.1
19	1.1	42	11.5	9.3	5.3		183	38	3.0	3.6	4.5	3.9	42
20	1.6	30	7.0	9.5	4.5	[b] 42	114	37	2.6	3.0	4.5	3.6	39
21	14.5	51	4.9	10.5	4.2		17	54	2.4	3.0	18.5	4.9	[a] 42
22	47	32	16	15.5	4.9	[b] 20	7.5	19.5	2.0	19.5	7.2	3.0	------
23	8.5	9.1	22	6.1	3.9		5.7	37	2.0	87	4.2	2.2	------
24	3.6	31	26	20	3.3		8.6	196	2.0	54	3.0	1.8	------
25	2.4	9.2	19.5	33	2.8	[a] 9.5	15.5	102	2.0	26	2.6	1.5	------
26	1.8	28	11	18.5	4.2		12.5	15.5	1.8	50	2.4	1.5	------
27	1.6	13	9.7	6.1	4.2		28	155	1.6	8.1	17	1.5	------
28	1.6	6.1	7.0	4.2	4.9	7.0	142	56	16.5	25	13	3.4	------
29	1.5	4.5	5.3	3.0	4.5	4.9	87	55	15.5	13	5.5	3.6	------
30	10	3.9	4.5	2.8	4.2	7.8	9.8	------	77	7.0	9.1	2.6	------
31	6.0	3.6	------	2.4	------	24	70	------	72	------	6.5	------	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931–32						
July	47	1.1	6.37	9.86	198	606
August	146	3.6	25.3	39.1	784	2,400
September	65	3.3	21.9	33.9	657	2,020
October	33	2.4	9.13	14.1	283	869
November	68	2.4	15.0	23.2	451	1,380
December	102	4.2	25.2	39.0	781	2,400
January	183	2.0	26.2	40.5	812	2,490
February	510	10.5	71.3	110	2,070	6,350
March	82	1.6	14.8	22.9	458	1,410
April	87	3.0	18.8	29.1	564	1,730
May	32	2.4	10.6	16.4	329	1,010
June	8.4	1.5	3.68	5.69	110	338
The year	510	1.1	20.5	31.7	7,500	23,000
1932						
July 1–21	66	2.0	16.0	24.8	336	1,030

[a] Partly estimated. [b] Estimated mean.

WAIALAE RIVER AT ELEVATION 3,700 FEET, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder at elevation 3,700 feet, 10½ miles N. 30° E. from Waimea.

DRAINAGE AREA.—3.3 square miles.

RECORDS AVAILABLE.—January 1920 to July 1932 (discontinued). August 1910 to January 1916 at site 2 miles downstream.

EXTREMES.—Maximum discharge during period, 2,300 million gallons a day (3,560 second-feet) Feb. 12 (gage height, 5.59 feet); minimum, 0.8 million gallons a day (1.2 second-feet) June 25–28.

1920–32: Maximum discharge (estimated), 4,500 million gallons a day (6,900 second-feet) Jan. 16, 1921 (gage height, 8.44 feet); minimum, 0.7 million gallons a day (1.1 second-feet) Mar. 18–20, 1925, June 14, 15, 1931.

REMARKS.—Records good for ordinary stages; poor for extremely high and low stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	2.6	2.8	3.8	2.9	2.1	1.9	11	34	16.5	12	7.2	2.9	1.0
2	4.7	20	54	3.1	28	1.7	6.6	47	15.5	6.8	23	5.2	1.0
3	2.2	124	15	3.8	52	32	4.1	10.5	13.5	9.6	5.4	2.8	2.2
4	1.4	43	27	3.4	10	38	3.4	10.5	7.6	29	3.8	2.1	4.1
5	1.2	4.8	8.5	2.8	4.8	68	2.8	88	6.3	37	19	2.4	17.5
6	1.0	5.6	8.8	2.6	4.1	16	2.6	69	5.6	8.8	12	2.6	6.0
7	1.0	3.8	36	15.5	4.8	5.6	2.2	34	4.6	6.3	16.5	3.4	2.2
8	1.0	2.9	66	5.2	10	6.6	2.1	20	8.0	8.0	8.0	3.1	5.7
9	1.0	13	7.8	8.9	54	8.4	2.7	81	7.6	7.0	13.5	1.9	14
10	1.2	8.9	26	48	21	11	17	50	5.9	13	8.1	2.2	4.6
11	4.8	17.5	16	20	8.5	13.5	11	27	4.6	8.3	12	2.4	5.6
12	5.1	18	21	7.5	44	24	4.8	607	3.6	18	10.5	1.7	4.8
13	42	5.6	6.6	4.1	9.6	22	6.3	40	3.4	7.3	5.1	1.4	71
14	5.6	27	5.1	3.4	5.1	29	12.5	18.5	3.1	5.1	3.8	1.2	15
15	3.1	5.9	22	3.1	3.8	65	5.4	9.4	76	4.1	12	1.1	6.6
16	2.1	73	11.5	2.8	17	16.5	3.4	14	19.5	2.9	9.8	1.0	5.4
17	2.4	17.5	32	3.4	21	20	2.6	143	6.3	8.1	4.6	3.5	4.6
18	1.2	6.6	17	11	8.2	12.5	8.7	26	4.5	4.4	3.4	3.4	5.4
19	1.1	15.5	8.0	6.1	4.6	30	184	53	3.6	2.8	3.4	2.1	36
20	1.2	14.5	5.1	6.6	3.4	50	106	50	3.1	2.2	3.6	1.9	42
21	9.2	26	4.0	4.4	2.8	54	15.5	59	2.8	2.1	14.5	2.8	36
22	38	21	14.5	9.0	2.8	15.5	7.3	21	2.6	11	6.5	1.4	5.6
23	7.0	5.6	15.5	4.4	2.2	17.5	5.4	51	2.4	76	3.6	1.0	4.1
24	3.1	22	13.5	13.5	2.2	9.9	7.8	196	2.4	39	2.8	1.0	2.9
25	1.9	6.3	11.5	19.5	1.9	6.6	10.5	124	2.2	23	2.4	.9	8.7
26	1.6	12.5	6.6	14	2.2	3.7	8.5	16	2.2	33	2.1	.8	4.7
27	1.4	8.8	7.3	4.8	2.1	9.4	24	121	2.1	6.6	16	.8	2.8
28	1.2	4.4	5.1	3.8	2.2	5.6	158	46	10	10.5	7.0	1.8	2.2
29	1.1	3.4	4.1	2.8	2.1	4.4	67	49	10.5	8.0	4.4	1.4	9.7
30	7.3	2.9	3.6	2.6	1.9	7.2	9.5	-------	34	5.1	5.1	1.0	5.9
31	4.7	2.6	-------	2.2	-------	17	46	-------	52	-------	4.6	-------	[a] 6.3

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931–32						
July	42	1.0	5.21	8.06	161	495
August	124	2.6	17.6	27.2	545	1,670
September	66	3.6	16.1	24.9	483	1,480
October	48	2.2	7.91	12.2	245	752
November	54	1.9	11.3	17.5	338	1,040
December	68	1.7	20.1	31.1	622	1,910
January	184	2.1	24.5	37.9	759	2,330
February	607	9.4	72.9	113	2,110	6,490
March	76	2.1	11.0	17.0	342	1,050
April	76	2.1	13.8	21.4	415	1,270
May	23	2.1	8.18	12.7	254	779
June	5.2	.8	2.04	3.16	61.2	188
The year	607	.8	17.3	26.8	6,340	19,500
1932						
July	71	1.0	11.1	17.2	344	1,050

[a] Partly estimated.

KEKAHA DITCH AT CAMP NO. 1, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder in Waimea Canyon, 6¼ miles N. 16° E. of Waimea.

RECORDS AVAILABLE.—November 1907 to June 1915; March 1916 to June 1932.

EXTREMES.—Maximum discharge during year, 66 million gallons a day (102 second-feet) Aug. 16 (gage height, 4.17 feet); no flow Mar. 22–27.

1907–32: Maximum discharge, 71 million gallons a day (110 second-feet) Apr. 25, 1928 (gage height, 4.33 feet); no flow occasionally, when water was shut out of ditch.

REMARKS.—Records good for ordinary stages except those estimated, which are fair; poor for extremely low stages. Intake on Waimea River 8 miles north of Waimea. Water used for irrigation of sugarcane at Kekaha plantation. Regulated by head gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	28	32	26	29	[a] 28	26	32	47	23	50	50	36
2	30	47	50	28		25	32	47	23	50	53	39
3	30	50	44	30		30	33	47	24	50	50	36
4	26	26	53	33	[a] 50	32	33	44	25	50	47	32
5	24	30	53	30		33	33	23	39	50	47	33
6	24	33	53	28		32	33	28	36	50	50	33
7	23	36	50	39	[a] 38	33	32	26	36	50	50	32
8	23	30	56	44		33	30	26	39	50	50	33
9	23	39	50	36		33	32	28	36	53	50	30
10	23	50	50	50		32	41	26	36	50	50	28
11	29	50	53	36	[a] 46		47	28	36	50	47	29
12	20	53	53	41			41	20	36	50	50	29
13	50	47	47	39	50		36	26	39	50	47	28
14	47	47		33	41	[a] 33	47	26	50	53	39	26
15	36	50		30	36		44	26	37	50	39	25
16	29	47	[a] 46	29	44		33	26	25	44	50	25
17	26	56		29	44	33	30	18.5	25	47	44	29
18	24	47		41	47	33	29	20	36	50	36	39
19	23	53		39	36	33	36	21	39	41	36	32
20	23	56		44	32	33	39	18	39	36	36	29
21	39	56	[a] 36		29	32	39	20	39	36	41	30
22	53	56			29	32	39	18	31	39	47	28
23	53	47	53		30	33	39	18	0	47	36	26
24	39	47	44		28	32	39	18	0	50	33	25
25	29	47	56	[a] 46	26	33	44	17	0	53	30	24
26	26	41	47		26	33	47	18	0	53	29	24
27	25	53	41		28	33	47	18	6.4	53	41	24
28	24	31	39		28	32	47	18	21	50	50	25
29	23	32	33		26	32	47	20	50	50	44	30
30	33	29	32	[a] 30	26	33	47	------	50	53	33	26
31	47	28	------		------	32	47	------	49	------	47	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	53	20	30.7	47.5	952	2,920
August	56	26	43.4	67.1	1,350	4,130
September	----------	26	45.2	69.9	1,360	4,160
October	----------	----------	38.1	58.9	1,180	3,630
November	----------	26	37.0	57.2	1,110	3,410
December	----------	25	32.1	49.7	996	3,060
January	47	29	38.5	59.6	1,200	3,670
February	47	17	25.4	39.3	736	2,260
March 1–22, 27–31	50	6.4	34.3	53.1	925	2,840
April	53	36	48.6	75.2	1,460	4,480
May	53	29	43.6	67.5	1,350	4,150
June	39	24	29.5	45.6	885	2,720
The year (362 days)	----------	6.4	37.3	57.7	13,500	41,400

[a] Estimated mean.

KEKAHA DITCH BELOW TUNNEL NO. 12, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder 1 mile north of Waimea.
RECORDS AVAILABLE.—April 1908 to November 1914; July 1916 to June 1932.
EXTREMES.—Maximum discharge during year, 51 million gallons a day (79 second-feet) Oct. 10 (gage height, 4.23 feet); no flow Mar. 22–28.
1908–14, 1916–32: Maximum discharge, 70 million gallons a day (108 second-feet) Dec. 24, 1927 (gage height, 5.17 feet); no flow occasionally, when water was shut out of ditch.
REMARKS.—Records good except those estimated, which are fair. Intake on Waimea River 8 miles north of Waimea. Water used for irrigation of sugarcane, Kekaha plantation. Regulated by head gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		[a] 29	22	24	25	22	27	39	18.5	41	40	30
2		37	34	22	25	22	29	39	18.5	41	41	30
3	[b] 24	46	37	22	46	27	29	39	18.5	41	39	30
4		24	29	27	46	29	29	37	18.5	41	37	27
5		27	41	25	41	30	29	21	30	41	36	29
6		29	41	23	32	29	27	25	30	39	39	29
7		30	39	30	32	29	25	23	29	41	39	29
8		27	41	39	34	29	25	23	30	39	39	29
9	[b] 20	29	41	32	41	29	25	24	29	41	39	27
10		41	39	41	43	27	32	24	29	39	39	23
11		41		34	41	29	39	23	29	39	39	25
12				36	39	29	36	18.5	29	39	39	24
13				36	43	29	30	24	29	39	39	23
14	[b] 38			30	36	29	37	24	37	39	34	22
15			[b] 40	27	30	29	37	24	35	37	32	22
16		[b] 42		27	36	29	27	24	21	34	39	21
17				25	36	29	25	17	21	36	34	22
18	[b] 20			34	41	29	25	18.5	29	37	30	32
19				32	32	30	30	19	32	32	29	27
20			36	39	27	29	34	17.5	32	29	30	24
21		45	29	34	24	29	34	18.5	32	27	32	25
22	[b] 36	46	27	43	24	29	34	16.5	30	30	39	23
23		43	41	39	25	29	32	16		36	32	21
24		39	37	34	22	29	32	17.5		37	29	20
25		39	45	45	22	29	34	16	[b] 0	39	27	19
26		32	39	46	22	29	37	16.5		39	25	18.5
27	[b] 24	39	34	41	23	29	37	15		39	30	18.5
28		29	34	39	22	27	39	16	[a] 7	39	39	19
29		27	29	32	23	29	39	16.5	39	39	37	24
30		25	27	29	22	29	39	-------	39	39	29	39
31	[a] 40	23	-------	25	-------	29	39	-------	41	-------	37	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	----------	----------	25.9	40.1	802	2,460
August	----------	23	36.3	56.2	1,120	3,450
September	----------	22	37.1	57.4	1,110	3,410
October	46	22	32.6	50.4	1,010	3,110
November	46	22	31.8	49.2	955	2,930
December	30	22	28.4	43.9	881	2,700
January	39	25	32.0	49.5	993	3,050
February	39	15	22.5	34.8	652	2,000
March 1–22, 28–31	41	----------	28.2	43.6	733	2,250
April	41	27	37.6	58.2	1,130	3,460
May	41	25	35.1	54.3	1,090	3,340
June	32	18.5	24.5	37.9	735	2,260
The year (361 days)	----------	----------	31.1	48.1	11,200	34,400

[a] Estimated. [b] Estimated mean.

HANAPEPE RIVER AT KOULA, NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder just below junction with Manuahi Stream, 500 feet below siphon at Koula and 4 miles northeast of Eleele.

DRAINAGE AREA.—18.8 square miles.

RECORDS AVAILABLE.—August 1910 to January 1921; December 1926 to June 1932.

EXTREMES.—Maximum discharge during year occurred on Feb.12 (gage height unknown); minimum uncertain, owing to faulty record.

1910–21, 1926–32: Maximum discharge, at least 5,000 million gallons a day (7,740 second-feet) Dec. 18, 1916 (at old station above mouth of Manuahi Stream; gage height not known, as station was destroyed by this flood); minimum, 7.1 million gallons a day (11.0 second-feet) Dec. 30, 31, 1913.

REMARKS.—Records good for ordinary stages and poor for estimated periods and extremely high stages. Hanapepe Ditch diverts water from river 3 miles above station for irrigation. Revision of 1930–31 data for this station is published in this paper.

Discharge, in million gallons, 1930–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1930-31												
1	44	[a]467	239	173	16.5	16.5	13	14	15.5	12	12	12
2	140	[a]126	303	44	15.5	17	13.5	13.5	42	12	12	12
3	120	[a]78	340	40	15.5	22	13.5	13	60	12.5	12	12
4	66	[a]38	210	29	15	17	14	13	22	12	11.5	11
5	47	[a]28	111	118	15	15.5	18	13	16.5	12	12	11.5
6	31	[a]117	114	206	15	15	14	12	13.5	14	11.5	12
7	25	[a]35	72	108	23	15.5	47	11.5	12.5	16.5	11.5	12
8	37	[a]21	39	50	28	15.5	84	11.5	12.5	13.5	12	12
9	22	[a]15.5	29	37	24	15.5	19.5	11.5	13	12	12	12.5
10	20	[a]72	34	47	46	15	15	12	14	12	19	12.5
11	23	[a]270	207	40	370	14.5	17.5	12	19	12	15.5	12.5
12	22	[a]316	49	36	246	14.5	35	11.5	13.5	12	31	12.5
13	42	[a]75	32	25	97	14.5	82	11	12	11.5	13.5	12.5
14	21	[a]50	35	22	39	16	49	23	11.5	11.5	16.5	12.5
15	17.5	[a]77	93	20	28	14.5	23	14	12	11.5	14	13.5
16	17	[b]50	164	25	24	45	17	31	11.5	12	14	62
17	16	[b]120	112	22	38	37	15.5	16	11	13	13.5	79
18	15	78	67	18.5	136	43	14.5	13	11	12	13.5	15
19	23	162	37	18	630	19	14	14	13	18.5	14	13
20	57	97	84	17	111	15.5	14	13.5	15	13.5	13.5	13
21	29	84	86	17	65	17	14	12	19	12	13.5	13
22	80	118	80	17.5	47	15.5	14	16	13	11.5	13	16.5
23	52	58	97	24	44	14	14	21	12	11.5	13	25
24	39	48	40	26	28	14	14	50	12	11.5	13.5	19
25	23	89	29	35	22	23	14	44	13	11.5	13.5	20
26	24	70	26	18	25	18	14	16	12.5	11.5	13.5	29
27	26	56	42	21	19	14	14.5	42	13.5	11.5	14	20
28	20	40	36	20	18	19	14	30	12	12	14	49
29	18.5	97	36	21	17	16.5	14	-------	12	12	14	17
30	40	61	204	40	16.5	13.5	14	-------	15.5	12	14	18.5
31	[b]163	116	-------	20	-------	13.5	15.5	-------	16	-------	13	------

[a] Estimated. [b] Partly estimated.

Discharge, in million gallons, of Hanapepe River at Koula, near Eleele, Kauai, 1930–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1931-32												
1	22	16	22	25	21	15.5	102	66		22	94	30
2	17.5	115	84	30	30	15.5	24	188	[c]75	20	247	37
3	16.5	594	32	56	97	23	15	51		32	41	24
4	16		41	64	66	16.5	14	97		116	26	31
5	21		88	29	26	15.5	14	325		146	72	54
6	15.5	[c]160	62	55	35	15	13.5	[b]762	[c]80	59	149	57
7	17		261	235	29	14	13.5	[a]329		46	175	54
8	15.5		334	57	57	15.5	13.5		[b]44	46	72	27
9	15.5	[b]100	68	60	108	15	15.5			36	28	165	22
10	15.5	91	155	59	133	15	44	[c]600		32	34	62	39
11	18.5	84	104	59	66	15.	48			30	22	74	24
12	25	84	172	43	[b]465	15.5	17.5			28	24	55	22
13	149	47	67	28	68	15	18.5			28	21	33	[c]20
14	32	218	45	25	36	15	58	[c]200		28	25	28	
15	20	84	96	30	36	24	32			55	19	134	18.5
16	17.5	407	60	25	[b]474	15	17.5			36	18.5	58	18
17	16	165	102	23	[b]178	15	15.5	[c]1,050		30	106	30	23
18	15.5	84	241	58	132	15	17			30	22	26	20
19	15	221	134	70	53	17	160			29	18	26	19
20	18	226	66	38	28	27	218	[c]340		[b]23	17.5	24	37
21	44	285	44	25	17.5	30	81			[b]19.5	19	180	24
22	117	156	82	32	17	20	36	[c]85		19	38	48	18
23	40	64	75	29	16.5	38	25			18.5	141	33	17
24	20	129	108	75	16	17	52	[c]1,400		18.5	141	93	16.5
25	17.5	55	148	58	15.5	15	55			27	122	30	16
26	17	162	66	78	15.5	35	91			27	60	28	16
27	17	118	56	35	15	26	94	[c]150		18.5	28	174	15.5
28	16	50	37	26	14.5	23	240			71	24	344	17.5
29	15.5	38	29	22	14	49	183			118	20	79	16.5
30	25	28	27	21	15	24	58			32	33	55	15
31	17	25		20		29	74			38		34	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1930-31						
July	163	15	42.6	65.9	1,320	4,050
August	467	15.5	101	156	3,130	9,600
September	340	26	102	158	3,050	9,350
October	206	17	43.7	67.6	1,360	4,160
November	630	15	74.5	115	2,230	6,860
December	45	13.5	18.6	28.8	576	1,770
January	84	13	22.2	34.3	689	2,110
February	50	11	18.4	28.5	515	1,580
March	60	11	16.2	25.1	502	1,540
April	18.5	11.5	12.4	19.2	373	1,140
May	31	11.5	14.0	21.7	434	1,330
June	79	11	19.7	30.5	592	1,820
The year	630	11	40.5	62.7	14,800	45,300
1931-32						
July	149	15	27.2	42.1	844	2,590
August	594	16	143	221	4,450	13,600
September	334	22	96.9	150	2,910	8,920
October	235	20	48.1	74.4	1,490	4,570
November	474	14	76.5	118	2,290	7,040
December	49	14	20.6	31.9	640	1,960
January	240	13.5	60.0	92.8	1,860	5,710
February			424	656	12,300	37,800
March		18.5	44.4	68.7	1,380	4,220
April	146	17.5	48.9	75.7	1,470	4,510
May	344	24	86.7.	134	2,690	8,250
June	57	15	25.6	39.6	768	2,360
The year		13.5	90.4	140	33,100	102,000

[a] Estimated. [b] Partly estimated. [c] Estimated mean.

HANAPEPE RIVER AT MAKAI SIPHON NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder on right side of makai siphon bridge and 2⅓ miles northeast of Eleele.

DRAINAGE AREA.—20.5 square miles.

RECORDS AVAILABLE.—December 1929 to February 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 6,440 million gallons a day (9,960 second-feet) Feb. 12 (gage height, 9.24 feet); minimum, 13.5 million gallons a day (20.9 second-feet) Jan. 7, 8, 9.

1929–32: Maximum discharge, that of Feb. 12, 1932; minimum, 11.5 million gallons a day (17.8 second-feet) Feb. 23, 1930, Apr. 26, 1931.

REMARKS.—Records good for ordinary stages; poor for estimated periods and high stages. Hanapepe Ditch and several small ditches divert water from stream above station. 1930–31 data for this station are revised in this paper.

Discharge, in million gallons, 1930–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1930–31												
1	45	658	255	191	16	17	14	14.5	15.5	13	12.5	
2	162	120	305	47	16	18	14	14	39	12.5	12.5	
3	129	80	351	44	15.5	24	14	13	60	13	12	
4	69	42	213	34	15	17	14	13	24	12	12	[a] 12
5	52	35	102	126	15	16.5	18	13	16.5	12	11.5	
6	33	120	114	207	14.5	15.5	14	13	14	13.5	12	
7	27	36	67	114	20	15	38	12.5	13	15.5	12	
8	42	24	41	52	26	15.5	87	12.5	13	13.5	13	
9	25	18	32	40	19.5	15	21	12	17.5	12.5	12.5	
10	22	77	31	50	39	14.5	15	12.5	15.5	12		
											[a] 22	[a] 13
11	25	290	213	44	367	14.5	17	12.5	21	11.5		
12	24	352	49	40	237	14.5	31	12	14.5	11.5		
13	49	84	35	28	94	14.5	77	12	13	12		
14	25	55	35	24	36	16	48	23	13	12	[a] 15	
15	19	82	90	22	27	14.5	24	14	13	12		
16	19	45	161	26	22	42	16.5	30	12.5	13		[a] 70
17	18	120	111	23	36	36	15	16.5	12.5	13		
18	17.5	73	78	19	240	42	14.5	13.5	12.5	12		
19	24	153	38	18	516	19	14	14	14	18		
20	26	90	85	17.5	104	16	14	14	16.5	14		[a] 15
21	35	71	73	17	59	17.5	14	13	19.5	12		
22	87	109	95	17.5	44	16	13.5	17	13	11.5	[a] 14	
23	56	52	95	26	42	14.5	13.5	22	13	11.5		
24	46	45	43	25	27	14.5	13.5	50	13	11.5		[a] 22
25	27	78	33	38	22	24	13.5	44	13	12.5		
26	32	64	28	17.5	26	17.5	14	15.5	13	11.5		
27	32	52	43	21	20	14.5	13.5	44	13.5	11.5		[a] 34
28	23	40	39	19.5	17.5	17.5	13	32	13	11.5		
29	22	92	40	19	17	17	13	-------	12.5	11.5		
30	44	61	210	40	17	14	13	-------	15	12		[a] 19
31	169	106	-------	21	-------	14	14	-------	17	-------		

[a] Estimated mean.

Discharge, in million gallons, of Hanapepe River at makai siphon near Eleele, Kauai, 1930–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
1931–32								
1	21	14.5		26	21	19	109	59
2	17	102		31	22	17.5	29	170
3	15.5	547		54	94	27	16	47
4	15	[a]210	[a] 55	64	64	18	14.5	94
5	21			32	27	19	14	329
6	15			54	33	19	14	874
7	16	[a]110	[a] 280	252	32	16.5	13.5	322
8	14.5			55	53	16	13.5	140
9	14.5			61	102	16	16	668
10	14.5		[a] 120	58	124	16	48	691
11	17.5	[a] 75		59	62	16	44	319
12	21			44	371	16	17	1,390
13	144		[a] 50	31	80	16	18.5	-------
14	35	[a]140		26	45	16	54	-------
15	21			32	34	27	31	-------
16	17	[a]280	[a] 100	26	270	15.5	17.5	-------
17	15.5			24	122	15	15.5	-------
18	14.5			58	74	15	18	-------
19	14.5			66	62	16	166	-------
20	17	[a]190		39	43	25	216	-------
21	41		[a] 65	26	33	29	77	-------
22	109			32	28	19	36	-------
23	48			27	25	36	28	-------
24	22		[a] 120	69	22	16.5	57	-------
25	17.5	[a]110		51	21	14.5	53	-------
26	16.5			76	20	31	87	-------
27	16.5		[a] 50	35	19	26	92	-------
28	16			27	18	20	233	-------
29	14.5	[a] 34		22	17.5	16.5	175	-------
30	24		30	21	19	27	54	-------
31	17		-------	19	-------	39	67	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1930–31						
July	169	17.5	47.1	72.9	1,460	4,490
August	658	18	107	166	3,320	10,200
September	351	28	104	161	3,100	9,530
October	207	17	46.1	71.3	1,430	4,380
November	516	14.5	72.2	112	2,170	6,650
December	42	14	18.6	28.8	578	1,770
January	87	13	21.6	33.4	668	2,050
February	50	12	18.9	29.2	529	1,620
March	60	12.5	17.0	26.3	526	1,610
April	18	11.5	12.5	19.3	376	1,150
May	----------	----------	14.3	22.1	444	1,360
June	----------	----------	20.3	31.4	610	1,870
The year	658	----------	41.7	64.5	15,200	46,700
1931–32						
July	144	14.5	6.5	41.0	823	2,530
August	547	14.5	136	210	4,220	13,000
September	----------	----------	90.0	139	2,700	8,290
October	252	19	48.3	74.7	1,500	4,590
November	371	17.5	65.2	101	1,960	6,010
December	39	14.5	20.5	31.7	636	1,950
January	233	13.5	59.5	92.1	1,840	5,660
February 1–12	1,390	47	425	658	5,100	15,700
The period (227 days)	1,390	13.5	82.7	128	18,800	57,700

[a] Estimated mean.

HANAPEPE DITCH BELOW INTAKE NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder 1 mile below intake and 7 miles northeast of Eleele.

RECORDS AVAILABLE.—March 1930 to June 1932.

EXTREMES.—Maximum discharge during year, 41 million gallons a day (63 second-feet) Nov. 12 (gage height, 3.96 feet); no flow several days during February and March.

1930–32: Maximum discharge, that of Nov. 12, 1931; no flow occasionally, owing to closing of head gates.

REMARKS.—Records good except those for estimated periods, which are fair. Ditch diverts water from Hanapepe River at intake 1 mile above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23	a 20	a 30	30	24		33	33	b 0	33	19	32
2	22		b 32	32	28		33	35		33	23	
3	20		32	32	33		30	35		33	a 28	
4	18.5		32	33	32		28	35	c 0	33	b 30	
5	23		32	32	32		26	35		33	31	
6	20		32	32	b 32		25	30	a 4	32	35	c 32
7	19		33	33	a 32		25	32		33	30	
8	19		33	32	b 32		25	33	a 20	33	30	
9	18.5		33	32	33		28	33	25	32	32	
10	19		33	32	33	c 26	33	33	25	32	30	
11	20		33	32	33		33	32	25	32	32	
12	25		33	32	33		30	13.5	25	32	32	c 30
13	33		32	30	33		32	0	b 26	32	32	
14	32		32	30	33		33	0		32	32	
15	25		33	30	33		32	2.8		30	32	30
16		c 32	32	30	33		28	22		30	32	30
17			33	28	33		26	26		32	32	32
18			33	32	33	26	28	25	c 26	30	32	30
19	c20		33	32	32	28	33	23		30	32	30
20			32	32	32	30	35	23		30	32	
21			32	30	30	32	33	22		32	17.5	
22			32	30	28	32	33	19.5	26	32	30	
23	c28		32	30	30	33	33	1.7	26	33	32	
24			33	32	30	28	33	0	28	32	32	
25			33	32	28	25	33	0	30	32	32	c 30
26			32	32		32	33	0	28	32	32	
27	c20		32	32		32	33	0	28	32	33	
28			32	30	c 28	28	35	0	32	32	33	
29			32	28		25	33	0	33	32	32	
30	c24		30	26		28	33	------	33	22	32	
31			------	25	------	32	33	------	33	------	32	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	33	----------	22.5	34.8	697	2,140
August	----------	----------	31.6	48.9	980	3,010
September	33	30	32.3	50.0	968	2,970
October	33	25	30.8	47.7	955	2,930
November	33	24	30.8	47.7	925	2,840
December	33	----------	27.5	42.5	853	2,620
January	35	25	31.0	48.0	961	2,950
February 1–12, 15–23	35	1.7	25.9	40.1	544	1,670
March 6–31	33	----------	26.0	40.2	675	2,070
April	33	22	31.6	48.9	948	2,910
May	35	17.5	30.5	47.2	946	2,900
June	----------	----------	30.7	47.5	922	2,830
The year (353 days)	35	----------	29.4	45.5	10,400	31,800

a Estimated. b Partly estimated. c Estimated mean.

HANAPEPE DITCH AT KOULA, NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder at first flume below siphon at Koula, 4 miles below intake and 4 miles north of Eleele.

RECORDS AVAILABLE.—January 1910 to June 1921; March 1927 to June 1932.

EXTREMES.—Maximum discharge recorded during year, 36 million gallons a day (56 second-feet) Aug. 3 (gage height, 3.05 feet); no flow several days during February and March.

1910–21, 1927–32: Maximum discharge, 36 million gallons a day (56 second-feet) Apr. 10, 1918, and Aug. 3, 1931 (gage heights, 3.18 and 3.05 feet, respectively); occasionally no flow, owing to closing of head gates.

REMARKS.—Records good except those for estimated periods, which are fair. Diverts water for irrigation from Hanapepe River 3 miles above station. Regulated by head gates and spillways.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	18.5	17	25	25	19.5	22	29	29		27		
2	17.5	27	29	25	22	22	29	32		27	[c] 20	
3	17.5	32	27	27	27	25	25	32	[a] 0	27		
4	15	32	27	27	27	24	24	29		27	[b] 27	
5	18.5	29	25	27	25	24	22	32		27	27	
6	16	29	27	27	25	24	22	29	[c] 3.0	27	29	[a] 28
7	16	25	29	29	25	22	21	27		27	29	
8	15	25	32	27	27	22	21	29	[a] 18	27	27	
9	15	27	29	27	29	22	22	29		27	29	
10	15	27	29	27	29	21	24	[b] 29		27	29	
11	17.5	29	29	27	27	21	27	[c] 29	[a] 22	27	29	
12	18.5	27	29	25	29	21	25	[c] 12		27	29	
13	26	27	27	25	29	21	27		[a] 17	[b] 27	29	[b] 27
14	26	29	27	25	29	21	27	[a] 0			29	27
15	21	27	27	25	29	25	27	[c] 2.0			29	27
16	18.5	29	27	25	32	22	25				29	
17	16	29	27	25	32	22	22	[a] 22		[a] 27	29	
18	15	27	29	27	29	22	24		[a] 24		29	
19	14	29	29	27	29	24	29				29	
20	17.5	29	27	27	27	25	32				29	
21	16	29	25	25	25	25	29	[a] 20	[b] 19		19	
22	25	29	24	25	25	27	29		22		27	
23	25	27	27	25	27	27	29		24		29	[a] 27
24	22	27	27	27	27	25	29		24		25	
25	18.5	27	27	27	25	22	29		22	[a] 28	27	
26	17	27	27	27	25	27	29	[a] 0	17.5		27	
27	18.5	29	27	25	24	23	29		24		29	
28	17	27	27	25	24	17.5	29		27		[b] 32	
29	16	27	27	24	22	18.5	32		24			
30	21	25	25	22	22	24	29	-------	22	[c] 22	[a] 28	
31	18.5	25	-------	22	-------	27	29	-------	29	-------	-------	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	26	14	18.3	28.3	568	1,740
August	32	17	27.5	42.5	851	2,610
September	32	24	27.3	42.2	820	2,520
October	29	22	25.8	39.9	800	2,460
November	32	19.5	26.4	40.8	794	2,440
December	27	17.5	23.1	35.7	715	2,190
January	32	21	26.6	41.2	826	2,530
February 1–12, 15–22	32	----------	24.3	37.6	486	1,490
March 6–31	29	----------	21.3	33.0	554	1,700
April	----------	----------	27.1	41.9	814	2,500
May	32	----------	27.3	42.2	846	2,600
June	----------	----------	27.4	42.4	822	2,520
The year (352 days)	32	----------	25.3	39.1	8,900	27,300

[a] Estimated mean. [b] Partly estimated. [c] Estimated.

HANAPEPE DITCH BELOW MAKAI SIPHON NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder 60 feet south of right end of makai siphon and 2½ miles northeast of Eleele.

RECORDS AVAILABLE.—December 1929 to June 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 32 million gallons a day (50 second-feet) Aug. 4 (gage height, 2.77 feet); no flow several days during February and March.

1929–32: Maximum discharge, that of Aug. 4, 1931; no flow occasionally, owing to closing of head gates.

REMARKS.—Records good. Ditch diverts water from Hanapepe River at intake 6 miles above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21	18	24	24	19.5	24	13	27	0.1	27	5.6	20
2	19.5	25	27	24	22	22	24	28	0	26	17	25
3	18.5	29	25	25	27	25	25	28	0	17.5	24	24
4	17.5	29	25	25	25	24	24	28	0	27	25	24
5	19.5	28	25	25	25	25	22	28	0	27	24	25
6	18	28	25	25	25	25	22	19.5	1.8	27	27	25
7	18	27	27	27	25	24	21	12.5	10.5	27	22	25
8	17.5	25	28	27	25	22	21	25	9.0	27	12	25
9	17	27	27	27	27	22	22	29	8.0	23	23	25
10	17.5	27	27	25	27	22	21	28	11	14.5	25	25
11	19.5	27	27	25	27	22	25	20	18.5	22	25	24
12	19.5	25	27	25	28	22	25	11.5	14.5	27	25	24
13	27	27	25	24	28	22	25	.3	6.5	25	25	24
14	27	28	25	24	28	22	27	0	6.5	21	25	24
15	24	27	25	25	27	25	27	0	17	25	27	[a] 24
16	21	28	25	24	29	25	24	18.5	24	24	27	------
17	18.5	27	25	24	27	22	22	27	18	25	25	------
18	17	27	27	25	24	23	22	19.5	13	25	25	------
19	16	27	27	25	28	25	27	13	6.0	25	27	------
20	19.5	27	25	25	27	25	28	12.5	6.5	25	27	------
21	16	27	25	25	25	25	28	8.6	18	25	16	------
22	25	27	23	25	25	27	27	3.7	22	27	25	------
23	25	25	25	25	27	27	27	0	24	21	25	------
24	24	27	25	25	27	25	27	0	24	12.5	23	------
25	21	25	25	25	25	24	27	.5	14.5	24	25	------
26	18.5	25	25	27	25	25	27	0	3.2	27	24	------
27	18.5	27	25	25	24	24	27	0	4.7	27	25	------
28	18	25	25	25	24	17.5	28	0	22	27	27	------
29	17	25	25	24	24	17	28	0	25	27	24	------
30	21	25	25	22	24	13	28	------	22	15	25	------
31	19.5	24	------	22	------	12	27	------	27	------	25	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	27	16	19.9	30.8	616	1,890
August	29	18	26.3	40.7	815	2,500
September	28	23	25.5	39.5	766	2,350
October	27	22	24.8	38.4	770	2,360
November	29	19.5	25.7	39.8	770	2,360
December	27	12	22.7	35.1	704	2,160
January	28	13	24.8	38.4	768	2,360
February 1–13, 16–22, 25	29	.3	18.5	28.6	388	1,190
March 1, 6–31	27	.1	14.0	21.7	377	1,160
April	27	12.5	24.0	37.1	720	2,210
May	27	5.6	23.4	36.2	727	2,230
June 1–15	25	20	24.2	37.4	363	1,110
The year (339 days)	29	.1	23.0	35.6	7,780	23,900

[a] Partly estimated.

GEE DITCH AT MAKAI SIPHON NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder 200 feet below right end of makai siphon bridge and 2⅓ miles northeast of Eleele.

RECORDS AVAILABLE.—December 1929 to June 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 12.5 million gallons a day (19.3 second-feet) Feb. 12 (gage height, 3.53 feet); no flow several days during February and March.

1929–32: Maximum discharge, that of Feb. 12, 1932; no flow occasionally, owing to closing of head gates.

REMARKS.—Records poor. Intake is 700 feet above station and diverts water from Hanapepe River.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.6	0.5	0.5	0.5	0.3	0.3	0.6	0.6	0.9	0.3	0.4	0.3
2	.6	1.0	.8	.6	.3	.3	.3	.8	.5	.2	1.0	1.4
3	.5	1.8	.5	.6	.5	.3	.3	.5	.3	.4	.3	.2
4	.5	1.2	.6	.8	.4	.3	.2	.3	.2	.6	.2	.2
5	.6	.7	.7	.5	.3	.3	.2	.3	.09	.6	.4	.4
6	.5	.7	.8	.7	.4	.3	.2	1.4	.04	.4	.6	.4
7	.5	.5	1.2	1.5	.4	.2	.2	.4	.01	.4	.7	.4
8	.5	.5	1.7	.7	.5	.2	.2	.3	.4	.4	.5	.2
9	.5	.8	.9	.7	.8	.2	.3	1.1	.04	.3	.7	.1
10	.5	.7	1.1	.8	.8	.2	.5	1.5	.02	.4	.4	.3
11	.5	.8	1.0	.8	.6	.2	.4	.8	.01	.2	.4	.2
12	.6	.8	1.3	.6	.8	.3	.3	2.3	.02	.2	.4	.1
13	1.0	.6	.8	.5	.6	.3	.3	.1	.08	.2	.3	.1
14	.7	1.2	.6	.5	.4	.3	.5	.09	.09	.2	.2	.1
15	.6	.8	1.0	.5	.3	.4	.4	.06	.2	.2	.5	[a].04
16	.5	1.4	.8	.5	1.0	.1	.3	.02	.1	.2	.4	------
17	.5	1.1	1.0	.5	.6	.2	.3	.04	.03	.5	.2	------
18	.5	.9	1.5	.7	.5	.2	.3	.02	.04	.2	.2	------
19	.5	1.4	1.2	.7	.4	.3	.8	0	.08	.2	.2	------
20	.5	1.4	.8	.6	.4	.3	.9	.05	.07	.1	.2	------
21	.7	1.6	.6	.5	.3	.4	.6	.2	.03	.2	.8	------
22	1.0	1.3	.7	.6	.3	.3	.4	.09	0	.3	.4	------
23	.8	.9	.9		.3	.4	.4	.2	0	.7	.3	------
24	.6	1.1	.9		.3	.3	.5	.5	.04	.7	.5	------
25	.5	.8	1.3	[b].5	.3	.2	.5	.7	.3	.5	.3	------
26	.5	1.2			.3	.3	.6	.2	.3	.4	.3	------
27	.5	1.1	[b].7		.3	.3	.7	.3	.3	.2	.8	------
28	.5	.7		[a].3	.2	.3	.8	.5	.4	.1	1.2	------
29	.4	.6		.3	.2	.3	.8	.8	.6	.07	.5	------
30	.6	.5	.5	.3	.3	.3	.5	-------	.3	.2	.4	------
31	.5	.5	-------	.3	-------	.4	.6	-------	.4	-------	.3	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.0	0.4	0.57	0.88	17.8	55
August	1.8	.5	.94	1.45	29.1	89
September	1.7	.5	.88	1.36	26.5	81
October	1.5	.3	.58	.90	18.1	56
November	1.0	.2	.44	.68	13.1	40
December	.4	.1	.28	.43	8.7	27
January	.9	.2	.45	.70	13.9	43
February 1–18, 20–29	2.3	.02	.506	.783	14.2	43
March 1–21, 24–31	.9	.01	.203	.314	5.89	18
April	.7	.07	.319	.494	9.57	29
May	1.2	.2	.45	.70	14.0	43
June 1–15	1.4	.04	.296	.458	4.44	14
The year (348 days)	2.3	.01	.504	.780	175	538

[b] Estimated mean.

SOUTH FORK OF WAILUA RIVER NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder a third of a mile above Wailua Falls and 5 miles northeast of Lihue. Prior to Nov. 18, 1918, station was a third of a mile farther upstream.

DRAINAGE AREA.—22.4 square miles.

RECORDS AVAILABLE.—December 1911 to June 1932.

EXTREMES.—Maximum discharge during year, 9,200 million gallons a day (14,200 second-feet) Feb. 12 (gage height, 7.65 feet); minimum, 2.4 million gallons a day (3.7 second-feet) July 5, 6, 7.

1911–32: Maximum discharge, 29,000 million gallons a day (44,900 second-feet) Jan. 16, 1920 (gage height, 11.25 feet); minimum, 1.2 million gallons a day (1.9 second-feet) May 3, 1926.

REMARKS.—Records good except those for extremely high stages, which are poor. Lihue Ditch and Hanamaulu Ditch divert water above station at elevations of 600 feet and 500 feet, respectively, for irrigation.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.7	2.7	7.4	17.5	38	8.3	764	153	410	7.5	407	25
2	2.7	49	159	48	21	6.0	170	364	312	8.5	620	29
3	2.6	273	10	235	104	66	108	116	224	24	146	8.2
4	2.7	137	37	309	156	37	86	277	156	99	100	144
5	2.5	8.7	122	146	80	53	77	1,430	126	130	137	227
6	2.4	6.5	129	81	38	67	51	1,620	108	49	211	139
7	2.4	4.5	439	510	66	27	44	528	90	42	294	87
8	28	3.2	600	191	99	12.5	40	279	83	34	146	32
9	14	3.5	191	327	110	19	39	1,020	57	27	230	16
10	4.4	9.2	229	204	156	14	88	1,040	31	57	111	42
11	3.3	5.0	204	156	100	13.5	101	483	22	35	114	13.5
12	3.3	8.5	330	136	429	20	50	1,710	17.5	10.5	101	21
13	91	4.6	156	108	116	24	46	509	39	10	71	13.5
14	21	174	98	100	81	18	105	304	49	7.0	53	6.0
15	14.5	16.5	120	108	62	86	87	195	81	5.9	153	5.3
16	6.0	378	81	74	261	26	52	156	63	5.9	85	5.0
17	4.3	130	116	76	212	16	44	409	26	134	27	5.3
18	3.3	22	245	150	114	15.5	13	156	29	28	17	5.0
19	3.1	174	191	189	100	29	83	197	30	6.7	10.5	9.0
20	3.1	204	116	108	72	48	341	213	22	6.2	19	11.5
21	3.3	366	55	25	57	39	188	258	27	18	190	11.5
22	16	221	70	54	58	27	62	136	24	99	86	4.7
23	8.2	108	100	34	49	69	47	116	16.5	152	43	4.0
24	4.7	180	143	153	25	30	80	368	24	184	250	4.0
25	3.7	57	282	113	29	26	97	382	44	164	41	3.8
26	3.2	270	136	146	8.8	71	137	136	28	92	28	3.7
27	3.0	146	108	77	9.8	71	101	206	27	25	175	3.9
28	2.8	21	55	70	21	33	124	266	51	58	352	4.4
29	2.6	26	20	48	38	25	177	390	90	51	103	4.8
30	2.7	21	17	53	11.5	60	83	-------	10.5	96	56	3.9
31	2.8	12	-------	31	-------	90	138	-------	11	-------	19.5	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	91	2.4	8.72	13.5	270	830
August	378	2.7	98.1	152	3,040	9,340
September	600	7.4	152	235	4,570	14,000
October	510	17.5	132	204	4,080	12,500
November	429	8.8	90.7	140	2,720	8,350
December	90	6.0	37.0	57.2	1,150	3,520
January	764	13	117	181	3,620	11,100
February	1,710	116	463	716	13,400	41,200
March	410	10.5	75.1	116	2,330	7,150
April	184	5.9	55.5	85.9	1,670	5,110
May	620	10.5	142	220	4,400	13,500
June	227	3.7	29.8	46.1	893	2,740
The year	1,710	2.4	115	178	42,100	129,000

NORTH FORK OF WAILUA RIVER AT ELEVATION 650 FEET, NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder 1½ miles above intake of Kanaha Ditch and 7¾ miles northwest of Lihue.

DRAINAGE AREA.—6.6 square miles.

RECORDS AVAILABLE.—August 1910 to June 1932.

EXTREMES.—Maximum discharge during year, 2,470 million gallons a day (3,820 second-feet) Feb. 12 (gage height, 7.21 feet); minimum, 15.5 million gallons a day (24.0 second-feet) Mar. 21.

1910–32: Maximum discharge, 3,410 million gallons a day (5,280 second-feet) Dec. 24, 1927 (gage height, 8.46 feet); minimum, about 7.7 million gallons a day (11.9 second-feet) Apr. 27, 1926.

REMARKS.—Records good for ordinary stages and poor for high stages. Hanalei tunnel discharges water into stream, and North Wailua Ditch diverts water from stream above station for irrigation.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23	23	55	40	44	27	110	106	221	59	295	59
2	20	143	107	60	68	26	50	161	113	49	296	59
3	18	234	80	179	94	93	40	75	76	52	94	49
4	16.5	94	81	130	78	53	37	156	52	78	72	138
5	20	47	129	72	47	102	34	594	46	76	106	156
6	17.5	51	66	121	53	52	32	460	40	63	113	112
7	17.5	34	198	227	44	40	32	214	35	52	159	84
8	88	32	176	85	62	37	30	165	35	58	82	63
9	40	65	80	99	83	34	34	383	32	52	100	56
10	26	45	105	67	72	34	79	333	27	59	76	63
11	28	45	116	61	56	34	48	206	24	52	82	40
12	29	46	106	50	176	44	37	596	24	52	67	40
13	82	32	64	44	67	44	46	166	35	49	59	34
14	37	121	53	42	53	60	85	94	28	49	56	40
15	44	21	69	50	59	122	47	63	85	43	108	38
16	29	189	47	47	126	64	40	58	46	57	67	30
17	25	109	67	64	86	53	34	212	34	110	56	33
18	22	68	148	57	64	50	40	72	29	49	52	29
19	22	135	100	76	76	79	86	66	30	43	49	28
20	30	153	56	66	50	64	183	73	30	48	49	48
21	41	162	47	71	44	67	98	96	28	78	121	31
22	56	117	71	68	42	56	56	59	34	119	59	28
23	46	68	58	63	40	67	50	60	34	137	84	26
24	27	103	104	72	37	47	59	155	45	113	146	26
25	24	60	125	67	34	40	50	158	40	104	63	24
26	22	145	67	72	40	59	82	63	34	102	59	24
27	22	89	56	56	32	47	82	162	32	63	94	24
28	20	50	44	50	30	40	99	129	60	101	221	31
29	19	42	42	47	26	34	131	188	64	72	76	25
30	23	37	40	47	26	55	56	-------	76	82	70	24
31	20	34	-------	44	-------	48	115	-------	78	-------	59	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	88	16.5	30.8	47.7	954	2,930
August	234	21	83.7	130	2,590	7,960
September	198	40	85.2	132	2,560	7,850
October	227	40	74.0	114	2,290	7,040
November	176	26	60.3	93.3	1,810	5,550
December	122	26	53.9	83.4	1,670	5,130
January	183	30	64.6	100	2,000	6,140
February	596	58	184	285	5,320	16,300
March	221	24	50.5	78.1	1,570	4,810
April	137	43	70.7	109	2,120	6,510
May	296	49	99.7	154	3,090	9,480
June	156	24	48.7	75.4	1,460	4,490
The year	596	16.5	75.0	116	27,400	84,200

KANAHA DITCH NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder a quarter of a mile below point where Kauai Electric Co.'s power line crosses ditch and 6¾ miles northwest of Lihue.

RECORDS AVAILABLE.—August 1910 to June 1932.

EXTREMES.—Maximum discharge during year, 43 million gallons a day (66 second-feet) Feb. 6 (gage height, 3.16 feet); no flow several days in December and January.

1910–32: Maximum discharge recorded, 45 million gallons a day (70 second-feet) Dec. 24, 1927 (gage height, 3.22 feet); no flow occasionally, when water was shut out of ditch.

REMARKS.—Records good except those for estimated periods, which are fair. Intake 8½ miles above mouth of river at elevation of about 600 feet. Water used for irrigation of sugarcane. Regulated by head gates and spillways.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14	11		6.1	5.6	5.7	1.2	3.0	2.3	5.8.	7.1	5.8
2	14	11		8.3	5.7	5.7	.6	3.2	2.5	5.7	6.0	5.9
3	13.5	9.5		8.9	5.7	6.0	1.1	3.1	1.9	5.8	5.8	5.7
4	13	6.0		8.9	5.6	6.0	.6	5.4	1.5	5.7	5.8	5.8
5	13.5	6.0		8.3	5.7	6.0	.6	3.2	1.4	5.8	5.8	5.8
6	13	6.1		8.9	5.9	5.6	.7	3.0	1.2	5.7	5.7	5.7
7	13.5	6.1		7.0	5.8	6.0	1.2	1.0	1.2	5.5	5.6	5.7
8	12	6.2		5.9	5.7	6.1	.8	.9	1.2	5.5	5.5	5.8
9	6.6	6.2		6.2	5.8	6.1	.7	1.8	1.0	5.7	5.7	5.8
10	6.7	6.2	a 6	5.8	5.5	6.0	.8	1.3	.6	5.8	5.6	6.0
11	6.7	6.2		5.8	5.5	6.0	.8	1.3	.8	6.0	5.7	5.4
12	6.7	6.2		5.8	5.6	6.0	.8	1.6	1.3	6.0	5.6	5.5
13	7.0	6.1		5.8	5.9	5.6	.8	.9	1.8	6.0	5.7	5.4
14	5.7	6.1		5.9	5.6	6.0	.8	.8	1.5	6.0	5.7	5.5
15	5.3	6.2		5.9	5.6	5.9	.8	.8	1.5	5.8	5.9	5.5
16	5.3	6.2		5.9	5.9	5.5	.7	.8	1.4	5.9	5.6	5.7
17	5.2	6.1		5.9	5.7	5.6	1.0	1.9	1.4	5.9	5.7	5.7
18	5.2	6.1	5.9	5.8	5.5	5.7	.7	1.5	1.2	5.7	5.7	5.5
19	5.2	8.9	5.6	8.9	5.8	6.1	.8	1.5	1.2	5.9	5.7	5.6
20	5.5	11	5.6	5.7	5.7	5.4	.8	1.6	1.2	6.2	5.6	5.8
21	6.2	12	5.6	5.9	5.8	5.3	1.0	2.2	1.0	6.0	5.9	5.7
22	9.5	15	5.7	6.0	5.7	5.3	1.0	1.5	1.2	5.7	5.7	5.7
23	10		5.6	5.8	5.8	5.4	1.2	2.1	1.2	5.7	6.0	5.8
24	10		5.7	6.0	5.8	5.6	1.2	2.8	1.5	5.7	6.0	5.9
25	10		5.8	5.8	5.8	5.5	1.2	2.6	4.8	5.7	5.6	5.9
26	10		5.5	6.0	5.8	3.7	3.1	2.2	5.4	5.7	5.7	5.8
27	10	a 6	5.7	5.8	5.8	5.0	3.2	1.9	5.5	5.8	5.9	5.8
28	9.5		5.7	5.6	5.7	1.2	3.0	2.1	5.7	6.0	6.0	5.8
29	10		5.7	5.6	5.7	.8	2.9	2.3	5.8	6.0	5.2	5.6
30	11		5.7	5.6	5.7	1.2	3.0	-------	5.7	5.7	5.5	5.8
31	11		-------	5.6	-------	1.0	3.3	-------	5.4	-------	5.6	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14	5.2	9.19	14.2	285	874
August	15	----------	7.24	11.2	224	689
September	----------	----------	5.86	9.07	176	540
October	8.9	5.6	6.43	9.95	199	612
November	5.9	5.5	5.71	8.83	171	526
December	6.1	.8	5.06	7.83	157	482
January	3.3	.6	1.30	2.01	40.4	124
February	5.4	.8	2.01	3.11	58.3	179
March	5.8	.6	2.30	3.56	71.3	219
April	6.2	5.5	5.81	8.99	174	535
May	7.1	5.2	5.76	8.91	179	548
June	6.0	5.4	5.71	8.83	171	526
The year	15	.6	5.21	8.06	1,910	5,850

a Estimated mean.

EAST BRANCH OF NORTH FORK OF WAILUA RIVER NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder 1,200 feet above confluence with North Fork and 7½ miles northwest of Lihue.

DRAINAGE AREA.—6.2 square miles.

RECORDS AVAILABLE.—July 1912 to June 1932.

EXTREMES.—Maximum discharge during year, 3,130 million gallons a day (4,840 second-feet) Jan. 29 (gage height, 10.10 feet); minimum, 12 million gallons a day (18.6 second-feet) July 4.

1912–32: Maximum discharge, 3,340 million gallons a day (5,170 second-feet) Dec. 24, 1927 (gage height, 10.57 feet); minimum, 4.4 million gallons a day (6.8 second-feet) July 8, 13, 1926.

REMARKS.—Records good for ordinary stages; fair for high and low stages and estimated periods. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.5	16		24	19	19	81	95	74	33	375	26
2	14	33		53	28	17	33	110	86	24	163	22
3	13	62		70	56	82	26	52	64	19	60	21
4	12.5	43	[a] 46	64	35	35	24	329	42	30	42	82
5	14	26		37	24	50	22	430	42	34	55	35
6	13.5	28		40	24	33	21	370	35	24	51	33
7	14	22		116	22	26	21	174	30	22	72	32
8	99	21		45	22	22	19	102	30	26	45	24
9	30	28		59	28	22	21	176	26	21	55	22
10	19	26	[a] 65	40	28	22	32	129	24	34	37	24
11	21	30		37	22	21	25	90	22	26	42	21
12	22	35		33	76	28	21	226	21	33	35	21
13	60	24		30	33	30	19	128	22	24	30	19
14	28	51		28	29	40	30	79	21	24	26	21
15	24	33	[a] 34	28	24	93	24	56	26	19	52	17.5
16	21	151		28	39	40	21	45	21	19	34	17.5
17	19	49		29	40	33	19	153	17.5	28	26	22
18	17	37	40	33	33	33	19	45	17	19	24	17.5
19	16	61	37	38	28	42	22	42	16	17	24	17
20	17.5		30	30	24	40	63	42	15.5	17	22	17.5
21	26	[a] 60	28	37	22	45	44	37	15	34	49	16
22	30		34	35	22	37	28	30	14.5	28	24	15.5
23	33		33	28	21	42	26	28	14	54	47	15
24	21		42	35	21	31	32	38	14	42	76	14.5
25	17.5		52	33	19	26	28	51	15.5	42	28	14
26	17	[a] 32	37	35	21	33	28	28	14	67	26	14
27	16		30	26	17.5	30	32	147	13	28	38	13.5
28	15.5		26	24	17	26	28	99	16	52	47	20
29	14.5		24	22	16.5	22	241	74	24	30	28	15
30	17	[a] 20	24	22	16.5	33	35	-------	31	36	33	13
31	16		-------	21	-------	32	106	-------	59	-------	24	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	99	12.5	23.1	35.7	716	2,200
August	151	----------	40.8	63.1	1,260	3,880
September	----------	----------	42.4	65.6	1,270	3,910
October	116	21	38.1	58.9	1,180	3,620
November	76	16.5	27.6	42.7	828	2,540
December	93	17	35.0	54.2	1,080	3,330
January	241	19	38.4	59.4	1,190	3,660
February	430	28	117	181	3,400	10,400
March	86	13	28.5	44.1	882	2,710
April	67	17	30.2	46.7	906	2,780
May	375	22	54.5	84.3	1,690	5,190
June	82	13	22.1	34.2	662	2,030
The year	430	12.5	41.2	63.7	15,100	46,200

[a] Estimated mean.

KAPAHI DITCH NEAR KEALIA, KAUAI

LOCATION.—Water-stage recorder 500 feet below intake and 4½ miles west of Kealia.

RECORDS AVAILABLE.—April 1909 to May 1914; May 1915 to June 1932.

EXTREMES.—Maximum discharge during year, 135 million gallons a day (209 second-feet) July 8 (gage height, 2.20 feet); no flow Sept. 9–20, Feb. 1.

1909–14, 1915–32: Maximum discharge, 233 million gallons a day (361 second-feet) Mar. 31, 1923 (gage height, about 3.15 feet); no flow occasionally, when water was shut out of ditch.

REMARKS.—Records good except those for extremely low stages and estimated periods, which are poor. Diverts water from Kapaa River at elevation of about 400 feet. Water used for irrigation. Regulated by head gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.5	5.4	4.4	7.4	0.4	9.2	0.4	0.2	0.4	5.2		5.2
2	4.2	6.7	11	5.5	9.7	8.0	.15	7.9	.3	2.6		8.0
3	2.9	12.5	5.9	4.9	13.5		.7	13	.08	.02		5.7
4	2.1	11	4.8	.3	14	[a]3.8	.4	8.6	.15	3.1		3.8
5	2.4	5.5	.4	6.9	8.0		.15	.4	.15	4.0		3.8
6	4.3	8.1	.4	8.7	8.3	.55	.08	1.7	.3	3.4	[a]0.2	12
7	4.6	3.7	.6	4.1	5.2	.3	1.8	.15	.3	3.7		15
8	55	4.2	.7	3.2	.4	.3	8.0	.08	.15	4.6		14
9	11.5	4.7	.2	3.8	4.9	7.1	12	.3	.15	3.2		9.4
10	4.6	6.4	0	3.0	2.3	5.8	19.5	.4	.15	.15		6.9
11	5.2	7.2	0	.3	.4	3.9	16.5	.4	.3	2.7		5.0
12	4.5	8.6	0	4.4	.9	3.9	12	.4	.15	2.3	[b]2.0	.9
13	4.4	4.4	0	2.4	.4	1.1	9.8	.15	.75	2.8	7.2	6.7
14	2.4	5.2	0	5.5	.4	5.2	7.0	.3	9.5	4.0	1.3	6.2
15	4.2	5.9	0	2.6	.4	2.4	4.1	.3	6.8	4.9	1.1	5.2
16	5.5	29	0	2.3	10.5	.4	2.1	.4	10.5	4.9	7.2	5.5
17	4.0	16	0	3.0	9.0	3.2	.55	.08	10.5	4.5	9.8	6.4
18	3.4	9.8	0	2.0	5.1	3.1	3.1	.02	6.1	8.3	10.5	3.9
19	3.2	12	0	7.1	6.3	2.4	5.0	.02	5.0	5.5	11.5	1.7
20	5.2	6.6	.15	9.0	4.7	.4	8.7	.02	1.1	6.8	10.5	5.9
21	7.8	6.5	9.7	7.3	2.7	2.9	13.5	.08	5.2	4.9	11.5	3.4
22	7.2	9.4	7.4	5.9	.3	6.2	9.3	.4	4.0		7.6	3.2
23	27	9.8	13.5	6.5	5.2	6.4	6.8	.7	3.7		17.5	5.2
24	5.5	6.5	13.5	5.0	3.6	2.2	.4	2.3	2.4	[a]3.4	12.5	4.9
25	4.6	5.2	7.6	.55	2.4	.3	5.8	.08	.15		7.7	5.2
26	1.8	7.7	10.5	4.7	3.7	.3	3.4	.08	2.5		9.0	2.9
27	4.0	9.7	10.5	5.9	3.2	.3	2.5	[a].15	.08	[a].6	6.5	4.9
28	3.8	5.1	7.6	3.2	2.6	1.2	1.9	.08	1.5		2.8	7.6
29	3.2	4.9	5.5	.55	.7	1.9	1.6	.3	.95	[a].2	.55	5.5
30	5.4	4.3	5.5	3.5	4.9	1.9	1.1	-------	1.2		4.2	4.6
31	3.7	4.0	-------	.3	-------	.55	.15	-------	.55	-------	4.0	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	55	1.8	6.87	10.6	213	654
August	29	3.7	7.94	12.3	246	755
September 1–9, 20–30	13.5	.15	5.99	9.27	120	368
October	9.0	.3	4.19	6.48	130	398
November	14	.3	4.47	6.92	134	412
December	9.2	.3	2.99	4.63	92.8	285
January	19.5	.08	5.11	7.91	158	486
February	13	.02	1.34	2.07	39.0	120
March	10.5	.08	2.42	3.74	75.1	230
April	8.3	.02	3.34	5.17	100	307
May	17.5	----------	4.75	7.35	147	452
June	15	.9	5.95	9.21	179	548
The year (356 days)	55	.02	4.59	7.10	1,630	5,020

[a] Estimated mean. [b] Estimated.

ANAHOLA RIVER NEAR KEALIA, KAUAI

LOCATION.—Water-stage recorder a quarter of a mile above dam at Kiokala and 4½ miles northwest of Kealia.

DRAINAGE AREA.—5.5 square miles.

RECORDS AVAILABLE.—August to November 1910, December 1912 to June 1932.

EXTREMES.—Maximum discharge recorded during year, 1,260 million gallons a day (1,950 second-feet) Feb. 4 (gage height, 8.45 feet); minimum, 2.3 million gallons a day (3.6 second-feet) several days in June.

1910, 1912–32: Maximum discharge, 1,820 million gallons a day (2,820 second-feet) Jan. 25, 1930 (gage height, 10.32 feet); minimum, 1.4 million gallons a day (2.2 second-feet) Sept. 12–13, 1923.

REMARKS.—Records good for ordinary stages; poor for estimated periods and high stages. Anahola Ditch diverts water 3 miles above station for irrigation and domestic supply.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.1	6.5	6.3	22	[a]7	[a]3.8	[a]30	34	[a]35	6.0	149	4.2
2	4.8	17	14	38				62		6.9	41	3.6
3	4.5	37	22	48	[a]14	[a]9.5		17		5.1	13	3.2
4	4.4	14.5	168	19			[a]9	246		9.6	8.8	11.5
5	5.8	5.3	48	7.5		[a]19			[a]12	9.2	8.5	5.3
6	4.7	6.2	25	7.0	[a]9			[a]260		5.5	12.5	4.4
7	5.0	4.5	54	56						5.1	15.5	4.0
8	16.5	4.4	110	10.5			[a]6	[b]37	[a]9	7.9	7.8	3.4
9	5.4	8.7	22	26		[a]12		54		5.5	8.5	3.1
10	4.7	4.9	22	26	[a]15			63	8.2	6.2	6.2	3.2
11	5.0	10.5	21	14			[a]10	29	7.2	6.0	7.2	3.1
12	6.1	6.5	29	10		13		55	6.9	12	5.5	2.8
13	21	6.0	16	8.2	[a]32	27		24	7.5	5.3	5.1	3.0
14	5.6	6.6	12.5	7.5	[a]8	10		18.5	6.9	15	4.9	2.6
15	5.2	5.0	13.5	7.5		46		12	7.2	4.4	6.0	2.5
16	5.6	151	10	7.2	[a]24		[a]6.5	11.5	6.9	4.0	4.9	2.5
17	4.1	23	17.5	6.8				[c]30	6.0	4.0	4.2	3.0
18	3.9	9.2	12.5	7.9		[a]14			5.5	3.6	4.0	2.8
19	3.6	26	13	34	[a]11				5.3	3.4	4.2	2.5
20	4.0	23	7.7	11					5.1	3.6	3.8	2.8
21	13.5	52	7.0	9.5			[a]22	[a]13	4.9	6.6	19	2.6
22	8.1	26	10.5	15					4.9	4.7	4.7	2.4
23	4.9	16	8.8	8.6		[a]10	5.6		4.9	16.5	7.5	2.3
24	4.7	23	17.5	12.5	[a]6.5		29	[a]26	4.7	11.5	21	2.3
25	4.5	9.8	26	19			10.5		5.3	6.2	3.8	2.3
26	4.0	35	9.1	19.5			5.5	[a]18	4.9	29	3.6	2.3
27	4.0	20	6.5	8.2			5.8		4.7	5.5	6.0	2.3
28	3.8	9.2	5.8	13.5	[a]3.9	[a]11	8.8		5.3	34	7.0	3.7
29	3.6	8.0	5.6	7.5			[c]14		7.5	15	4.0	3.0
30	4.5	7.2	5.8	7.0			8.2	-------	7.9	102	9.8	2.3
31	4.5	6.8	-------	[c]6	-------		48	-------	14.5	-------	4.2	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21	3.6	6.00	9.28	186	571
August	151	4.4	19.0	29.4	589	1,810
September	168	5.6	24.9	38.5	747	2,290
October	56	----------	16.1	24.9	500	1,540
November	----------	----------	11.5	17.8	345	1,060
December	----------	----------	13.1	20.3	407	1,250
January	----------	----------	13.2	20.4	410	1,260
February	----------	----------	57.8	89.4	1,680	5,140
March	----------	4.7	9.26	14.3	287	881
April	102	3.4	12.0	18.6	359	1,100
May	149	3.6	13.3	20.6	411	1,260
June	11.5	2.3	3.30	5.11	99.0	304
The year	----------	2.3	16.4	25.4	6,020	18,500

[a] Estimated mean. [b] Partly estimated. [c] Estimated.

ANAHOLA DITCH ABOVE KANEHA RESERVOIR, NEAR KEALIA, KAUAI

LOCATION.—Water-stage recorder at upper end of second tunnel above Kaneha Reservoir and 5 miles northwest of Kealia.

RECORDS AVAILABLE.—May 1915 to June 1932.

EXTREMES.—Maximum discharge during year, 59 million gallons a day (91 second-feet) Dec. 3 (gage height, 4.00 feet); no flow occasionally, when water was shut out of ditch.

1915–32: Maximum discharge recorded, 130 million gallons a day (201 second-feet) Jan. 16, 1921 (gage height, 6.25 feet); no flow occasionally, when water was shut out of ditch.

REMARKS.—Records good. This station measures water diverted from Anahola River to Kaneha Reservoir, where it is stored for irrigation. Regulated by head gates and spillways.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.0	4.4	4.0	7.6	3.7	6.8	0	0	0.01	6.8	0.01	5.7
2	3.0	9.0	8.8	4.3	6.7	4.6	0	0	.02	7.0	0	3.8
3	2.2	11	7.8	0	6.2	7.6		0	.01	3.2	0	2.9
4	1.8	9.0	3.7	0	2.6	.02		.01	.01	6.9	0	5.3
5	5.6	5.1	0	0	4.6	.01	<0	.01	.02	7.2	0	5.8
6	3.3	7.2	0	0	5.7	.01		.19	0	4.8	0	5.6
7	3.5	4.0	0	0	4.6	.01	.01	0	0	4.1	0	4.8
8	7.8	3.9	.01	0	4.3	.01	.01	0	.01	5.6	0	3.6
9	4.5	8.7	0	0	5.0	.01	.01	0	0	6.2	0	2.8
10	3.4	5.7	0	0	4.2	.01	.01	0	.01	6.3	2.5	4.2
11	3.4	7.9	0	0	3.9	.01	.01	0	.01	6.2	1.3	2.9
12	7.8	8.8	0	0	2.2	.01	0	0	.01	9.2	3.7	2.8
13	9.6	6.2	0	0	.01	.01	0	0	.01	6.2	4.0	2.6
14	7.8	7.6	0	0	0	.01	0	0	.01	8.9	3.7	2.3
15	5.1	5.4	0	0	0	.01	0	0	.01	4.4	5.9	2.1
16	4.0	14	0	3.7	0	0	2.1	0	.01	3.2	4.3	2.1
17	2.9	10.5	.01	3.9	0	0	2.2	0	.01	4.8	2.9	3.8
18	2.5	8.7	.02	5.6	0	0	2.2	0	1.3	2.7	2.7	2.6
19	2.2	10.5	.02	1.9	0	0	2.2	0	2.0	2.4	3.5	2.1
20	5.6	10.5	.01	.56	0	0	5.2	0	1.9	2.5	2.5	3.8
21	9.0	3.2	.01	2.1	0	0	4.6	0	1.8	6.5	7.3	2.2
22	7.9	0	.01	2.7	0	0	3.8	0	1.8	4.2	3.8	2.0
23	8.7	0	.01	2.0	0	0	5.1	0	1.75	9.5	5.4	1.75
24	4.5	0	.01	4.2	0	0	4.7	0	1.75	9.8	7.4	1.65
25	4.2	0	.01	4.6	1.15	0	4.1	0	1.65	6.8	4.2	1.6
26	3.0	0	.01	5.1	7.6	0	4.5	0	1.65	10	3.6	1.5
27	3.0	0	0	2.9	3.5	0	4.6	.01	1.6	4.8	6.0	1.5
28	2.6	0	0	3.2	2.5	0	5.3	.02	1.9	5.8	7.3	4.9
29	2.3	2.8	0	2.6	1.6	0	1.2	.01	5.5	.06	4.0	2.7
30	5.6	4.9	1.5	3.5	3.2	0	0	-------	4.5	.02	6.0	1.6
31	3.3	4.8	-------	3.0	-------	0	.01	-------	10.5	-------	4.3	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	9.6	1.8	4.71	7.29	146	448
August 1–21, 29–31	14	2.8	7.24	11.2	174	533
September 1–4, 8, 17–26, 30	8.8	.01	1.62	2.51	25.9	80
October 1–2, 16–31	7.6	.56	3.53	5.46	63.5	195
November 1–13, 25–30	7.6	.01	3.86	5.97	73.3	225
December 1–15	7.6	.01	1.28	1.98	19.1	59
January 7–11, 16–29, 31	5.3	.01	2.59	4.01	51.9	159
February 4–6, 27–29	.19	.01	.042	.065	.25	1
March 1–5, 8, 10–31	10.5	.01	1.42	2.20	39.8	122
April	10	.02	5.54	8.57	166	510
May 1, 10–31	7.4	.01	4.19	6.48	96.3	296
June	5.8	1.5	3.10	4.80	93.0	285
The year (260 days)	14	.01	3.65	5.65	949	2,910

* Estimated mean.

HANALEI RIVER AT ELEVATION 625 FEET, NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder 2 miles west of Kauai Electric Co's power line and about 10 miles above mouth of stream.

DRAINAGE AREA.—7.4 square miles.

RECORDS AVAILABLE.—January 1914 to June 1932.

EXTREMES.—Maximum discharge during year, 4,050 million gallons a day (6,270 second-feet) Feb. 12 (gage height, 7.42 feet); minimum, 11.5 million gallons a day (17.8 second-feet) June 30.

1914–32: Maximum discharge, 6,500 million gallons a day (10,100 second-feet) Jan. 16, 1921 (gage height, 7.50 feet); minimum, 5.8 million gallons a day (9.0 second-feet Apr. 28, May 1–3, 1926.

REMARKS.—Records good for ordinary stages, poor for estimated periods and for extremely high and low stages. Hanalei tunnel diverts water from stream about 2 miles above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			38	21	16	16	124	125	164	49	197	34
2			58	37	63	15	34	178	106	36	248	30
3		[a]120	55	116	112	126	24	73	94	35	64	22
4			80	87	48	47	21	168	68	50	46	55
5	[a] 11		92	40	24	117	19	443	73	52	68	122
6			40	58	25	38	17.5	355	56	38	75	52
7			143	181	20	24	16.5	168	52	28	97	38
8			187	48	29	21	16	112	52	34	56	28
9		[a] 34	52	46	51	21	16	233	49	31	79	22
10			79	35	40	21	55	251	48	42	49	28
11			83	33	28	21	29	134	43	33	56	20
12	[a] 28		108	26	143	49	18	792	38	56	46	21
13		25	45	21	40	46	22	203	26	33	36	18.5
14	[a] 65	120	34	19	28	78	62	119	30	30	30	18.5
15		50	46	23	60	172	26	83	51	24	79	18
16		208	31	20	101	71	19	80	28	21	43	17
17	[a] 17	80	52	31	65	43	16.5	299	23	95	30	22
18		44	129	30	37	37	23	64	[b] 24	24	28	18.5
19		100	58	46	36	88	99	77	21	18.5	30	16
20		106	31	28	25	65	195	74	19.5	21	27	28
21	[a] 60	159	24	32	22	78	70	72	22	36	87	16
22		107	40	34	21	57	35	43	16	112	33	14
23		50	31	30	18.5	60	28	40	16	104	24	13.5
24		76	60	52	17.5	35	44	108	16	87	79	13
25		35	96	56	17	28	31	121	17.5	68	30	12.5
26	[a] 19	115	50	44	24	35	61	46	16	126	29	12
27		56	34	26	16	29	81	216	16	43	62	12
28		30	26	22	15	23	120	124	32	94	131	25
29		25	23	19	14.5	19.5	230	167	67	60	42	13.5
30	[a] 30	22	22	17.5	15	38	48	------	60	62	49	12
31		19.5	------	16.5	------	32	169	------	109	------	32	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	------	------	25.6	39.6	795	2,440
August	------	------	70.3	109	2,180	6,690
September	187	22	61.6	95.3	1,850	5,670
October	181	16.5	41.8	64.7	1,300	3,970
November	143	14.5	39.0	60.3	1,170	3,600
December	172	15	50.0	77.4	1,550	4,760
January	230	16	57.1	88.3	1,770	5,430
February	792	40	171	265	4,970	15,200
March	164	16	46.9	72.5	1,450	4,460
April	126	18.5	51.4	79.5	1,540	4,730
May	248	24	63.9	98.9	1,980	6,080
June	122	12	25.7	39.8	772	2,370
The year	792	------	58.3	90.2	21,300	65,400

[a] Estimated mean. [b] Partly estimated.

WAIOLI STREAM NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder 2½ miles south of Hanalei and 3 miles above mouth of stream.

DRAINAGE AREA.—1.6 square miles.

RECORDS AVAILABLE.—July 1914 to July 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 884 million gallons a day (1,370 second-feet) Feb. 12 (gage height, 5.91 feet); minimum, 5.6 million gallons a day (8.7 second-feet) July 4, 1931.

1914–32: Maximum discharge, 955 million gallons a day (1,480 second-feet) Dec. 19, 1916 (gage height, 6.15 feet); minimum, 2.0 million gallons a day (3.1 second-feet) July 22, 1914.

REMARKS.—Records good for ordinary stages; poor for extremely high and low stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	9.8	25	18	11	12	13	27	53	28	29	25	13	8.2
2	6.8	28	27	8.7	44	23	12	100	25	24	36	12	12
3	6.0	108	61	15.5	110	76	9.6	27	20	24	15.5	9.8	19
4	5.7	51	63	14	28	23	8.4	25	14	32	13	9.4	12
5	9.0	12	37	9.2	13	28	7.9	70	30	36	19.5	10	14.5
6	6.3	15	18	9.6	14	13	7.4	73	15	22	19.5	10	10.5
7	6.1	8.5	54	34	11.5	10.5	7.1	45	12	18	22	11.5	9.8
8	8.8	9.2	54	13.5	13.5	11	7.0	25	13	17	15.5	10.5	14
9	7.2	22	14.5	16	25	12	6.8	60	11.5	27	21	9.0	17
10	8.2	21	22	12	20	12	11.5	72	11	28	16	14	11.5
11	11	18	17	13	15	12	10	37	10	27	22	10	17.5
12	20	16	30	9.6	47	24	7.9	209	9.6	50	19	10.5	14.5
13	34	18	14	7.7	14	26	11.5	59	9.2	28	16.5	9.4	32
14	20	23	13.5	7.1	11.5	36	14.5	24	8.8	31	14	10	16
15	12.5	18.5	17.5	8.8	11	62	8.5	15.5	12	20	30	9.2	16
16	8.7	15.5	17.5	8.8	12	27	7.1	13	10.5	14	17.5	10	14
17	6.9	20	20	11	22	22	6.7	29	9.0	16	13	14.5	12
18	6.3	16	28	10	12	17.5	9.8	14	9.2	12	12.5	11	17
19	6.1	38	15.5	38	9.8	30	55	12.5	8.7	11	14	9.6	39
20	15.5	29	10.5	15.5	8.4	27	54	12.5	8.5	12	14	13	32
21	32	91	8.5	28	8.6	44	16	13	8.4	11	28	9.4	36
22	56	36	20	25	12.5	32	10.5	10.5	8.2	20	14	8.7	17
23	20	19.5	13	16.5	7.9	32	14.5	9.8	8.2	65	12	8.4	13
24	11	37	32	19	7.4	17	16.5	13.5	8.2	45	13	8.2	11.5
25	10	13.5	26	55	7.6	13	13.5	24	8.2	30	10.5	8.2	21
26	8.2	46	14	25	17.5	24	17	11.5	8.2	33	11	8.2	13
27	8.7	20	13.5	12	8.5	19	19.5	47	8.2	15.5	19	8.4	------
28	7.5	11	9.6	13.5	8.2	12	49	34	21	59	25	14	------
29	6.7	8.7	9.8	9.6	7.1	9.4	112	37	22	24	14	9.4	------
30	22	8.0	11	8.8	10.5	21	16	------	40	21	25	8.4	------
31	12	7.6	------	7.7	------	17	51	------	48	------	14	------	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931–32						
July	56	5.7	13.2	20.4	409	1,260
August	108	7.6	26.1	40.4	810	2,490
September	63	8.5	23.6	36.5	709	2,180
October	55	7.1	15.9	24.6	493	1,510
November	110	7.1	18.3	28.3	550	1,690
December	76	9.4	24.0	37.1	745	2,290
January	112	6.7	20.2	31.3	625	1,920
February	209	9.8	40.5	62.7	1,180	3,610
March	48	8.2	15.0	23.2	464	1,420
April	65	11	26.7	41.3	802	2,460
May	36	10.5	18.1	28.0	561	1,720
June	14.5	8.2	10.3	15.9	308	944
The year	209	5.7	20.9	32.3	7,660	23,500
1932						
July 1–26	39	8.2	17.3	26.8	450	1,380

LUMAHAI RIVER NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder 6 miles above mouth and 4½ miles southwest of Hanalei.

DRAINAGE AREA.—7.1 square miles.

RECORDS AVAILABLE.—May 1914 to October 1917, July 1920 to June 1932.

EXTREMES.—Maximum discharge during year, 3,420 million gallons a day (5,290 second-feet) Feb. 12 (gage height, 7.12 feet); minimum, 14.5 million gallons a day (22.4 second-feet) July 7, 8.

1914–17, 1920–32: Maximum discharge (estimated), 5,000 million gallons a day (7,740 second-feet) Sept. 11, 1922 (gage height, 9.41 feet); minimum, 13.6 million gallons a day (21 second-feet) May 15, 17, 1926.

REMARKS.—Records good for ordinary stages; poor for estimated periods and extremely high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	75	48	42	40	28	129	273	[a] 110	135	[b] 280	
2	18.5	187	77	38	253	39	59	385	86	86		
3	16	573	282	56	421	312	43	110	73	86		[b] 65
4	15.5	246	214	49	111	126	38	98	54	98	[b] 85	
5	19	65	116	38	57	206	35	218	[a] 72	116		
6	16	63	75	42	52	80	32	323	[a] 51	71		[a] 40
7	15.5	42	262	129	42	48	31	206	[a] 44	58		
8	20	40	229	55	52	44	30	110	[a] 49	62	[b] 120	[b] 32
9	18.5	73	80	55	82	46	29	353	[a] 42	75		
10	20	70	104	52	62	54	41	325	38	124		
11	31	73	92	55	47	56	38	146	35	127	[b] 70	
12	52	70	126	42	164	109	30	[a] 888	34	195		
13	154	52	68	36	58	125	46	[a] 211	34	80		
14	54	73	59	33	42	308	75	[a] 110	33	80		
15	33	57	74	35	47	567	38	[a] 74	56	60	[b] 100	[b] 24
16	25	591	75	36	82	168	31	58	42	47		
17	21	109	109	44	74	123	28	154	35	97		
18	18.5	68	113	43	46	117	39	65	32	47	[b] 48	
19	18.5	151	71	97	38	218	285	59	31	40		
20	46	134	51	55	32	185	250	59	30	38		
21	100	308	43	117	32	243	80	65	29	35		
22	152	156	78	103	43	[a] 123	48	46	28	132		
23	71	80	58	62	31	[a] 116	44	40	28	240		
24	37	152	143	75	28	[a] 75	66	100	28	143	[b] 75	[b] 20
25	30	67	114	204	28	[c] 60	54	138	28	110		
26	25	159	71	102	39	[a] 80	65	55	27	227		
27	24	80	64	57	28	63	70		27	70	[b] 180	
28	21	51	49	50	27	46	278	[b] 170	46	258		
29	20	42	45	41	25	39	461		68	108		[b] 22
30	52	38	46	37	28	83	75	-------	248	73	[b] 75	
31	29	35	-------	34	-------	75	267	-------	336	-------		-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	154	15.5	38.6	59.7	1,200	3,670
August	591	35	128	198	3,980	12,200
September	282	43	101	156	3,040	9,320
October	204	33	61.7	95.5	1,910	5,870
November	421	25	70.4	109	2,110	6,480
December	567	28	128	198	3,960	12,200
January	461	28	91.5	142	2,840	8,700
February	888	40	179	277	5,180	15,900
March	336	27	60.5	93.6	1,870	5,750
April	258	35	104	161	3,120	9,570
May	----------	----------	99.1	153	3,070	9,430
June	----------	----------	31.2	48.3	935	2,870
The year	888	15.5	90.7	140	33,200	102,000

[a] Partly estimated. [b] Estimated mean. [c] Estimated.

HANAKAPIAI STREAM NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder 1½ miles above mouth and 6 miles west of Hanalei.
DRAINAGE AREA.—1.6 square miles.
RECORDS AVAILABLE.—December 1931 to June 1932.
EXTREMES.—Maximum discharge during period, 591 million gallons a day (914 second-feet) Apr. 23 (gage height, 4.63 feet); minimum, 3.9 million gallons a day (6.0 second-feet) Jan. 17–18.
REMARKS.—Records good for ordinary stages; poor for high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		15	41	11	32	10	6.6
2		9.2	50	9.2	22	8.5	5.3
3		6.9	14	8.3	21	7.4	4.9
4		6.0	10	7.1	21	6.8	4.8
5		5.5	48	28	33	8.7	6.4
6		5.1	24	10	12.5	9.0	5.3
7		4.9	26	7.3	10	9.8	5.0
8		4.8	13	11.5	14	9.2	4.9
9		4.8	24	9.0	29	9.8	4.7
10		4.7	20	8.5	28	8.5	4.9
11		4.4	12	6.5	33	14.5	4.9
12		4.3	40	5.8	44	11	4.8
13		4.3	28	5.6	18.5	16	4.6
14		4.2	13	5.3	18.5	8.7	4.4
15		4.1	8.3	12.5	14	15.5	4.4
16		4.1	7.6	8.5	9.0	12	4.6
17		4.0	80	5.8	8.5	7.4	9.1
18		4.1	18.5	5.4	7.1	6.6	6.0
19		14.5	15.5	5.0	6.3	6.8	4.8
20		23	16	4.9	6.0	5.9	4.4
21		8.8	36	4.8	12.5	7.1	4.4
22		5.4	11.5	4.8	10.5	6.0	4.3
23		4.9	9.4	4.8	102	5.4	4.2
24	18	7.6	34	4.7	45	5.3	4.2
25	11	7.8	99	4.8	21	5.0	4.1
26	23	4.9	13	4.7	43	5.0	4.1
27	18.5	4.6	43	4.6	12	5.6	4.1
28	9.2	4.7	16	5.9	70	5.1	5.6
29	7.4	12	13.5	11	17	4.8	4.8
30	12.5	5.8	-------	49	14	11.5	4.2
31	17.5	40	-------	68	-------	7.1	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
December 24–31	23	7.4	14.6	22.6	117	359
January	40	4.0	7.88	12.2	244	750
February	99	7.6	27.0	41.8	784	2,410
March	68	4.6	11.0	17.0	342	1,050
April	102	6.0	24.5	37.9	734	2,250
May	16	4.8	8.39	13.0	260	798
June	9.1	4.1	4.96	7.67	149	457
The period (190 days)	102	4.0	13.8	21.4	2,630	8,070

HANAKOA STREAM NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder three quarters of a mile above mouth and 7½ miles west of Hanalei.

DRAINAGE AREA.—1.1 square miles.

RECORDS AVAILABLE.—December 1931 to June 1932.

EXTREMES.—Maximum discharge during period, 274 million gallons a day (424 second-feet) Apr. 23 (gage height, 4.12 feet); minimum, 0.4 million gallons a day (0.6 second-foot) June 22–25, 30.

REMARKS.—Records good for ordinary stages; poor for high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		4.4	13.5	3.2	8.4	2.6	0.8
2		2.8	17	2.6	5.3	1.9	.6
3		2.1	3.7	2.2	5.4	1.5	.5
4		1.8	2.6	1.8	4.6	1.4	.5
5		1.5	17.5	11	7.2	1.4	.7
6		1.4	5.3	3.2	3.1	1.3	.6
7		1.2	6.8	2.2	2.2	1.3	.5
8		1.2	3.4	4.4	3.1	1.4	.5
9		1.2	5.2	3.2	7.4	1.5	.4
10		1.1	4.4	2.9	8.7	1.1	.4
11		1.0	2.8	1.9	9.9	1.8	.4
12		.9	13	1.5	16	1.5	.4
13		.9	6.7	1.4	4.9	2.8	.4
14		.8	3.7	1.2	4.0	1.4	.4
15		.7	2.4	3.9	3.4	2.5	.4
16		.7	2.3	2.4	2.2	2.2	.4
17		.7	41	1.4	2.1	1.1	1.1
18		.7	7.8	1.1	1.7	.9	.7
19		3.5	5.5	1.0	1.4	.9	.5
20	19.5	5.6	5.5	.9	1.3	.7	.4
21	30	2.1	16	.9	2.3	.8	.4
22	10	1.1	4.6	.8	2.1	.6	.4
23	11	.9	3.2	.8	40	.6	.4
24	6.5	1.5	13	.7	14.5	.6	.4
25	4.2	1.5	60	.9	5.9	.5	.4
26	6.5	.9	5.3	.7	14	.5	.4
27	5.5	.7	14.5	.7	3.5	.7	.4
28	3.2	.7	5.6	.9	22	.5	.6
29	2.6	2.1	4.0	1.7	4.6	.5	.5
30	4.3	1.0	-------	18.5	4.1	1.9	.4
31	3.8	10.5	-------	25	-------	.9	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
December 20–31	30	2.6	8.92	13.8	107	329
January	10.5	.7	1.85	2.86	57.2	176
February	60	2.3	10.2	15.8	296	909
March	25	.7	3.39	5.25	105	322
April	40	1.3	7.18	11.1	215	661
May	2.8	.5	1.27	1.96	39.3	121
June	1.1	.4	.50	.77	14.9	46
The period (194 days)	60	.4	4.30	6.65	835	2,560

KALALAU STREAM NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder 2 miles above mouth and 9 miles southwest of Hanalei.
DRAINAGE AREA.—2.6 square miles.
RECORDS AVAILABLE.—November 1931 to June 1932.
EXTREMES.—Maximum discharge during period, 72 million gallons a day (111 second-feet) Feb. 25 (gage height, 3.00 feet); minimum, 2.5 million gallons a day (3.9 second-feet) Nov. 17–21, 24, 25.
REMARKS.—Records good for ordinary stages; poor for high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	-------	2.6	3.6	5.2	5.7	7.0	5.3	4.0
2	-------	3.1	3.5	5.7	5.2	5.7	4.8	3.9
3	-------	20	3.3	4.2	4.8	5.5	4.5	3.9
4	-------	15.5	3.3	4.0	4.4	4.8	4.4	3.9
5	-------	12.5	3.2	11	7.0	5.2	4.3	3.9
6	3.0	8.1	3.1	5.3	5.7	4.7	4.2	3.8
7	2.9	6.1	3.1	4.5	4.8	4.4	4.2	3.8
8	2.8	6.6	3.1	4.0	5.7	4.4	4.2	3.8
9	2.8	5.0	3.1	4.2	5.3	4.8	4.2	3.8
10	2.6	5.2	3.1	4.0	5.3	5.9	4.2	3.8
11	2.6	5.7	3.1	3.9	4.7	6.5	4.2	3.8
12	2.6	12	3.0	6.0	4.3	14	4.2	3.8
13	3.6	23	3.0	5.7	4.2	8.1	4.2	3.8
14	2.6	13.5	2.9	5.0	4.0	6.2	4.2	3.8
15	2.5	35	2.9	4.7	5.7	5.5	4.2	3.8
16	2.5	15.5	2.9	5.0	5.3	4.8	3.9	3.8
17	2.5	12.5	2.9	32	4.5	4.7	3.9	3.9
18	2.5	9.3	3.0	15.5	4.2	4.4	3.9	3.9
19	2.5	8.6	3.3	10.5	3.9	4.3	3.9	3.9
20	2.5	10.5	4.4	10	3.9	4.2	3.9	3.9
21	2.5	15	4.0	17	3.8	4.2	4.0	3.8
22	2.5	10.5	3.4	9.9	3.8	4.2	3.9	3.8
23	2.5	9.6	3.3	7.3	3.6	9.4	3.9	3.8
24	2.5	7.5	3.2	12	3.6	7.7	3.9	3.8
25	2.5	5.9	3.2	42	3.6	6.2	3.9	3.8
26	2.8	5.3	3.2	13	3.6	8.1	3.9	3.8
27	2.6	5.2	3.2	10	3.6	6.2	3.9	3.8
28	2.5	4.3	3.2	8.1	3.6	8.8	3.9	3.9
29	2.6	4.0	3.3	6.6	3.6	7.0	3.9	3.8
30	2.6	3.8	3.3	-------	6.5	6.1	4.0	3.8
31	-------	3.8	3.9	-------	12	-------	4.0	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
November 6–30	3.0	2.5	2.60	4.02	65.1	200
December	35	2.6	9.85	15.2	305	937
January	4.4	2.9	3.26	5.04	101	310
February	42	3.9	9.53	14.7	276	848
March	12	3.6	4.84	7.49	150	460
April	14	4.2	6.10	9.44	183	562
May	5.3	3.9	4.13	6.39	128	393
June	4.0	3.8	3.84	5.94	115	353
The period (238 days)	42	2.5	5.56	8.60	1,320	4,060

MISCELLANEOUS MEASUREMENTS

Measurements of streams on the island of Kauai at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on island of Kauai, 1931–32

Date	Stream	Tributary to—	Locality	Discharge	
				Second-feet	Million gallons a day
Aug. 14	Kokee	Waimea River	Ranger station near Waimea	0.574	0.371
15	Kalalau	Pacific Ocean	Elevation 250 feet, near Hanalei	8.92	5.77

ISLAND OF OAHU

RIGHT BRANCH OF NORTH FORK OF KAUKONAHUA STREAM NEAR WAHIAWA, OAHU

LOCATION.—Water-stage recorder 200 feet upstream from intake of Wahiawa Water Co.'s tunnel, which is just below confluence of right and left branches of North Fork of Kaukonahua Stream and 8 miles northeast of Wahiawa.

DRAINAGE AREA.—1.2 square miles.

RECORDS AVAILABLE.—May 1913 to June 1932.

EXTREMES.—Maximum discharge during year, 683 million gallons a day (1,060 second-feet) Feb. 28 (gage height, 7.43 feet); minimum, 0.7 million gallons a day (1.1 second-feet) July 4.

1913–32: Maximum discharge, about 985 million gallons a day (1,520 second-feet) Mar. 26, 1920 (gage height, 9.00 feet; determined from flood marks and comparison with record of Left Branch of North Fork of this stream); minimum, 0.09 million gallons a day (0.15 second-foot) Mar. 22, 1926.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	6.5	6.0	6.0	5.7	2.4	45	21	100	11	47	9.6
2	1.6	27	6.2	14.5	9.0	2.3	5.6	20	45	5.8	18	3.9
3	1.2	51	16.5	7.5	18.5	2.4	2.6	9.6	20	3.5	14	[a] 40
4	.8	8.8	7.5	5.6	18	2.6	3.9	41	14	10.5	7.6	
5	8.2	8.3	17	7.1	4.9	2.7	2.3	30	11	8.3	7.6	
6	1.7	19.5	10	24	6.3	3.5	1.7	34	8.8	15.5	14	[a] 8.5
7	2.1	5.2	65	23	5.2	1.8	1.5	16	7.6	10.5	12	
8	3.0	4.9	39	13	3.7	1.7	2.4	22	6.9	15.5	5.8	
9	1.5	13	15	7.1	21	1.5	2.1	92	6.0	11	10.5	
10	1.9	14	11.5	7.4	14	1.4	1.4	158	5.3	5.8	8.1	[a] 3.3
11	2.2	6.2	19.5	3.4	14	1.4	3.9	96	4.9	11	6.9	
12	1.6	5.3	12	43	56	1.4	1.7	98	4.2	7.3	5.0	
13	4.0	31	7.4	6.4	8.8	1.3	12	148	3.9	13	6.6	[b] 5.3
14	6.7	11	8.5	5.2	6.8	1.9	13.5	36	3.6	6.2	6.2	[b] 6.8
15	2.2	7.2	11	4.7	71	23	14	18	3.5	4.6	31	[b] 2.6
16	1.5	15.5	7.6	3.9	19.5	2.6	4.2	17	7.9	13.5	5.8	[b] 2.2
17	1.2	6.7	19	7.4	18.5	4.3	2.9	18.5	3.6	8.2	4.9	[b] 2.2
18	1.0	17	94	4.3	10	2.1	4.8	12	3.1	4.2	4.2	[b] 5.9
19	.9	47	17	3.7	22	1.8	38	25	2.7	3.6	4.5	[b] 6.5
20	1.3	22	9.6	3.2	7.1	1.4	83	16	2.5	14	7.5	[b] 25
21	8.8	27	15	2.9	6.7	6.4	33	28	2.4	15.5	21	[b] 3.3
22	73	20	16	18.5	8.8	4.8	18.5	13	2.9	36	5.8	[b] 2.9
23	8.2	20	9.3	6.2	4.7	2.3	23	9.6	2.4	21	14	[b] 2.5
24	4.0	12	31	5.6	4.3	4.2	23	9.3	2.5	18.5	7.9	[b] 2.0
25	3.1	8.9	29	4.9	3.8	1.8	21	15.5	27	7.6	4.3	[b] 1.8
26	2.7	73	16	6.2	3.6	2.2	26	7.4	3.2	12	4.6	[b] 1.8
27	7.0	15	9.6	3.3	3.4	1.8	14.5	24	2.4	5.5	21	[b] 5.2
28	2.4	12.5	7.1	3.0	3.1	1.4	13.5	165	6.1	6.3	13.5	[c] 70
29	2.0	12	6.2	2.8	2.8	1.2	36	104	6.8	34	4.7	[a] 4.5
30	2.1	8.2	7.0	2.6	2.5	3.3	11.5	-------	2.4	62	4.0	
31	3.3	6.2	-------	10.5	-------	2.5	16.5	-------	10.5	-------	3.6	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	73	0.8	5.25	8.12	163	499
August	73	4.9	17.5	27.1	542	1,660
September	94	6.0	18.2	28.2	546	1,670
October	43	2.6	8.61	13.3	267	819
November	71	2.5	12.8	19.8	384	1,180
December	23	1.2	3.08	4.77	95.4	293
January	83	1.4	15.6	24.1	483	1,480
February	165	7.4	45.0	69.6	1,300	4,000
March	100	2.4	10.7	16.6	333	1 020
April	62	3.5	13.4	20.7	401	1,230
May	47	3.6	10.7	16.6	332	1,020
June	----------	1.8	9.68	15.0	290	892
The year	165	.8	14.0	21.7	5,140	15,800

[a] Estimated mean. [b] Partly estimated. [c] Estimated.

LEFT BRANCH OF NORTH FORK OF KAUKONAHUA STREAM NEAR WAHIAWA, OAHU

LOCATION.—Water-stage recorder 100 feet upstream from intake of Wahiawa Water Co.'s tunnel, which is just below confluence of the Right and Left Branches of North Fork of Kaukonahua Stream and 8 miles northeast of Wahiawa.

DRAINAGE AREA.—1.5 square miles.

RECORDS AVAILABLE.—May 1913 to June 1932.

EXTREMES.—Maximum discharge during year, 2,390 million gallons a day (3,700 second-feet) Feb. 28 (gage height, 8.46 feet); minimum, 1.8 million gallons a day (2.8 second-feet) Jan. 12.

1913–32: Maximum discharge, about 4,080 million gallons a day (6,310 second-feet) Jan. 14, 1923 (gage height, 10.3 feet); minimum, less than 0.1 million gallons a day (0.2 second-foot) June 15, 1931.

REMARKS.—Records fair for ordinary stages and poor for high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	8.0	10.5	11	7.4	3.5	101	30	123	12.5	41	14.5
2	3.1	16	10	15	9.0	3.5	8.6	27	56	6.0	26	7.7
3	4.6	45	25	15	29	3.5	4.2	12.5	22	6.5	23	108
4	2.7	12.5	11	8.9	49	3.7	7.6	55	15	19.5	10.5	36
5	15.5	23	33	7.9	7.9	3.6	3.5	38	12.5	52	1.5	19
6	3.3	22	21	27	13	5.0	2.7	82	10.5	33	20	23
7	6.5	11	137	29	9.2	2.7	2.6	27	9.2	19	17	16.5
8	23	13	43	18	7.7	2.6	3.7	35	8.1	17	9.2	7.4
9	5.6	23	25	11	21	2.6	3.3	186	7.4	15	18.5	6.7
10	4.2	28	17.5	9.3	19	2.4	2.4	400	6.4	8.1	16	7.8
11	5.0	11	45	11	20	2.4	3.3	139	5.8	9.9	14.5	5.2
12	5.3	11.5	22	58	69	2.2	2.2	94	5.2	8.6	8.8	10.5
13	8.7	15	11.5	8.2	10	2.0	16	257	4.8	32	10	15
14	12.5	30	18.5	7.9	27	2.2	14.5	44	4.5	9.9	12	17
15	4.6	23	18	7.4	37	38	19.5	23	4.2	6.7	66	6.7
16	3.5	24	13.5	6.0	23	3.5	6.4	16.5	10.5	13	10.5	5.2
17	2.9	9.3	23	10.5	23	6.5	3.5	20	4.2	7.0	8.4	6.4
18	2.7	79	129	7.1	12	3.1	4.6	12	3.5	5.0	7.4	12
19	2.6	102	20	7.1	20	2.7	11.5	29	3.3	4.5	9.2	9.9
20	6.7	76	11.5	5.0	8.2	2.4	68	15	2.9	10.5	14.5	22
21	12	85	23	5.0	7.9	11.5	28	34	2.9	26	23	6.0
22	168	45	24	36	10.5	12.5	15.5	13	9.6	60	8.8	5.5
23	17	36	30	9.4	6.5	4.2	38	9.9	3.5	32	18.5	4.8
24	7.7	22	94	7.9	6.0	6.7	27	10	3.4	34	11	4.5
25	6.3	14	48	7.4	5.3	3.1	28	16.5	35	12.5	6.7	4.0
26	5.3	129	28	14	5.0	4.9	28	7.8	4.2	15.5	7.0	3.5
27	11	23	16.5	5.5	4.8	3.5	16.5	55	3.1	8.1	30	12.5
28	4.8	17.5	11.5	4.8	4.6	2.6	10.5	421	3.8	12.5	21	125
29	4.4	27	9.7	4.4	4.2	2.4	61	87	9.1	55	7.8	11
30	4.4	12	12.5	3.9	3.7	5.9	13.5	------	2.9	112	6.7	9.2
31	4.6	9.7	------	12	------	5.9	24	------	18	------	5.8	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	168	2.6	12.0	18.6	372	1,140
August	129	8.0	32.3	50.0	1,000	3,050
September	137	9.7	31.4	48.6	942	2,890
October	58	3.9	12.6	19.5	391	1,200
November	69	3.7	16.0	24.8	480	1,470
December	38	2.0	5.20	8.05	161	495
January	101	2.2	18.7	28.9	579	1,780
February	421	7.8	75.7	117	2,200	6,740
March	123	2.9	13.4	20.7	414	1,270
April	112	4.5	22.1	34.2	663	2,040
May	66	5.8	16.1	24.9	498	1,530
June	125	3.5	18.1	28.0	542	1,660
The year	421	2.0	22.5	34.8	8,240	25,300

PUHAWAI STREAM AT LUALUALEI, NEAR WAIANAE, OAHU

LOCATION.—Duplex water-stage recorder in Lualualei Valley, 1 mile north of McCandless ranch house and 5 miles northeast of Waianae.

DRAINAGE AREA.—0.6 square mile.

RECORDS AVAILABLE.—September 1930 to June 1932.

EXTREMES.—Maximum discharge during year, 60 million gallons a day (93 second-feet) Feb. 21 (gage height, 3.58 feet); minimum, 0.01 million gallons a day (0.02 second-foot) Dec. 19–20, Jan. 11.

1930–32: Maximum discharge, that of Feb. 21, 1932; minimum, that of Dec. 19, 20, 1931, Jan. 11, 1932.

REMARKS.—Records good for ordinary stages and fair for estimated periods. A 2-inch pipe diverts water above station for domestic supply. Continuous rainfall records are obtained at station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.03	0.31	0.03	0.02	0.02	0.05	0.02	0.05	[a]0.9			[a]0.03
2	.03	.08	.03	.03	.04	.05	.02	.05				[b].10
3	.02	.05	.08	.03	.05	.06	.02	.03				[b].12
4	.02	.04	.06	.03	.04	.07	.02	.03		[a]0.08	[a]0.17	
5	.03	.03	.05	.03	.03	.05	.02					
6	.03	.03	.04	.03	.03	.05	.02	[a].12				[a].14
7	.03	.03	.05	.02	.03	.03	.02				.14	
8	.04	.03	.20	.02	.04	.05	.02			[b].08	.12	
9	.04	.03	.05	.03	.05	.05	.02	.06	[a].06	[b].08	.12	
10	.03	.05	.03	.38	.04	.05	.02	.10		[b].08	.12	
11	.04	.04	.03	.12	.03	.05	.02	.06		[b].08	.14	
12	.03	.04	.03	.18	.03	.05	.02	.06		.09	.12	
13	.04	.03	.02	.06	.03	.04	.02	.28		.10	.14	
14	.03	.03	.03	.03	.04	.13	.03	.32		.08	.10	
15	.03	.03	.03	.03	.03	.39	.03	.12		.07	.13	
16	.03	.08	.03	.02	.03	.06	.03	.07	[a].2	.07	.10	
17	.02	.04	.02	.02	.03	.02	.03	.24		.06	.12	
18	.02	.03	.02	.02	.03	.01	.03	.35		.05	.12	[a].04
19	.02	.05	.02	.02	.03	.01	.06	2.7		.05	.12	
20	.02	.11	.02	.02	.03	.01	.14	3.7		.08	.10	
21	.02	.12	.02	.02	.03	.01	.08	16			.10	
22	.08	.10	.02	.02	.03	.03	.06	4.3			.08	
23	.05	.05	.02	.02	.02	.02	.05	2.2			.06	
24	.03	.03	.02	.02	.03	.02	.05	1.5	[a].05		.05	
25	.03	.03	.02	.02	.04	.02	.03	1.45		[a].15	.05	
26	.03	.10	.02	.02	.03	.02	.03	.88			.05	
27	.04	.04	.02	.02	.12	.02	.03	.89			.05	
28	.03	.03	.02	.03	.06	.02	.03	[a]6			.05	[a].2
29	.03	.03	.02	.02	.05	.02	.03				.05	
30	.03	.03	.02	.02	.05	.03	.03				.05	
31	.03	.03		.02		.03	.04				.03	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.08	0.02	0.032	0.050	0.98	3
August	.31	.03	.056	.087	1.75	5
September	.20	.02	.036	.056	1.07	3
October	.38	.02	.044	.068	1.37	4
November	.12	.02	.038	.059	1.14	3
December	.39	.01	.049	.076	1.52	5
January	.14	.02	.035	.054	1.07	3
February	16	.03	1.65	2.55	47.9	147
March			.119	.184	3.68	11
April			.101	.156	3.03	9
May		.03	.107	.166	3.33	10
June			.073	.113	2.20	7
The year	16	.01	.189	.292	69.0	210

[a] Estimated mean. [b] Partly estimated.

PEARL HARBOR SPRINGS AT WAIAWA, NEAR PEARL CITY, OAHU

LOCATION.—Water-stage recorder on right bank of Waiawa Stream at rear of Oahu Sugar Co.'s pumping plant no. 9, 1.7 miles from Pearl City and 13.2 miles northwest of Honolulu.

RECORDS AVAILABLE.—March 1931 to June 1932.

EXTREMES.—Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

REMARKS.—Records good. When needed for irrigation of sugarcane. Oahu Sugar Co.'s pump no. 9 diverts about 3 million gallons a day above station. Some small diversions above station for truck gardens. Surface run-off caused by floods not included in figures given below.

Discharge, in million gallons, 1931–32

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1931					1931—Continued				
1		15	14.5	15	16		14	14	14
2		15	14.5	14.5	17		14.5	14	14
3		15	14	14.5	18		14.5	14.5	14
4		15.5	14	14.5	19		14.5	14.5	14
5		15.5	14	14	20		14.5	14.5	13.5
6		15	14	14	21		14.5	14.5	14
7		15	14	14	22		14.5	14.5	14
8		15.5	14	14	23		11.5	14.5	13.5
9		15	14	14	24		14.5	14.5	13.5
10		14.5	14	14	25		14.5	15	13
11		14.5	14	14	26		15	15	13.5
12		14.5	14	14	27		14.5	15	13.5
13		14.5	14	13.5	28	[a]14	14.5	15	13.5
14		14	14	14	29	14.5	14.5	15	14
15		14	14	14	30	14.5	14.5	15	14
					31	14.5		15	

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1931–32												
1	13.5	9.3	13	10.5	14	14	14	14	16	16.5	15.5	15
2	13	9.6	13	10.5	14	14	14.5	14	16	16.5	15.5	14.5
3	13	11	13	13.5	13.5	11	14	14	16	16.5	15.5	15
4	13	13	13	14	13.5	10	14	14	16	16.5	15.5	15.5
5	13	10.5	13	14	13	11	14	14	16.5	16.5	15.5	15.5
6	13	9.6	13.5	14	13.5	14	14	14	16.5	16	15.5	14.5
7	13	9.6	14	14	14	14	13.5	14.5	16.5	16	15.5	13
8	13	11	14.5	10.5	14.5	14	13.5	14	16.5	16	15.5	12
9	13	13.5	14	10	14	10.5	14	14	16.5	16	15.5	12
10	13	10.5	14	13	14.5	10	14	14	16.5	16	15.5	13
11	13	9.6	14	14	14.5	13	14	14.5	16.5	16	15.5	15.5
12	13	9.6	14	14	14.5	13.5	14	14.5	16.5	16	15.5	15.5
13	13	9.6	14	14	14.5	14	13.5	15	16.5	16	15.5	13
14	13	9.3	14	14	14	14	13.5	14.5	16.5	15.5	15.5	12
15	13	10.5	14	14	14.5	14	13	14.5	17	15.5	15.5	12
16	11	13.5	13.5	14	14.5	14	13	15	17	16	15.5	12
17	12	10.5	13.5	14	14	14	13.5	15	17	16	15.5	12
18	9.6	10	13.5	14	14	14	13.5	15	16.5	16	15.5	12
19	9.6	9.6	13.5	14	14	14	13	15	16.5	16	15.5	12
20	9.6	11	13.5	11	14	14	13	15.5	16.5	15.5	15.5	12
21	10	13.5	14	10	14	14	13.5	15.5	16.5	15.5	15.5	12
22	10	14	14	10.5	14	14	13.5	15.5	16.5	15.5	15.5	12
23	9.6	14	14	12	14	14	13.5	15.5	16.5	15.5	15	11.5
24	9.6	14	13.5	13.5	14	14	13.5	15.5	16.5	16	15	13
25	[a]11	14	13.5	14	14	14	14	15.5	16.5	15.5	15	15
26	13	14	13.5	14	14	14	13.5	15.5	16.5	15.5	15	15.5
27	10.5	13.5	13.5	14	14	14	13	15.5	16.5	15.5	15	15
28	9.3	14	13.5	13.5	14	14	13	15.5	16.5	15.5	15	15
29	9.3	14	13.5	13.5	14	14	13	15.5	16.5	15.5	15	15
30	9.3	13.5	14	13.5	14	14	14		16.5	15.5	15	15
31	9.3	13.5		13.5		14	14		16.5		15	

[a] Partly estimated.

Monthly discharge of Pearl Harbor Springs at Waiawa, near Pearl City, Oahu, 1931–32

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931						
April	15.5	14	14.7	22.7	440	1,350
May	15	14	14.4	22.3	446	1,370
June	15	13	13.9	21.5	418	1,280
The period (91 days)	15.5	13	14.3	22.1	1,300	4,000
1931-32						
July	13.5	9.3	11.6	17.9	358	1,100
August	14	9.3	11.7	18.1	363	1,110
September	14.5	13	13.6	21.0	410	1,260
October	14	10	13.0	20.1	403	1,240
November	14.5	13	14.0	21.7	421	1,290
December	14	10	13.4	20.7	415	1,270
January	14.5	13	13.6	21.0	422	1,300
February	15.5	14	14.8	22.9	428	1,320
March	17	16	16.5	25.5	511	1,570
April	16.5	15.5	15.9	24.6	476	1,460
May	15.5	15	15.4	23.8	476	1,460
June	15.5	11.5	13.6	21.0	407	1,250
The year	17	9.3	13.9	21.5	5,090	15,600

PEARL HARBOR SPRINGS AT PUUKAPU, NEAR PEARL CITY, OAHU

LOCATION.—Water-stage recorder on left bank of stream near levee 0.4 mile from Pearl City and 11.5 miles northwest of Honolulu.

RECORDS AVAILABLE.—July 1931 to June 1932.

EXTREMES.—Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

REMARKS.—Records good. About a million gallons a day is occasionally diverted from stream above station. Surface run-off caused by floods not included in figures given below.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	-------	3.8	4.1	3.8	4.0	4.1	4.4	4.6	5.3	5.3	5.3	5.8
2	-------	3.9	4.2	3.8	3.9	4.1	4.4	4.5	5.4	5.4	5.2	5.8
3	-------	3.9	4.3	3.5	4.2	4.1	4.4	4.7	5.4	5.3	5.2	5.8
4	-------	3.9	4.1	3.9	3.9	4.2	4.4	4.8	5.5	5.3	5.2	6.0
5	-------	3.9	3.9	4.1	3.9	4.0	4.3	4.7	5.5	5.3	5.1	5.9
6	-------	3.9	4.1	4.0	4.1	4.2	4.2	4.6	5.5	5.2	5.1	5.6
7	-------	3.8	4.2	3.8	4.1	4.1	4.3	4.7	5.5	5.5	5.2	5.7
8	-------	3.8	4.3	3.8	4.1	4.2	4.1	4.8	5.4	5.2	5.3	5.7
9	-------	4.1	4.0	3.8	4.4	4.2	4.4	4.7	5.4	5.1	5.1	5.7
10	-------	3.9	3.9	3.9	4.4	4.2	4.4	4.6	5.4	5.5	5.1	5.8
11	-------	3.9	4.0	3.7	4.3	4.2	4.2	4.4	5.5	5.4	5.1	5.8
12	1.8	4.0	4.2	3.9	4.1	4.4	4.4	4.5	5.4	5.2	5.1	5.7
13	1.75	4.0	4.4	3.8	4.1	4.6	4.6	4.6	5.4	4.9	5.1	5.4
14	1.75	4.0	4.2	3.9	4.1	4.6	4.3	4.7	5.2	4.9	5.4	5.8
15	1.7	3.9	4.1	3.7	3.9	4.6	4.1	4.7	5.4	5.2	5.7	5.7
16	1.7	3.6	4.1	3.6	4.1	4.3	4.1	4.8	5.6	5.2	5.4	5.5
17	1.6	3.7	4.2	3.6	4.1	4.2	4.2	4.9	5.6	5.2	5.7	5.8
18	1.6	3.9	4.2	3.7	4.1	4.2	4.1	4.9	5.4	5.2	5.7	5.7
19	1.6	3.6	4.1	3.7	3.9	4.2	4.0	5.1	5.3	5.1	5.6	5.7
20	1.6	3.8	4.1	3.7	4.1	4.3	3.9	5.1	5.3	5.1	5.6	5.7
21	1.6	3.8	3.9	3.4	4.0	4.3	3.9	5.2	5.3	5.1	5.6	5.6
22	1.55	4.1	4.1	3.6	4.0	4.4	4.0	5.1	5.2	5.0	5.7	5.4
23	1.75	4.1	4.1	3.6	4.0	4.2	4.0	5.0	5.4	5.2	5.6	5.5
24	2.4	4.1	4.1	3.7	4.1	4.3	4.0	5.0	5.2	5.2	5.6	5.6
25	2.4	3.7	3.9	3.6	4.2	4.4	3.9	5.1	5.2	5.2	5.7	5.5
26	2.5	4.1	3.8	4.0	4.0	4.4	3.7	5.1	5.4	5.2	5.7	5.6
27	2.5	4.1	4.1	4.0	3.8	4.4	3.8	5.2	5.4	5.2	5.7	5.6
28	2.5	3.9	4.1	4.0	4.1	4.4	3.8	5.4	5.4	5.1	5.7	5.7
29	2.6	4.1	4.1	3.8	4.2	4.3	3.9	5.3	5.4	5.1	5.8	5.7
30	3.1	3.9	4.0	3.7	4.1	4.3	4.1	-------	5.2	5.2	5.9	5.7
31	3.4	3.9	-------	3.9	-------	4.4	4.4	-------	5.4	-------	5.6	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July 12-31	3.4	1.55	2.07	3.20	41.4	127
August	4.1	3.6	3.91	6.05	121	372
September	4.4	3.8	4.10	6.34	123	377
October	4.1	3.4	3.77	5.83	117	359
November	4.4	3.8	4.08	6.31	122	375
December	4.6	4.0	4.28	6.62	133	408
January	4.6	3.7	4.15	6.42	129	395
February	5.4	4.4	4.86	7.52	141	432
March	5.6	5.2	5.38	8.32	167	512
April	5.5	4.9	5.20	8.05	156	479
May	5.9	5.1	5.45	8.43	169	518
June	6.0	5.4	5.68	8.79	170	523
The period (355 days)	6.0	1.55	4.48	6.93	1,590	4,880

PEARL HARBOR SPRINGS AT LOKO KUKONA, NEAR PEARL CITY, OAHU

LOCATION.—Water-stage recorder on left bank of stream near levee half a mile from Pearl City and 11½ miles northwest of Honolulu.
RECORDS AVAILABLE.—June 1931 to June 1932.
EXTREMES.—Not determined because extremes at gaging-station site are caused by changes in tidal backwater.
REMARKS.—Records good. Small diversions above station. Surface run-off caused by floods not included in figures given below.

Discharge, in million gallons, 1931–32

Day	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		2.6	2.9	3.4	3.0	3.2	3.0	3.2	3.1		4.0	3.6	3.9
2		2.5	2.8	3.4	3.0	3.1	3.1	3.2	3.0	[a]3.7	4.0	3.5	3.9
3		2.5	2.7	3.4	3.0	3.1	3.1	3.2	3.0		4.0	3.5	3.8
4		2.5	2.8	3.4	3.0	3.0	3.1	3.2	3.0		3.9	3.5	3.9
5		2.7	2.8	3.5	3.0	3.0	3.2	3.0	3.2		3.8	3.5	3.9
6		2.7	2.8	3.5	3.0	3.0	3.2	3.0	3.2		3.8	3.4	3.9
7		2.8	2.8	3.5	3.0	3.0	3.2	3.0	3.3		3.8	3.5	3.9
8		2.9	2.8	3.6	3.0	3.0	3.2	3.0	3.2	[a]3.8	3.9	3.6	3.7
9		2.9	2.8	3.5	3.0	3.0	3.2	3.0	3.2		3.8	3.7	3.7
10		3.0	2.9	3.0	3.0	3.0	3.2	3.0	3.4		3.9	3.7	3.7
11		3.0	2.9	3.1	2.9	3.0	3.2	3.0	3.3		3.8	3.6	3.7
12		3.0	3.0	3.1	2.9	3.0	3.2	3.1	3.3		3.7	3.6	3.6
13		3.0	3.0	3.2	2.9	3.0	3.2	3.1	3.2		3.5	3.6	3.6
14		3.0	2.9	3.1	2.8	3.0	3.2	3.0	3.2		3.5	3.7	3.6
15		3.0	2.8	3.0	2.8	3.0	3.2	3.0	3.1	[a]3.9	3.5	3.7	3.6
16		3.0	2.8	3.0	2.8	3.0	3.2	3.0	3.2		3.6	3.7	3.6
17		3.0	2.8	3.0	2.9	3.0	3.2	3.1	3.0		3.6	3.7	3.5
18		3.0	2.9	3.0	2.9	3.0	3.2	3.1	3.0	3.9	3.7	3.7	3.5
19		3.0	2.9	3.0	2.9	3.0	3.2	3.2	3.2	3.9	3.7	3.7	3.6
20		3.0	3.0	3.1	2.9	3.0	3.2	3.2	3.4	3.9	3.6	3.7	3.5
21		3.0	3.0	3.2	2.9	3.0	3.2	3.3	3.4	4.0	3.4	3.7	3.5
22		3.0	3.0	3.2	2.9	3.0	3.1	3.4	3.4	4.0	3.4	3.7	3.5
23		3.0	3.0	3.2	2.9	3.0	3.1	3.4	3.4	3.9	3.4	3.7	3.6
24		3.0	3.0	3.2	2.8	3.0	3.1	3.3	3.4	3.9	3.4	3.6	3.5
25		3.0	3.0	3.0	2.9	3.0	3.1	3.1	3.4	3.9	3.4	3.7	3.5
26	2.8	3.0	3.2	3.0	3.0	3.0	3.2	3.2	3.4	3.9	3.4	3.7	3.5
27	2.8	3.0	3.2	3.0	3.1	3.1	3.2	3.1	3.4	3.9	3.4	3.7	3.5
28	2.8	3.0	3.1	3.0	3.0	3.1	3.2	3.2	3.6	3.9	3.4	3.7	3.5
29	2.8	3.0	3.3	3.0	3.1	3.0	3.1	3.2	[b]3.6	3.9	3.4	3.8	3.5
30	2.8	2.9	3.4	3.0	3.1	2.9	3.2	3.1	------	3.9	3.6	3.9	3.6
31	------	2.9	3.3	------	3.0	------	3.2	3.2	------	4.0	------	3.9	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931						
June 26–30	2.8	2.8	2.80	4.33	14.0	43
1931–32						
July	3.0	2.5	2.90	4.49	89.9	276
August	3.4	2.7	2.95	4.56	91.6	281
September	3.6	3.0	3.19	4.94	95.6	293
October	3.1	2.8	2.95	4.56	91.4	280
November	3.2	2.9	3.02	4.67	90.5	278
December	3.2	3.0	3.17	4.90	98.2	301
January	3.4	3.0	3.13	4.84	97.1	298
February	------	3.0	3.26	5.04	94.5	290
March	------	------	3.86	5.97	120	367
April	4.0	3.4	3.64	5.63	109	335
May	3.9	3.4	3.65	5.65	113	348
June	3.9	3.5	3.64	5.63	109	335
The year	------	2.5	3.28	5.07	1,200	3,680

[a] Estimated mean. [b] Estimated.

PEARL HARBOR SPRINGS AT KALUAOOPU, NEAR PEARL CITY, OAHU

LOCATION.—Water-stage recorder on left bank of stream, 0.2 mile below Kamehameha highway, 1 mile from Pearl City, and 11.3 miles northwest of Honolulu.

RECORDS AVAILABLE.—August 1931 to June 1932.

EXTREMES.—Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

REMARKS.—Records good. Small diversions above station. Surface run-off caused by floods not included in figures given below.

Discharge, in million gallons, 1931–32

Day	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	-------	17	18	18	18.5	19.5	20	21	22	22	22
2	-------	17	18	18	18.5	20	20	21	22	22	21
3	-------	17	18.5	18	18.5	20	20	22	22	22	21
4	-------	17	18.5	18	18.5	19.5	20	21	22	22	21
5	-------	16.5	18.5	18	18.5	19	20	22	22	22	21
6	-------	16.5	18.5	18.5	18.5	19	20	22	22	22	21
7	-------	17	18	18.5	18.5	19	20	22	22	22	21
8	-------	17.5	18	19	18	18.5	20	22	22	22	21
9	-------	18	18	18.5	18	19	20	22	21	21	21
10	-------	18.5	18	18.5	18	19.5	20	22	22	22	21
11	-------	18.5	18	18.5	18	19.5	20	22	21	22	21
12	-------	18	18	18.5	18	19.5	20	22	21	22	20
13	-------	18.5	18	18.5	18	19.5	20	22	21	22	21
14	-------	18.5	18.5	18.5	18.5	19.5	20	22	21	22	20
15	-------	18	18.5	19	18.5	19	20	22	21	22	20
16	-------	18	18.5	18.5	18.5	19	20	22	21	22	20
17	-------	18	18.5	19	18.5	19.5	21	22	21	22	20
18	-------	18	18.5	18.5	18.5	19.5	21	22	21	22	20
19	-------	18	18.5	18.5	18.5	19.5	21	22	21	22	20
20	-------	18	18.5	18	18.5	19	21	22	21	22	21
21	-------	18	18.5	18.5	18.5	19	21	22	21	22	20
22	17	18	18.5	18.5	18.5	19	21	22	21	22	20
23	17.5	18	18	18.5	18.5	19	21	22	21	22	20
24	17.5	18	18	18.5	18.5	19.5	21	22	21	22	21
25	17	18	18.5	18	19	19	21	22	21	22	21
26	17	18	18	18.5	19.5	18	21	22	21	22	21
27	17.5	18.5	18	18.5	19.5	19	21	22	21	21	21
28	17	18.5	18	18.5	19.5	19.5	21	22	21	21	21
29	17	18.5	18	19	19.5	19.5	21	22	21	22	21
30	16.5	18	18	19	19.5	19.5	-------	22	21	22	21
31	16.5	-------	18	-------	19.5	20	-------	22	-------	22	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
August 22–31	17.5	16.5	17.0	26.3	170	523
September	18.5	16.5	17.8	27.5	535	1,640
October	18.5	18	18.2	28.2	565	1,730
November	19	18	18.5	28.6	554	1,700
December	19.5	18	18.6	28.8	577	1,770
January	20	18	19.3	29.9	598	1,830
February	21	20	20.4	31.6	593	1,820
March	22	21	21.9	33.9	679	2,080
April	22	21	21.3	33.0	639	1,960
May	22	21	21.9	33.9	679	2,080
June	22	20	20.7	32.0	621	1,910
The year (314 days)	22	16.5	19.8	30.6	6,210	19,000

PEARL HARBOR SPRINGS AT WAIAU, NEAR PEARL CITY, OAHU

LOCATION.—Water-stage recorder on left bank of Waiau Stream, 0.2 mile below Kamehameha highway, 1.1 miles from Pearl City, and 11.2 miles northwest of Honolulu.

RECORDS AVAILABLE.—May 1931 to June 1932.

EXTREMES.—Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

Remarks.—Records good. A small pumping plant diverts water above station for irrigation. Surface run-off caused by floods not included in figures given below.

Discharge, in million gallons, 1931–32

Day	May	June	Day	May	June	Day	May	June
1931			1931			1931		
1	-------	7.5	11	6.5	6.5	21	7.3	6.4
2	-------	7.5	12	6.5	6.5	22	7.5	6.4
3	-------	7.1	13	6.5	6.5	23	7.7	5.7
4	-------	6.9	14	6.5	6.7	24	7.9	6.0
5	[a] 6.5	6.7	15	6.4	6.7	25	7.9	6.2
6	6.5	6.9	16	6.4	6.4	26	7.9	6.2
7	6.5	6.9	17	6.5	6.4	27	7.9	6.4
8	6.5	6.2	18	6.7	6.4	28	7.7	6.2
9	6.4	6.5	19	6.9	6.4	29	7.7	6.0
10	6.7	6.5	20	7.1	6.0	30	7.5	6.0
						31	7.7	------

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1931–32												
1	5.8	5.1	5.7	6.0	6.5	6.9	7.9	8.3	9.0	9.3	8.8	8.1
2	5.8	5.5	5.5	6.0	6.4	6.7	7.9	8.3	9.0	9.3	8.8	7.9
3	5.7	5.7	5.5	6.0	6.7	6.7	7.9	8.3	9.3	9.3	8.8	7.9
4	6.2	5.7	5.7	6.2	6.5	6.5	7.9	8.1	9.3	9.3	8.8	8.1
5	6.2	5.3	5.5	6.2	6.7	6.5	7.7	8.3	9.3	9.3	8.7	7.3
6	5.8	5.5	6.0	6.0	6.9	6.9	7.7	8.3	9.3	9.0	8.7	7.5
7	5.7	5.3	6.0	6.0	6.7	6.5	[b] 7.6	8.3	9.3	9.0	8.5	7.9
8	5.7	5.5	6.0	6.2	6.9	6.5	7.5	8.3	9.3	9.0	8.5	7.9
9	5.7	5.7	6.2	6.0	6.9	6.5	7.7	8.3	9.3	9.0	8.5	8.3
10	5.3	5.7	6.2	6.0	6.7	6.5	7.9	8.3	9.5	8.8	8.5	8.1
11	5.5	5.7	6.4	6.4	7.1	6.5	7.7	8.3	9.5	8.8	8.5	8.3
12	5.5	5.7	6.4	6.5	6.9	6.7	7.5	8.7	9.5	8.8	8.5	8.3
13	4.8	[a] 6.2	6.5	6.5	6.7	7.3	7.5	8.7	9.5	8.8	8.5	8.3
14	5.5	[a] 5.5	6.4	6.5	6.9	7.1	7.5	8.7	9.5	8.8	8.7	8.3
15	5.7	[a] 4.6	6.2	6.7	7.3	7.3	7.5	8.7	9.5	8.5	8.7	8.1
16	5.5	[a] 5.1	6.0	6.5	6.9	7.5	7.5	8.7	9.5	8.5	8.7	8.1
17	5.5	5.1	5.8	6.5	6.7	7.5	7.7	8.8	9.3	8.5	8.7	8.1
18	5.1	5.3	5.8	6.7	6.5	7.3	7.7	8.8	9.5	8.7	8.7	8.3
19	5.7	5.3	6.0	6.5	6.7	7.3	7.7	8.8	9.7	8.5	8.7	8.3
20	5.3	5.0	6.4	6.5	6.5	7.5	7.7	8.8	9.7	8.1	8.5	8.3
21	5.1	[a] 7.1	6.4	6.5	6.9	7.5	7.7	8.8	9.7	7.7	8.5	8.3
22	5.1	[a] 5.0	6.2	6.4	7.1	7.3	8.1	8.8	9.7	7.9	8.7	8.3
23	4.8	3.2	6.2	6.4	6.7	7.3	8.3	9.0	9.7	8.5	8.5	8.3
24	5.3	5.0	6.0	6.4	6.7	7.3	8.3	9.0	9.7	8.5	8.7	8.5
25	5.5	5.7	6.4	6.5	6.9	7.3	7.9	9.0	9.7	8.5	8.5	8.5
26	5.7	5.7	5.8	6.5	7.1	7.5	7.5	9.0	9.5	8.5	8.5	7.3
27	5.5	5.7	6.4	6.5	6.9	7.5	7.7	9.3	9.3	7.7	8.3	7.5
28	5.3	5.7	6.0	6.0	6.7	7.5	7.9	9.3	9.3	8.3	8.3	7.7
29	5.1	5.7	5.7	6.4	7.3	7.5	7.9	9.0	9.3	8.8	8.5	6.9
30	5.0	6.0	6.4	6.2	7.1	7.7	7.9	-------	9.3	8.8	8.3	7.1
31	5.0	5.7	-------	6.4	-------	7.7	8.3	-------	9.3	-----	8.3	------

[a] Partly estimated.

[b] Interpolated.

Monthly discharge of Pearl Harbor Springs at Waiau, Pearl City, Oahu, 1931–32

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931						
May 5–31	7.9	6.4	7.03	10.9	190	583
June	7.5	5.7	6.49	10.0	195	598
1931–32						
July	6.2	4.8	5.46	8.45	169	520
August	----------	3.2	5.45	8.43	169	519
September	6.5	5.5	6.04	9.35	181	556
October	6.7	6.0	6.33	9.79	196	602
November	7.3	6.4	6.82	10.6	204	628
December	7.7	6.5	7.11	11.0	220	676
January	8.3	7.5	7.78	12.0	241	740
February	9.3	8.1	8.66	13.4	251	770
March	9.7	9.0	9.43	14.6	292	897
April	9.3	7.7	8.68	13.4	260	799
May	8.8	8.3	8.58	13.3	266	816
June	8.5	6.9	7.99	12.4	240	736
The year	9.7	3.2	7.35	11.4	2,690	8,260

PEARL HARBOR SPRINGS AT KALAUAO, NEAR AIEA, OAHU

LOCATION.—Water-stage recorder on left bank of Kalauao Stream, a quarter of a mile below Honolulu Plantation pump no. 6, 1.1 miles from Aiea, and 9.7 miles northwest of Honolulu.

RECORDS AVAILABLE.—March 1931 to June 1932.

EXTREMES.—Not determined because extremes at gaging station are caused by changes in tidal backwater.

REMARKS.—Records good. When needed for irrigation of sugarcane, Honolulu Plantation pump no. 6 diverts about 7 million gallons a day when used as a high-lift pump or 9 million gallons a day as a low-lift pump above station. Surface run-off caused by floods not included in figures given below.

Discharge, in million gallons, 1931–32

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1931									
1	------	14	12	14	16	------	16	15	11.5
2	------	15.5	14.5	14	17	------	16	17	11.5
3	------	21	19.5	12.5	18	16	15.5	18	12.5
4	------	20	15	12	19	15	20	20	11.5
5	------	21	14.5	12	20	14	14	18.5	14
6	------	16	13	17	21	14.5	12.5	21	18.5
7	------	15.5	12.5	18	22	20	14	20	14
8	------	20	17.5	12.5	23	15.5	14	20	13
9	------	16	14.5	14	24	15.5	12	21	11.5
10	------	20	18.5	12	25	16	14	21	11.5
11	------	20	13.5	12	26	19.5	20	21	12.5
12	------	20	11.5	12	27	15.5	15.5	21	17.5
13	------	20	11.5	14.5	28	17	15	21	17.5
14	------	15.5	11.5	18	29	18	13.5	17.5	11.5
15	------	16	13.5	13.5	30	12.5	12	19.5	12
					31	14	------	19.5	------

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1931–32												
1	11.5	12	11.5	10.5	17.5	14.5	22	15.5	23	23	22	14.5
2	10.5	17	11	11	11.5	11.5	22	15.5	23	23	19	14
3	12	17	12	12.5	16.5	12	21	15.5	23	23	20	15.5
4	18	17.5	14	17	19.5	12.5	14	16	23	19.5	22	21
5	17	11.5	15	11	20	16	13	21	23	17	18	22
6	12.5	11.5	19.5	10.5	18.5	18.5	13	21	23	16.5	19.5	17
7	10.5	12	15	12	18.5	12.5	13	22	23	18.5	22	14
8	10.5	13.5	18.5	12	18	14	14	22	23	19.5	22	14
9	10.5	17	19.5	10.5	12	12.5	17.5	22	23	23	15	14
10	11.5	12	20	14	14	12.5	19	22	23	23	15	20
11	14	17	21	17.5	18	14	14	22	23	18.5	15.5	22
12	17.5	10.5	20	19.5	12	17.5	13	22	23	17	14	21
13	17	10.5	20	19.5	12.5	20	13.5	22	23	17.5	15.5	14
14	17.5	10.5	13.5	20	16	16	12.5	22	23	17.5	23	14
15	10.5	13	12	20	18.5	20	14	22	20	22	23	14
16	10.5	18.5	11.5	20	12.5	14	18.5	22	21	22	16	14
17	10.5	12	11.5	20	12	12.5	22	23	23	22	17	15.5
18	13	10.5	14	20	16	13	17	22	23	18.5	14	22
19	17.5	13	15.5	13.5	13.5	16.5	19.5	23	23	17	15	21
20	10.5	14.5	18.5	12	14	20	18	23	23	17	14	14
21	10.5	19	11.5	14	17.5	14	17	23	23	17	22	14
22	13	19	11.5	12.5	19.5	13	17	23	22	18.5	22	14
23	13.5	19.5	11.5	11.5	14	15.5	19	23	20	22	15.5	14.5
24	14.5	12.5	12	14	13	15	19	23	22	22	14	15.5
25	18.5	10.5	12.5	17.5	15.5	21	13.5	23	22	18	14	22
26	17	12.5	12.5	12	19.5	21	13	23	22	17.5	14	20
27	10.5	12.5	17.5	11.5	14	19.5	13	23	21	17	14	14
28	11.5	11.5	11	11.5	16.5	14	13.5	23	19	17	22	19.5
29	10.5	14	9.7	11.5	18.5	15	15	23	18	20	22	22
30	10	19.5	9.7	11.5	14	21	17	------	18	22	15	22
31	10.5	12.5	------	13	------	21	19	------	22	------	14.5	------

Monthly discharge of Pearl Harbor Springs at Kalauao, near Aiea, Oahu, 1931–32

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931						
March 18–31	20	12.5	15.9	24.6	223	683
April	21	12	16.5	25.5	494	1,520
May	21	11.5	16.9	26.1	524	1,610
June	18	11.5	13.6	21.0	408	1,250
The period (105 days)	21	11.5	15.7	24.3	1,650	5,060
1931–32						
July	18.5	10	13.0	20.1	403	1,240
August	19.5	10.5	14.0	21.7	434	1,330
September	21	9.7	14.4	22.3	433	1,330
October	20	10.5	14.3	22.1	444	1,360
November	20	11.5	15.8	24.4	473	1,450
December	21	11.5	15.8	24.4	490	1,500
January	22	12.5	16.3	25.2	506	1,550
February	23	15.5	21.5	33.3	622	1,910
March	23	18	22.1	34.2	684	2,100
April	23	16.5	19.5	30.2	586	1,800
May	23	14	17.8	27.5	550	1,690
June	22	14	17.2	26.6	515	1,580
The year	23	9.7	16.8	26.0	6,140	18,800

NORTH HALAWA STREAM NEAR AIEA, OAHU

LOCATION.—Duplex water-stage recorder 300 feet above sea level in North Halawa Gulch, 2.6 miles north of Kamehameha highway, and 3½ miles northeast of Aiea post office.

DRAINAGE AREA.—3.6 square miles.

RECORDS AVAILABLE.—August 1929 to June 1932.

EXTREMES.—Maximum discharge during year, 4,300 million gallons a day (6,650 second-feet) Feb. 28 (gage height, 13.36 feet); no flow several times during year.

1929–32: Maximum discharge, that of Feb. 28, 1932; no flow during dry weather.

REMARKS.—Records poor. No diversions. Continuous records of rainfall are obtained at station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0				a 3.5		a 8		41	3.3	237	0.86
2	0	a 6.5	a 2.0			a 0.4		a 30	28	2.8	26	.86
3	0				a 22				11.5	1.9	11	65
4	0			a 2.1			a 2.5	13.5	5.9	3.7	4.8	50
5	0	a 3.2	a 6.5		b 4.5			56	4.7	3.3	3.2	2.7
6	0				4.6	a 3.5		26	3.4	4.2	2.6	c 1.65
7	0				2.4		a .7	11	2.5	23	2.1	c 2.8
8	0	a 2.2	a 65	a 6.5	3.6	a .6		7.1	5.2	9.8	1.7	c 1.1
9				3.3	2.9	.27		28	2.7	5.1	1.5	.72
10		a 4.5	a 9	2.2	2.1	.24	a .3	91	2.0	3.8	3.4	.58
11			6.8	1.55	3.4	.21		27	1.6	3.1	3.0	.30
12			5.3	156	12	.20		67	1.4	3.3	1.95	.44
13		a 1.4	3.1		3.5	.19	.67	232	1.2	3.3	1.55	.37
14				a 10	1.9	.57	1.8	51	1.2	2.5	1.5	.29
15	a 0		a 2.4		18	39	4.1	14	1.1	2.1	13	.26
16				a 1.6	4.2		1.65		8.8	1.7	2.9	.23
17		a 32	3.5		2.2		.58	a 6	3.4	1.5	1.65	.21
18			64		1.4	a .6	.30		2.0	1.3	1.3	.21
19			7.7		4.9		66		1.5	1.2	1.15	.20
20		a 36	3.5	a .4	1.8		104		1.25	3.7	1.2	.23
21			a 8		1.4		61	a 34	1.2	1.9	1.9	.22
22	a 3.5	a 14		a 12	2.1	a 1.0	9.7		1.1	1.4	1.2	.19
23			a 3.0		1.2		7.7		1.05	5.6	11	.20
24		a 8			.82		7.4	8.8	1.0	7.3	5.0	.18
25	a .4		a 10		.58	a .7	4.9	11	3.8	3.1	1.55	.16
26		a 17			.50		5.6	5.9	1.25	11.5	1.15	.14
27				a 2.4	.42		6.2	30	1.05	3.8	3.3	.12
28		a 5	a 3.9		.46		4.8	436	1.0	11	1.95	19.5
29	a .2				a .3	a .2	6.7	36	.94	19	1.05	2.0
30		a 2.2					a 10		.88	496	1.0	.86
31	b 1.0								12		.93	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July		0	0.33	0.51	10.2	31
August			11.2	17.3	347	1,060
September			11.1	17.2	332	1,020
October	156		8.33	12.9	258	793
November			4.42	6.84	132	407
December	39		1.93	2.99	59.9	184
January	104		11.0	17.0	340	1,040
February	436		49.3	76.3	1,430	4,390
March	41	.88	5.02	7.77	156	478
April	496	1.2	21.5	33.3	645	1,980
May	237	.93	11.4	17.6	353	1,080
June	65	.12	5.09	7.88	153	468
The year	496	0	11.5	17.8	4,220	12,900

a Estimated mean. b Estimated. c Partly estimated.

MOANALUA STREAM NEAR HONOLULU, OAHU

LOCATION.—Duplex water-stage recorder 4¼ miles from mouth of stream and 5¼ miles north of Honolulu post office.

DRAINAGE AREA.—3.2 square miles.

RECORDS AVAILABLE.—June 1926 to June 1932.

EXTREMES.—Maximum discharge during year, 1,160 million gallons a day (1,790 second-feet) Feb. 28 (gage height, 8.54 feet); no flow several periods during year.

1926–32: Maximum discharge, 2,370 million gallons a day (3,670 second-feet) Nov. 18, 1930 (gage height, 11.58 feet); no flow during dry weather.

REMARKS.—Records poor. Water for domestic use diverted from stream 1 mile above station by means of a 2-inch pipe. Continuous records of rainfall are obtained at station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0.22	0.42	0.94	2.5	0.03	7.5	34	54		150	0.01
2	0	38	.27	.76	.68	.03	.33	26	[a]22		20	.01
3	0	16.5	.44	.72	11	.33	.07	10			8.8	27
4	0	2.8	1.2	.35	14	.11	1.6	7.0		[a]0.8	4.6	33
5	0	1.3	5.0	.22	3.9	1.45	.47	22			2.0	3.9
6	0	1.45	4.5	.25	2.0	4.1	.08	8.8			1.35	.88
7	0	1.0	44	1.35	1.05	.25	.06	5.4	[a]2.5	3.1	1.2	.85
8	0	.40	19.5	.83	1.6	.07	.05	3.2		3.4	.87	.23
9	0	.25	5.6	.84	1.65	.05	.04	22		1.2	.61	.09
10	0	1.6	4.2	.94	1.15	.04	.04	46		1.3	.37	.06
11	0	2.1	5.1	.84	1.45	.04	.04	22		.88	.29	.04
12	0	1.2	3.7	63	5.2	.04	.03	49		.56	.21	.04
13	0	.77	2.2	4.9	2.3	.03	.02	160	[a].3	.75	.38	.03
14	0	.38	1.8	2.5	1.0	.02	0	29		.50	.09	.02
15	0	.17	1.6	1.2	17	9.8	.08	8.2		.22	3.3	.02
16	0	.95	1.8	.61	3.7	.64	.15	4.6	[b]5	.14	.87	0
17	0	.49	2.2	.38	1.45	.14	.06	4.2	[a]1.1	.08	.27	0
18	0	1.9	27	.24	.79	.07	.07	2.5		.06	.08	0
19	0	31	6.5	.15	3.7	.05	39	32		.05	.05	0
20	0	8.2	3.0	.11	.83	.04	48	20		2.2	.03	0
21	0	9.9	8.1	.09	.44	.06	32	49	[a].1	1.5	.03	0
22	2.0	9.4	2.8	13.5	.27	.07	8.1	21		.52	.02	0
23	.92	7.0	1.8	3.4	.13	.06	5.6	10.5		3.5	5.0	0
24	.21	5.1	1.45	.72	.07	.62	3.7	4.9		4.6	2.9	0
25	.04	2.3	4.9	.40	.06	.31	2.5	3.0		1.35	.42	0
26	.02	14	12	4.2	.06	.11	4.0	2.2	[a].6	1.4	.08	0
27	.02	3.9	3.2	.95	.05	.06	4.6	11		1.05	.04	0
28	.01	1.6	2.0	.42	.05	.05	3.2	177		10	.03	4.4
29	0	1.35	1.15	.19	.04	.04	7.1	50	[a]0	24	.02	.33
30	0	1.0	1.75	.12	.04	.04	3.0	-------		209	.01	.07
31	0	.63	-------	1.3	-------	.04	8.4	-------	[b]2.5	-------	.01	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	2.0	0	0.104	0.161	3.22	10
August	38	.17	5.38	8.32	167	512
September	44	.27	5.97	9.24	179	550
October	63	.09	3.43	5.31	106	327
November	17	.04	2.61	4.04	78.2	240
December	9.8	.02	.606	.938	18.8	58
January	48	0	5.80	8.97	180	552
February	177	2.2	29.1	45.0	844	2,590
March	54	----------	4.16	6.44	129	396
April	209	.05	9.21	14.2	276	848
May	150	.01	6.58	10.2	204	626
June	33	0	2.37	3.67	71.0	218
The year	209	0	6.17	9.55	2,260	6,930

[a] Estimated mean. [b] Estimated.

KALIHI STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder at Kioi Pool, three eighths of a mile upstream from Catholic orphanage and 5 miles north of Honolulu post office.

DRAINAGE AREA.—2.7 square miles.

RECORDS AVAILABLE.—September 1913 to June 1932.

EXTREMES.—Maximum discharge during year, 1,970 million gallons a day (3,050 second-feet) Feb. 13 (gage height, 12.06 feet); minimum, 0.7 million gallons a day (1.1 second-feet) July 4.

1913–32: Maximum discharge, 2,730 million gallons a day (4,220 second-feet) Nov. 18, 1930 (gage height, 13.81 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Apr. 5, 1924, May 12–25, 1926.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. Water for domestic use diverted from stream above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.8	37	5.6	5.4	6.3	2.6	18.5	32	26		[a]28	1.8
2	.8	79	5.4	7.0	3.8	4.2	2.6	16.5	14.5			1.8
3	.7	27	10.5	5.1	21	9.5	2.1	7.2	10		[a]9	58
4	.7	9.1	8.3	4.5	20	3.2	6.1	6.5	8.9	[a]3.7		25
5	1.2	6.6	17	4.6	8.3	4.5	3.1	25	7.6		6.3	4.8
6	.8	8.1	21	6.9	7.2	4.0	2.2	19.5	6.5		5.4	3.1
7	2.0	5.6	64	8.7	5.4	2.8	2.0	7.9	5.6	[a]15	4.8	3.2
8	1.2	4.8	20	6.8	4.8	2.5	2.0	6.5	5.4		4.0	2.6
9	1.1	5.1	12	9.4	4.6	2.2	1.8	18.5	4.8	[a]6.5	3.8	2.5
10	1.0	7.4	10	[c]7.0	4.1	2.1	1.6	18.5	4.5		[a]3.7	2.3
11	1.2	6.8	10	[b]4.3	4.0	2.1	1.8	29	4.0		3.5	2.1
12	1.1	5.9	9.1	71	6.5	2.1	1.6	44	3.8	[a]4.5	3.1	2.1
13	1.2	4.6	7.9	9.5	4.6	1.9	2.7	174	3.4		3.0	2.0
14	1.6	4.3	7.4	7.2	4.6	4.6	2.6	22	3.2		2.6	2.1
15	1.2	4.0	8.9	5.6	41	24	5.0	12	3.4		7.5	1.9
16	1.1	6.4	7.9	4.6	7.9	3.8	2.8	9.3	[a]3.8	[a]3.2	3.0	1.7
17	1.0	4.5	9.1	4.3	5.3	2.7	1.9	10.5			2.5	1.8
18	.9	13	39	3.8	4.8	2.3	2.5	7.2			2.2	1.8
19	.8	36	12.5	3.5	7.2	2.0	27	56			2.2	1.8
20	1.0	17	8.9	3.2	4.5	2.0	42	23			2.1	1.8
21	1.1	22	12.5	2.8	4.1	3.8	28	74		[a]4.8	2.2	1.7
22	14	16	8.3	8.4	4.3	3.8	8.7	28			2.0	1.7
23	8.1	18.5	7.2	11.5	3.7	3.0	6.8	13.5			3.2	1.5
24	3.7	13.5	7.0	4.1	3.4	4.9	5.1	9.1	[a]2.6	[a]4.1	2.8	1.5
25	2.5	10	11.5	4.5	3.0	2.6	4.3	7.4			2.1	1.5
26	2.0	33	13	14.5	2.8	2.5	4.0	6.3			2.0	1.4
27	3.5	13	8.1	4.3	3.0	2.0	3.5	32		[a]6.5	1.9	1.5
28	2.2	9.3	6.5	3.7	2.8	1.9	3.5	[c]163			1.9	13.5
29	1.9	9.3	5.6	3.2	2.6	1.8	6.3	33		[b]25	1.8	3.1
30	1.9	7.4	7.4	2.8	2.6	1.9	4.0	------		[b]150	1.7	2.1
31	1.7	6.3	------	12.5	------	2.0	17.5	------	[b]7	------	1.7	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14	0.7	2.06	3.19	64.0	196
August	79	4.0	14.5	22.4	450	1,380
September	64	5.4	12.7	19.6	382	1,170
October	71	2.8	8.22	12.7	255	782
November	41	2.6	6.94	10.7	208	639
December	24	1.8	3.72	5.76	115	354
January	42	1.6	7.21	11.2	224	686
February	174	6.3	31.4	48.6	911	2,800
March	26	----------	5.16	7.98	160	491
April	----------	----------	10.3	15.9	310	951
May	----------	1.7	5.06	7.83	157	482
June	58	1.4	5.12	7.92	154	472
The year	174	.7	9.26	14.3	3,390	10,400

[a] Estimated mean. [b] Estimated. [c] Partly estimated.

NUUANU STREAM BELOW RESERVOIR NO. 2 WASTEWAY, NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder on Pali road in upper Nuuanu Valley, 1 mile above end of car line and 5 miles from Honolulu post office.

DRAINAGE AREA.—3.4 square miles.

RECORDS AVAILABLE.—October 1913 to June 1932.

EXTREMES.—Maximum discharge during year, 990 million gallons a day (1,530 second-feet) Feb. 13 (gage height, 6.77 feet); minimum, 1.2 million gallons a day (1.9 second-feet) July 3.

1913–32: Maximum discharge, 1,600 million gallons a day (2,480 second-feet) Jan. 16, 1921 (gage height, 8.74 feet; from flood marks); minimum, 0.06 million gallons a day (0.09 second-foot) Sept. 10, 11, 1925.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. Reservoirs nos. 2, 3, and 4 regulate flow, but diversion from them past station was discontinued in January 1928. The board of water supply diverts ground water from tunnels in drainage area.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	b 1.4	b60	a 8.6	9.3	24	6.9	8.7	28	108	6.7	169	4.7
2			8.6	11.5	13	2.4	4.1	16.5	34	6.3	100	4.7
3	a 1.2		13	8.8	24	9.5	3.6	8.7	20	6.1	49	19.5
4	1.3		13.5	8.6	20	9.0	6.3	8.1	17	6.7	14.5	51
5	2.1	b12	24	8.8	12	5.4	4.6	36	21	6.9	13.5	8.8
6	1.4		16.5	16.5	10	5.2	4.0	94	15	8.3	11.5	7.3
7	b 4.2		76	16.5	8.7	5.0	3.7	18.5	14	12	10	7.9
8		b8.5	38	10.5	8.4	4.7	3.7	11	15	8.8	9.3	5.9
9			17.5	9.3	8.1	4.9	3.5	26	12.5	9.8	9.0	5.5
10			17	10.5	7.6	4.6	3.3	34	11.5	7.6	9.0	5.3
11			15.5	9.6	7.9	4.5	3.3	44	11.5	6.9	8.7	4.3
12			17.5		12	4.4	3.1	94	11	6.5	7.6	4.2
13			13.5	b38	8.1	4.0		247	10	7.4	7.9	3.9
14		b9	12.5		7.4	5.7	b6	86	10	6.5	7.4	3.8
15	b 2.0		14.5		55	31		20	9.9	6.5	18.5	3.6
16			11.5		24	7.9		16.5	11.5	6.1	7.6	3.4
17			10.5	b8.5	13	8.1	b3.5	20	9.6	5.7	7.0	3.4
18			45		10	5.7		14.5	8.8	5.5	6.7	3.4
19			17		9.8	4.6		86	8.6	5.3	6.5	3.2
20		b34	13	a 6.5	8.1	4.6	b3.3	22	8.3	12	6.3	3.4
21			14		7.6	6.5		83	8.1	6.9	6.5	3.0
22	b15		11.5	b11	7.6	5.8	b9.5	69	8.3	6.3	6.5	3.0
23		b22	11		7.4	6.1		25	7.9	7.1	12	2.9
24			11.5	b 7.5	6.7	7.2	8.4	16	7.6	6.1	8.5	2.8
25	b 5.5		17.5		4.7	6.0	7.4	15.5	12.5	5.9	6.0	2.8
26		b32	22	c 20	3.4	5.8	6.5	13	7.4	7.9	5.2	2.6
27			15	a 7.4	3.0	5.1	7.4	42	7.1	5.7	7.3	2.8
28			11.5	7.0	2.8	4.1	8.4	200	7.1	9.0	5.8	22
29	b 3.5	b11	10	6.3	2.6	3.4	9.0	130	6.5	25	5.1	4.6
30			10	5.8	11	3.2	7.0	-------	6.5	217	5.0	3.7
31			-------	13	-------	3.4	12	-------	8.3	-------	4.6	-------

Month	Million gallons a day		Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean	Million gallons	Acre-feet
July	----------	----------	3.52	5.45	109	335
August	----------	----------	20.8	32.2	646	1,980
September	76	8.6	17.9	27.7	537	1,650
October	----------	----------	12.6	19.5	390	1,200
November	55	2.6	11.6	17.9	348	1,070
December	31	2.4	6.28	9.72	195	598
January	----------	----------	5.66	8.76	175	538
February	247	8.1	52.6	81.4	1,520	4,680
March	108	6.5	14.7	22.7	454	1,390
April	217	5.3	14.8	22.9	444	1,360
May	169	4.6	17.8	27.5	552	1,690
June	51	2.6	6.91	10.7	207	636
The year	247	----------	15.3	23.7	5,580	17,100

a Partly estimated. b Estimated mean. c Estimated.

WEST BRANCH OF MANOA STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder 75 feet above lower highway bridge and 4 miles northeast of Honolulu post office.

DRAINAGE AREA.—1.1 square miles.

RECORDS AVAILABLE.—May 1913 to January 1921, August 1925 to June 1932.

EXTREMES.—Maximum discharge during year, 1,850 million gallons a day (2,860 second-feet) Apr. 30 (gage height, 5.12 feet); minimum, 0.4 million gallons a day (0.6 second-foot) July 4.

1913–21, 1925–32: Maximum stage, 10.4 feet Jan. 16, 1921, from flood marks (discharge, estimated, 2,100 million gallons a day or 3,250 second-feet); minimum, about 0.05 million gallons a day (0.08 second-foot) Mar. 16, 22, 1926.

REMARKS.—Records good for ordinary stages and fair for high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.5	3.4	2.1	2.1	4.0	1.0	6.5	10	33	3.2	29	2.7
2	.6	11	1.9	4.8	3.2	1.0	1.9	9.2	18.5	3.0	9.3	1.9
3	.6	10	4.6	3.2	19.5	1.7	1.4	4.2	11	2.5	7.7	4.0
4	.5	4.3	2.7	1.9	13.5	1.2	1.5	3.8	8.3	3.4	5.4	12.5
5	1.6	3.2	10.5	2.8	6.1	1.2	1.2	12	7.5	4.6	4.5	5.0
6	.6	4.0	8.2	7.3	5.9	1.0	1.1	15.5	6.0	7.5	4.0	4.3
7	1.5	6.3	24	8.8	3.8	.8	1.0	9.1	4.9	9.6	3.4	4.4
8	1.2	4.1	13	5.9	4.0	.8	1.0	6.7	4.6	7.3	3.1	2.2
9	1.2	3.5	8.3	3.5	4.0	.7	1.1	14	3.5	7.0	3.0	2.5
10	1.0	6.8	6.6	3.8	3.0	.6	.9	16	3.1	4.4	3.9	2.3
11	2.4	5.3	7.6	3.4	3.9	.6	1.0	19	2.7	3.2	3.2	1.7
12	1.1	5.5	6.3	20	7.0	.6	1.0	30	2.5	3.1	2.8	2.2
13	1.2	3.2	4.9	4.8	3.7	.6	4.2	84	2.2	5.9	3.3	1.7
14	1.8	2.7	3.9	3.4	2.8	2.2	4.6	15	2.1	3.7	2.6	1.9
15	1.1	3.9	5.5	3.0	7.6	7.4	5.0	9.9	1.9	3.9	10	1.3
16	1.0	4.1	3.7	2.5	3.3	1.5	2.4	7.3	2.5	2.6	3.5	1.1
17	.8	2.1	4.2	2.4	2.5	1.4	1.5	7.1	1.7	2.2	2.6	1.6
18	.7	9.0	15	2.3	2.3	1.1	2.2	5.2	1.5	2.0	2.6	1.2
19	.6	17.5	6.8	1.9	2.8	1.0	4.7	16	1.4	1.9	2.6	1.0
20	.8	12	3.9	1.9	2.2	1.0	6.0	7.3	1.2	5.2	2.2	1.0
21	1.0	13.5	7.2	1.6	1.9	3.2	3.3	16	1.5	3.0	2.5	.9
22	14	10.5	4.9	6.0	1.6	3.0	3.1	13.5	2.1	2.0	3.0	.8
23	7.4	11	4.3	6.7	1.5	2.2	4.2	8.0	1.4	4.7	5.9	.8
24	2.4	6.8	8.2	2.7	1.4	4.1	3.6	5.6	1.2	3.8	3.9	.9
25	1.4	5.1	11	2.6	1.3	1.9	2.6	5.2	2.6	3.5	2.5	.8
26	1.2	12	10.5	5.1	1.1	1.7	2.2	4.4	1.3	7.4	2.1	.7
27	3.1	5.9	6.3	2.3	1.8	1.3	3.5	12	1.1	3.2	3.9	1.0
28	1.2	4.1	3.9	1.9	1.2	1.1	3.0	36	1.3	6.4	2.5	8.1
29	1.2	4.1	3.0	1.6	1.1	1.0	4.3	17.5	1.1	8.6	1.9	1.6
30	1.1	3.2	3.0	1.5	1.0	1.3	2.7	-------	1.1	120	2.2	1.2
31	1.0	2.4	-------	7.9	-------	1.6	7.5	-------	6.0	-------	1.9	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14	0.5	1.80	2.79	55.8	171
August	17.5	2.1	6.47	10.0	200	615
September	24	1.9	6.87	10.6	206	632
October	20	1.5	4.18	6.47	130	398
November	19.5	1.0	3.97	6.14	119	365
December	7.4	.6	1.61	2.49	49.8	153
January	7.5	.9	2.91	4.50	90.2	277
February	84	3.8	14.5	22.4	420	1,290
March	33	1.1	4.54	7.02	141	432
April	120	1.9	8.29	12.8	249	764
May	29	1.9	4.55	7.04	141	433
June	12.5	.7	2.44	3.78	73.3	225
The year	120	.5	5.12	7.92	1,880	5,760

EAST BRANCH OF MANOA STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder just below highway bridge 400 feet upstream from confluence with West Branch of Manoa Stream and 4 miles northeast of Honolulu post office.

DRAINAGE AREA.—1.0 square mile.

RECORDS AVAILABLE.—May 1913 to January 1921, August 1925 to June 1932.

EXTREMES.—Maximum discharge during year, 325 million gallons a day (503 second-feet) Apr. 30 (gage height, 4.50 feet); minimum, 0.7 million gallons a day (1.1 second-feet) July 1.

1913–21, 1925–32: Maximum gage height, 10.4 feet Jan. 16, 1921, determined from flood marks (discharge, estimated, 2,000 million gallons a day or 3,090 second-feet); minimum, 0.4 million gallons a day (0.6 second-foot) June 7, 8, 1926.

REMARKS.—Records good for ordinary stages; fair for estimated period; poor for high stages. Water is diverted from stream above station by East Manoa Ditch.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.9	4.4	2.6	3.3	5.6	1.9	5.2	14	13.5	3.4	27	2.8
2	1.3	14.5	2.2	5.2	4.4	2.0	2.2	10	13	3.1	8.1	2.4
3	1.2	8.4	6.8	4.0	18.5	3.3	1.8	4.3	8.1	2.7	5.6	2.9
4	1.2	3.4	3.4	3.4	10.5	2.3	1.7	4.0	6.2	3.0	4.3	9.5
5	2.0	2.3	14	3.4	5.5	2.6	1.6	12.5	6.1	3.6	4.0	4.5
6	1.2	2.8	9.3	5.8	5.7	2.4	1.6	8.9	4.8	3.7	3.7	4.1
7	4.5	5.5	27	7.5	4.3	2.0	1.5	5.4	4.3	10	3.5	3.9
8	1.9	2.5	11	4.9	4.3	1.9	1.6	4.2	4.7	5.1	3.5	3.0
9	1.8	2.1	6.3	4.0	4.0	1.9	1.8	5.9	4.3	4.9	3.4	3.3
10	1.6	5.3	5.2	6.3	3.2	1.8	1.5	7.0	3.5	4.2	3.7	3.1
11	2.6	2.8	5.6	5.0	3.2	1.9	1.5	9.4	3.0	3.4	3.6	2.7
12	1.6	2.9	4.2	21	4.4	1.9	1.5	16	3.0	3.5	3.2	2.8
13	1.8	1.8	4.0	4.3	2.7	1.8	3.6	40	2.7	4.2	3.4	2.3
14	2.1	2.0	4.0	3.7	2.4	3.8	3.6	11	2.7	3.2	3.1	2.3
15	1.6	2.4	4.2	3.4	5.6	8.6	4.9	6.8	2.7	3.2	6.9	2.2
16	1.4	3.5	3.5	3.1	3.1	2.4	2.8	5.2	3.0	3.0	3.2	2.0
17	1.3	1.6	3.5	3.1	2.7	2.5	2.2	5.1	2.7	2.7	3.0	2.4
18	1.2	9.6	14	3.0	2.7	2.0	2.6	4.0	2.5	2.7	3.0	2.0
19	1.2	18.5	5.4	2.7	3.1	1.9	3.6	8.2	2.4	2.6	3.0	1.9
20	1.7	10.5	3.9	2.7	3.0	1.9	5.5	5.4	2.3	4.2	2.8	1.9
21	1.9	13.5	6.9	2.5	2.5	3.9	3.4	10.5	2.6	3.1	2.8	1.9
22	15.5	9.1	4.7	7.0	2.4	4.2	3.4	8.8	3.0	2.6	3.3	1.8
23	7.5	11.5	4.2	7.8	2.2	3.4	3.2	5.5	2.4	3.7	4.9	1.9
24	3.1	4.9	7.2	3.5	2.2	4.8	3.2	4.5	2.4	3.1	3.9	1.9
25	2.5	3.4	9.1	3.5	2.2	2.7	2.7	4.5	2.6	3.0	2.8	1.8
26	2.1	13	7.6	5.1	1.9	3.1	2.5	4.0	2.3	5.6	2.7	1.8
27	4.7	4.2	4.5	3.0	2.6	2.6	3.6	11.5	2.2	3.0	3.1	2.4
28	2.1	3.4	3.9	3.0	2.0	2.4	2.7	25	2.3	5.1	2.7	6.3
29	2.0	3.4	3.7	2.6	1.8	2.3	3.0	11	2.2	8.2	2.5	2.2
30	1.9	2.7	[illegible]	2.6	1.9	2.5	[a] 5.5	-------	2.0	51	2.6	2.0
31	1.8	2.6	-------	11	-------	2.6	-------	-------	5.9	-------	2.5	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.5	0.9	2.55	3.95	79.2	243
August	18.5	1.6	5.76	8.91	178	548
September	27	2.2	6.55	10.1	196	601
October	21	2.5	4.88	7.55	151	465
November	18.5	1.8	4.02	6.22	121	370
December	8.6	1.8	2.75	4.25	85.3	262
January	----------	1.5	2.94	4.55	91.0	279
February	40	4.0	9.40	14.5	273	837
March	13.5	2.0	4.05	6.27	125	385
April	51	2.6	5.49	8.49	165	506
May	27	2.5	4.38	6.78	136	417
June	9.5	1.8	2.87	4.44	86.0	264
The year	51	.9	4.61	7.13	1,690	5,180

[a] Estimated mean.

EAST MANOA DITCH NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder 150 feet east of lower highway and gaging station on East Branch of Manoa Stream and 4 miles northeast of Honolulu post office.

RECORDS AVAILABLE.—May 1915 to December 1916, January 1918 to January 1921, August 1925 to June 1932.

EXTREMES.—Maximum discharge during year, 22 million gallons a day (34 second-feet) Apr. 30 (gage height, 2.62 feet); minimum, 0.16 million gallons a day (0.25 second-foot) July 24.

1915–16, 1918–21, 1925–32: Maximum discharge, about 26 million gallons a day (40 second-feet) Jan. 16, 1921 (gage height, 2.27 feet); no flow Aug. 26, 1927.

REMARKS.—Records good except those for estimated periods, which are poor. Water diverted from East Manoa Stream about a quarter of a mile above station by means of crude stone dam.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	[b]0.5	1.35	[b]1.3	[a]0.9	0.95	1.3	1.25	1.95	1.35	1.45	[b]2.7	1.8
2		1.85		1.35	.88	1.3	1.1	1.6	1.1	1.4		1.75
3	.60	1.0		1.05	2.5	1.35	1.05	1.05	.53	1.15		1.8
4	.57	.88		1.0	2.1	1.2	1.05	1.0	.60	1.15	2.4	2.9
5	.80	1.25		.97	1.05	1.15	1.0	1.2	.80	1.3	2.3	1.95
6	.57	1.55	[b]4.3	1.25	.97	1.15	1.0	1.15	.84	1.3	2.2	1.8
7	1.1	2.1		1.65	.80	1.05	1.0	.84	.84	3.0	2.1	1.75
8	.84	[a]1.4		1.4	.80	1.05	1.0	.76	.67	4.3	2.2	1.6
9	.76	[a]1.2	1.8	1.25	.72	1.05	1.0	1.0	.57	1.8	2.1	1.65
10	.72	[b]1.7	1.6	1.6	.88	1.05	1.0	1.1	1.15	1.75	2.2	1.65
11	.84			1.45	1.25	1.05	1.0	1.25	1.45	1.45	2.3	1.5
12	.68			2.6	1.5	1.05	1.0	2.1	1.4	1.65	2.1	1.75
13	.68			1.35	1.35	1.05	1.15	3.6	1.4	1.7	2.2	1.7
14	.84			1.15	1.25	1.1	1.15	1.4	1.4	1.55	2.0	1.65
15	.68	[b].9	[b]1.2	1.05	1.45	1.35	1.15	1.15	1.45	1.5	2.9	1.6
16	.64			1.0	1.35	1.05	1.05	1.25	1.55	1.45	2.3	1.55
17	.64			.93	1.3	1.0	1.05	1.2	1.45	1.4	2.1	1.6
18	.60			.88	1.3	.97	1.05	1.05	1.4	1.35	1.95	1.55
19	.64			.84	1.35	.93	1.1	1.3	1.4	1.3	1.8	1.5
20	.85			.84	1.4	.88	1.15	1.25	1.4	1.55	1.8	1.55
21	1.05	[b]3.3		.80	1.35	.97	1.1	1.5	1.45	1.35	1.75	1.5
22	4.0		[b]1.8	1.4	1.35	.97	1.05	1.5	1.5	1.25	2.0	1.45
23	2.7			1.3	1.3	.84	1.05	1.25	1.35	1.4	2.5	1.45
24	1.05	[b]1.2		.97	1.3	.84	1.05	1.15	1.35	1.4	2.3	1.45
25	.93			.93	1.3	.76	1.05	1.15	1.4	1.3	2.0	1.4
26	.84	[b]2.2		1.1	1.3	.76	1.0	1.1	1.25	1.9	1.95	1.4
27	1.8			.88	1.4	.72	1.05	1.5	1.2	1.2	1.95	1.55
28	.84		[b]1.1	.84	1.4	.72	1.0	2.3	1.25	1.35	2.0	2.1
29	.68	[b].9		.84	1.35	.72	1.0	.64	1.2	2.6	1.85	1.55
30	.68			.80	1.3	.72	1.0	-------	1.15	4.9	1.8	1.55
31	.64		-------	1.25	-------	.88	1.1	-------	2.0	-------	1.8	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.0	-------	0.944	1.46	29.3	90
August	-------	-------	1.61	2.49	50.0	153
September	-------	-------	1.83	2.83	54.8	168
October	2.6	0.80	1.15	1.78	35.6	109
November	2.5	.72	1.28	1.98	38.5	118
December	1.35	.72	.999	1.55	31.0	95
January	1.25	1.0	1.06	1.64	32.8	101
February	3.6	.64	1.35	2.09	39.3	121
March	2.0	.53	1.22	1.89	37.8	116
April	4.9	1.15	1.74	2.69	52.2	160
May	-------	1.75	2.16	3.34	67.0	205
June	2.9	1.4	1.67	2.58	50.0	153
The year	4.9	-------	1.42	2.20	518	1,590

[a] Estimated. [b] Estimated mean.

PUKELE STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder 200 feet upstream from Palolo belt-road bridge, five eighths of a mile above confluence of Pukele and Waiomao Streams, and 4¾ miles east of Honolulu post office.

DRAINAGE AREA.—1.2 square miles.

RECORDS AVAILABLE.—April 1912 to September 1913, June 1926 to June 1932.

EXTREMES.—Maximum discharge during year, 379 million gallons a day (586 second-feet) Apr. 30 (gage height, 5.87 feet); minimum, 0.18 million gallons a day (0.28 second-foot) several times during July and August.

1912–13, 1926–32: Maximum discharge, 805 million gallons a day (1,250 second-feet) Apr. 11, 1930 (gage height, 7.75 feet, from flood marks); minimum, 0.15 million gallons a day (0.23 second-foot) June 3, 1926, and between June 25 and 30, 1931.

REMARKS.—Records fair for ordinary stages; poor for high stages and estimated periods. A 2-inch pipe diverts water from stream above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			1.45	1.45	[b]4		[a]0.97	10	[b]9	1.0	52	0.75
2		[b]2.8	1.35	1.35			[c].65	10.5		1.0	7.6	.72
3			3.1	1.3	[b]18		[c].65	1.75		.99	3.3	.92
4	[b]0.4		1.9	1.25		[b]0.7	[c].65	1.35		.97	1.75	4.5
5			5.2	1.2	[b]4.2		[a].66	13.5	[b]3.9	.97	1.35	[b]1.3
6		[b]1.4	4.6	1.65			.65	11.5		.97	1.25	
7	[b]1.2		26	1.8			.63	3.7		6.6	1.25	
8			11	1.15			.61	2.4	[b]2.2	3.3	1.25	
9			3.6	1.1			.57	4.4		2.8	1.15	
10			2.8	1.8		[b].4	.54	5.0		2.0	1.05	[b].8
11	[b].7		2.7	1.25	[b]2.2		.52	6.2	1.65	1.35	1.05	
12			2.4	23			.52	21	1.55	1.35	1.0	
13		[b]1.6	1.9	4.8			.50	28	1.45	1.65	.99	
14	[b]1.1		1.9	3.7		[b]3.8	.49	28	1.35	1.35	1.0	
15			1.65	3.6			2.0	3.6	1.3	1.3	8.2	
16			1.65	3.4		.75	[c].70	2.8	1.3	1.25	.95	[b].7
17			1.55	3.4		.77	.61	2.8	1.25	1.25	.95	
18			5.6	3.4		.72	.65	2.4	1.15	1.15	.97	
19	[b].6		2.0	3.4		.75	.65	4.7	1.1	1.1	.97	
20		[b]10	1.55	3.1	[b]1.4	.75	.77		1.05	1.8	1.0	
21			1.55	3.1		.87	.68		1.0	1.05	1.0	
22	[b]5		1.45	3.4		1.15	.65		.96	.99	1.0	
23			1.35			.82	.65	[b]4.2	.89	.95	1.3	
24		[b]6.5	1.75			1.7	.66		.87	.92	1.05	[b].5
25			5.4			.94	.66		.84	.87	.99	
26	[b]1.9		3.9	[b]3.9		.94	.66		.82	3.5	.96	
27		3.9	1.9		[b].8	.89	.75		.80	1.0	.96	
28		2.3	1.55			[a].87	.68	[b]15	.77	6.2	.92	
29		1.75	1.55			[a].84	.68		.77	8.3	.84	[b]1.9
30	[b]1.3	1.65	1.55	[b]6		.82	.66		.77	49	.82	
31		1.55				.75	2.1		2.7		.75	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July			1.21	1.86	37.5	115
August			3.70	5.72	115	352
September	26	1.35	3.53	5.46	106	325
October	23	1.1	3.64	5.63	113	346
November			2.97	4.60	89.0	273
December			.933	1.44	28.9	89
January	2.1	.49	.736	1.14	22.8	70
February	28	1.35	7.83	12.1	227	697
March		.77	2.15	3.33	66.7	205
April	49	.87	3.56	5.51	107	328
May	52	.75	3.21	4.97	99.6	306
June	4.5		.973	1.51	29.2	90
The year	52		2.85	4.41	1,040	3,200

[a] Partly estimated. [b] Estimated mean. [c] Estimated.

WAIOMAO STREAM ABOVE PUKELE STREAM, NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder 300 feet west of road, 1 mile upstream from confluence of Waiomao and Pukele Streams, and 5 miles east of Honolulu post office.

DRAINAGE AREA.—1.0 square mile.

RECORDS AVAILABLE.—April 1911 to December 1912, June 1926 to June 1932.

EXTREMES.—Maximum discharge during year, 327 million gallons a day (506 second-feet) Apr. 30 (gage height, 5.59 feet); minimum, 0.02 million gallons a day (0.03 second-foot) June 26, 27.

1911-12, 1926–32: Maximum discharge, 461 million gallons a day (713 second-feet) Apr. 11, 1930 (gage height, 6.27 feet); no flow in extremely dry weather.

REMARKS.—Records good for ordinary and medium stages; poor for very high stages and estimated periods. Board of Water Supply diverts ground water from tunnels in drainage area.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	[b]0.2	0.68	[a]0.7	0.60	4.7	0.14	0.74	10	14.5	0.68	30	0.19
2		2.3	.52	1.05	1.4	.20	.63	6.6	8.0	.88	4.4	.31
3	[c].13	4.7	3.7	.62	17	.36	.39	1.95	3.0	.37	2.3	.26
4	.06	1.25	2.2	.62	14	.41	.36	1.6	1.65	.41	1.25	1.95
5	.07	.79	5.2	.54	3.2	.27	.29	12	2.1	.72	.87	1.05
6	.04	.64	3.1	1.4	2.6	.39	.22	11	1.05	.66	.66	.70
7	1.35	1.35	11	2.1	1.65	.19	.22	3.4	.69	1.65	.54	.82
8	.62	.71	8.9	1.15	1.5	.14	.18	1.95	.60	1.65	.46	.39
9	.32	.62	2.7	.79	1.15	.12	.20	3.2	.50	1.55	.37	.32
10	.25	1.8	1.95	1.85	.96	.11	.14	4.2	.41	1.25	.42	.35
11	.33	1.15	1.5	1.85	1.05	.11	.13	3.5	.33	.71	.58	.24
12	.28	.98	1.25	20	1.4	.10	.11	14.5	.30	.52	.37	.24
13	.24	.60	.79	3.4	.93	.08	.34	17.5	.24	.82	.38	.18
14	1.1	.46	.79	2.1	.75	1.35	.68	5.9	.27	.69	.26	.18
15	.44	.67	.96	1.65	1.3	5.7	2.7	2.7	.24	1.15	.88	.12
16	.28	1.8	.71	1.4	.87	.69	1.1	1.65	.41	1.05	.48	.10
17	.18	.60	.69	1.5	.63	.60	.47	.96	.38	.87	.30	.10
18	.13	2.5	4.2	1.4	.37	.38	.39	.71	.20	.79	.28	.13
19	.09	15.5	1.15	1.4	.37	.24	.54	3.1	.18	.79	.28	.08
20	.19	5.9	.69	1.25	.32	.20	1.3	3.1	.16	2.3	.24	.08
21	.74	9.0	1.05	1.25	.39	.48	1.05	7.9	.30	1.05	.30	.07
22	6.1	5.9	.79	1.8	.30	1.45	.85	7.7	.60	.87	.33	.05
23	4.2	[c]7.0	.69	2.9	.22	.66	.54	3.0	.26	.87	.76	.04
24	1.5		1.35	2.1	.19	1.8	.56	1.65	.18	1.15	.80	.04
25	.87		3.4	2.1	.16	.58	.48	1.25	.16	.87	.41	.03
26	.71	[b]4.7	3.0	2.2	.14	.55	.44	.79	.13	3.1	.32	.03
27	2.6		1.25	1.5	.36	.44	.95	7.0	.11	1.15	.42	.02
28	.72		.79	1.65	.38	.32	.41	24	.11	5.9	.28	.81
29	.41		.69	1.5	.18	.25	.35	7.8	.09	9.3	.22	.22
30	.32	[b]1.4	.87	1.4	.14	.27	.83	-------	.08	30	.22	.12
31	.24		-------	8.2	-------	.48	2.4	-------	1.5	-------	.18	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.1	0.04	0.804	1.24	24.9	76
August	15.5	.46	3.05	4.72	94.6	290
September	11	.52	2.22	3.43	66.6	204
October	20	.54	2.36	3.65	73.3	225
November	17	.14	1.92	2.97	58.6	180
December	5.7	.08	.615	.952	19.1	58
January	2.7	.11	.645	.998	20.0	61
February	24	.71	5.88	9.10	171	524
March	14.5	.08	1.25	1.93	38.7	119
April	30	.37	2.46	3.81	73.8	226
May	30	.18	1.60	2.48	49.6	152
June	1.95	.02	.307	.475	9.22	28
The year	30	.02	1.91	2.96	699	2,140

[a] Estimated. [b] Estimated mean. [c] Partly estimated.

MISCELLANEOUS MEASUREMENTS

Measurements of streams and ditches on the island of Oahu at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on island of Oahu, 1931–32

Date	Stream	Tributary to—	Locality	Discharge	
				Second-feet	Million gallons a day
Aug. 17	Pearl Harbor Springs	Pacific Ocean	Ditch levee 1,000 feet west of Puukapu gaging station.	0.275	0.178
Sept. 11	do	do	do	.920	.595
Nov. 6	do	do	do		[a].01
Jan. 8	do	do	do	0	0
Feb. 4	do	do	do	0	0
29	do	do	do	0	0
Apr. 13	do	do	do	0	0
May 9	do	do	do	0	0
Sept. 11	do	do	Wooden culvert 10 feet west of Waiau Railway station.	.632	.408
Oct. 14	do	do	do	.740	.478
Nov. 6	do	do	do	.540	.349
Dec. 11	do	do	do	.630	.407
Jan. 8	do	do	do	.503	.325
Feb. 4	do	do	do	.635	.410
29	do	do	do	.677	.438
Apr. 13	do	do	do	.746	.482
May 9	do	do	do	.856	.553
Sept. 15	do	do	27-inch culvert 300 feet west of Waiau Railway station.	4.43	2.86
Oct. 14	do	do	do	3.07	1.98
Nov. 6	do	do	do	4.19	2.71
Dec. 11	do	do	do	2.83	1.83
Jan. 8	do	do	do	4.81	3.11
Feb. 4	do	do	do	4.55	2.94
29	do	do	do	4.80	3.10
Apr. 13	do	do	do	3.74	2.42
May 9	do	do	do	4.35	2.81
Jan. 8	do	do	Ditch levee 900 feet west of Puukapu gaging station.	.338	.218
Feb. 28	Kalihi Stream	do	School Street highway bridge	671	434
29	Pearl Harbor Springs	do	Below diversion dam of Waiau gaging station.	1.76	1.14
May 9	do	do	do	1.79	1.16
Apr. 19	Waialae Springs	do	Waialae golf course, 200 feet below Springs.	.098	.063

[a] Estimated.

ISLAND OF MOLOKAI

HALAWA STREAM NEAR HALAWA, MOLOKAI

LOCATION.—Water-stage recorder 750 feet below confluence of two main branches and 2 miles above mouth of stream and Halawa schoolhouse.

DRAINAGE AREA.—4.6 square miles.

RECORDS AVAILABLE.—August 1917 to July 1932 (discontinued).

EXTREMES.—Maximum discharge during period unknown, owing to missing record; minimum, 2.4 million gallons a day (3.7 second-feet) Mar. 29.

1917–32: Maximum discharge, about 1,550 million gallons a day (2,400 second-feet) Mar. 31, 1923 (gage height, 11.65 feet); minimum, 0.8 million gallons a day (1.2 second-feet) Oct. 13–15, 19, 1917.

A maximum discharge greater than 1,550 million gallons a day may have occurred on Jan. 20, 1929.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated period. A 1-inch pipe line diverts water a quarter of a mile above station for domestic use of Halawa village.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	5.9	5.2	a 7.8		b12	b5		82	28	73	206	13	23
2	4.7	76	a 8.9		b12	b5		114	16.5	22	35	17.5	20
3	4.3	37	b70		b65	b20		96	24	16.5	22	19	32
4	4.3	15	b70		b65	b20		103	15	12.5	15	27	9.8
5	17	9.7						116	29	17	14.5	44	6.8
6	48	16					b7	134	32	44	14.5	33	5.4
7	30	30					b7	68	12.5	34	15	23	4.7
8	20	15	b26		b12		b7	28	11.5	21	20	12	4.5
9	18	15.5	b26		b12	b12	b7	75	11.5	55	21	10	19
10	17	41	b26	b9	b12	b12	b7	68	23	22	21	14	15
11	21	16.5	b26	b9	b12	b12	b7	105	10.5	18.5	13	8.5	25
12	10.5	13	b15	b9	b12	b12	b7	69	7.7	18	15	24	13
13	12	12	b15	b9	b12	b12	b14	97	10.5	28	13	28	34
14	21	13	b15	b9	b12	b12	b14	97	6.0	17.5	8.8	20	11
15	9.3	51	b26	b9	b12	b12	c44	70	5.0	13.5	30	11	34
16	7.2	28	b26	b9	b7.5	b12	a24	28	6.4	12.5	11	10	15.5
17	6.2	11	b16	b9	b7.5	b12	a11	20	14	8.8	8.1	11.5	7.4
18	7.2	57	b16	b9	b7.5	b44	c10	15	10	6.0	7.0	14	a18
19	5.9	103	b16	b9	b7.5	b44	13	13	6.8	4.7	6.4	9.2	------
20	15.5	38	b16	b9	b7.5	b44	22	26	5.9	14.5	7.2	23	------
21	34	31	b13	b9	b14	b44	14	70	8.8	8.8	12.5	7.7	------
22	129	31	b13	b9	b14	b44	22	128	24	8.6	7.2	6.2	------
23	32	64	b13	b38	b14	b44	64	25	9.5	18	10	7.6	------
24	14	24	b13	b38	b14	b16	21	15.5	6.2	12	18	6.4	------
25	10	15	b13	b38	b6	b16	17.5	50	5.6	23	7.0	4.4	------
26	11	c30	b40	b38	b28	b16	16	99	9.8	84	9.6	4.0	------
27	15	a24	b40	b38	b28	b16	13	203	4.2	13.5	28	32	------
28	7.5	a22	b40	b38	b28	b16	13	86	3.2	61	13.5	69	------
29	8.2	a16	b40	b13	b5.5	b7.5	14.5	37	2.7	150	7.4	29	------
30	8.2	a12	b40	b13	b5.5	b7.5	15	------	12	245	17	9.2	------
31	6.2	a12	------	b13	------	b7.5	17	------	93	------	14.5	------	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931–32						
July	129	4.3	18.1	28.0	560	1,720
August	103	5.2	28.5	44.1	884	2,710
September	------	------	27.5	42.5	824	2,530
October	------	------	14.5	22.4	448	1,370
November	------	------	14.2	22.0	424	1,300
December	------	------	19.8	30.6	615	1,890
January	64	------	14.9	23.1	463	1,420
February	203	13	73.7	114	2,140	5,650
March	93	2.7	15.0	23.2	465	1,430
April	245	4.7	36.1	55.9	1,080	3,320
May	206	6.4	20.9	32.3	648	1,990
June	69	4.0	18.2	28.2	547	1,680
The year	245	2.7	24.9	38.5	9,100	27,900
1932						
July 1–18	34	4.5	16.6	25.7	298	915

a Partly estimated. b Estimated mean. c Estimated.

WAIKOLU STREAM BELOW PIPE-LINE CROSSING, NEAR KALAUPAPA, MOLOKAI

LOCATION.—Water-stage recorder at elevation 280 feet, 500 feet below pipe-line crossing, three fourths of a mile above mouth of stream, and 4⅛ miles southeast of Kalaupapa.

DRAINAGE AREA.—4.0 square miles.

RECORDS AVAILABLE.—August 1931 to July 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 1,620 million gallons a day (2,510 second-feet) Feb. 28 (gage height, 5.54 feet); minimum, 6.1 million gallons a day (9.4 second-feet) Aug. 14, 15.

REMARKS.—Records fair for ordinary stages; poor for estimated periods and extremely high stages. Kalaupapa water-supply system diverts water above station for domestic use.

Discharge, in million gallons, 1931–32

Day	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	-------	7.0	10.5	12	7.9	8.4	29	23	147	[a] 95	[a] 11	14
2	-------	6.8	8.7	11	7.0	8.1	124	15	22			12.5
3	-------	71	8.1	42	17	8.1	85	12	14		11	15
4	-------	51	7.8	41		8.9	19.5	11	12.5		11	10.5
5	-------	9.9	7.3	10.5		8.1	66	32	11		11	10
6	-------	18.5	6.8	9.3	[a] 14	7.5	13.5	24	20		11	9.8
7	-------	31	9.3	9.3		7.5	22	12	12.5		11	9.5
8	-------	25	8.4	16		7.5	11.5	13.5	9.8		10.5	9.5
9	-------	12	8.1	16.5		7.5	19.5	13	20	[a] 15	10.5	9.5
10	-------	15	14.5	11	10.5	7.5	13.5	12.5	39		10.5	12.5
11	-------	19.5	9.9	10.5	17.5	9.0	13.5	11	41		10	17.5
12	-------	14	29	11.5	10	8.1	26	11	39		13.5	15
13	-------	8.7	8.4	8.1	16	14.5	28	11	23		11.5	31
14	[b] 6.4	10.5	7.3	7.3	10.5	10	71	10	14		11.5	12
15	8.5	17.5	7.0	10.5	99	9.6	9.6	9.2	20		11	17
16	9.8	20	7.0	11	22	9.0	8.4	21	13.5	[a] 36	10	12
17	6.8	11	6.8	9.9	29	7.5	12.5	22	10		10.5	10.5
18	16	10	6.8	8.4	29	7.5	9.9	14	9.2		11	15
19	26	8.4	6.8	7.5	66	17.5	20	11	9.0		10	12.5
20	11	7.5	6.8	7.3	24	28	45	11.5	9.0		11.5	[b] 12.5
21	11	7.8	7.0	10.5	32	9.0	130	14	9.0	[a] 11	10	------
22	16.5	11	11.5	17.5	31	8.1	175	11	9.0		9.8	------
23	18.5	8.7	9.3	8.1	13	12.5	21	10	11.5		9.8	------
24	9.6	15	9.6	7.3	14	12.5	9.9	9.8	19		9.8	------
25	7.0	11.5	11.5	6.8	9.9	11.5	41	9.8	18.5		9.8	------
26	9.0	11	9.9	8.1	8.7	12	38	9.8			9.8	------
27	7.3	12	7.8	23	8.1	12.5	151	9.5	[a] 34	[a] 16	13.5	------
28	6.8	10.5	24	14	8.1	25	38	9.2			23	------
29	6.8	30	15	7.5	7.8	9.5	25	9.0	[a] 170		14	------
30	7.0	66	8.1	7.0	9.0	15	-------	9.0		[a] 11	10.5	------
31	8.4	-------	34	-------	10.5	9.9	-------	140	-------		-------	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931–32						
August 14–31	26	6.4	10.7	16.6	192	590
September	71	6.8	18.6	28.8	558	1,710
October	34	6.8	10.7	16.6	333	1,020
November	42	6.8	12.7	19.6	380	1,170
December	99	7.0	19.4	30.0	602	1,850
January	28	7.5	10.9	16.9	337	1,040
February	175	8.4	44.0	68.1	1,280	3,920
March	140	9.0	17.4	26.9	541	1,660
April	----------	9.0	33.5	51.8	1,000	3,080
May	----------	----------	19.9	30.8	617	1,890
June	23	9.8	11.3	17.5	339	1,040
The period (322 days)	----------	----------	19.2	29.7	6,180	19,000
1932						
July 1–20	31	9.5	13.4	20.7	268	822

[a] Estimated mean. [b] Partly estimated.

WAIHANAU STREAM NEAR KALAUPAPA, MOLOKAI

LOCATION.—Water-stage recorder 100 feet above end of Waihanau Tunnel, 3¼ miles east of Kalaupapa, and 3½ miles southeast of Kalae.

DRAINAGE AREA.—1.1 square miles.

RECORDS AVAILABLE.—March 1930 to July 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 680 million gallons a day (1,050 second-feet) Oct. 31 (gage height, 6.04 feet); minimum, 0.24 million gallons a day (0.37 second-foot) June 25, 26.

1930–32: Maximum discharge, 3,200 million gallons a day (4,950 second-feet) Nov. 18, 1930 (gage height, 8.62 feet); minimum, 0.09 million gallons a day (0.14 second-foot) Nov. 15, 1930.

REMARKS.—Records fair for ordinary stages; poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	0.38	0.42	0.52	1.7	2.9	0.83		4.1	3.4	44	18.5	0.64	2.2
2	.34	.42	.50	.92	1.6	.48	[b]0.9	27	[a]2.8	6.1	3.6	.48	.85
3	.33	.40	15.5	.70	13	.49		21	[a]2.2		2.4	.42	.73
4	.33	.40	6.0	.60	12			[a]3.8	[a]1.8		1.65	.44	.48
5	.64	.40	1.75	.55	2.1		.60	[a]16.5	5.7	[b]2.6	1.3	.42	.36
6	1.05	.40	6.3	.67	1.25		.48	[a]3.1	4.4		1.05	.36	.32
7	.50	.50	6.2	.77	1.0		.42	[a]4.8	1.6		.91	.38	.32
8	.38	.48	3.1	1.15	1.6	[b]1.4	.38	1.7	1.25	[a]1.15	.82	.33	.31
9	.36	.45	2.1	.82	.85		.35	1.55	[b]1.0	2.8	1.1	.32	.31
10	.38	1.45	2.9	.64	.64		.33	1.1		8.0	.82	.36	.38
11	1.15	.52	4.0	.80	.59		.36	.85		[b]5.0	.62	.33	1.75
12	.76	1.35	1.7	1.3	.52		.33	[c]3.0			12	.54	1.0
13	1.35	.85	1.05	.58	.48	[a]1.75	[a].77	3.4		6.9	3.3	.36	1.95
14	.70	.45	2.4	.42	.44	[a]1.8	.35	[a]11	[b].6	2.9	1.1	.32	.67
15	.45	1.95	3.8	.38	.42	[a]28	.32			10.5	1.0	.30	.48
16	.36	1.65	4.3	.34	.40	[a]3.0	.32			4.0	.82	.30	.38
17	.36	.67	1.55	.33	.38	[a]4.8	.31	[b].7		2.2	.67	.33	3.3
18	.40	6.9	.84	.31	.36	[a]6.0	.31		[b]1.2	1.6	.70	.31	.91
19	.50	4.2	.67	.30	.35	12.5	.30			1.3	.59	.27	------
20	1.5	1.2	.64	.28	.33	4.4	1.15			1.15	.59	.26	------
21	23	2.9	.64	.27	.39	[a]4.8		[b]17	[b].7	.95	.54	.24	------
22	7.4	4.7	4.3	.91	1.85	[a]6.4		48		.79	.48	.24	------
23	2.6	5.0	1.15	.66	.57	2.0	[b].7	9.0		1.4	.48	.26	------
24	.95	1.6	6.1	.45	.42	[a]1.65		4.0		1.05	.46	.25	------
25	.67	.96	1.5	2.8	.38	[a]1.45	.94	9.0	[b].5	2.5	.42	.24	------
26	.58	1.05	.92	.60	1.05	[a]1.15	[a].38	13		12	.44	.25	------
27	.58	.73	.80	.36	2.4	[a].76	[a].33	[a]47		2.0	.54	1.8	------
28	.48	.67	.73	9.6	1.95	[a].62	.32	10.5	.42	10	.38	8.3	------
29	.67	.58	8.9	2.5	.57	.46	.31	4.5	.36	15	.36	1.8	------
30	.60	.67	13.5	.52	.44	1.1	.30	------	.35	11.5	8.0	.57	------
31	.48	.67	------	27	------	2.4	.32	------	32	------	1.5	------	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931–32						
July	23	0.33	1.62	2.51	50.2	154
August	6.9	.40	1.44	2.23	44.6	137
September	15.5	.50	3.48	5.38	104	320
October	27	.27	1.91	2.96	59.2	182
November	13	.33	1.71	2.65	51.2	157
December	28	.46	3.21	4.97	99.4	305
January	1.15	.30	.528	.817	16.4	50
February	48	----------	9.84	15.2	285	876
March	32	.35	2.24	3.47	69.6	214
April	44	.79	5.76	8.91	173	530
May	18.5	.36	2.17	3.36	67.1	206
June	8.3	.24	.714	1.10	21.4	66
The year	48	.24	2.85	4.41	1,040	3,200
1932						
July 1-18	3.3	.31	.928	1.44	16.7	51

[a] Partly estimated. [b] Estimated mean. [c] Estimated.

MISCELLANEOUS MEASUREMENTS

Measurements of streams on the island of Molokai at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on island of Molokai

Date	Stream	Tributary to—	Locality	Discharge	
				Second-feet	Million gallons a day
Nov. 24	Waihanau	Pacific Ocean	Makai boundary of land of Kahanui, near Kalaupapa.	0.114	0.074
June 1	do	do	do	.240	.160

ISLAND OF MAUI

HONOKAHAU STREAM NEAR HONOKAHAU, MAUI

LOCATION.—Water-stage recorder 1,000 feet above intake of Honokahau Ditch and about 5 miles southeast of Honokahau; elevation 910 feet.

DRAINAGE AREA.—4.2 square miles.

RECORDS AVAILABLE.—March 1913 to September 1920, May 1922 to June 1932.

EXTREMES.—Maximum discharge during year, 1,130 million gallons a day (1,750 second-feet) Feb. 27 (gage height, 6.30 feet); minimum, 10.5 million gallons a day (16.2 second-feet) July 3, 4.

1913–20, 1922–32: Maximum discharge, 2,200 million gallons a day (3,400 second-feet) Feb. 13, 1924 (gage height, 7.92 feet); minimum, 6.2 million gallons a day (9.6 second-feet) June 30, 1926.

REMARKS.—Records good except those for extremely high stages, which are poor. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11	13	16	25	19	15.5	28	28	48	149	206	42
2	11	52	17.5	20	22	15.5	20	95	32	43	31	25
3	11	35	44	21	154	17	16	77	32	38	48	25
4	11	15	21	24	99	26	16	61	25	29	25	34
5	34	59	43	19	22	16	15.5	38	26	31	29	25
6	37	32	95	42	20	48	14.5	112	36	71	31	26
7	24	46	108	36	19.5	17.5	14	93	25	28	31	22
8	12.5	21	40	26	26	15.5	14	30	28	30	24	24
9	14	18	57	21	21	15	14	126	26	118	53	31
10	25	87	39	18.5	26	15.5	14	124	24	59	49	46
11	30	20	101	18	36	20	14	151	23	80	23	20
12	36	22	29	22	75	16	14	79	23	82	94	28
13	26	22	22	18	19.5	18	43	126	22	163	31	41
14	26	17.5	30	17.5	20	16	31	118	22	29	40	31
15	13.5	76	31	17	68	45	51	34	22	34	128	19
16	12.5	24	45	17	46	21	23	31	30	45	27	18.5
17	12	22	30	21	39	31	16.5	49	42	21	27	18
18	46	209	32	30	20	50	18	32	26	19	25	19
19	21	37	18	20	19	115	42	29	24	19.5	21	24
20	95	28	22	23	17	49	44	64	28	24	25	29
21	105	24	26	40	26	73	18	80	34	20	22	18
22	168	55	32	70	72	41	16	251	26	34	23	17
23	25	57	24	37	19	28	73	54	23	29	24	17
24	16	18	59	33	17	34	42	32	22	24	29	23
25	22	19	62	48	16	18.5	42	86	24	38	21	17
26	23	39	53	22	17	16	19.5	91	23	129	22	28
27	20	17.5	39	18	18	16	18.5	277	22	36	30	24
28	15.5	20	22	22	26	16	20	64	22	63	21	68
29	23	43	104	26	16	15.5	16	43	29	76	23	70
30	14	35	84	17	16	34	17.5	-------	57	135	31	26
31	13	32	-------	28	-------	63	22	-------	90	-------	27	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	168	11	30.7	47.5	953	2,920
August	209	13	39.2	60.7	1,220	3,730
September	108	16	44.8	69.3	1,350	4,130
October	70	17	26.4	40.8	817	2,510
November	154	16	34.4	53.2	1,030	3,160
December	115	15	30.2	46.7	938	2,880
January	73	14	24.7	38.2	767	2,350
February	277	28	85.3	132	2,480	7,600
March	90	22	30.2	46.7	936	2,870
April	163	19	56.6	87.6	1,700	5,210
May	206	21	40.0	61.9	1,240	3,810
June	70	17	28.5	44.1	856	2,630
The year	277	11	39.0	60.3	14,300	43,800

HONOKAWAI DITCH NEAR LAHAINA, MAUI

LOCATION.—Water-stage recorder just below intake on Honokawai Stream, 2½ miles above Pioneer Mill Co's. power house, and 7½ miles northeast of Lahaina.

RECORDS AVAILABLE.—July 1912 to June 1932.

EXTREMES.—Maximum discharge during year, 52 million gallons a day (80 second-feet) June 28 (gage height, 2.52 feet); minimum, 2.4 million gallons a day (3.7 second-feet) Sept. 5, Nov. 14.

1912–32: Maximum discharge, 76 million gallons a day (118 second-feet) Aug. 11, 1929 (gage height, 2.17 feet); no flow occasionally, when water is shut out of ditch.

REMARKS.—Records good. Diverts water for irrigation from Honokawai Stream just above station. Regulated by head gates at intake.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.4	4.0	2.5	5.2	3.5	3.5	7.0	5.5	10	29	24	12
2	3.5	5.4	2.5	4.2	4.4	2.8	4.6	19	6.9	11	7.0	7.3
3	3.5	6.9	7.8	4.0	38	3.5	4.2	15.5	6.5	8.6	12.5	5.6
4	3.4	4.0	4.2	4.4	26	4.4	4.0	12.5	5.5	5.5	5.5	6.7
5	8.2	15.5	4.6	2.8	4.8	2.8	4.0	7.8	5.4	7.2	9.9	6.9
6	6.7	9.0	13.5	7.2	4.7	10.5	3.5	16.5	6.4	20	9.3	5.6
7	5.0	13.5	22	7.1	4.4	3.5	3.5	17	5.0	6.1	7.7	6.6
8	2.8	5.0	13.5	5.2	7.2	2.5	3.5	7.6	5.6	5.9	5.8	7.7
9	2.8	4.7	15	4.4	4.9	2.5	3.5	23	5.4	21	18	8.9
10	6.0	21	11.5	2.8	7.5	2.5	3.5	26	5.0	11.5	14.5	15.5
11	9.5	5.2	24	2.8	14	4.9	3.5	19	4.8	15	5.5	6.1
12	8.8	5.4	7.8	2.8	20	2.8	6.6	19	4.6	19.5	24	7.8
13	7.4	2.5	5.3	2.8	4.0	4.6	14	12	4.7	26	8.1	12.5
14	6.6	2.8	7.1	3.5	2.8	3.5	5.8	8.1	4.7	7.7	12	11
15	2.8	9.7	7.8	3.5	16.5	11.5	8.3	5.2	4.7	8.3	26	6.4
16	3.5	4.6	15	3.5	11	4.7	5.4	5.4	9.0	[a]11.5	6.9	5.8
17	4.0	6.1	9.0	5.9	14	6.4	4.6	9.1	12.5	5.0	6.8	5.9
18	13.5	33	8.6	5.5	4.9	15	4.6	5.9	5.4	4.9	6.9	7.8
19	4.6	9.6	4.2	2.8	4.5	28	9.2	5.3	4.8	5.0	5.4	7.4
20	23	8.6	4.6	4.6	2.5	16	9.6	16.5	6.4	6.1	6.2	7.1
21	30	7.2	5.5	6.8	5.2	21	4.6	20	9.0	4.8	5.6	5.4
22	28	13	9.0	13	17.5	13.5	4.7	35	5.9	9.1	5.4	5.4
23	6.2	13	5.1	6.5	3.5	8.1	21	14	4.9	7.8	5.4	6.2
24	4.4	4.4	15	9.7	2.5	11	13	6.2	4.7	6.9	5.9	5.8
25	5.2	5.0	18	14.5	2.5	4.8	15	15	4.6	10.5	5.4	5.5
26	6.7	9.2	16	4.6	2.8	4.2	5.5	13	4.6	37	6.8	8.9
27	5.8	4.2	13	2.5	2.8	4.0	5.6	19	4.6	9.8	8.6	8.0
28	4.4	4.2	5.3	6.5	5.5	4.0	6.4	10.5	4.6	7.7	5.8	20
29	6.5	10.5	22	6.8	2.5	4.0	4.6	10.5	5.4	11	6.5	7.1
30	3.5	7.6	15.5	2.8	3.5	8.5	4.6	-------	14	12	12.5	6.4
31	2.8	6.2	-------	5.1	-------	14.5	6.6	-------	23	-------	7.9	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	30	2.8	7.50	11.6	232	714
August	33	2.5	8.42	13.0	261	801
September	24	2.5	10.5	16.2	315	966
October	14.5	2.5	5.28	8.17	164	503
November	38	2.5	8.26	12.8	248	761
December	28	2.5	7.53	11.7	234	717
January	21	3.5	6.60	10.2	204	628
February	35	5.2	13.8	21.4	399	1,220
March	23	4.6	6.73	10.4	209	640
April	37	4.8	11.7	18.1	351	1,080
May	26	5.4	9.61	14.9	298	914
June	20	5.4	7.98	12.3	239	734
The year	38	2.5	8.62	13.3	3,150	9,680

[a] Partly estimated.

KANAHA STREAM ABOVE PIPE-LINE INTAKE NEAR LAHAINA, MAUI

LOCATION.—Water-stage recorder 200 feet above intake of pipe line for Lahaina and Lahainaluna School and 2¾ miles northeast of Lahaina.

DRAINAGE AREA.—1.8 square miles.

RECORDS AVAILABLE.—February 1916 to June 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 120 million gallons a day (186 second-feet) July 21 (gage height, 3.07 feet); minimum, 1.8 million gallons a day (2.8 second-feet) Aug. 24, 25, 27, 28.

1916–32: Maximum discharge, 314 million gallons a day (486 second-feet) Nov. 26, 1918 (gage height, 3.79 feet); minimum, 1.1 million gallons a day (1.7 second-feet) May 5–6, 1931.

REMARKS.—Records fair for ordinary stages; poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	2.8	2.4	3.1	2.8	2.8	3.3	2.8	7.4	[a]18	12	6.8
2	3.1	3.6	2.4	2.8	2.9	2.8	2.6	3.5	3.1		4.0	3.9
3	3.1	3.7	4.6	2.8	40	2.8	2.4	3.1			8.8	3.3
4	3.1	2.9	4.7	2.8	22	2.8	3.3	4.6		[a]4.8	3.5	4.1
5	5.0	6.6	2.9	2.8	3.3	2.8	2.8	4.3			6.9	3.8
6	4.8	5.3	8.3	3.1	3.3	2.8	2.6	6.9			7.4	2.9
7	3.7	7.3	28	3.7	5.4	2.8	2.6	8.5		[a]13	6.8	4.3
8	3.1	3.1	11.5	2.9	9.5	2.8	2.6	4.3			3.7	3.3
9	3.3	3.9	13.5	2.9	10.5	2.8	2.6	13.5	[a]3.0		12.5	4.6
10	5.0	15.5	10.5	2.8	5.2	2.8	2.6	10.5		[a]10	14.5	9.4
11	7.3	5.4	36	2.8	12	2.8	2.6	11.5			3.7	3.3
12	4.6	6.1	11	2.8	12	2.8	2.4	6.7		[a]22	21	4.2
13	8.1	2.6	3.7	2.8	3.3	5.3	7.7	6.3			9.0	4.4
14	4.1	2.4	6.0	2.8	2.9	2.9	2.6	8.4			7.8	4.9
15	2.8	3.8	7.7	2.8	4.6	4.3	2.6	2.4		[a]7	11.5	3.1
16	2.6	2.9	17	2.8	3.5	2.8	2.8	2.2	[a]9		4.0	2.8
17	2.2	2.6	3.5	4.8	10.5	2.8	2.4	5.1			4.0	2.9
18	7.2	35	3.3	3.3	4.4	9.2	2.4	2.8		[a]3.2	5.9	3.3
19	2.8	5.0	2.8	2.8	3.6	42	2.4	2.2			3.3	2.8
20	12	3.3	2.6	3.7	3.1	16.5	2.6	10		4.0	3.3	2.8
21	50	3.3	2.9	3.6	4.5	26	2.6	15	[a]3.9	2.9	3.1	2.8
22	16	6.2	8.4	8.1	14.5	12	2.4	44		4.7	2.9	------
23	3.3	6.4	3.3	3.4	3.3	5.9	12	9.5		5.8	2.9	------
24	2.8	2.2	8.6	4.1	2.9	7.2	8.9	3.1		7.8	2.9	------
25	2.8	1.8	11	10.5	2.8	3.1	9.9	11		16.5	3.8	------
26	4.2	3.9	10.5	3.1	2.8	2.8	3.8	3.5	[a]2.9	16	5.9	------
27	4.1	1.8	12	2.6	2.8	2.6	6.6	26		3.7	4.6	------
28	5.4	2.0	5.1	5.9	2.9	2.6	9.7	7.4		3.3	2.8	------
29	8.6	5.6	18.5	5.0	2.8	2.4	2.8	5.2		4.6	4.8	------
30	2.9	4.2	9.0	2.6	2.8	4.0	2.4	------	[a]14	4.8	9.6	------
31	2.8	3.3	------	2.9	------	10.5	2.4	------		------	4.1	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	50	2.2	6.25	9.67	194	595
August	35	1.8	5.31	8.22	164	505
September	36	2.4	9.06	14.0	272	834
October	10.5	2.6	3.64	5.63	113	346
November	40	2.8	6.90	10.7	207	635
December	42	2.4	6.40	9.90	198	609
January	12	2.4	3.92	6.07	121	373
February	44	2.2	8.42	13.0	244	750
March	------	------	4.43	6.85	137	421
April	------	------	9.04	14.0	271	832
May	21	2.8	6.48	10.0	201	617
June 1–21	9.4	2.8	3.99	6.17	83.7	257
The period (357 days)	50	1.8	6.18	9.56	2,210	6,770

[a] Estimated mean.

OLOWALU DITCH NEAR OLOWALU, MAUI

LOCATION.—Water-stage recorder 425 feet above intake to penstock of hydroelectric power station 1 mile above Olowalu and 7 miles east of Lahaina.

RECORDS AVAILABLE.—August 1911 to June 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 11.5 million gallons a day (17.8 second-feet) July 22, 23 (gage height, 1.56 feet); minimum, 1.0 million gallons a day (1.6 second-feet) Sept. 13.

1911–32: Maximum discharge, 18 million gallons a day (28 second-feet) Dec. 25, 1920 (gage height, 1.53 feet); no flow occasionally, when water is shut out of ditch.

REMARKS.—Records good except those for estimated periods, which are poor. Intake in Olowalu Stream at elevation about 450 feet. Water used for power and irrigation. Regulated by head gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.4	4.7	5.6	8.4			7.3	6.2	2.8	8.7	8.4	6.2
2	3.2	4.7	5.0	8.0	[a]6.5		5.9	8.7	5.9	8.7	,6.6	5.9
3	3.1	5.0	6.2	7.3			5.2	8 4	8.7	8.4	5.9	5.2
4	3.0	4.7	7.3	7.0		[a]4.5	5.8	9 8	8.4	7.6	4.9	5.2
5	3.8	5.6	7.0	5.9	[a]9		5.6	9 1	8.0	7.0	4.6	5.6
6	4.1	7.0	7.6	6.2			4.9	7.3	7.6	7.6	4.6	5.2
7	4.1	7.3	6.2	7.3		[b]4.0	4.6	5.2	7.3	7.0	4.3	5.2
8	3.4	7.6	5.6	5.9		[b]4.0	4.3	4.6	7.3	6.6	4.0	4.9
9	3.3	6.2	5.6	6.2		3.9	4.3	4.6	7.3	8.4	4.6	6.2
10	4.4	8.0	5.9	7.6		3.9	4.0	4.9	6.6	8.4	5.6	7.3
11	5.6	8.7	5.3	6.6		3.9	3.9	4.3	6.2	8.4	4.6	6.2
12	6.6	8.4	3.5	5.6		3.8	3.8	4.6	5.9	8.7	7.3	5.6
13	5.9	6.6	4.6	5.0	[a]8	6.0	5.3	5.8	5.9	8.7	7.0	5.9
14	5.9	5.6	8.0	5.3		5.3	4.0	9.1	5.6	8.4	5.9	7.3
15	4.7	7.3	8.0	5.0		4.3	4.3	9.5	5.6	8.0	8.0	5.9
16	3.8	7.3	8.0	4.7		4.3	4.3	9.1	7.3	8.t	7.0	5.2
17	3.5	5.9	8.0	4.7		4.3	3.8	9.1	8.0	7.6	5.9	4.9
18	4.7	7.3	8.0	[a]5.5		5.4	3.8	9.1	5.2	7.0	5.2	4.9
19	4.1	4.9	7.3			9.5	3.6	8.4	6.5	6.6	4.9	4.6
20	7.6	5.9	6.6	[a]7		9.5	4.0	5.4	7.6	6.6	4.6	4.3
21	7.6	4.4	6.6		[a]6.5	9.5	3.8	6.5	7.3	7.0	4.3	4.3
22	11	7.3	7.3			9.8	3.6	3.3	6.6	7.3	4.3	------
23	7.8	8.4	6.6			9.5	6.1	4.1	6.2	7.3	4.0	------
24	7.0	8.4	7.0			9.1	6.6	3.1	6.2	6.6	4.0	------
25	8.4	8.0	8.0			7.3	8.4	4.2	5.9	7.6	5.2	------
26	7.3	8.0	8.4	[a]8		6.2	6.2	5.1	5.9	8.4	5.9	------
27	6.2	6.6	8.4		[a]4.9	5.9	4.9	9.1	5.6	8.7	5.9	------
28	5.6	5.9	8.4			5.2	4.6	4.0	5.9	8.4	5.6	------
29	7.3	6.2	8.4			5.2	4.3	3.1	6.6	8.7	5.6	------
30	5.6	7.0	8.4			4.9	4.3	-------	8.7	8.4	6.6	------
31	5.0	7.0	-------			9.3	4.0	-------	8.7	-------	6.2	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	11	3.0	5.39	8.34	167	513
August	8.7	4.4	6.64	10.3	206	632
September	8.4	3.5	6.89	10.7	207	635
October	----------	----------	6.80	10.5	211	647
November	----------	----------	7.03	10.9	211	647
December	9.8	3.8	5.84	9.04	181	555
January	8.4	3.6	4.82	7.46	150	459
February	9.8	3.1	6.40	9.90	186	570
March	8.7	2.8	6.69	10.4	207	636
April	8.7	6.6	7.83	12.1	235	721
May	8.4	4.0	5.53	8.56	172	526
June 1–21	7.3	4.3	5.52	8.54	116	356
The period (357 days)	11	2.8	6.29	9.73	2,250	6,900

[a] Estimated mean. [b] Partly estimated.

RIGHT BRANCH OF KAHALAWE STREAM NEAR KIPAHULU, MAUI

LOCATION.—Water-stage recorder at old ditch intake, elevation 1,100 feet, 2 miles north of Kipahulu.
DRAINAGE AREA.—0.1 square miles.
RECORDS AVAILABLE.—February 1927 to June 1932.
EXTREMES.—Maximum discharge during year, 612 million gallons a day (947 second-feet) Feb. 5 (gage height, 11.20 feet); minimum, 0.7 million gallons a day (1.1 second-feet) Mar. 28.
1927–32: Maximum discharge, that of Feb. 5, 1932; minimum, 0.15 million gallons a day (0.23 second-foot) Dec. 16, 1929.
REMARKS.—Records fair for ordinary stages, poor for high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.1	1.8	2.5	5.8	2.8	1.5	5.4	3.4	3.6	7.1	39	8.3
2	1.6	4.7	2.2	5.2	2.2	1.4	28	2.6	4.3	1.8	5.2	3.4
3	1.4	14	2.2	14	17	1.3	3.2	2.5	4.6	3.4	6.0	3.7
4	1.5	3.2	5.5	7.5	13.5	1.3	1.8	31	2.4	1.5	3.0	5.2
5	5.9	5.0	12	4.4	3.2	1.3	1.4	58	2.0	4.2	3.6	4.8
6	10.5	5.8	9.0	9.4	6.3	1.2	1.3	39	1.8	8.2	4.0	4.1
7	12	4.4	21	7.3	3.8	1.1	1.2	12	1.5	2.5	5.1	2.8
8	5.8	3.8	12.5	4.9	4.2	1.1	2.1	13.5	4.7	2.4	3.6	2.1
9	4.4	2.9	8.9	19	3.0	1.0	2.7	29	1.9	8.4	5.6	2.1
10	3.5	8.5	6.6	7.6	2.6	1.0	7.0	17.5	1.4	2.7	3.7	4.8
11	4.1	4.8	6.9	4.4	8.1	.9	4.1	61	1.1	3.0	2.0	2.4
12	2.8	5.5	5.5	5.9	8.9	2.1	2.6	36	1.0	10.5	6.8	3.0
13	3.5	7.5	4.1	3.2	2.5	1.2	6.0	46	4.2	7.6	3.7	6.1
14	3.2	3.8	3.5	2.9	9.4	1.1	6.5	27	3.7	4.5	2.3	9.1
15	3.3	3.8	3.2	2.8	7.9	1.6	9.4	6.4	1.2	3.0	13	3.0
16	2.3	5.0	7.1	2.6	6.6	1.1	3.0	4.6	1.2	3.0	3.0	2.3
17	1.9	2.9	5.3	2.5	12	.9	2.1	14	1.5	3.0	2.1	2.3
18	2.6	14	23	2.9	4.1	2.9	2.8	4.0	1.1	1.8	2.3	4.0
19	2.2	10	4.4	2.3	4.0	10.5	5.7	3.0	.9	1.6	2.0	4.3
20	6.2	5.6	3.2	3.1	2.8	2.2	5.1	10.5	1.1	2.4	3.6	8.1
21	16	4.4	5.7	3.3	2.6	3.4	4.8	24	1.5	6.2	2.3	2.4
22	19	6.8	3.2	20	8.7	3.2	7.6	70	1.6	2.4	3.2	2.1
23	3.8	5.2	2.8	33	2.8	3.0	8.7	6.6	1.1	2.4	10	2.8
24	2.6	3.5	6.5	5.5	2.5	3.6	5.1	4.0	1.1	4.8	10.5	2.0
25	3.7	2.9	9.9	6.7	2.2	1.5	9.9	6.1	.9	3.0	4.8	1.9
26	2.6	4.4	7.6	3.6	2.1	1.2	3.2	3.3	1.4	8.6	3.4	7.1
27	2.5	2.9	5.9	5.2	2.1	1.1	3.8	13	.9	3.0	10	3.3
28	2.2	4.9	3.8	2.5	1.9	1.0	4.3	7.8	.8	1.9	3.6	7.1
29	3.2	5.5	8.7	2.2	1.8	.9	6.1	5.2	1.4	12	2.7	2.1
30	3.1	4.1	26	1.9	1.6	1.4	8.0	------	4.6	55	4.0	1.9
31	1.9	4.0	------	15.5	------	2.6	2.6	------	2.2	------	2.8	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	19	1.4	4.56	7.06	141	434
August	14	1.8	5.34	8.26	166	508
September	26	2.2	7.62	11.8	229	702
October	33	1.9	7.00	10.8	217	666
November	17	1.6	5.11	7.91	153	470
December	10.5	.9	1.92	2.97	59.6	183
January	28	1.2	5.34	8.26	166	508
February	70	2.5	19.3	29.9	561	1,720
March	4.7	.8	2.02	3.13	62.7	192
April	55	1.5	6.06	9.38	182	558
May	39	2.0	5.71	8.83	177	543
June	9.1	1.9	3.95	6.11	119	364
The year	70	.8	6.10	9.44	2,230	6,850

HANAWI STREAM NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder 200 feet above Koolau Ditch intake and trail, 1¾ miles southeast of Nahiku, and 4½ miles southeast of Keanae.

DRAINAGE AREA.—0.8 square mile.

RECORDS AVAILABLE.—January 1914 to January 1916, November 1921 to June 1932.

EXTREMES.—Maximum discharge during year, 532 million gallons a day (823 second-feet) Apr. 30 (gage height, 8.20 feet); minimum, 2.2 million gallons a day (3.4 second-feet) Feb. 5.

1914–16, 1921–32: Maximum stage from flood marks, about 20 feet during flood of Jan. 18, 1916 (discharge not determined); minimum, 1.4 million gallons a day (2.2 second-feet) July 5, 8, 1926.

REMARKS.—Records good for ordinary stages, poor for extremely high and low stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	5.1	7.1	13	8.7	5.2	51	10.5	16	92	102	21
2	3.0	5.6	6.2	9.6	6.3	5.0	33	61	10.5	14.5	15	9.9
3	2.8	5.7	6.4	8.8	56	11	9.6	54	8.6	9.6	21	7.0
4	2.8	5.1	6.2	8.1	43	9.6	12	43	7.6	7.1	10.5	6.2
5	8.1	15.5	10.5	7.3	10.5	5.5	7.8	34	7.5	7.9	11	5.6
6	8.8	10.5	17	7.3	8.2	13.5	6.6	74	8.3	13	13	5.1
7	8.4	14	20	7.3	7.8	6.3	6.1	55	6.8	6.6	11	4.8
8	4.5	8.6	17.5	7.3	12.5	5.3	5.7	21	8.0	5.8	10.5	4.5
9	3.9	8.3	19	7.2	23	4.9	5.6	53	7.5	19	21	4.4
10	4.9	23	16	7.0	12	4.5	5.6	130	6.6	20	14	5.8
11	12	10.5	36	7.0	25	4.2	5.9	170	6.2	41	14	5.6
12	6.3	8.7	15	17	63	3.9	5.5	120	5.9	79	77	7.6
13	7.6	7.0	11	6.7	10.5	3.7	19.5	163	5.5	61	29	6.6
14	6.3	6.2	12	6.1	37	3.5	6.4	98	5.2	15.5	17	7.6
15	4.1	18.5	15	5.7	68	47	6.6	22	5.0	19	53	5.9
16	3.6	7.8	47	5.3	12	8.2	5.7	17	4.8	13	16	5.3
17	3.3	7.7	12	6.1	21	8.1	5.1	32	5.0	7.8	11	4.8
18	5.6	67	17.5	7.5	10.5	25	30	16	7.0	7.0	12	4.8
19	5.3	30	8.8	5.5	8.7	158	102	15	8.0	7.0	8.4	4.7
20	14.5	9.6	8.0	5.3	7.7	70	53	14	8.8	7.7	8.1	6.5
21	107	7.6	7.7	43	8.2	45	7.8	13	8.5	7.3	7.5	4.5
22	35	11.5	7.7	90	59	20	6.3	24	6.8	7.6	7.2	4.0
23	8.7	13.5	7.7	8.6	10.5	12.5	11	11	5.0	9.8	6.8	4.3
24	6.1	7.5	10	38	8.0	13.5	14	10.5	4.7	19.5	6.7	3.9
25	9.2	6.6	20	37	7.3	7.1	18	9.6	4.2	18	6.6	3.6
26	6.9	6.6	16	11.5	7.1	5.6	15.5	26	3.9	55	6.8	9.6
27	6.6	5.7	27	9.7	6.6	5.0	47	202	5.0	25	10.5	9.2
28	5.3	5.9	23	6.8	6.1	4.9	123	96	5.7	61	7.3	7.4
29	8.0	8.1	67	5.7	5.7	4.9	41	43	4.4	70	8.6	4.6
30	6.8	18.5	61	5.1	5.5	8.6	38	-------	5.6	112	15.5	4.1
31	5.3	12	-------	4.9	-------	17.5	9.2	-------	22	-------	8.8	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	107	2.8	10.4	16.1	324	994
August	67	5.1	12.2	18.9	378	1,160
September	67	6.2	18.5	28.6	555	1,700
October	90	4.9	13.4	20.7	415	1,270
November	68	5.5	19.2	29.7	575	1,770
December	158	3.5	17.6	27.2	547	1,680
January	123	5.1	23.0	35.6	714	2,190
February	202	9.6	56.5	87.4	1,640	5,030
March	22	3.9	7.25	11.2	225	689
April	112	5.8	28.0	43.3	839	2,570
May	102	6.6	18.3	28.3	567	1,740
June	21	3.6	6.30	9.75	189	580
The year	202	2.8	19.0	29.4	6,970	21,400

KAPAULA STREAM NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder 150 feet above Koolau Ditch, 300 feet above ditch trail, 1¾ miles southwest of Nahiku, and 4 miles southeast of Keanae.
DRAINAGE AREA.—0.2 square mile.
RECORDS AVAILABLE.—November 1921 to June 1932.
EXTREMES.—Maximum discharge during year, 719 million gallons a day (1,110 second-feet) Feb. 13 (gage height, 5.49 feet); minimum, 1.5 million gallons a day (2.3 second-feet) July 4.
1921–32: Maximum discharge, 1,400 million gallons a day (2,170 second-feet) Dec. 18, 1929 (gage height, 7.39 feet); minimum, 0.6 million gallons a day (0.9 second-foot) July 5, 1926.
REMARKS.—Records good for ordinary stages; poor for extremely high stages and estimated periods. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.8	3.1	5.1	11.5	6.9	2.9	42	9.4	11	66	68	[a]13
2	1.7	4.0	3.9	8.5	5.4	2.8	[b]25	47	7.5	13	8.8	
3	1.6	3.9	4.3	8.8	56	11	[c]5.6	66	6.3	9.8	14.5	
4	1.7	3.2	4.1	8.1	34	8.4	[b]10.5	42	5.1	6.5	8.3	[a]5
5	10.5	12.5	5.8	6.1	8.1	3.4	[c]5.9	25	5.6	7.0	8.3	
6	10	11	15.5	5.2	5.2	13	[b]3.6	67	6.3	12.5	9.2	
7	9.2	13.5	19.5	4.9	5.2	4.3	3.2	36	4.1	5.4	7.7	[a]3.1
8	3.6	8.3	15	4.3	10	3.0	3.1	13	5.0	4.8	5.9	
9	3.0	7.7	19	4.0	18.5	2.6	3.2	39	4.9	16	14.5	
10	4.0	23	15	3.8	12	2.3	3.4	103	3.5	21	11	[a]4.
11	12	11	30	3.9	18	2.1	3.9	136	3.1	35	[a]30	3.8
12	6.3	7.9	14	10.5	43	2.0	3.5	85	2.9	65		5.8
13	6.8	6.1	9.8	4.6	7.9	1.9	15	149	2.8	46		4.9
14	6.6	5.2	12	3.9	45	1.8	4.4	71	2.7	12	[a]22	6.1
15	3.1	18.5	18	3.4	41	48	4.6	12.5	2.4	18.5		3.8
16	2.3	7.4	46	3.2	8.8	8.1	3.2	9.4	2.3	13		
17	2.0	7.9	13	4.0	16.5	9.3	2.7	12.5	2.8	6.6	[a]7.5	[a]3.2
18	5.0	64	18	6.5	8.5	28	19.5	8.8	4.4	4.9		
19	4.3	23	8.7	4.0	6.5	126	52	8.1	7.0	4.4		
20	15	9.0	6.5	3.8	4.9	50	29	7.7	7.5	4.4		
21	161	6.1	5.9	35	5.8	36	5.1	7.5	7.4	3.6	[a]4.2	[a]5
22	25	12	5.8	97	52	20	3.5	7.0	5.1	3.5		
23	6.5	13	5.2	7.2	7.9	15	8.2	6.5	3.4	6.1		[a]2.8
24	3.9	6.1	8.2	30	4.9	16.5	10	5.8	2.9	17		
25	7.4	5.1	17	39	4.0	11.5	13.5	5.6	2.8	17	[a]3.6	
26	6.0	4.9	18	10	4.1	9.4	14.5	22	2.4	43		
27	5.4	3.8	28	9.5	3.8	8.8	37	177	2.6	18		
28	4.2	4.3	25	5.6	3.6	8.5	74	49	4.1	48	[a]6	[a]5.5
29	8.5	8.0	103	3.9	3.2	8.1	25	30	3.1	54		
30	6.1	20	52	3.4	3.0	11.5	31	-------	5.1	88	[a]9.5	
31	3.8	11.5	-------	3.4	-------	20	7.5	-------	24	-------		-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	161	1.6	11.2	17.3	348	1,070
August	64	3.1	11.1	17.2	345	1,060
September	103	3.9	18.4	28.5	551	1,690
October	97	3.2	11.5	17.8	357	1,100
November	56	3.0	15.1	23.4	454	1,390
December	126	1.8	16.0	24.8	496	1,520
January	74	2.7	15.2	23.5	473	1,450
February	177	5.6	43.4	67.1	1,260	3,860
March	24	2.3	5.16	7.98	160	491
April	88	3.5	22.3	34.5	670	2,060
May	68	----------	12.0	18.6	374	1,150
June	----------	----------	4.82	7.46	145	444
The year	177	1.6	15.4	23.8	5,630	17,300

[a] Estimated mean. [b] Partly estimated. [c] Estimated.

KOOLAU DITCH AT NAHIKU WEIR, NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder between Kapaula and Waihoue Streams, 3½ miles southwest of Nahiku and 4 miles southeast of Keanae.

RECORDS AVAILABLE.—February 1919 to June 1932.

EXTREMES.—Maximum discharge during year, 56 million gallons a day (87 second-feet) Feb. 26, 27 (gage height, 1.68 feet); no flow occasionally, when water is shut out of ditch.

1919–32: Maximum discharge, 58 million gallons a day (90 second-feet) Feb. 25, 1930 (gage height, 1.72 feet); no flow occasionally, when intake gates are closed.

REMARKS.—Records excellent except those for extremely low stages, which are good. Regulated by spillways and gates. Koolau Ditch diverts water at elevation 1,200 feet from all streams from Makapipi to Alo.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13	16.5	28	44	28	20	2.0	44	42	46	49	42
2	12.5	18.5	23	40	30	19.5	1.4	44	40	38	44	38
3	11.5	18.5	24	38	49	26	0	46	36	36	46	30
4	11.5	16	23	38	46	34	0	49	34	30	42	26
5	28	28	32	32	40	23	0	44	36	30	44	23
6	30	32	40	26	38	38	6.1	42	36	44	44	21
7	32	34	49	28	34	26	16.5	38	30	32	42	20
8	20	28	46	26	40	21	16.5	44	30	26	38	19
9	17.5	28	46	26	49	19	20	51	30	44	46	18
10	19.5	44	46	19.5	46	15.5	23	46	26	42	44	22
11	32	38	51	23	49	12.5	24	46	24	49	44	20
12	26	34	46	38	44	9.0	23	42	22	42	46	26
13	26	30	44	26	42	7.9	42	42	21	46	44	24
14	26	26	44	23	36	7.3	28	44	20	42	46	28
15	18.5	34	44	21	40	17.5	30	49	19	38	49	22
16	16	32	40	19.5	40	11.5	24	49	18.5	40	46	20
17	14.5	26	36	22	40	2.5	21	49	20	38	44	19
18	23	49	46	28	38	1.0	38	46	23	32	42	18
19	21	46	36	21	38	4.8	51	49	28	30	36	18.5
20	40	42	34	19.5	34	0	46	46	30	30	32	26
21	44	34	30	32	32	.2	36	44	30	26	30	18.5
22	36	40	30	46	44	0	30	46	26	26	28	16.5
23	36	44	28	40	38	0	38	40	20	30	26	17
24	32	32	34	38	34	0	40	36	18	44	24	15.5
25	38	28	40	53	30	0	46	36	17.5	44	24	14
26	30	26	44	44	28	0	46	46	15.5	49	24	28
27	26	23	46	38	26	0	49	44	16	49	34	30
28	21	23	46	32	24	0	53	44	20	46	28	28
29	28	30	49	26	23	0	49	44	17.5	46	30	18.5
30	24	38	46	23	21	0	51	-------	21	49	38	16.5
31	19	40	-------	18.5	-------	0	42	-------	34	-------	34	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	44	11.5	24.9	38.5	772	2,370
August	49	16	31.6	48.9	978	3,000
September	51	23	39.0	60.3	1,170	3,590
October	53	18.5	30.6	47.3	949	2,910
November	49	21	36.7	56.8	1,100	3,380
December 1–19, 21	38	.2	15.8	24.4	316	970
January 1–2, 6–31	53	1.4	31.9	49.4	892	2,740
February	51	36	44.5	68.9	1,290	3,960
March	42	15.5	25.8	39.9	801	2,460
April	49	26	38.8	60.0	1,160	3,570
May	49	24	38.3	59.3	1,190	3,650
June	42	14	22.8	35.3	683	2,100
The year (352 days)	53	.2	32.1	49.7	11,300	34,700

WAIOHUE STREAM NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder 200 feet above intake to Koolau Ditch, 300 feet above ditch trail, 2¼ miles southwest of Nahiku, and 3½ miles southeast of Keanae.

DRAINAGE AREA.—1.5 square miles.

RECORDS AVAILABLE.—October 1921 to June 1932.

EXTREMES.—Maximum discharge during year, 405 million gallons a day (627 second-feet) Feb. 13 (gage height, 4.80 feet); minimum, 3.4 million gallons a day (5.3 second-feet) Dec. 14, 15.

1921–32: Maximum discharge, 576 million gallons a day (891 second-feet) Dec. 18, 1929 (gage height, 5.94 feet); minimum, 1.7 million gallons a day (2.6 second-feet) Apr. 11, 1926.

REMARKS.—Records good for ordinary stages; poor for extremely high and low stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	5.0	6.1	11.5	8.1	4.5	25	13.5	11.5	30	45	13
2	3.8	6.3	5.6	10	6.9	4.2	20	60	8.3	8.3	11.5	6.5
3	3.6	5.8	6.1	11.5	39	14.5	6.6	50	7.2	7.0	15	5.4
4	3.7	5.0	6.2	8.5	23	7.7	7.7	33	6.6	5.8	9.5	5.1
5	10	8.4	10.5	7.2	7.2	4.4	5.9	24	7.6	6.6	10	4.8
6	8.7	7.8	12.5	6.8	6.4	12	5.4	53	7.0	12	10	4.7
7	7.9	10.5	16	6.4	6.8	4.7	5.1	27	5.8	7.0	8.5	4.6
8	4.8	7.0	11.5	6.1	8.8	4.2	5.0	14.5	6.6	6.4	7.2	4.5
9	4.6	5.9	14	5.8	13.5	3.9	5.0	28	5.6	15.5	13.5	4.0
10	5.0	15	12.5	5.3	10.5	3.8	4.8	52	4.8	14.5	9.6	5.4
11	8.0	8.1	20	5.1	14.5	3.7	5.6	82	4.6	21	7.9	4.6
12	6.8	7.0	10.5	8.2	28	3.6	5.0	47	4.4	32	29	5.7
13	6.8	7.0	10	5.0	8.1	3.5	12	107	4.2	34	12	5.8
14	5.8	6.4	11.5	4.6	29	3.4	5.4	47	4.0	12.5	10.5	6.4
15	4.7	15.5	14	4.5	29	30	6.2	14.5	3.9	15	27	5.0
16	4.5	6.8	25	4.2	10	5.9	5.0	11.5	3.8	13	11	4.5
17	4.2	6.5	12.5	5.1	15	6.6	4.5	11.5	4.1	8.5	8.8	4.5
18	7.2	37	16.5	6.8	9.5	14	12	9.0	5.2	7.7	8.8	4.5
19	5.9	16.5	9.2	4.8	7.7	54	26	7.9	5.8	7.2	7.4	4.7
20	13	8.1	8.1	4.7	6.8	22	15	7.2	6.5	7.2	7.0	6.8
21	87	7.0	7.7	17	7.7	20	5.4	6.6	5.8	6.6	6.4	4.5
22	20	11.5	7.9	47	32	12.5	4.8	6.1	4.8	6.4	6.1	4.1
23	6.8	13	6.8	6.5	7.9	10	8.7	5.8	4.2	8.2	5.8	4.5
24	5.9	7.4	11.5	16	6.2	13	8.2	5.4	4.0	14.5	5.4	4.0
25	10.5	6.8	16	22	5.8	7.9	12	5.6	3.9	13.5	5.3	3.9
26	7.2	6.8	14.5	7.7	5.8	6.6	9.2	20	3.7	26	5.8	5.4
27	6.6	5.9	18.5	7.6	5.3	5.9	18.5	104	3.9	12.5	8.0	5.6
28	5.9	6.4	15	6.2	5.0	5.8	34	30	4.8	26	5.4	6.1
29	9.3	9.6	35	5.8	4.8	5.4	16.5	24	4.4	36	5.6	4.2
30	6.4	14	28	5.6	4.6	8.0	21	------	5.5	55	7.9	3.9
31	5.4	9.9	------	6.1	------	12.5	8.8	------	12.5	------	5.6	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	87	3.6	9.48	14.7	294	902
August	37	5.0	9.48	14.7	294	902
September	35	5.6	13.3	20.6	399	1,230
October	47	4.2	9.02	14.0	280	858
November	39	4.6	12.4	19.2	373	1,140
December	54	3.4	10.3	15.9	318	977
January	34	4.5	10.8	16.7	334	1,030
February	107	5.4	31.3	48.4	907	2,780
March	12.5	3.7	5.65	8.74	175	537
April	55	5.8	15.9	24.6	476	1,460
May	45	5.3	10.9	16.9	336	1,030
June	13	3.9	5.22	8.08	157	481
The year	107	3.4	11.9	18.4	4,340	13,300

WEST KOPILIULA STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 600 feet above Koolau Ditch crossing and highway bridge and 3 miles southeast of Keanae post office.

DRAINAGE AREA.—3.9 square miles.

RECORDS AVAILABLE.—January 1914 to September 1917, October 1921 to June 1932.

EXTREMES.—Maximum discharge during year, 875 million gallons a day (1,350 second-feet) July 21 (gage height, 4.65 feet); minimum, 2.5 million gallons a day (3.9 second-feet) July 3, 4, June 24, 25.

1914–17, 1921–32: Maximum discharge, about 2,000 million gallons a day (3,090 second-feet) Jan. 18, 1916 (gage height, 9.25 feet); minimum, 0.6 million gallons a day (0.9 second-foot) Sept. 15–17, 1917.

REMARKS.—Records good for ordinary stages; poor for high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	4.0	5.4	14.5	6.2	3.4	53	21	9.6	210	147	30
2	2.8	4.7	4.6	7.9	4.9	3.3	53	152	6.4	28	13	6.0
3	2.6	4.2	5.0	8.8	126	16	6.9	124	5.2	11.5	22	4.2
4	2.8	3.4	4.5	6.0	54	5.7	8.7	32	4.6	6.0	6.9	4.0
5	18	19.5	13	5.0	8.3	3.3	5.2	51	5.2	7.0	7.5	3.7
6	12.5	9.5	19	4.6	6.2	18.5	4.3	107	5.0	15	7.4	3.6
7	8.1	17	27	4.3	5.8	3.7	4.1	72	4.0	4.6	6.0	3.4
8	4.2	6.2	21	4.2	13	3.3	4.0	25	6.9	5.6	5.4	3.3
9	3.7	6.0	29	4.0	25	3.1	4.1	51	4.4	21	19.5	3.5
10	4.3	33	29	3.8	9.6	3.0	3.8	182	3.7	42	8.9	4.3
11	17	8.8	54	4.0	29	2.9	4.2	262	3.6	74	8.5	3.7
12	6.1	6.9	18.5	7.8	68	2.8	4.3	171	3.4	169	138	6.7
13	9.5	5.4	14	3.7	8.3	2.8	19	214	3.3	101	40	4.1
14	6.5	4.6	15.5	3.6	82	2.8	4.0	151	3.1	18	16	4.6
15	4.2	24	28	3.4	77	87	4.2	20	3.0	42	68	3.7
16	3.7	5.7	107	3.3	9.1	8.4	3.4	9.6	3.0	22	20	3.4
17	3.3	6.7	22	4.0	24	11	3.3	24	3.3	6.9	9.6	3.3
18	6.0	102	26	4.8	8.3	48	34	8.7	6.1	5.6	8.7	3.2
19	4.4	58	7.9	3.4	6.2	363	7.4	6.6	5.8	5.2	6.4	3.3
20	29	8.3	6.6	3.4	5.4	165	48	6.2	7.0	5.0	5.8	4.7
21	343	5.8	5.6	36	7.4	78	5.6	5.6	5.7	4.3	5.0	3.0
22	47	12	5.8	203	112	36	4.5	5.2	4.1	4.3	4.6	2.9
23	8.3	14	5.0	7.5	8.2	17	8.8	5.0	3.3	9.6	4.2	3.1
24	5.6	5.0	9.2	42	5.8	16.5	12.5	4.5	3.1	30	4.2	2.7
25	12	5.0	29	91	4.8	6.9	21	5.0	3.0	30	4.2	2.6
26	6.1	4.5	36	11.5	4.8	5.4	16	44	2.8	95	4.5	10.5
27	5.1	4.0	56	26	4.2	4.8	90	374	3.2	36	8.3	6.8
28	4.8	4.3	53	7.2	4.0	4.5	153	102	4.1	109	4.3	5.4
29	11.5	9.7	134	5.2	3.7	4.2	47	44	3.1	105	5.2	3.2
30	5.8	23	106	4.3	3.6	13	50	-------	5.0	156	17.5	3.0
31	4.3	17	-------	5.4	-------	11.5	8.3	-------	13	-------	5.1	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	343	2.6	19.5	30.2	605	1,860
August	102	3.4	14.3	22.1	442	1,360
September	134	4.5	29.9	46.3	897	2,750
October	203	3.3	17.5	27.1	544	1,670
November	126	3.6	24.5	37.9	735	2,260
December	363	2.8	30.8	47.7	955	2,930
January	153	3.3	24.6	38.1	762	2,340
February	374	4.5	78.6	122	2,280	7,000
March	13	2.8	4.74	7.33	147	451
April	210	4.3	46.0	71.2	1,380	4,230
May	147	4.2	20.4	31.6	632	1,940
June	30	2.6	5.00	7.74	150	460
The year	374	2.6	26.0	40.2	9,530	29,300

EAST WAILUAIKI STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 1,000 feet above Koolau Ditch crossing and trail and 3 miles southeast of Keanae post office.

DRAINAGE AREA.—3.7 square miles.

RECORDS AVAILABLE.—December 1913 to October 1917, July 1922 to June 1932.

EXTREMES.—Maximum discharge during year, 1,160 million gallons a day (1,790 second-feet) Feb. 27 (gage height, 6.90 feet); minimum, 2.6 million gallons a day (4.0 second-feet) July 3, 4.

1913–17, 1922–32: Maximum discharge, 1,900 million gallons a day (2,940 second-feet) Jan. 18, 1916 (gage height, 8.35 feet); minimum, 1.0 million gallons a day (1.6 second-feet) Oct. 22, 23, 1917, Aug. 1–2, 1922.

Flood of Dec. 24, 1921, may have reached a higher stage, but owing to destruction of station no data are available for this peak.

REMARKS.—Records good for ordinary stages; poor for high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	5.7	8.4	19	8.5	4.9	51	24	17	175	186	29
2	3.2	6.5	7.2	14	8.4	4.5	58	176	12	30	18	12.5
3	2.8	6.2	7.6	14	136	15	12.5	138	9.9	17	24	8.0
4	3.0	4.9	6.9	10.5	66	10.5	11	86	9.0	9.6	13	6.9
5	21	26	14.5	9.0	14	4.9	8.4	54	9.5	10.5	13	6.4
6	16.5	17	28	8.2	9.4	25	7.2	111	9.4	17	13.5	6.1
7	13	21	34	7.6	9.0	7.2	6.5	74	7.5	8.6	11	5.7
8	6.5	10.5	21	7.1	16	5.3	6.1	22	10	8.7	9.6	5.3
9	5.2	9.6	37	6.5	22	4.5	6.2	70	8.6	32	25	5.7
10	6.5	38	26	6.1	14	4.2	5.5	187	6.8	45	16	8.0
11	24	15	57	5.8	24	3.9	6.4	252	6.2	83	14	6.2
12	10.5	11.5	22	10	71	3.6	5.8	164	5.8	153	139	10.5
13	12.5	8.6	17	5.7	13	3.3	22	245	5.5	110	40	7.8
14	12	8.1	14	5.2	59	3.3	6.6	122	5.0	20	19.5	8.8
15	6.2	34	30	4.6	86	87	7.1	22	4.9	34	82	6.5
16	4.9	11	95	4.3	16	17	5.4	17	4.5	23	21	5.8
17	4.3	11	20	6.1	23	15	4.8	22	5.3	12.5	16	5.5
18	10.5	122	23	8.4	13.5	46	44	16	9.1	9.6	14	5.2
19	7.8	62	12.5	4.8	10	322	45	12	11.5	8.8	11	5.5
20	33	15	10.5	4.8	9.0	139	46	10.5	12.5	8.2	9.9	8.2
21	365	9.6	9.2	68	10.5	78	9.2	9.4	11	6.9	9.0	4.6
22	55	16	9.5	169	112	32	7.2	9.0	7.5	7.1	8.4	4.2
23	14.5	18.5	8.1	11.5	15	20	14	8.4	5.5	12	7.6	4.8
24	9.0	9.0	12	58	9.6	20	15.5	7.6	4.8	27	7.1	3.8
25	15.5	8.2	28	75	8.2	12	21	8.8	4.3	30	7.1	3.8
26	10.5	7.4	30	16	8.2	9.2	21	48	4.0	96	7.8	15.5
27	8.9	6.2	56	29	7.1	8.2	75	397	4.9	41	12.5	13.5
28	7.6	6.8	50	11.5	6.5	7.4	125	94	6.9	119	7.5	9.4
29	19	13	139	8.2	5.8	6.6	33	36	4.6	112	9.2	5.2
30	10	40	111	6.9	5.3	16.5	54	-------	8.6	182	19.5	4.3
31	6.6	23	-------	8.0	-------	30	16	-------	61	-------	10	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	365	2.8	23.5	36.4	728	2,240
August	122	4.9	19.4	30.0	601	1,850
September	139	6.9	31.5	48.7	944	2,900
October	169	4.3	20.1	31.1	623	1,910
November	136	5.3	27.2	42.1	816	2,500
December	322	3.3	31.2	48.3	966	2,960
January	125	4.8	24.4	37.8	756	2,320
February	397	7.6	84.2	130	2,440	7,500
March	61	4.0	9.45	14.6	293	899
April	182	6.9	48.3	74.7	1,450	4,450
May	186	7.1	25.8	39.9	801	2,460
June	29	3.8	7.76	12.0	233	714
The year	397	2.8	29.1	45.0	10,700	32,700

WEST WAILUAIKI STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 500 feet above Koolau Ditch crossing and trail bridge and 2¾ miles south of Keanae post office.

DRAINAGE AREA.—3.6 square miles.

RECORDS AVAILABLE.—January 1914 to October 1917, November 1921 to June 1932.

EXTREMES.—Maximum discharge during year, 1,840 million gallons a day (2,850 second-feet) Feb. 27 (gage height, 8.66 feet); minimum, 2.9 million gallons a day (4.5 second-feet) July 3, 4.

1914–17, 1921–32: Maximum discharge (estimated), 4,500 million gallons a day (6,960 second-feet) Jan. 14, 1923 (gage height, from flood marks, about 13.5 feet); minimum, 0. 3 million gallons a day (0.5 second-foot) July 26, 1922.

REMARKS.—Records good for ordinary stages; poor for extremely high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.2	7.3	11.5	25	9.7	4.9	89	46	19	182	271	30
2	3.7	9.2	9.3	16	8.7	4.6	116	319	13	35	24	15
3	3.2	11	9.9	15	196	32	16	268	10.5	19	26	8.9
4	3.6	7.0	8.9	12	118	11	12.5	157	8.9	11.5	14	7.3
5	27	32	17.5	9.3	19	5.1	9.9	95	9.6	12.5	13	8.5
6	22	24	36	8.1	12.5	45	7.9	261	9.3	18.5	13	7.1
7	18	28	51	7.7	10.5	9.7	6.8	113	7.0	9.5	11	6.3
8	9.3	14.5	26	7.3	19	6.8	6.2	32	11	9.1	9.5	5.4
9	7.0	12.5	47	6.2	24	6.0	5.9	73	10	36	27	5.7
10	8.5	50	34	5.7	15	5.3	5.3	232	6.7	49	18	8.5
11	28	20	74	5.3	40	5.0	5.4	436	5.7	82	15.5	6.8
12	13	16	28	8.3	90	4.6	5.3	269	5.1	166	149	11
13	15.5	11.5	22	5.0	16	4.2	21	617	4.9	139	50	8.1
14	16.5	10.5	24	4.4	117	4.0	6.3	252	4.2	28	23	8.7
15	8.7	46	40	4.0	111	117	6.2	28	4.0	44	90	7.0
16	6.8	16	124	3.6	18	22	5.1	19	3.7	29	28	6.5
17	5.6	13.5	26	4.6	28	18	4.4	26	4.6	14	19	5.9
18	11	166	29	6.3	15.5	50	50	16	9.3	10.5	16	5.3
19	8.1	88	15	4.2	11.5	416	36	12.5	13.5	9.3	12.5	5.3
20	39	20	12.5	4.0	9.7	150	40	10.5	11.5	8.1	11	7.2
21	563	13	10.5	50	12	83	10.5	9.3	11.5	6.8	9.3	4.6
22	81	18	9.9	284	137	41	7.7	8.3	8.1	6.7	8.3	4.3
23	19	23	8.3	16	16	25	14	7.3	5.9	11.5	7.3	4.6
24	11.5	11.5	13	69	11	24	16.5	6.7	5.0	30	6.7	3.6
25	17	10	38	105	8.9	15	26	8.3	4.3	36	6.5	3.7
26	11.5	8.9	44	20	8.5	11	24	62	3.9	108	7.0	19
27	11	7.3	75	32	7.3	9.3	58	592	4.7	51	11	14.5
28	9.1	7.9	68	14	6.7	8.1	131	136	6.0	216	6.7	12
29	25	15.5	147	10	5.7	7.1	40	51	4.3	158	8.7	6.5
30	12.5	42	152	8.3	5.3	16.5	57	-------	10.5	198	21	5.0
31	8.9	27	-------	9.3	-------	43	19	-------	62	-------	11.5	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	563	3.2	33.2	51.4	1,030	3,160
August	166	7.0	25.4	39.3	787	2,420
September	152	8.3	40.4	62.5	1,210	3,720
October	284	3.6	25.1	38.8	780	2,390
November	196	5.3	36.9	57.1	1,110	3,400
December	416	4.0	38.8	60.0	1,200	3,700
January	131	4.4	27.7	42.9	859	2,640
February	617	6.7	144	223	4,160	12,800
March	62	3.7	9.60	14.9	298	914
April	216	6.7	57.8	89.4	1,730	5,320
May	271	6.5	30.5	47.2	944	2,900
June	30	3.6	8.41	13.0	252	774
The year	617	3.2	39.3	60.8	14,400	44,100

EAST WAILUANUI STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 125 feet above Koolau Ditch intake, 250 feet above trail, and 2½ miles south of Keanae post office.

DRAINAGE AREA.—0.5 square mile.

RECORDS AVAILABLE.—January 1914 to October 1917, November 1921 to June 1932.

EXTREMES.—Maximum discharge during year, 585 million gallons a day (905 second-feet) Feb. 27 (gage height, 4.65 feet); minimum, 1.1 million gallons a day (1.7 second-feet) Dec. 13–15, Mar. 13–17.

1914–17, 1921–32: Maximum discharge, 1,050 million gallons a day (1,620 second-feet) Feb. 12, 1925 (gage height, 6.96 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Apr. 11, 1926.

REMARKS.—Records good for ordinary stages; poor for estimated periods and high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.6	2.9	3.4	5.1	2.3	b3.4	b15	a15	5.1	14	37	13
2	1.5	3.1	3.5	3.4	2.6			70	3.6	5.1	5.3	4.1
3	1.4	3.2	4.0	5.0	42			56	3.4	5.6	9.6	3.7
4	1.5	2.2	3.7	3.8	20	5.7	b4.7	31	2.2	3.4	3.8	3.6
5	12	7.8	9.4	3.4	4.0	1.7		18.5	2.7	4.0	4.4	3.4
6	8.4	6.4	12.5	2.9	3.7	15		46	3.4	7.9	4.6	2.9
7	5.1	9.9	14	2.2	3.6	3.4	b2.3	20	1.8	3.4	3.8	2.2
8	3.7	4.4	9.8	2.0	4.7	2.0		6.9	2.6	6.4	3.4	2.0
9	3.6	3.8	11.5	1.7	6.9	1.7		24	1.8	15.5	11	2.0
10	3.4	15	9.0	1.6	4.7	1.5		59	1.6	10	5.4	3.4
11	8.1	5.6	20	1.6	10.5	1.4	b1.7	85	1.5	24	3.5	2.2
12	5.0	4.4	6.7	2.8	22	1.3		38	1.4	27	19	4.2
13	6.0	3.4	5.8	1.5	4.0	1.1	b4.1	105	1.3	40	6.7	3.7
14	4.4	3.7	6.6	1.4	21	1.1		48	1.1	7.7	7.1	3.4
15	3.6	16	8.1	1.3	12	c11		6.3	1.1	8.1	23	3.7
16	2.9	4.4	18.5	1.3	4.5	4.4	b1.8	4.5	1.1	7.4	6.0	3.4
17	2.0	5.0	5.6	1.6	8.4	5.6		3.4	1.5	3.4	4.5	3.4
18	5.4	46	8.8	2.8	4.5	11	b18	3.7	3.6	3.7	4.0	2.9
19	3.8	13	4.0	1.5	3.7	40		3.4	4.7	3.7	3.5	3.1
20	12	4.7	3.4	1.5	3.6	10		2.2	4.8	3.6	3.5	3.9
21	72	3.4	3.7	14.5	4.2	14	b4.8	2.0	4.0	2.9	3.7	2.9
22	a10	6.4	3.4	42	c30	7.8		1.7	3.4	2.5	3.6	2.0
23	c4.6	10	3.7	3.4	b5	6.0	b3.8	1.6	2.0	6.9	3.4	2.0
24	3.7	3.4	6.9	11		6.4		1.5	1.7	9.0	2.9	1.7
25	8.3	3.4	13	17		3.4	b6.5	2.2	1.6	9.8	2.2	1.8
26	3.5	3.5	10.5	4.5	b2.8	3.7		19	1.5	28	3.4	5.1
27	3.5	3.4	12.5	5.5		3.6	b30	113	1.8	9.3	5.8	4.5
28	3.9	3.7	7.4	3.7		2.9		24	3.4	27	3.6	4.6
29	8.3	7.8	33	2.2		2.2		17	1.7	39	3.4	2.9
30	3.9	12	25	1.8	b1.8	7.1	b19	------	4.2	46	7.3	2.0
31	3.4	8.4	------	2.8	------	8.5		------	7.4	------	3.4	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	72	1.4	7.11	11.0	220	677
August	46	2.2	7.43	11.5	230	707
September	33	3.4	9.58	14.8	287	882
October	42	1.3	5.06	7.83	157	481
November	42	------	8.26	12.8	248	760
December	40	1.1	6.25	9.67	194	594
January	------	------	8.44	13.1	262	803
February	113	1.5	28.5	44.1	828	2,540
March	7.4	1.1	2.68	4.15	83.0	255
April	46	2.5	12.8	19.8	384	1,180
May	37	2.2	6.83	10.6	212	650
June	13	1.7	3.46	5.35	104	318
The year	113	1.1	8.77	13.6	3,210	9,850

a Estimated. b Estimated mean. c Partly estimated.

WEST WAILUANUI STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 150 feet above Koolau Ditch crossing and intake and 2¼ miles south of Keanae post office.

DRAINAGE AREA.—0.7 square mile.

RECORDS AVAILABLE.—December 1913 to October 1917, July 1922 to June 1932.

EXTREMES.—Maximum discharge during year, 530 million gallons a day (820 second-feet) Feb. 27 (gage height, 4.85 feet); minimum, 1.2 million gallons a day (1.9 second-feet) July 3–4, Dec. 14–15.

1913–17, 1922–32: Maximum discharge, 1,220 million gallons a day (1,890 second-feet) Jan. 14, 1923 (gage height, 7.70 feet); minimum, 0.2 million gallons a day (0.3 second-foot) July 16–21, 1922.

REMARKS.—Records fair for ordinary stages; poor for estimated periods and extremely high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.6	3.1	4.8		3.5	1.7	20	21	9.1	76	56	14.5
2	1.4	8.3	3.9	a8.5	3.6	1.6	35	79	6.5	19	13	5.2
3	1.3	6.7	4.4		52	7.9	7.0	69	4.8	10	15	3.3
4	1.4	3.2	4.0		34	6.9	6.2	46	4.0	5.5	7.3	4.8
5	13.5	11	9.7		8.8	1.9	4.0	35	4.3	5.7	7.3	4.9
6	9.6	10.5	13.5	a4.0	6.0	16	3.1	54	4.4	9.6	7.0	3.2
7	6.5	13.5	21		5.1	3.1	2.6	41	3.2	4.2	5.5	2.8
8	3.2	6.8	13		7.5	2.2	2.4	18	4.3	4.9	4.6	2.2
9	2.8	6.0	18		9.4	1.8	2.4	30	3.8	17.5	13.5	2.4
10	3.4	20	17		6.5	1.6	2.1	68	2.5	19.5	7.6	3.5
11	9.4	9.4	27		13.5	1.6	2.1	107	2.2	36	5.7	2.5
12	6.0	6.8		a2.7	28	1.5	2.0	68	1.9	61	47	4.8
13	7.1	5.2	a10		7.3	1.3	10.5	94	1.7	48	21	3.2
14	6.5	4.8			24	1.3	2.4	86	1.6	14.5	11.5	4.2
15	3.6	16.5			43	29	2.6	17.5	1.7	16.5	36	2.9
16	2.8	6.6			8.8	8.0	2.1	10.5	1.7	13	14	2.6
17	2.4	4.8	a24		13	7.3	1.7	16	2.2	7.3	8.5	2.6
18	6.1	47		a2.6	7.0	17	15.5	9.1	5.2	5.5	7.3	2.4
19	3.7	40			5.0	164	14.5	5.2	6.1	4.6	5.0	2.5
20	15	11			4.2	71	11.5	4.4	6.5	4.2	4.4	3.5
21	174	5.7	a5	a60	4.2	39	4.2	3.4	5.3	3.4	3.4	1.9
22	40	7.5			44	22	3.2	2.9	3.4	3.6	3.1	1.8
23	11	11.5			7.5	12.5	7.7	2.6	2.5	7.6	2.6	2.1
24	6.0	4.7		a28	4.6	11	7.6	2.2	2.1	12.5	2.5	1.6
25	10	3.8			3.7	6.2	11.5	3.0	1.8	14.5	2.4	1.5
26	5.7	4.0	a13		3.6	4.9	8.6	17.5	1.7	44	2.6	6.9
27	4.8	2.9	a26	a10	2.8	4.0	16	168	2.2	21	5.9	6.0
28	4.4	3.1			2.5	3.4	37	46	3.1	39	2.6	5.0
29	10.5	8.3	a50	4.4	2.1	2.9	14.5	23	1.9	48	3.6	2.4
30	5.2	13.5		3.6	1.9	7.4	25	-------	5.1	64	8.7	1.8
31	3.7	11	-------	4.5	-------	16.5	8.8	-------	24	-------	3.8	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	174	1.3	12.3	19.0	383	1,170
August	47	2.9	10.2	15.8	317	973
September	-------	-------	15.2	23.5	456	1,400
October	-------	-------	10.5	16.2	324	994
November	52	1.9	12.2	18.9	367	1,130
December	164	1.3	15.4	23.8	476	1,460
January	37	1.7	9.48	14.7	294	902
February	168	2.2	39.6	61.3	1,150	3,520
March	24	1.6	4.22	6.53	131	401
April	76	3.4	21.3	33.0	640	1,960
May	56	2.4	10.9	16.9	338	1,040
June	14.5	1.5	3.63	5.62	109	335
The year	174	1.3	13.6	21.0	4,980	15,400

a Estimated mean.

KOOLAU DITCH NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder on west side of Keanae Valley, 2¾ miles southwest of Keanae post office.

RECORDS AVAILABLE.—January 1910 to December 1912, November 1917 to June 1932.

EXTREMES.—Maximum discharge during year, 166 million gallons a day (257 second-feet) Feb. 13 (gage height, 5.65 feet); no flow occasionally, when water is shut out of ditch.

1910–12, 1917–32: Maximum discharge, 175 million gallons a day (271 second-feet) Jan. 4, 1922 (gage height, 6.36 feet); no flow occasionally, when water is shut out of ditch.

REMARKS.—Records excellent for ordinary stages and fair for high stages. Regulated by gates and spillways. Koolau Ditch diverts water at elevation 1,200 feet from all streams from Makapipi to Alo. No diversions from ditch above station except from several spillways.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	41	63	90	144	83	54	0	148	0	148	140	128
2	38	80	76	133	90	50	0	152	0	136	140	113
3	35	79	83	125	140	70	0	148	0	136	144	83
4	36	60	76	114	144	98	0	144	0	94	125	73
5	104	99	114	93	129	57	0	140	0	104	125	70
6	116	136	133	83	107	125	13	148	0	133	129	63
7	122	125	124	80	100	76	57	136	0	90	114	60
8	70	111	140	76	129	57	57	144	0	87	100	54
9	60	100	140	70	140	54	60	148	0	133	140	57
10	73	136	144	60	133	32	60	99	0	136	136	79
11	114	133	144	60	136	0	66	124	0	148	129	63
12	104	118	130	100	140	0	60	78	0	148	136	90
13	105	100	140	63	129	0	122	156	0	140	144	80
14	107	90	140	57	110	0	73	152	0	133	140	90
15	66	114	140	54	148	0	80	148	0	148	148	66
16	57	110	144	50	129	0	63	144	0	144	144	63
17	50	89	140	60	140	0	54	144	0	118	136	60
18	98	139	144	84	129	0	118	133	.2	97	129	57
19	76	140	125	57	111	0	148	118	0	87	107	64
20	140	136	107	54	93	0	140	111	0	83	97	79
21	148	107	97	109	98	0	97	100	0	73	87	54
22	148	129	97	140	144	0	76	100	0	74	80	47
23	[a] 125	136	87	118	125	0	116	25	0	103	73	54
24	[b] 120	100	110	125	97	0	118	0	0	140	70	44
25		87	140	148	83	0	138	0	0	140	66	42
26	[a] 104	87	140	136	83	0	140	0	0	144	73	107
27	93	70	144	120	73	0	148	.4	0	140	106	111
28	81	76	140	111	66	0	148	0	0	140	73	97
29	129	108	131	83	60	0	148	0	6.4	148	90	57
30	97	140	144	73	57	0	140	-------	77	140	120	50
31	73	133	-------	80	-------	0	133	-------	113	-------	98	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	148	35	91.9	142	2,850	8,750
August	140	60	107	166	3,330	10,200
September	144	76	123	190	3,700	11,400
October	148	50	92.3	143	2,860	8,780
November	148	57	112	173	3,350	10,300
December 1–10	125	32	67.3	104	673	2,070
January 6–31	148	13	99.0	153	2,570	7,900
February 1–23, 27	156	.4	123	190	2,940	9,020
March 18, 29–31	113	.2	49.2	76.1	197	603
April	148	73	123	190	3,680	11,300
May	148	66	114	176	3,540	10,900
June	128	42	71.8	111	2,160	6,610
The year (308 days)	156	.2	103	159	31,800	97,800

[a] Partly estimated. [b] Estimated mean.

HONOMANU STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 500 feet above Spreckels Ditch intake and trail bridge and 3 miles by trail northwest of Upper Keanae.

DRAINAGE AREA.—3.3 square miles.

RECORDS AVAILABLE.—November 1913 to June 1932.

EXTREMES.—Maximum discharge during year, 724 million gallons a day (1,120 second-feet) Feb. 27 (gage height, 6.48 feet); minimum, 1.2 million gallons a day (1.9 second-feet) Dec. 15.

1913–32: Maximum discharge, 1,270 million gallons a day (1,960 second-feet) Dec. 18, 1929 (gage height, 9.25 feet); minimum, 0.08 million gallons a day (0.12 second-foot) Mar. 24, 1928.

REMARKS.—Records good except those for high stages, which are poor. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	4.6	6.3	17	6.2	2.0	32	7.6	6.7	126	56	29
2	2.2	48	4.9	10.5	5.2	1.9	25	113	4.6	17.5	9.6	8.8
3	2.0	12.5	9.0	13.5	112	3.4	5.7	92	4.1	7.2	13.5	4.2
4	2.1	5.5	6.6	11.5	48	7.0	4.1	39	3.3	4.4	5.8	17
5	38	48	21	6.4	8.5	2.3	3.5	40	3.5	6.8	5.4	11.5
6	23	36	35	13	4.8	25	2.9	68	5.4	10	5.4	6.5
7	13	30	35	12.5	4.3	4.4	2.5	47	3.2	5.8	4.5	5.8
8	6.8	12	19.5	7.8	11.5	2.8	2.2	12	6.9	6.2	4.5	3.3
9	8.4	8.2	42	4.9	9.8	2.2	2.2	45	8.4	26	23	4.1
10	10.5	49	29	4.2	5.6	1.9	2.0	117	3.0	44	11	5.7
11	29	14	62	4.0	16	1.8	1.8	147	2.5	79	9.2	5.3
12	9.4	10.5	19.5	5.4	45	1.5	2.0	89	2.2	107	91	8.9
13	17	12	14.5	4.1	7.2	1.4	13	94	2.0	69	29	5.1
14	11	14	19	3.4	11.5	1.3	3.1	97	1.9	14.5	12	6.0
15	8.6	33	36	3.1	35	34	7.2	11	1.7	27	59	4.8
16	6.0	13	81	3.0	6.2	12	5.2	6.5	1.6	13.5	15	3.8
17	4.1	9.8	15.5	3.1	14.5	14	2.4	5.1	1.9	6.5	8.6	3.3
18	11	104	19.5	4.3	7.2	32	34	4.4	7.3	4.3	6.8	2.8
19	7.5	57	8.6	3.1	4.5	213	10	3.7	7.3	4.1	5.0	3.3
20	39	11	6.8	2.9	3.8	84	14	3.4	6.0	3.7	4.3	4.6
21	263	7.0	6.3	58	5.0	40	3.8	3.2	7.1	3.1	3.7	4.3
22	52	8.6	6.3	82	62	18	3.0	3.4	4.0	3.8	3.7	3.3
23	13	14	5.4	8.5	7.5	11	10	3.5	2.8	9.8	4.0	2.9
24	7.0	6.4	9.6	48	4.2	10.5	13	2.9	2.2	20	5.6	2.6
25	14	5.4	47	54	3.5	6.0	15	2.9	1.9	24	3.6	2.8
26	11.5	4.9	34	8.6	3.3	4.0	10.5	26	1.6	66	3.5	20
27	9.5	4.1	53	4.5	3.0	3.4	22	255	1.9	22	6.6	12
28	4.7	4.3	47	3.7	2.9	3.0	38	47	1.9	55	3.6	8.0
29	25	14.5	95	3.5	2.4	2.7	7.2	12.5	1.5	46	4.6	3.6
30	8.4	33	95	3.0	2.2	13	12	-------	7.7	103	13.5	2.8
31	5.4	21	-------	6.3	-------	25	4.8	-------	53	-------	6.8	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	263	2.0	21.5	33.3	667	2,050
August	104	4.1	21.1	32.6	655	2,010
September	95	4.9	29.6	45.8	889	2,730
October	82	2.9	13.5	20.9	418	1,280
November	112	2.2	15.4	23.8	463	1,420
December	213	1.3	18.9	29.2	584	1,790
January	38	1.8	10.1	15.6	314	964
February	255	2.9	48.2	74.6	1,400	4,290
March	53	1.5	5.45	8.43	169	519
April	126	3.1	31.2	48.3	935	2,870
May	91	3.5	14.1	21.8	438	1,340
June	29	2.6	6.87	10.6	206	632
The year	263	1.3	19.5	30.2	7,140	21,900

HAIPUAENA STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 200 feet above inflow of Spreckels Ditch and 3¼ miles southeast of Kailua.
DRAINAGE AREA.—1.1 square miles.
RECORDS AVAILABLE.—October 1913 to June 1932.
EXTREMES.—Maximum discharge during year, 463 million gallons a day (716 second-feet) Feb. 27 (gage height, 5.30 feet); minimum, 1.6 million gallons a day (2.5 second-feet) July 4, Dec. 3, 14–15, Mar. 15–17.
1913–32: Maximum discharge, 582 million gallons a day (900 second-feet) Feb. 17, 1929 (gage height, 6.25 feet); minimum, 0.3 million gallons a day (0.5 second-foot) frequently during December 1919.
REMARKS.—Records fair for ordinary stages; poor for extremely high stages. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.2	3.6	5.3	11.5	4.9	1.9	28	11.5	6.8	82	46	29
2	2.0	32	4.2	7.2	4.5	1.8	26	106	5.2	15	8.8	9.2
3	1.8	8.7	8.6	9.1	90	6.0	7.1	73	4.2	7.7	14	4.6
4	1.8	4.5	5.7	8.2	43	6.8	4.8	38	3.2	4.9	6.5	10.5
5	27	35	15	4.8	8.2	2.3	3.9	41	3.8	6.5	6.5	7.4
6	17	24	22	6.2	5.4	28	3.3	62	5.8	11.5	6.6	5.0
7	9.4	23	30	6.7	5.0	4.5	2.9	41	3.0	6.2	5.3	4.9
8	5.4	9.3	17.5	4.8	11	2.6	2.6	12.5	6.0	7.1	5.3	3.3
9	5.9	6.8	34	3.2	10	2.3	2.6	43	6.0	29	22	4.0
10	7.9	41	22	2.8	6.4	2.2	2.5	105	2.6	33	10	5.5
11	22	11	57	2.6	22	2.1	2.3	100	2.2	71	7.9	4.7
12	10.5	9.4	16	3.6	42	1.9	2.4	68	1.9	83	64	8.2
13	10.5	10	11.5	2.6	7.9	1.8	16	86	1.9	64	22	6.0
14	9.0	11.5	14.5	2.2	19.5	1.7	3.6	59	1.8	15	12	7.0
15	6.0	29	28	2.1	21	32	6.8	10.5	1.7	23	52	5.4
16	5.0	10.5	65	1.9	7.0	11.5	5.3	7.0	1.6	15	13	4.2
17	3.6	7.9	12.5	2.2	17	13	2.8	5.4	1.8	7.4	8.6	3.9
18	9.0	96	15.5	3.8	7.9	31	36	4.8	4.7	4.9	7.4	3.4
19	6.6	45	7.2	2.3	5.3	142	12	3.8	6.9	4.4	5.2	4.7
20	32	9.2	5.4	2.2	4.4	55	15	3.5	6.6	4.0	4.5	6.0
21	157	6.2	5.0	37	10.5	35	4.8	3.1	6.8	3.3	3.8	4.0
22	39	8.8	5.4	64	47	18	3.6	4.2	3.9	4.0	3.6	3.6
23	9.6	13.5	4.2	6.6	7.0	11.5	11.5	4.2	2.6	9.1	3.4	3.3
24	5.6	6.0	9.0	30	4.4	11.5	14	2.6	2.2	19	4.6	2.8
25	11.5	5.0	33	47	3.5	7.2	17	2.8	1.9	20	3.4	2.6
26	8.2	4.6	23	8.7	3.3	4.9	12.5	30	1.8	55	3.5	17.5
27	7.0	3.7	35	4.9	2.8	4.2	17.5	163	2.2	18	7.0	9.2
28	5.3	4.0	29	4.0	2.6	3.6	43	27	2.6	50	3.6	8.2
29	15.5	13	74	3.8	2.2	3.3	8.6	14.5	1.9	43	4.8	4.3
30	7.2	26	71	4.2	2.0	13	13	-------	8.5	81	12.5	3.1
31	4.3	14	-------	5.2	-------	27	5.9	-------	38	-------	7.2	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	157	1.8	15.0	23.2	465	1,430
August	96	3.6	17.2	26.6	532	1,630
September	74	4.2	22.8	35.3	686	2,100
October	64	1.9	9.85	15.2	305	937
November	90	2.0	14.3	22.1	428	1,310
December	142	1.7	15.8	24.4	490	1,500
January	43	2.3	10.9	16.9	337	1,040
February	163	2.6	39.0	60.3	1,130	3,480
March	38	1.6	4.84	7.49	150	461
April	83	3.3	26.6	41.2	797	2,450
May	64	3.4	12.4	19.2	385	1,180
June	29	2.6	6.52	10.1	196	600
The year	163	1.6	16.1	24.9	5,900	18,100

SPRECKELS DITCH AT HAIPUAENA, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder between Haipuaena and Puohokamoa Streams on Spreckels Ditch trail, 3½ miles southeast of Kailua.

RECORDS AVAILABLE.—February 1930 to June 1932.

EXTREMES.—Maximum discharge during year, 64 million gallons a day (99 second-feet) Sept. 29 (gage height, 4.65 feet); minimum, 5.6 million gallons a day (8.7 second-feet) Dec. 15.

1930–32: Maximum discharge, that of Sept. 29, 1931; no flow when water is turned out of ditch.

REMARKS.—Records good except those for estimated periods, which are poor. Regulated by gates and spillways. Spreckels Ditch diverts from all streams between Nuaailua and Kailua above Koolau Ditch east of Puohokamoa and below Koolau Ditch west of Puohokamoa.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.6	12.5	18	32	18	7.2	20	26	20	42	30	32
2	7.1	19.5	16	25	17	6.9	19	42	17	30	25	24
3	6.2	20	22	27	42	11	16	39	15	27	28	16
4	6.4	16	18	26	37	17	15	36	12	19	21	20
5	26	24	25	18	26	9.4	13.5	34	14	24	21	22
6	28	26	27	20	18	26	11	37	19	29	22	18
7	26	26	21	24	18	12.5	9.6	34	11.5	21	19	17
8	18	22	26	17	28	11	8.7	28	14.5	19	18	[a] 12.5
9	20	21	28	18	29	8.7	8.5	34	18	34	30	
10	25	30	27	19	24	7.4	8.1	39	11	33	27	[b] 15
11	29	25	32	18	33	7.2	7.8	37	10.5	39	24	
12	27	24	24	17	39	6.6	8.3	34	11	42	34	
13	26	22	22	10	24	6.4	16	37	11	39	30	
14	25	24	24	8.7	21	6.2	12	32	9.6	30	29	
15	19	27	26	8.1	33	23	14	26	8.5	33	37	[b] 19
16	15	22	29	7.4	22	28	13.5	22	8.1	29	28	
17	11.5	20	24	11.5	30	27	9.2	18	11	22	25	
18	24	36	25	16	24	30	16	16	17	17	22	
19	21	26	21	9.0	18	39	18	14	20	15	17	
20	33	20	19	8.7	15	25	18	12.5	20	15	16	[b] 12
21	37	19	18	30	22	24	15	11.5	19	12.5	13	
22	21	22	22	39	36	21	12.5	12.5	15	14	13	
23	21	25	17	22	22	21	22	12	10.5	25	11.5	
24	18	19	25	29	16	21	24	9.0	9.0	32	15	[b] 8
25	24	17	42	39	13	19	25	10	11	32	11.5	
26	22	16	39	25	12.5	16	24	30	9.8	37	13	[b] 22
27	21	13	42	18	11	13	25	37	12	30	20	
28	17	15	39	15	10.5	12	26	20	17	29	12.5	
29	27	22	48	14	8.9	11	22	24	13	36	17	[b] 16
30	21	26	45	12	8.1	13.5	24	-------	22	37	25	
31	15	24	-------	17	-------	21	19	-------	33	-------	21	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	37	6.2	20.8	32.2	645	1,980
August	36	12.5	22.0	34.0	681	2,090
September	48	16	27.0	41.8	811	2,490
October	39	7.4	19.4	30.0	600	1,840
November	42	8.1	22.5	34.8	676	2,070
December	39	6.2	16.4	25.4	508	1,560
January	26	7.8	16.2	25.1	501	1,540
February	42	9.0	26.3	40.7	764	2,340
March	33	8.1	14.5	22.4	450	1,380
April	42	12.5	28.1	43.5	844	2,590
May	37	11.5	21.8	33.7	676	2,070
June	32	----------	16.3	25.2	490	1,500
The year	48	6.2	20.9	32.3	7,650	23,400

[a] Partly estimated. [b] Estimated mean.

PUOHOKAMOA STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above Spreckels Ditch inflow and trail crossing and 3 miles southeast of Kailua.

DRAINAGE AREA.—2.6 square miles.

RECORDS AVAILABLE.—December 1910 to June 1932.

EXTREMES.—Maximum discharge during year, 920 million gallons a day (1,420 second-feet) Feb. 27 (gage height, 7.20 feet); minimum, 3.6 million gallons a day (5.6 second-feet) Dec. 15.

1910–32: Maximum discharge, 1,100 million gallons a day (1,700 second-feet) Jan. 14, 1923, Nov. 18, 1930 (gage height, 7.88 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Nov. 17, 1929.

REMARKS.—Records good for ordinary stages and poor for high stages. Kula pipe line diverts small amount of water above station at elevation 4,300 feet.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.3	8.8	11.5	25	8.9	4.7	41	18.5	16.5	121	98	50
2	4.9	51	8.9	16.5	8.6	4.4	51	204	13.5	28	21	18
3	4.2	17.5	16	21	163	9.1	14.5	153	11.5	16.5	29	9.7
4	4.2	11.5	10.5	17.5	93	19.5	10.5	73	8.9	11.5	15.5	12.5
5	42	61	25	12.5	18	5.7	8.9	75	11	14	15	12
6	29	42	51	12.5	12.5	55	7.4	115	16	23	16	8.9
7	15.5	43	55	12.5	11.5	10.5	6.4	74	8.5	12.5	12.5	8.6
8	10.5	19.5	32	10.5	20	6.5	5.8	25	12	12	11.5	6.7
9	11.5	15.5	60	8.9	19.5	5.5	5.7	83	13	65	44	8.1
10	14.5	70	35	8.1	13.5	5.0	5.2	211	7.0	54	21	11.5
11	37	23	107	7.3	30	4.9	5.0	188	6.1	129	16.5	8.9
12	21	19.5	31	9.7	81	4.3	5.3	132	5.8	169	98	18
13	22	21	23	7.0	15.5	4.0	31	166	6.0	149	42	12.5
14	16.5	18	27	6.0	19.5	3.8	7.4	118	5.5	34	25	14.5
15	10.5	56	49	5.6	50	64	10	25	5.0	44	88	10.5
16	9.7	21	121	5.1	14.5	21	9.4	18	4.7	33	27	8.3
17	7.4	15.5	25	6.0	30	21	5.6	15.5	5.3	16.5	18	7.6
18	18	190	30	8.8	15.5	47	70	12.5	9.7	12.5	16.5	6.4
19	12.5	86	15.5	5.7	11.5	232	23	10.5	15	10.5	12.5	8.6
20	49	21	13.5	5.3	9.7	89	26	9.7	14.5	9.7	10.5	9.7
21	260	14.5	12.5	68	6.4	62	9.7	8.6	15	7.9	8.9	6.9
22	74	18	13.5	108	91	34	7.4	9.7	8.9	8.6	8.5	6.1
23	20	25	11.5	13.5	13.5	23	25	8.9	6.3	19	7.5	6.3
24	13.5	13.5	22	51	9.7	23	27	6.7	5.3	35	9.7	5.6
25	23	11.5	59	79	8.2	14.5	33	8.2	4.8	31	7.3	4.9
26	17.5	9.7	42	18	7.8	10.5	23	47	4.2	113	7.5	30
27	15.5	8.1	62	11.5	6.8	8.9	36	308	4.8	32	15	14.5
28	12.5	8.6	49	9.7	6.4	7.9	81	58	5.6	100	7.4	14.5
29	29	24	155	9.7	5.6	7.1	16.5	32	4.4	74	10	7.9
30	15.5	42	129	7.6	5.1	24	21	-------	15.5	149	24	5.7
31	10.5	24	-------	10	-------	44	12.5	-------	57	-------	14.5	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	260	4.2	27.0	41.8	836	2,570
August	190	8.1	32.6	50.4	1,010	3,100
September	155	8.9	43.4	67.1	1,300	4,000
October	108	5.1	19.3	29.9	598	1,840
November	163	5.1	26.9	41.6	806	2,470
December	232	3.8	28.3	43.8	876	2,690
January	81	5.0	20.7	32.0	641	1,970
February	308	6.7	76.3	118	2,210	6,790
March	57	4.2	10.6	16.4	327	1,000
April	169	7.9	51.1	79.1	1,530	4,710
May	98	7.3	24.4	37.8	758	2,330
June	50	4.9	11.8	18.3	353	1,080
The year	308	3.8	30.8	47.7	11,200	34,600

MANUEL LUIS DITCH AT PUOHOKAMOA GULCH, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder in Puohokamoa Gulch at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 3 miles southeast of Kailua.

RECORDS AVAILABLE.—December 1917 to June 1932.

EXTREMES.—Maximum discharge during year, 40 million gallons a day (62 second-feet) July 21 (gage height, 2.58 feet); minimum, 0.3 million gallons a day (0.5 second-foot) July 4.

1917–32: Maximum discharge, 116 million gallons a day (179 second-feet) Jan. 14, 1923 (gage height, 4.93 feet); minimum, 0.05 million gallons a day (0.08 second-foot) Mar. 3, 1920.

REMARKS.—Records fair except those for low stages, which are good. Estimated periods poor. Manuel Luis Ditch is extension of Center Ditch and picks up water at elevation 500 feet between Kolea and Waikamoi Streams. Regulated by gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.4	1.0	1.2	6.0	1.2	0.9	19	9.1	4.3	[a]20		[a]10
2	.4	7.9	1.0	2.6	1.6	.8	24	23	1.8			
3	.3	5.7	4.0	3.7	19	3.6	10.5	25	1.6			
4	.3	1.5	1.0	3.7	6.8	5.2	3.8	22	1.5	[a]19	[a]8	
5	12.5	10	12.5	1.5	3.6	.8	2.4	18	2.7			[a]2.5
6	9.5	19.5	13.5	1.6	2.3	14.5	1.8	17	6.0			
7	5.6	18	18.5	1.5	2.0	1.5	1.4	19.5	1.6	[a]7	[a]4.0	.8
8	.8	5.8	16.5	1.2	2.8	1.0	1.2	5.6	3.9			.8
9	.8	1.9	18.5	1.0	3.2	.9	1.3	16	4.8			.8
10	1.0	20	22	.9	2.3	.8	1.2	25	1.4			1.5
11	9.3	9.2	25	.8	7.9	.8	1.1	24	1.3	[a]22	[a]10	.8
12	6.7	5.0	14	1.2	18.5	.8	1.3	20				2.5
13	6.0	4.3	8.0	.8	2.6	.8	9.9	25				1.5
14	3.2	3.7	12.5	.7	4.0	.8	1.9	19				2.0
15	1.2	14	14.5	.6	15	14	3.8	9.4	[a]1.3	[a]11	[a]12	1.0
16	1.0	6.4	25	.6	3.6	11.5	2.2	1.5				.8
17	.9	2.2	10.5	.6	9.6	10.5	1.1	1.2		[a]12		.9
18	3.9	24	16	1.0	2.8	13	14.5	1.0			[a]4.0	.9
19	1.8	24	2.7	.7	2.0	26	14.5	.8				.9
20	19.5	7.9	1.8	.7	1.8	26	10	.7	[a]9			1.4
21	27	2.8	1.6	8.4	3.0	26	2.0	.5		[a].8		.8
22	26	4.9	2.2	21	16	25	1.5	.6				.7
23	8.2	12.5	1.5	4.7	2.2	20	9.3	.7	[a]1.4			.8
24	2.2	2.1	5.2	10.5	1.8	22	7.8	.9		[a]9	[a]2.1	.7
25	8.1	1.8	21	22	1.5	8.2	11	1.3				.6
26	2.1	2.4	18	4.1	1.3	2.8	4.9	14.5	[a].6			5.7
27	2.6	1.4	23	1.8	1.2	2.3	10.5	25		[a]18	[a]3.0	2.7
28	1.3	1.6	19.5	1.5	1.0	2.0	17.5	19.5	[a]1.8			2.6
29	9.4	6.4	17.5	1.3	1.0	1.8	3.6	15.5				.7
30	2.7	16.5	23	1.1	.9	5.9	7.5	------	[a]12		[a]4.8	.6
31	1.1	9.1	------	1.8	------	22	2.0	------		------		------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	27	0.3	5.67	8.77	176	540
August	24	1.0	8.18	12.7	254	778
September	25	1.0	12.4	19.2	371	1,140
October	22	.6	3.54	5.48	110	336
November	19	.9	4.75	7.35	142	437
December	26	.8	8.78	13.6	272	835
January	24	1.1	6.60	10.2	204	628
February	25	.5	12.5	19.3	361	1,110
March	------	------	3.47	5.37	108	330
April	------	------	13.3	20.6	399	1,230
May	------	------	6.13	9.48	190	583
June	------	.6	2.08	3.22	62.5	192
The year	27	.3	7.24	11.2	2,650	8,140

[a] Estimated mean.

MANUEL LUIS DITCH WEST OF PUOHOKAMOA STREAM, NEAR HEULO, MAUI

LOCATION.—Water-stage recorder 500 feet below intake in Puohokamoa Stream at lower portal of intake tunnel and 3 miles southeast of Kailua.

RECORDS AVAILABLE.—February 1930 to June 1932.

EXTREMES.—Maximum discharge during year, 64 million gallons a day (99 second-feet) Feb. 27 (gage height, 5.26 feet); minimum uncertain, owing to faulty record.

1930–32: Maximum discharge, 82 million gallons a day (127 second-feet) Nov. 18, 1930 (gage height, 5.80 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Feb. 13, 1931.

REMARKS.—Records fair except those for high and low stages; poor for estimated periods. Manuel Luis Ditch is an extension of Center Ditch and picks up water at elevation 500 feet between Kolea and Waikamoi Streams. Regulated by gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		1.0		7.0	1.9		18.5	9.9	25	27	20	15.5
2		7.1		3.2	2.1	a1.2	21	25	21	13.5	8.2	5.2
3	a0.4	5.8	a2.0	4.8			12	23	16.5	2.9	10	1.7
4		1.6		4.6	a14	a4.2	4.2	22	13.5	1.2	4.8	3.8
5			11	1.6			3.0	19	13.5	1.6	4.9	2.8
6	a8		13	1.7		a8	2.0	21	19.5	9.0	5.5	1.2
7		a12	16.5	1.4	a3.0		1.4	19	12	1.4	4.4	1.1
8			14	1.0			1.3	7.6	13	1.4	3.3	1.0
9	a.9		17	.8		a1.4	1.3	16	17	16.5	13.5	1.0
10			17	.7			1.1	25	5.0	13	5.9	2.4
11			23	.6		1.0	1.1	26	1.4	25	3.7	1.0
12	a7.5	a5.5	13	1.1	a14	1.2	1.0	22	1.3	27	15	4.4
13			9.2	.5	a3.8	1.1	8.8	31	1.4	26	13	2.5
14			12	.4		1.1	2.1	24	1.3	9.2	8.2	2.9
15			14	.4		13.5	3.6	8.2	1.2	13	20	1.4
16	a2.2	a8.5	23	.4	a11	18	2.4	5.0	1.1	9.8	9.0	1.0
17			11	.4		17	1.1	3.8	1.4	1.5	4.6	1.2
18		a23	14	1.0		17.5	14.5	3.3	4.6	1.0	4.2	1.1
19			4.1	.4	a2.8	26	11.5	3.0	11.5	.8	3.0	1.2
20		a6	2.8	.4		22	9.6	2.8	12.5	.9	2.6	1.9
21	a20		2.5	6.1	a9	21	2.8	2.4	11.5	.6	2.1	.8
22		a7.5	3.2	a12		19	2.2	2.5	3.0	.8	2.0	.7
23			2.1		a2.2	18	10.5	3.0	.8	3.4	1.6	.9
24	3.1		5.3	10.5		18	7.8	3.2	.6	14	1.6	.7
25	8.2		19	19.5		12	11	4.6	.7	10	1.6	.6
26	2.8	a2.0	16.5	5.1		3.2	5.4	20	.5	22	1.8	7.7
27	2.8		18	2.8	a1.4	2.5	9.5	34	.7	10.5	5.9	3.3
28	1.6		17	2.3		2.2	16	27	2.7	13	1.7	3.1
29	9.0		18	2.0		1.9	4.2	26	.9	24	1.9	.8
30	2.8	a10	24	1.6		4.7	6.7	-------	8.7	26	6.6	.6
31	1.2		-------	2.4	-------	19	2.6	-------	16	-------	3.2	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July			5.66	8.76	176	539
August			8.00	12.4	248	761
September	24		11.6	17.9	348	1,070
October		0.4	3.51	5.43	109	334
November			5.26	8.14	158	484
December	26		8.78	13.6	272	836
January	21	1.0	6.46	10.0	200	614
February	34	2.4	15.1	23.4	439	1,350
March	25	.5	7.74	12.0	240	736
April	27	.6	10.9	16.9	326	1,000
May	20	1.6	6.25	9.67	194	595
June	15.5	.6	2.45	3.79	73.5	226
The year			7.60	11.8	2,780	8,540

a Estimated mean.

SPRECKELS DITCH AT WAHINEPEE, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder between Puohokamoa and Alo Streams, 1,000 feet below intake at Puohokamoa Gulch and 3 miles southeast of Kailua.

RECORDS AVAILABLE.—August 1928 to June 1932.

EXTREMES.—Maximum discharge during year, 56 million gallons a day (87 second-feet) Feb. 27 (gage height, 4.21 feet); no flow occasionally, when water was shut out of ditch.

1928–32: Maximum discharge, 69 million gallons a day (107 second-feet) Dec. 7, 1929 (gage height, 5.05 feet); no flow occasionally, when water was shut out of ditch.

REMARKS.—Records good except those for estimated periods, which are poor. Intake is on Puohokamoa Stream just below intake of Koolau Ditch and for normal flows takes all water that passes Koolau Ditch intake.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.5	5.7		3.0	0.1	0.1	27	4.2	8.1	40	27	28
2	11.5	15.5		.2	.1	.1	22	28	17.5	24	.8	8.6
3	9.4	[a] 4.0	[a] 0.8	6.6	26	2.6	29	28	24	6.2	13	.1
4	10			.9	25	4.0	26	24	18	.4	.1	2.6
5	26			.1	.6	.1	22	17.5	19.5	1.9	2.4	.6
6	6.1	[a]18		.3	.1	16	13.5	17	28	19	3.0	.1
7	2.3		[a]12	.2	.1	.1	.1	22	17.5	2.7	.4	.1
8	.1		7.2	.1	2.3	.1	.1	2.2	18	3.8	.1	.1
9	10	[a].2	15	.1	1.7	.1	.1	15.5	24	31	22	.1
10	.1		9.0	.1	.2	2.8	.1	26	15.5	20	11	.1
11	15	[a] 3.5	31	.1	12	12	.5	24	13	41	.9	.1
12	16		5.3	.1	27	10	.1	21	12	44	23	7.6
13	11	[a].1	1.2	.1	.6	9.4	7.9	29	12	38	25	.7
14	2.4		2.8	.1	2.3	8.7	.1	21	11.5	17.5	22	.7
15	.1		13	.1	15.5	13	.2	3.4	10	23	34	.1
16	.1	[a] 5.5	27	0	.3	21	.1	.2	9.4	18.5	24	.1
17	8.4		1.2	.1	12	29	.1	.1	12	7	10.5	.1
18	16.5		5.9	.1	.4	31	7.7	.1	19.5	.1	7.0	.1
19	.2	[a]22	.2	.1	.1	24	20	.1	31	.1	.1	.1
20	20		.2	.1	.1	15.5	1.8	.1	32	.1	.1	.1
21	30		.2	14	1.7	24	.1	.1	31	.1	.1	.1
22	17.5	[a] 8.5	.4	25	18.5	29	.1	.1	31	1.9	.1	.1
23	.2		.1	.3	.2	31	5.4	12	15.5	7.7	.1	.1
24	.1		8.4	10	.1	29	1.8	14	12.5	29	.1	.1
25	3.8		28	27	.1	29	5.9	16	11.5	22	.1	.1
26	.2	[a].2	22	.5	.1	28	1.4	31	10	35	.1	15.5
27	.1		31	.1	.1	24	6.4	36	12.5	19.5	6.9	3.6
28	.2		24	.1	.1	19.5	14.5	7.2	18	16.5	.1	3.4
29	4.4		23	.1	.1	11.5	.2	8.7	12	35	.1	[b].1
30	.3	[a]10	32	.1	.1	20	3.7	-------	9.8	37	15.5	.1
31	.1	-------	-------	.2	-------	32	.1	-------	23	-------	4.6	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	30	0.1	7.57	11.7	235	720
August	-------	-------	6.88	10.6	213	655
September	32	.1	10.5	16.2	316	970
October 1–15, 17–31	27	.1	3.00	4.64	89.9	276
November	27	.1	4.92	7.61	148	453
December	32	.1	15.4	23.8	477	1,460
January	29	.1	7.03	10.9	218	669
February	36	.1	14.1	21.8	408	1,250
March	32	8.1	17.4	26.9	539	1,660
April	44	.1	17.8	27.5	535	1,640
May	34	.1	8.20	12.7	254	780
June	28	.1	2.44	3.78	73.3	225
The year (365 days)	44	.1	9.61	14.9	3,510	10,800

[a] Estimated mean. [b] Partly estimated.

ALO STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above Spreckels Ditch inflow and trail crossing and 2½ miles southeast of Kailua.

DRAINAGE AREA.—0.2 square mile.

RECORDS AVAILABLE.—December 1910 to June 1932.

EXTREMES.—Maximum discharge during year, 360 million gallons a day (557 second-feet) Jan. 18 (gage height, 3.70 feet); minimum, 0.5 million gallons a day (0.8 second-foot) Oct. 16.

1910–32: Maximum discharge, 1,600 million gallons a day (2,480 second-feet) Nov. 18, 1930 (gage height, 6.90 feet); minimum, 0.3 million gallons a day (0.5 second-foot) Nov. 10, 13, 15–17, 1930, and June 15, 16, 1931.

REMARKS.—Records good for ordinary stages; poor for high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.0	1.2	2.3	4.1	1.4	0.8	12	11	4.4	13	24	10
2	1.0	6.9	1.9	2.9	1.7	.7	15	38	3.0	6.9	4.4	3.2
3	.8	4.0	3.9	6.1	31	2.4	3.7	24	2.3	5.2	6.4	2.1
4	.9	1.8	1.8	3.4	16.5	4.3	2.3	23	1.7	3.0	3.3	2.1
5	5.2	4.9	7.1	2.1	4.0	1.0	1.8	19	2.9	3.4	4.5	1.8
6	5.9	5.0	9.6	1.8	2.9	15.5	1.4	36	4.7	7.2	4.6	1.4
7	3.4	5.7	13	1.6	3.3	1.9	1.2	15	1.6	3.4	3.7	1.4
8	1.8	3.4	7.6	1.4	4.6	1.3	1.0	6.4	2.3	3.4	2.4	1.2
9	1.7	2.4	7.8	1.2	5.3	1.0	1.2	16.5	1.8	13	7.4	1.8
10	1.8	10.5	7.8	1.0	4.2	.9	1.0	38	1.2	5.9	4.3	3.0
11	7.0	4.5	17	.9	8.2	.9	1.0	38	1.0	13.5	2.7	1.4
12	7.7	3.8	5.5	1.6	17.5	.8	1.4	25	.9	13.5	9.5	2.4
13	4.7	4.1	5.0	.8	3.8	.8	6.8	50	.9	24	5.2	3.8
14	3.7	3.0	4.8	.7	7.1	.8	1.9	28	.8	7.1	7.5	4.2
15	2.0	12.5	7.8	.6	11	14.5	3.5	5.3	.7	5.3	14.5	2.1
16	1.6	4.1	12.5	.6	4.1	4.8	1.8	4.0	.7	7.0	4.5	1.8
17	1.2	2.6	4.7	1.1	7.5	5.4	1.2	3.2	.9	3.4	3.8	2.2
18	4.1	29	7.6	3.1	3.7	7.4	19.5	2.3	1.7	2.4	3.7	1.9
19	3.1	14	3.3	1.0	2.7	19	9.0	1.8	4.2	2.2	2.7	2.1
20	10	4.2	2.7	.9	2.1	7.6	5.2	1.6	5.6	2.3	2.4	2.6
21	30	3.0	2.4	7.5	3.6	9.8	2.8	1.4	2.8	1.7	1.8	1.4
22	16	6.0	4.2	20	12.5	6.5	2.0	1.2	1.8	2.4	1.7	1.2
23	3.9	7.9	2.3	3.6	2.6	5.8	8.7	1.0	1.2	4.3	1.4	1.5
24	2.6	3.2	6.0	5.4	1.8	6.5	5.2	1.0	1.0	6.5	1.4	1.2
25	6.0	2.8	11	12.5	1.5	3.3	8.5	3.2	.9	4.8	1.6	1.0
26	2.8	3.5	7.4	3.8	1.4	2.2	4.8	16	.8	16	2.3	4.1
27	2.2	1.8	8.2	2.4	1.2	1.8	6.7	59	1.2	5.4	5.1	3.0
28	1.9	2.4	4.5	1.8	1.2	1.6	11	13	2.8	10.5	2.0	2.6
29	4.0	5.5	15.5	2.0	.9	1.4	4.5	11.5	1.6	21	2.3	1.8
30	2.9	5.5	17.5	1.4	.8	4.5	6.8	-------	7.1	29	3.1	1.1
31	1.5	3.8	-------	1.5	-------	8.7	3.2	-------	8.2	-------	2.5	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	30	0.8	4.59	7.10	142	437
August	29	1.2	5.58	8.63	173	531
September	17.5	1.8	7.09	11.0	213	653
October	20	.6	3.19	4.94	98.8	303
November	31	.8	5.67	8.77	170	522
December	19	.7	4.64	7.18	144	442
January	19.5	1.0	5.04	7.80	156	479
February	59	1.0	17.0	26.3	493	1,510
March	8.2	.7	2.35	3.64	72.7	223
April	29	1.7	8.22	12.7	247	757
May	24	1.4	4.73	7.32	147	450
June	10	1.0	2.36	3.65	70.9	218
The year	59	.6	5.81	8.99	2,130	6,520

WAIKAMOI STREAM ABOVE WAILOA DITCH, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 500 feet above intake of Wailoa Ditch, a quarter of a mile above Spreckels Ditch trail, and 2½ miles southeast of Kailua.

DRAINAGE AREA.—4.4 square miles.

RECORDS AVAILABLE.—January 1922 to June 1932.

EXTREMES.—Maximum discharge during year, 1,200 million gallons a day (1,860 second-feet) Feb. 27 (gage height, 6.68 feet); minimum, 1.7 million gallons a day (2.6 second-feet) July 2, 3, Mar. 27.

1922–32: Maximum discharge, 4,660 million gallons a day (7,210 second-feet) Oct. 16, 1924 (gage height, 10.45 feet); minimum, 0.4 million gallons a day (0.6 second-foot) Nov. 16, 1929.

REMARKS.—Records good for ordinary stages and poor for high stages. Haleakala Ranch and Kula pipe lines divert small amounts of water above station. Maximum discharge for each year 1922–31 has been revised in this paper. The rating is not well enough defined to warrant revision of daily discharge.

Revised maximum discharge, 1922–31

Year ending June 30	Maximum				Year ending June 30	Maximum			
	Million gallons a day	Second-feet	Date	Gage height in feet		Million gallons a day	Second-feet	Date	Gage height in feet
1922	2,310	3,570	Jan. 30	8.26	1927	861	1,330	Jan. 3	5.98
1923	3,960	6,130	Jan. 14	9.87	1928	861	1,330	Nov. 17	5.98
1924	1,510	2,340	Dec. 18	7.20	1929	2,060	3,190	Feb. 17	7.95
1925	4,660	7,210	Oct. 16	10.45	1930	3,180	4,920	Dec. 18	9.18
1926	684	1,060	Aug. 27	5.56	1931	1,360	2,100	Nov. 18	6.95

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.2	3.7	6.4	19	5.2	2.6	17.5	11	11	124	56	32
2	2.0	42	5.1	11.5	4.9	2.4	31	108	8.6	30	13	12.5
3	2.0	18	10.5	12	110	4.1	9.4	89	6.9	10.5	16.5	5.9
4	2.2	6.2	8.4	12	64	13.5	5.9	42	5.2	6.6	8.8	9.0
5	15	52	12.5	6.8	12.5	3.7	5.1	50	5.6	8.4	7.8	12.5
6	19.5	37	34	6.1	7.3	38	4.1	64	11	13	8.4	6.6
7	12.5	33	47	10	6.2	8.0	3.5	48	5.2	8.2	6.8	6.2
8	6.2	15	21	7.6	15.5	4.2	3.2	18.5	7.4	6.2	6.2	4.8
9	5.2	8.6	43	4.1	14	3.4	3.0	52	12.5	31	28	5.2
10	8.4	52	29	3.3	8.2	2.9	3.0	105	4.5	42	15	7.3
11	28	17	78	3.0	22	2.8	2.6	109	3.6	83	11.5	5.9
12	11.5	13	25	4.3	54	2.4	2.5	86	3.1	112	61	11.5
13	13	13.5	16	3.0	11.5	2.2	18	95	2.4	82	38	7.8
14	11	9.6	21	2.4	9.3	2.0	4.6	69	2.2	19.5	17.5	9.2
15	5.5	28	38	2.2	36	36	7.2	15.5	2.2	33	44	7.4
16	4.8	16	95	1.9	9.6	19	9.6	10.5	2.0	19	19.5	5.2
17	3.3	8.9	20	2.4	18	15.5	3.7	8.8	2.3	10.5	12.5	4.6
18	8.7	113	22	4.0	11	33	34	7.6	4.5	7.1	10.5	4.1
19	6.4	65	12	2.5	7.1	218	11.5	5.6	8.6	6.1	7.3	4.8
20	32	13	8.8	2.2	5.5	95	19.5	5.2	[a] 6.6	5.8	6.2	6.4
21	243	7.6	7.8	23	6.4	47	6.2	4.5	[a] 7.3	4.5	5.2	4.3
22	55	8.2	6.9	84	61	26	4.3	9.6	5.2	4.6	4.9	4.9
23	14.5	15	5.3	10	9.8	16.5	15	10.5	3.4	9.3	4.3	3.7
24	8.0	6.4	8.4	24	5.9	15	17.5	4.3	2.5	24	7.1	3.3
25	12.5	5.3	42	67	4.6	10.5	19.5	5.9	2.1	27	4.8	2.9
26	9.3	5.5	36	13	4.5	6.9	17	37	1.8	67	4.6	21
27	9.4	4.3	54	6.6	4.1	5.5	23	269	2.0	24	8.2	9.7
28	5.5	4.4	48	5.1	4.0	4.8	52	44	2.8	44	4.8	11
29	22	11.5	102	5.6	3.3	4.2	11	19	2.2	44	5.3	6.0
30	9.4	26	112	4.2	2.9	7.5	13	-------	7.9	128	13	3.6
31	4.9	23	-------	4.6	-------	39	7.6	-------	47	-------	9.8	------

[a] Partly estimated.

Monthly discharge of Waikamoi Stream above Wailoa Ditch, near Huelo, Maui, 1931–32

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	243	2.0	19.1	29.6	593	1,820
August	113	3.7	22.0	34.0	682	2,090
September	112	5.1	32.5	50.3	975	2,990
October	84	1.9	11.9	18.4	367	1,130
November	110	2.9	17.9	27.7	538	1,650
December	218	2.0	22.3	34.5	692	2,120
January	52	2.5	12.4	19.2	385	1,180
February	269	4.3	48.4	74.9	1,400	4,310
March	47	1.8	6.44	9.96	200	613
April	128	4.5	34.5	53.4	1,030	3,170
May	61	4.3	15.0	23.2	466	1,430
June	32	2.9	7.95	12.3	238	732
The year	269	1.8	20.7	32.0	7,570	23,200

KAAIEA STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 700 feet above Hamakua Ditch trail crossing and 2 miles southeast of Kailua.

DRAINAGE AREA.—0.5 square mile.

RECORDS AVAILABLE.—December 1921 to June 1932.

EXTREMES.—Maximum discharge during year, 760 million gallons a day (1,180 second-feet) Jan. 18 (gage height, 4.94 feet); minimum, 0.6 million gallons a day (0.9 second-foot) Dec. 14.

1921–32: Maximum discharge, 2,300 million gallons a day (3,560 second-feet) Nov. 18, 1930 (gage height, 7.93 feet); minimum, 0.3 million gallons a day (0.5 second-foot) July 17, 1922, Mar. 22, 1927, Nov. 16, 1929.

Remarks.—Records good for ordinary stages, fair for estimated periods, and poor for high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		1.8	2.6	4.8	1.6	0.8	11.5	7.4	4.5	16	25	12.5
2	[a]1.0	8.8	2.2	3.5	1.6	.7	15.5	51	3.0	7.7	4.5	4.0
3		4.8	4.8	6.9	36	2.5	3.2	28	2.4	5.7	7.3	2.6
4		2.4	2.2	4.6	20	5.1	2.1	22	1.8	3.2	3.5	2.1
5		7.8	7.2	2.6	3.5	1.0	1.5	23	2.8	3.5	5.1	2.2
6		6.8	11	2.2	2.4	18	1.2	37	5.6	7.5	5.7	1.8
7		7.8	16	2.1	2.7	2.1	1.1	16	1.8	3.5	4.0	1.6
8		4.2	9.2	1.8	4.6	1.4	1.0	6.3	2.5	3.2	2.8	1.4
9	[a]5	3.2	10.5	1.5	5.7	1.2	1.0	19	2.0	16	9.1	2.1
10		15	9.5	1.4	4.0	1.1	1.0	49	1.3	6.8	4.5	3.4
11		5.7	25	1.2	10	1.0	.9	45	1.2	18.5	2.8	1.8
12		4.8	6.6	2.1	20	.8	.9	31	1.2	19	13	3.0
13		4.5	5.7	1.2	4.0	.7	9.1	56	1.2	30	6.1	3.9
14		3.4	5.7	1.1	7.2	.7	1.5	32	1.1	6.9	7.5	4.6
15		15.5	9.7	1.1	12.5	15.5	2.6	5.0	1.0	5.7	18.5	2.8
16	[a]3.1	4.8	18	1.0	4.5	3.5	1.6	3.5	1.0	7.8	5.0	2.2
17		3.0	5.3	1.6	9.0	4.3	1.2	2.8	1.2	3.5	4.0	2.5
18		39	9.4	4.0	4.0	7.5	36	2.2	2.2	2.6	4.2	2.4
19		19.5	3.7	1.5	3.0	24	9.8	1.8	5.2	2.2	2.8	3.1
20		4.5	3.0	1.2	2.4	8.0	5.1	1.8	6.9	2.8	2.6	3.0
21	[a]24	3.2	3.0	11.5	3.7	9.8	2.4	1.5	3.7	1.8	2.2	1.8
22		6.1	4.9	24	16.5	6.1	1.8	1.5	2.8	2.5	2.1	1.5
23	4.2	9.3	2.8	3.5	3.0	5.0	9.1	1.4	1.8	4.4	1.8	1.8
24	2.6	3.2	7.2	6.6	2.1	5.7	5.7	1.2	1.5	6.6	1.8	1.4
25	7.4	2.8	14	15	1.6	2.6	9.5	4.6	1.4	5.0	1.9	1.3
26	3.2	4.1	8.9	4.5	1.6	1.9	5.5	17	1.2	18	3.0	5.3
27	2.8	2.1	10.5	2.6	1.4	1.6	7.8	86	1.6	5.9	5.7	3.5
28	2.4	2.4	5.7	2.2	1.2	1.4	14.5	15	3.6	12.5	2.4	3.0
29	5.5	6.6	20	2.2	1.0	1.3	4.5	12.5	1.9	23	3.2	1.6
30	3.9	7.1	24	1.6	.9	5.9	7.0	-------	8.0	32	4.1	1.4
31	2.1	4.8	-------	1.9	-------	10	3.0	-------	9.3	-------	3.5	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July			5.60	8.66	174	533
August	39	1.8	7.06	10.9	219	672
September	25	2.2	8.94	13.8	268	823
October	24	1.0	3.97	6.14	123	377
November	36	.9	6.39	9.89	192	588
December	24	.7	4.88	7.55	151	464
January	36	.9	5.76	8.91	179	548
February	86	1.2	20.0	30.9	580	1,780
March	9.3	1.0	2.80	4.33	86.7	266
April	32	1.8	9.46	14.6	284	871
May	25	1.8	5.47	8.46	170	521
June	12.5	1.3	2.85	4.41	85.6	263
The year	86	-------	6.86	10.6	2,510	7,710

[a] Estimated mean.

NAILILIHAELE STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 200 feet above Wailoa Ditch intake, 700 feet above New Hamakua Ditch trail, and 1½ miles south of Kailua.

DRAINAGE AREA.—2.8 square miles.

RECORDS AVAILABLE.—October 1913 to June 1918, August 1919 to June 1932.

EXTREMES.—Maximum discharge recorded during year, 790 million gallons a day (1,220 second-feet) Jan. 18 (gage height, 7.50 feet); minimum, 6.6 million gallons a day (10.2 second-feet) June 24–25.

1913–18, 1919–32: Maximum discharge, 1,800 million gallons a day (2,790 second-feet) May 1, 1916; maximum gage height, 10.74 feet Nov. 18, 1930; minimum, 0.45 million gallons a day (0.70 second-foot) July 14, 1920.

REMARKS.—Records fair for ordinary stages; poor for estimated periods and high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.5	11.5	17	35	14	9.0	34		[a]22	80	76	40
2	8.0	37	14	25	13	8.5	51	[a]130		36	24	16.5
3	7.5	25	29	32	154	12.5	20			28	32	12.5
4	7.5	14	15.5	30	104	30	17			20	19.5	12
5	32	49	36	18	26	9.5	15		[a]20	23	21	12.5
6	32	43	58	16	20	76	12.5	[a]85		36	24	11
7	17	47	77	15	20	15	11			22	19	11
8	10.5	25	47	13	32	11	10		[a]14	23	16	10
9	10	21	59	11	36	9.5	9.5		18.5	70	40	11.5
10	13.5	80	54	10	25	8.8	9.2	[a]95	14	42	21	14
11	44	32	130	9.5	51	8.5	8.8		13.5	98	17	10.5
12	34	28	44	13	96	8.0	9.0		13	105	58	15.5
13	24	32	35	9.5	26	7.5	50	[a]110	13	126	29	14
14	18.5	21	38	8.8	33	7.1	12.5		12	32	28	16
15	12	65	53	8.2	58	65	18		12	34	66	12
16	10	27	105	8.0	25	27	13.5	[a]32	11	35	23	10
17	9.2	19	35	8.5	48	28	9.2		12	20	20	10.5
18	28	176	47	17	25	48	88		15.5	16.5	20	9.6
19	20	94	25	9.2	20	151	37		24	15.5	16	11.5
20	64	29	22	8.5	17.5	72	32	[a]15	29	16	15	10
21	216	22	21	58	23	64	16		22	14	14	8.0
22	89	30	25	105	83	45	14		17.5	15.5	13	7.5
23	26	42	19	19	22	38	39	[a]22	14	24	12	7.8
24	18	20	35	40	17	41	31		13	35	12	7.0
25	35	18	72	75	14.5	24	42		13	26	12	6.7
26	[b]19	20	52	25	13.5	18.5		[a]85	12	76	13	17.5
27	[a]14	14	64	17	12.5	16			13.5	28	21	11
28		14.5	50	14	11.5	14	[a]42	[a]42	17.5	71	11.5	11
29		31	115	14.5	9.8	12.5			14	72	13	7.8
30	[a]48	43	126	11	9.2	33		-------	34	128	20	7.2
31	14	30	-------	19	-------	55		-------	46	-------	15	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	216	7.5	30.7	47.5	951	2,920
August	176	11.5	37.4	57.9	1,160	3,560
September	130	14	50.6	78.3	1,520	4,660
October	105	8.0	22.7	35.1	703	2,160
November	154	9.2	35.3	54.6	1,060	3,250
December	151	7.1	31.4	48.6	973	2,990
January	----------	8.8	27.8	43.0	861	2,640
February	----------	----------	68.4	106	1,980	6,090
March	46	11	17.9	27.7	556	1,710
April	128	14	45.6	70.6	1,370	4,200
May	76	11.5	23.9	37.0	741	2,270
June	40	6.7	12.1	18.7	362	1,110
The year	216	6.7	33.4	51.7	12,200	37,600

[a] Estimated mean. [b] Partly estimated.

KAILUA STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder above Wailoa Ditch intake, 1¼ miles southwest of Kailua and 2½ miles south of Huelo.

DRAINAGE AREA.—3.0 square miles.

RECORDS AVAILABLE.—December 1910 to June 1918, July 1919 to June 1932.

EXTREMES.—Maximum discharge during year, 2,530 million gallons a day (3,910 second-feet) Feb. 27 (gage height, 7.89 feet); minimum, 2.3 million gallons a day (3.6 second-feet) July 3, 4.

1910–18, 1919–32: Maximum discharge, 3,390 million gallons a day (5,250 second-feet) Nov. 18, 1930 (gage height, 8.61 feet); minimum, 0.07 million gallons a day (0.11 second-foot June 27, 1921.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9			28	10	4.6	11	12.5	14.5	156	82	39
2	2.6			17	7.8	4.0	16.5	161	11	44	17	14
3	2.3	a18	a8	16	137	4.5	7.8	142	9.2	16	25	7.0
4	2.3			14	115	17.5	6.3	65	7.4	9.4	10.5	
5	18.5			10	22	5.1	5.9	85	7.6	11	10	a7
6	18		38	9.2	13.5	61	4.4	77	18	19.5	12	
7	10.5	a40	68	10	12	9.7	3.7	76	6.3	10	8.6	
8	5.1		28	8.6	22	5.9	3.5	25	10.5	8.3	7.4	4.8
9	4.2		53	7.0	24	4.8	3.2	58	13.5	55	37	5.3
10	5.9		44	6.1	15.5	4.0	3.2	128	5.7	52	16	7.4
11	31		119	5.5	34	3.8	2.9	142	4.8	120	12	5.5
12	13.5		40	7.2	80	3.5	2.8	86	4.2	168	108	12
13	12		24	5.3	18.5	3.2	27	143	3.8	136	49	7.8
14	10		28	4.4	14.5	2.9	5.3	139	3.4	34	22	9.7
15	5.9	a22	49	4.0	39	46	5.6	23	3.2	39	80	6.8
16	4.9		143	3.7	14.5	22	7.8	13.5	2.9	34	23	5.5
17	4.2		32	4.0	30	16.5	4.0	10	3.0	14	15	5.1
18	10.5	a95	32	5.9	16	38	44	8.1	4.0	9.4	14	4.6
19	7.9		18	4.0	12	219	15.5	6.5	7.8	8.1	9.2	6.1
20	37		14.5	3.5	10	125	25	6.8	9.0	7.6	7.8	5.5
21	394		13.5	43	13	65	7.8	5.5	9.2	6.1	6.8	4.2
22	83	a38	13.5	86	76	39	5.7	19	6.1	6.1	5.9	3.8
23	19		11	10.5	14.5	21	22	12	3.8	12.5	5.3	3.7
24			18.5	26	10	20	25	6.1	3.2	30	5.9	3.2
25	a28	a12	51	85	8.3	12	27	33	2.9	28	5.3	3.0
26			44	16	7.8	8.1	21	62	2.6	92	5.3	20
27		a6.5	76	9.4	7.0	6.5	34	380	2.9	31	9.5	8.3
28	a22		61	7.8	6.8	5.5	83	87	3.8	72	5.1	8.6
29			156	8.9	5.5	4.8	14.5	32	3.0	64	6.3	5.7
30	a17	a15	138	6.8	4.9	4.8	14	-------	12.5	196	19	4.0
31			-------	13.5	-------	52	10	-------	47	-------	11	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	394	2.3	28.7	44.4	889	2,730
August	-------	-------	29.9	46.3	928	2,850
September	156	-------	45.1	69.8	1,350	4,150
October	86	3.5	15.7	24.3	486	1,490
November	137	4.9	26.7	41.3	801	2,460
December	219	2.9	27.1	41.9	840	2,580
January	83	2.8	15.1	23.4	469	1,440
February	380	5.5	70.5	109	2,040	6,270
March	47	2.6	7.96	12.3	247	757
April	168	6.1	49.6	76.7	1,490	4,570
May	108	5.1	21.0	32.5	651	2,000
June	39	3.0	7.95	12.3	239	732
The year	394	2.3	28.5	44.1	10,400	32,000

a Estimated mean.

HOOLAWALIILII STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above New Hamakua Ditch crossing, 2 miles west of Kailua, and 2 miles southwest of Huelo.

DRAINAGE AREA.—Not determined.

RECORDS AVAILABLE.—April 1911 to June 1932.

EXTREMES.—Maximum discharge during year, 261 million gallons a day (404 second-feet) Feb. 27 (gage height, 4.20 feet); minimum, 1.1 million gallons a day (1.7 second-feet) July 4, 5.

1911–32: Maximum discharge, 578 million gallons a day (894 second-feet) Nov. 18, 1930 (gage height, 6.74 feet); minimum, 0.2 million gallons a day (0.3 second-foot)June 8, 1926.

REMARKS.—Records good for ordinary stages and poor for high stages. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.7	3.0	3.0	7.4	2.6	2.0	3.7	7.7	6.7	9.3	19	5.7
2	1.6	4.3	2.8	5.8	2.4	2.0	4.8	18	4.6	5.1	7.0	3.0
3	1.6	3.9	3.7	5.8	17	2.3	3.5	11.5	3.7	4.4	6.4	2.6
4	1.4	3.3	3.0	4.8	14	2.3	3.0	15	3.3	3.7	4.6	2.6
5	1.2	4.4	3.9	4.4	5.8	2.0	2.8	14.5	3.5	3.7	4.4	2.3
6	2.2	5.1	5.6	3.9	4.4	9.7	2.6	19.5	3.7	4.8	4.6	2.3
7	2.2	5.4	10.5	3.7	3.9	2.6	2.6	12	2.6	3.7	4.1	2.3
8	1.8	4.4	5.8	3.5	4.1	2.4	2.3	7.7	3.5	3.5	3.5	2.0
9	1.8	3.9	6.1	3.3	4.8	2.4	2.3	9.9	2.8	8.6	5.1	2.0
10	1.8	8.9	7.0	3.0	4.1	2.3	2.2	17	2.4	4.8	4.4	2.4
11	2.4	5.4	15	2.8	6.7	2.3	2.2	21	2.4	9.3	3.5	2.0
12	3.0	4.8	7.7	2.8	9.9	2.2	2.2	17.5	2.3	9.0	7.7	2.2
13	2.6	4.4	6.1	2.3	5.1	2.2	4.4	34	2.3	16.5	4.6	2.0
14	2.4	3.9	5.4	2.3	4.6	2.0	2.6	21	2.3	8.0	4.8	2.2
15	2.2	7.7	5.4	2.3	7.4	7.9	3.0	8.0	2.2	5.8	10	1.8
16	2.0	5.1	10	2.2	4.6	3.5	2.8	5.4	2.2	6.1	5.4	1.7
17	1.8	4.1	5.8	2.2	4.8	3.0	2.4	4.4	2.3	4.1	4.8	1.7
18	2.4	16.5	6.1	2.3	4.1	4.4	22	3.5	2.3	3.5	4.6	1.7
19	2.4	16	4.6	2.0	3.5	11.5	5.4	3.3	2.4	3.3	3.9	1.8
20	4.8	7.4	4.1	1.8	3.3	7.0	5.5	4.6	2.6	3.3	3.7	2.0
21	21	5.1	3.9	3.0	3.3	7.0	3.7	2.8	2.6	2.6	3.3	1.8
22	13	5.1	4.1	11	10.5	6.4	3.0	3.5	2.4	2.6	3.0	1.8
23	6.4	5.8	3.7	3.0	3.7	5.1	6.4	3.0	2.2	2.8	2.8	1.8
24	4.6	4.4	4.1	3.0	3.3	5.4	4.6	2.6	2.2	4.1	2.6	1.8
25	5.4	3.9	6.7	6.0	3.0	4.1	6.4	4.8	2.0	3.5	2.6	1.7
26	4.1	4.1	6.4	3.3	3.0	3.5	4.8	9.9	2.0	8.1	2.6	2.2
27	3.9	3.5	7.4	2.8	2.4	3.3	6.3	.46	2.0	4.8	3.3	2.0
28	3.7	3.3	5.8	2.6	2.3	2.8	9.3	15	2.3	5.2	2.6	2.3
29	4.1	3.3	12.5	2.8	2.2	2.8	4.8	11.5	2.2	14	2.6	1.8
30	3.9	3.5	15.5	2.4	2.2	3.3	4.8	------	3.6	23	2.6	1.6
31	3.5	3.3	------	3.3	------	5.1	4.1	------	5.9	------	2.6	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21	1.2	3.77	5.83	117	359
August	16.5	3.0	5.39	8.34	167	513
September	15.5	2.8	6.39	9.89	192	588
October	11	1.8	3.61	5.59	112	343
November	17	2.2	5.10	7.89	153	470
December	11.5	2.0	4.03	6.24	125	383
January	22	2.2	4.53	7.01	140	431
February	46	2.6	12.2	18.9	355	1,090
March	6.7	2.0	2.89	4.47	89.5	275
April	23	2.6	6.37	9.86	191	587
May	19	2.6	4.73	7.32	147	450
June	5.7	1.6	2.17	3.36	65.1	200
The year	46	1.2	5.06	7.83	1,850	5,690

HOOLAWANUI STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above intake of Wailoa Ditch, 2 miles southwest of Kailua, and 2 miles southwest of Huelo; elevation, 1,240 feet.
DRAINAGE AREA.—Not determined.
RECORDS AVAILABLE.—December 1910 to June 1932.
EXTREMES.—Maximum discharge during year unknown, owing to missing record; minimum, 2.2 million gallons a day (3.4 second-feet) July 9.
1910–32: Maximum discharge, 584 million gallons a day (904 second-feet Nov. 18, 1930 (gage height, 9.37 feet); minimum, 0.15 million gallons a day (0.23 second-foot) Oct. 25, 1917.
REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.6	4.0	4.2	a11	4.3		5.2	a55		a14	39	8.5
2	2.5	8.2	3.8		a22		a7.5		a7.5		13	4.9
3	2.4	5.3	5.6			a33					12	3.9
4	2.3	4.2	4.0	a7							8.1	3.7
5	3.4	8.9	4.9		a20		a3.7	a46	a5.5	a6.5	7.6	3.6
6	3.8	8.5	8.6								7.6	3.5
7	2.8	9.5	19			a10					6.5	3.4
8	2.4	6.9	8.8	a5.5	a8			a22	6.0		5.6	3.2
9	2.3	5.9	11.5			3.4			5.1		11	3.2
10	2.4	15	12			3.2	a2.6		4.3		7.1	3.9
11	5.5	8.5	37		a22	3.0		a42	3.9		5.9	3.2
12	4.2	7.6	16			2.8				a18	19	3.8
13	3.7	6.3	11.5	a3.7		2.6					12	3.6
14	3.3	5.5	10			2.5					10.5	4.2
15	2.8	12	13		a9.5	15	a4.4	a8.5			21	3.7
16	2.6	7.1	33			5.2					10.5	3.5
17	2.5	5.6	13.5	a3.2		4.7					9.2	3.5
18	3.5	49	12			7.9				a7	8.5	3.3
19	3.4	35	8.3			48	a17				6.9	3.6
20	8.6	13	7.4	2.5	a5.5	25			a2.9	a5	6.2	3.4
21	69	8.8	6.3	9.2		18	a5	a5			5.5	3.1
22	29	8.0	6.2	20	a14	14.5				4.8	5.1	2.9
23	11	8.5	5.3	4.3		10.5				5.3	4.7	2.8
24	7.6	6.0	6.5	5.3		10				7.3	4.6	2.7
25	8.8	5.5		14.5	a5	7.4	a9			6.5	4.2	2.6
26	6.2	5.1	a12	5.3		6.0				21	4.0	4.3
27	5.2	4.6		4.6		5.3	a18	a32		9.4	4.8	3.4
28	4.8	4.3		4.2		4.7				19	3.8	3.3
29	6.9	4.8	a28	4.6	a3.7	4.4				24	3.8	2.7
30	5.6	6.6		3.8		7.1	a7	-------	a8.5	58	4.6	2.6
31	4.6	5.7	-------	6.1	-------	11		-------		-------	4.4	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	69	2.3	7.28	11.3	226	693
August	49	4.0	9.48	14.7	294	902
September	-------	3.8	12.4	19.2	372	1,140
October	20	2.5	6.01	9.30	186	571
November	-------	-------	10.2	15.8	305	936
December	48	2.5	8.67	13.4	269	825
January	-------	-------	7.19	11.1	223	684
February	-------	-------	27.2	42.1	788	2,420
March	-------	-------	4.29	6.64	133	408
April	58	-------	13.2	20.4	397	1,220
May	39	3.8	8.93	13.8	277	849
June	8.5	2.6	3.60	5.57	108	331
The year	-------	2.3	9.77	15.1	3,580	11,000

a Estimated mean.

HONOPOU STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above Wailoa Ditch crossing, 2½ miles southwest of Kailua, and 2¼ miles southwest of Huelo; elevation, about 1,250 feet.

DRAINAGE AREA.—1.0 square mile.

RECORDS AVAILABLE.—December 1910 to June 1932.

EXTREMES.—Maximum discharge recorded during year, 321 million gallons a day (497 second-feet) Apr. 30 (gage height, 4.10 feet); minimum, 0.8 million gallons a day (1.2 second-feet) July 3–5, 17–18.

1910–32: Maximum discharge, 1,220 million gallons a day (1,890 second-feet) Nov. 18, 1930 (gage height, 7.28 feet); minimum, 0.15 million gallons a day (0.23 second-foot) July 14, 1920.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.9	2.2	2.0	6.9	2.1		2.9	[a]11	[a]5	[a]7	[a]12	[a]4.0
2	.9	3.1	1.8	5.5	1.8		4.2					
3	.8	2.5	2.6	5.3	16	[a]1.4	2.6					
4	.8	2.2	2.0	4.3	14		2.5					[a]1.8
5	1.5	3.1	2.8	3.7	6.0		2.3	[a]14	[a]2.9	[a]3.5	[a]4.4	
6	1.5	3.4	4.9	3.3	4.6		2.1					1.5
7	1.2	3.7	7.7	3.0	4.0	[a]4.4	2.0					1.5
8	.9	2.8	4.5	2.6	4.6		2.0	[a]8	4.1			1.4
9	1.0	2.4	5.0	2.4	5.2	1.7	1.8		3.0			1.6
10	1.1	6.9	5.8	2.3	3.7	1.6	1.7		2.6	[a]7.5	[a]3.8	2.3
11	1.8	3.7	14.5	2.1	5.5	1.6	1.5	[a]20	2.4			1.4
12	2.2	3.7	7.6	2.1	7.9	1.4	1.7		2.2			1.9
13	1.5	3.0	6.5	1.7	4.5	1.4	3.8		2.0	[a]12	[a]6	1.6
14	1.3	2.8	5.5	1.6	3.8	1.3	1.7	[a]14	1.8			1.8
15	1.1	6.6	5.5	1.5	5.5	8.0	2.0		1.7			1.5
16	.9	3.5	9.9	1.4	3.7	2.5	1.7					1.4
17	.9	2.9	5.8	1.4	4.3	2.5	1.4					1.4
18	1.6	16.5	5.7	1.6	3.4	4.2	12.5			[a]4.2	[a]4.1	1.3
19	1.3	16	4.5	1.2	3.0	10.5	4.5					1.5
20	3.4	7.4	4.0	1.2		7.2	4.4	[a]3.3				1.4
21	21	5.7	3.5	3.3	[a]4.9	7.2	2.8					1.2
22	11.5	5.2	3.8	9.0		6.4	2.3		[a]1.7	3.0		1.2
23	5.7	5.5	3.2	2.1		5.5	5.2			3.0		1.2
24	4.3	3.8	3.4	2.3		5.5	3.5			4.1		1.2
25	5.2	3.5	5.4	5.2		4.3	5.4	[a]7		3.2		1.1
26	3.5	3.3	4.5	2.4	[a]2.2	3.7	4.0			8.1	[a]2.3	1.6
27	3.2	2.8	5.5	2.1		3.3	5.7			4.4		1.5
28	2.8	2.6	4.1	2.1		3.0	9.3	[a]22				1.6
29	3.2	2.7	13.5	2.4		2.8	5.0			[a]13		1.2
30	3.0	2.6	13.5	1.8		3.2	[a]3.5	------	[a]4.2			1.1
31	2.5	2.4	------	2.5	------	4.7		------		------	------	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21	0.8	2.98	4.61	92.5	284
August	16.5	2.2	4.47	6.92	138	425
September	14.5	1.8	5.63	8.71	169	519
October	9.0	1.2	2.91	4.50	90.3	277
November	16	----------	4.53	7.01	136	417
December	10.5	----------	3.67	5.68	114	349
January	12.5	1.4	3.53	5.46	110	336
February	----------	----------	11.2	17.3	326	1,000
March	----------	----------	2.47	3.82	76.5	235
April	----------	----------	6.11	9.45	183	562
May	----------	----------	4.23	6.54	131	402
June	----------	1.1	1.66	2.57	49.8	153
The year	----------	.8	4.41	6.82	1,620	4,960

[a] Estimated mean.

WAILOA DITCH AT HONOPOU, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 100 feet below intake at Honopou Stream, half a mile west of Lupi, and 2½ miles west of Kailua.

RECORDS AVAILABLE.—November 1922 to June 1932.

EXTREMES.—Maximum discharge during year, 168 million gallons a day (260 second-feet) Feb. 27 (gage height, 5.68 feet); minimum, 11 million gallons a day (17 second-feet) Feb. 12.

1922–32: Maximum discharge, 173 million gallons a day (268 second-feet) Nov. 23, 1930 (gage height, 5.77 feet); minimum, that of Feb. 12, 1932.

REMARKS.—Records good. Wailoa Ditch receives water from Koolau Ditch at Alo and from all streams west of Alo to Halehaku at elevation about 1,200 feet. Discharge estimated from Feb. 14 to Mar. 7 and Mar. 23 to Apr. 21 by comparison with East Maui Irrigation Co.'s station at Kamole.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	78	122	150	162	142	92	130	162	76	162	162	162
2	74	129	134	158	146	85	126	166	80	162	162	158
3	67	158	154	158	162	97	88	162	85	162	162	154
4	67	130	146	158	162	146	81	162	90	162	162	146
5	129	146	150	154	162	103	74	162	110	162	162	152
6	154	162	162	150	162	156	64	162	115	162	162	134
7	154	162	166	154	162	142	103	162	80	162	162	126
8	130	162	162	142	162	110	99	162	89	162	162	111
9	118	162	162	122	162	96	99	162	97	162	162	122
10	146	162	166	111	162	79	99	131	64	162	162	150
11	158	162	166	107	162	45	103	162	57	162	162	126
12	158	162	166	142	162	42	96	118	51	162	162	146
13	150	162	166	107	162	38	158	162	51	162	162	154
14	154	162	162	96	162	37	134	162	45	162	162	158
15	134	162	162	92	162	106	142	162	42	162	166	142
16	114	162	166	85	158	118	130	162	42	162	166	126
17	96	158	162	101	162	118	99	162	45	162	162	122
18	140	166	162	135	158	126	154	163	59	162	162	118
19	142	166	162	96	158	162	162	163	96	162	162	123
20	162	166	162	92	154	162	158	165	108	150	162	142
21	158	162	158	133	158	162	156	163	96	130	158	111
22	158	162	158	162	162	158	138	162	74	131	150	99
23	162	162	150	158	158	146	162	100	56	158	134	103
24	162	158	154	158	154	150	158	70	50	162	142	88
25	162	150	162	158	142	107	162	120	45	162	130	85
26	162	150	162	158	138	88	162	160	40	162	142	154
27	158	126	162	158	122	74	162	160	60	162	158	158
28	150	130	162	154	118	67	162	100	60	162	138	154
29	162	158	162	146	103	64	162	80	70	162	158	114
30	162	162	162	122	96	76	162	-------	150	162	158	96
31	138	158	-------	134	-------	146	162	-------	160	-------	158	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	162	67	137	212	4,260	13,100
August	166	122	155	240	4,800	14,700
September	166	134	159	246	4,780	14,700
October	162	85	134	207	4,160	12,800
November	162	96	151	234	4,540	13,900
December	162	37	106	164	3,300	10,100
January	162	64	131	203	4,050	12,400
February	166	70	148	229	4,290	13,200
March	160	40	75.6	117	2,340	7,190
April	162	130	159	246	4,780	14,700
May	166	130	157	243	4,870	15,000
June	162	85	131	203	3,930	12,100
The year	166	37	137	212	50,100	154,000

NEW HAMAKUA DITCH AT HONOPOU, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 600 feet below Honopou Stream crossing, 15 feet above tunnel portal, and 2½ miles west of Kailua.

RECORDS AVAILABLE.—January 1918 to June 1932.

EXTREMES.—Maximum discharge during year, 143 million gallons a day (221 second-feet) Feb. 27 (gage height, 5.90 feet); minimum, 0.6 million gallons a day (0.9 second-foot) Dec. 14, 15.

1918–32: Maximum discharge, that of Feb. 27, 1932; no flow when water is shut out of ditch.

REMARKS.—Records good for ordinary stages, fair for high stages, and poor for estimated periods. New Hamakua Ditch diverts water from streams between Waikamoi and Halehaku above Center and Lowrie Ditches. Regulated by gates and spillways.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.5	1.4		92	12	1.0	20	87	17.5		113	63
2	1.4	24		60	7.8	.8	38	111	7.6	[a]85	100	63
3	1.3	54	[a]16	56	98	2.9	16	113	3.8		99	8.5
4	1.2	4.7		58	110	45	2.1	113	3.0		69	6.6
5	32	42	54	19.5	74	1.2	1.7	110	3.3	[a]32	58	27
6	54	87	73	15	35	87	1.8	110	16.5		77	1.4
7	52	87	98	16.5	23	17	2.0	95	2.4	[a]10	56	1.3
8	5.1	64	87	9.3	64	1.3	1.1	100	[b]8		22	1.2
9	2.1	31	93	3.1	81	1.0	.9	104	[a]12	[a]80	85	1.8
10	4.5	90	97	2.9	50	.9	.8	113			90	20
11	59	78	110	2.8	88	1.3	.9	113	[a]3.8		61	1.4
12	64	62	100	11	105	.8	.8	113			93	34
13	34	52	84	2.4	66	.7	67	116			95	11
14	51	32	87	2.1	32	.6	3.5	116			95	41
15	2.9	70	87	1.8	99	44	12.5	110	[a]1.0	[a]95	108	10
16	1.2	66	110	1.7	53	4.5	17	81			95	1.3
17	1.2	26	90	1.6	77	4.8	.8	60	[a]3.8		90	1.7
18	30	99	92	12.5	55	28	72	45		[a]22	80	2.2
19	27	110	52	1.3	31	103	81	28			40	6.9
20	77	79	35	1.2	12	96	85	35	[a]38		21	12.5
21	90	45	24	37	26	79	30	9.0		[a]7.5	4.6	1.2
22	95	54	35	101	98	48	2.1	24	[a]6	3.1	3.4	1.2
23	76		16	45	46	12	65	15		37	2.1	1.2
24	32	[a]75	37	31	16	14.5	75	1.1		90	2.0	1.2
25	63		95	101	3.3	7.3	87	31	[a]1.5	87	1.8	1.2
26	39		92	60	2.1	6.5	87	88		100	2.4	65
27	34	[a]22	95	23	1.7	5.7	93	116		88	47	34
28	2.5		92	11.5	1.6	5.3	102	59	[a]5.5	73	2.6	47
29	72		105	8.0	1.3	3.3	78	60		110	11	1.2
30	42	[a]48	110	2.1	1.2	8.4	81	-------	[a]44	110	41	.9
31	2.9		-------	21	-------	48	50	-------		-------	44	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	95	1.2	33.9	52.5	1,050	3,220
August	110	1.4	53.8	83.2	1,670	5,120
September	110	----------	70.5	109	2,110	6,490
October	101	1.2	26.2	40.5	811	2,490
November	110	1.2	45.7	70.7	1,370	4,200
December	103	.6	21.9	33.9	680	2,090
January	102	.8	37.9	58.6	1,180	3,610
February	116	1.1	78.5	121	2,280	6,990
March	----------	----------	10.8	16.7	336	1,030
April	----------	----------	65.1	101	1,950	5,990
May	113	1.8	55.1	85.3	1,710	5,240
June	83	.9	16.3	25.2	490	1,500
The year	116	.6	42.7	66.1	15,600	48,000

[a] Estimated mean. [b] Estimated.

LOWRIE DITCH AT HONOPOU GULCH, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder a quarter of a mile below siphon across Honopou Stream and 1½ miles northwest of Kailua.

RECORDS AVAILABLE.—February 1930 to June 1932.

EXTREMES.—Maximum discharge during year, 84 million gallons a day (130 second-feet) Feb. 13 (gage height, 5.35 feet); no flow for several hours Oct. 14, 15.

1930–32: Maximum discharge, 86 million gallons a day (133 second-feet) Nov. 18, 1930 (gage height, 5.45 feet); no flow at times.

REMARKS.—Records good except those estimated, which are poor. Lowrie Ditch diverts water at elevation of 500 feet from all streams between Kailua and Halehaku Streams. Regulated by gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.2	14.5	[a]24	61	[a]50		50	52	11	56	48	51
2	6.5	26		50		[a]12	56	56	6.0	45	59	40
3	5.9	46	32	45			42	56	5.0	35	56	35
4	6.1	35	16.5	53	[a]55		23	61	9.8	23	45	34
5	26	41	42	30		11.5	20	59	10.5	25	35	20
6	40	64	53	37		61	18.5	56	14	48	45	9.2
7	40	61	64	42		31	21	42	9.2	30	40	8.6
8	10.5	46	59	28		15.5	35	40	13	21	30	8.6
9	8.6	32	61	17.5	[a]36	22	15.5	48	9.2	52	53	8.6
10	9.2	61	61	15.5		25	13.5	50	8.6	42	53	22
11	39	56	64	14.5		22	13	50	7.9	56	35	12
12	44	48	61	19.5		17.5	12	45	7.4	59	50	23
13	32	50	59	13.5		13	44	55	12	56	56	16.5
14	36	48	59	5.7		12	34	30	14.5	50	59	24
15	14.5	56	59	.5	[a]55	42	32	37	17.5	48	61	14.5
16	10.5	53	64	1.0		37	23	37	19.5	50	56	11
17	9.2	45	61	1.0		37	13.5	35	19.5	32	48	11
18	29	64	61	[a] 3.0	[a]38	45	49	30	13.5	23	42	11
19	22	67	45			64	56	25	26	20	35	13
20	54	61	32	[a]32	[a]19	61	56	23	22	28	28	20
21	64	50	30			59	34	8.6	25	25	28	10.5
22	64	50	32			56	23	9.2	15.5	23	25	9.8
23	56	59	28		[a]42	50	50	8.0	11	25	18.5	9.8
24	40	37	46	[a]55		53	50	7.2	10.5	59	16.5	9.2
25	48	40	64			40	53	12	20	56	15.5	9.2
26	37	[b]42	64			24	53	24	12	61	16.5	36
27	48		64		[a]15	21	56	42	9.2	56	39	24
28	25		61			19.5	59	8.4	13	44	15.5	36
29	53	[a]40	64	[a]22		18.5	45	9.0	10.5	61	16.5	10.5
30	30		67		[a] 9.5	20	48	-------	36	67	27	9.2
31	16.5		-------		-------	50	30	-------	35	-------	30	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	64	5.9	30.0	46.4	931	2,860
August	67	14.5	46.9	72.5	1,450	4,460
September	67	16.5	50.7	78.4	1,520	4,670
October	61	.5	28.7	44.4	890	2,730
November	----------	----------	38.6	59.7	1,160	3,550
December	64	----------	31.5	48.7	976	2,990
January	59	12	36.4	56.3	1,130	3,460
February	61	7.2	35.0	54.2	1,020	3,120
March	36	5.0	14.6	22.6	454	1,390
April	67	20	42.5	65.8	1,280	3,920
May	61	15.5	38.1	58.9	1,180	3,630
June	51	8.6	18.6	28.8	557	1,710
The year	67	.5	34.3	53.1	12,500	38,500

[a] Estimated mean. [b] Partly estimated.

HAIKU DITCH AT KAPALALAEA GULCH, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder in open section of ditch just below tunnel between Honopou and Kapalalaea Gulches, 1¾ miles northwest of Kailua.

RECORDS AVAILABLE.—February 1930 to June 1932.

EXTREMES.—Maximum discharge during year, 99 million gallons a day (153 second-feet) Apr. 30 (gage height, 5.77 feet); minimum, 0.8 million gallons a day (1.2 second-feet) July 7, 8, 9.

1930–32: Maximum discharge, 110 million gallons a day (170 second-feet) Nov. 18, 1930 (gage height, 5.87 feet); no flow Nov. 26 to Dec. 1, 1930.

REMARKS.—Records good except those estimated, which are poor. Haiku Ditch diverts water at elevation of 250 feet from all streams between Kailua Stream and Maliko Gulch. Regulated by gates.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.9	2.5	a 1.8	29	12.5	2.7	17	44		76	84	57
2	1.1	20		5.2	4.6	2.5	32		a19	43	50	20
3	1.0	20	6.5	31	61	2.5	6.2	a60		6.6	58	2.7
4	.9	3.6	2.9	9.7	82	20	2.8			3.4	9.2	3.3
5	.9	28	18.5	4.3	29	4.6	2.5		a40	2.9	6.0	2.3
6	.9	40	28	4.3	6.2	62	2.1	a22		38	24	5.1
7	.8	51	70	4.1	5.3	5.2	2.0		24	3.7	12	5.5
8	.9	14	47	3.7	9.4	7.6	2.0	a14	27	2.8	4.8	5.3
9	19	3.9	54	3.4	14	3.6	1.9		25	60	53	5.5
10	24	63	77	3.3	4.3	3.2	1.8		14.5	37	11	2.5
11		32	82	b 3.2	35	3.3	1.8	a42	12.5	73	3.4	2.1
12	a42	6.6	52	b 3.2	72	2.9	1.8		11.5	76	47	3.7
13		13.5	21	b 3.1	5.5	2.6	33		6.8	76	57	2.1
14		4.6	31	4.6	3.6	2.3	2.7	a13	3.1	62	53	1.9
15		37	33	11.5	71	34	2.6		2.9	51	78	1.8
16	a 7.5	19	79	10.5	7.2	4.2	2.0		2.8	56	42	1.6
17		7.0	37	11	30	3.1	1.5	a 5.5	2.9	6.1	9.2	1.4
18		82	53	15.5	9.5	19	51		2.7	3.1	4.5	1.6
19	2.0	78	5.4	3.3	3.9	79	56		3.6	2.8	2.9	1.5
20	53	16	4.1	2.1	3.6	7.5	49		2.9	2.7	2.9	1.6
21	79		3.9	25	4.0	44	5.9		2.8	2.6	2.9	1.5
22	79	a11	3.7	79	58	25	4.7	a 3.9	2.5	2.1	2.9	1.4
23	39		3.6	37	4.3	4.4	44		2.3	3.2	2.9	1.3
24	5.3		26	16.5	3.6	5.9	42		2.2	55	2.8	1.1
25	28		70	82	3.3	3.7	53		2.3	27	2.7	1.1
26	5.6	a 3.0	77	25	3.6	3.3	43		2.1	68	2.6	7.2
27	5.8		79	4.3	3.2	2.8	47	a34	2.0	52	14	1.8
28	4.4		71	3.7	2.9	2.7	69		2.0	27	2.6	8.9
29	17.5		65	4.0	2.7	2.6	11.5		1.9	86	2.5	1.7
30	4.8	a36	82	4.6	4.9	5.5	24		28	86	15	1.5
31	2.9			5.8		37	4.1		43		16	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	79	0.8	18.6	28.8	576	1,770
August	82		22.5	34.8	698	2,140
September	82		39.5	61.1	1,190	3,640
October	82	2.1	14.6	22.6	453	1,390
November	82	2.7	18.7	28.9	560	1,720
December	79	2.3	13.2	20.4	409	1,250
January	69	1.5	20.0	30.9	620	1,900
February			22.9	35.4	664	2,040
March		1.9	12.6	19.5	389	1,190
April	86	2.1	36.4	56.3	1,090	3,350
May	84	2.5	21.9	33.9	679	2,080
June	57	1.1	5.20	8.05	156	479
The year	86	.8	20.4	31.6	7,480	22,900

a Estimated mean. b Partly estimated.

MISCELLANEOUS MEASUREMENTS

Measurements of streams and ditches on the island of Maui at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on island of Maui, 1931–32

Date	Stream	Tributary to—	Locality	Discharge	
				Second-feet	Million gallons a day
Sept. 12	Manamana	Pacific Ocean	Elevation 500 feet, near Kipahulu	6.35	4.10
Nov. 29	do	do	do	1.40	.904
Sept. 13	do	do	Elevation 1,000 feet, near Kipahulu	5.81	3.76
Oct. 26	do	do	do	4.34	2.81
Nov. 29	do	do	do	1.58	1.02
Sept. 13	do	do	Elevation 2,100 feet, near Kipahulu	5.07	3.28
Oct. 26	do	do	do	3.31	2.14
Nov. 29	do	do	do	.710	.459
Dec. 15	do	do	do	.339	.219
Oct. 26	Puuhaoa	do	Elevation 2,000 feet, near Kipahulu	.796	.514
Oct. 26	do	do	Highway bridge near Kipahulu	2.60	1.68

ISLAND OF HAWAII

WAIAKEA STREAM AT MIDDLE FLUME HOUSE, NEAR MOUNTAIN VIEW, HAWAII

LOCATION.—Water-stage recorder 800 feet above Olaa Sugar Co.'s main flume, at middle flume house, 7½ miles northwest of Mountain View.

DRAINAGE AREA.—Large part of flow comes from three tunnels.

RECORDS AVAILABLE.—September 1930 to June 1932.

EXTREMES.—Maximum discharge during year, 149 million gallons a day (231 second-feet) July 21 (gage height, 4.70 feet); no flow about July 5.

1930–32: Maximum discharge, that of July 21, 1931; no flow when tunnels and stream dry up.

REMARKS.—Records poor, owing to faulty record. No diversions. Station established Sept. 13, 1930, and all records are published in this report.

Discharge, in million gallons, 1930–32

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1930–31										
1			1.65	3.7	1.55		[a] 3.3	0.24	0.68	
2			1.6	3.4	1.6		2.9	.22	.60	
3				2.8	1.55		3.0	.16	.58	
4				2.5	1.45		3.0	.07	.58	
5				2.2	1.35		3.2	.18	.52	
6				2.0	1.4		3.1	.32		
7		[b] 5		1.8	1.5		2.8	.10		
8				1.75	1.3		2.8	.02		
9				1.65	1.2			0		
10				1.6				0		
11				1.45		[b] 0.4		0		
12				1.3				0		
13	1.1			1.2				0		
14	1.05	5.0		1.15				0		
15	[c] 1.0	5.0		1.05				0		
16	6.0	5.0	[b] 4.4	1.3				.20		[b] 2
17	9.7	4.7		1.5				.04		
18	7.4	4.7		1.3			[b] .9	.20	[b] .4	
19	8.6	4.4		1.1				.02		
20	6.8	4.1		1.05	[b] .6			.01		
21	6.0	3.7		1.4				0		
22	[c] 5	3.4		1.9				0		
23	[a] 4.0	3.0		1.6				3.4		
24	8.2	2.8		1.5				1.85		
25	8.3	2.7		1.4		[b] 5.5		1.25		
26	6.4	2.5		3.0				1.05		
27		2.2		1.95				.90		
28	[b] 4.8	2.1		1.85				.87		
29		1.95		2.1				.87		
30		1.85	4.2	1.9			.35	.77		
31		1.75		1.65			.29			

[a] Estimated. [b] Estimated mean. [c] Partly estimated.

Discharge, in million gallons, of Waiakea Stream at middle flume house, near Mountain View, Hawaii, 1930–32—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1931–32												
1		5.4			5.0	2.7	6.8	13.5				[c] 7.6
2		5.0			4.7	2.3	5.7	9.8	[b]12			
3	[b]0	4.7	[b] 3.4		4.2	2.0	5.4	8.6				
4		4.4			5.9	1.75	5.4					
5		4.0			4.7	1.55	5.2		8.6			
6			3.0		4.4	1.35	5.0		7.4	[b]6		
7			4.4		4.4	1.25	4.7		6.6			
8			4.4		5.7	1.2	4.4		5.7			
9			4.7		8.7	1.2	4.4		5.4			[b]6
10			4.7		11.5	1.25	4.7		5.0			
11		[b]4.4	10.5		9.8	1.5	5.0	[b]10	4.4			
12	[b].35		8.0		11.5	1.4	4.4		4.2			
13			7.1		10.5	1.3	5.2		3.7			
14			6.8		18	1.15	5.2		3.2			
15			6.8	[b]7.5	22	1.05	5.2				[b]7	
16			7.1		16	.90	5.0					
17			12		16	.77	4.7					
18			12		12	.66	12.5					
19			8.6		10	5.2	17.5					
20	1.75	[b]12	8.6		9.2	8.3	16		[b]1.6	[b]8.5		
21	19		8.0		8.6	7.2	13					
22	8.6				7.1	6.0	13	[b]3.8				
23	7.4				6.6	5.4	11					[b]2.9
24	7.1				5.4	5.2	9.8					
25	7.1		[b]7		5.0	5.4	14					
26	7.1	[b]5.5			4.7	5.2	11					
27	6.6				4.4	5.0	14.5					
28	6.3				4.2	5.0	25	[b]13				
29	6.0		[b]20		3.7	4.7	25		[b]4.8			
30	6.0				3.2	4.4	25				[c]7.1	
31	5.7			5.4		5.0	20					

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1930–31						
September 13–30	9.7		5.49	8.49	98.8	303
October		1.75	4.06	6.28	126	386
November			4.21	6.51	126	387
December	3.7	1.05	1.81	2.80	56.0	172
January			.842	1.30	26.1	80
February			1.49	2.31	41.8	128
March			1.41	2.18	43.6	134
April	3.4	0	.425	.658	12.7	39
May			.431	.667	13.4	41
June			.20	.31	6.0	18
The period (291 days)		0	1.89	2.92	550	1,690
1931–32						
July	19		3.02	4.67	93.6	287
August			5.78	8.94	179	550
September			7.42	11.5	223	683
October			7.43	11.5	230	707
November	22	3.2	8.24	12.7	247	758
December	8.3	.66	3.14	4.86	97.3	299
January	25	4.4	10.1	15.6	314	963
February			8.67	13.4	251	771
March			4.69	7.25	145	446
April			7.67	11.9	230	706
May			7.00	10.8	217	666
June			4.61	7.13	138	424
The year			6.46	10.0	2,360	7,260

[a] Estimated. [b] Estimated mean. [c] Partly estimated.

WAILUKU RIVER AT PUKAMAUI, NEAR HILO, HAWAII

LOCATION.—Water-stage recorder at Pukamaui, three quarters of a mile above Hilo Boarding School Ditch intake and 4½ miles west of Hilo.

DRAINAGE AREA.—97.2 square miles.

RECORDS AVAILABLE.—April 1923 to June 1928, July 1929 to June 1932.

EXTREMES.—Maximum discharge during year, 5,760 million gallons a day (8,910 second-feet) July 21 (gage height, 14.95 feet); no flow July 5.

1923–28, 1929–32: Maximum discharge, that of July 21, 1931; no flow when stream dries up.

REMARKS.—Records good for ordinary stages except those estimated, which are fair. High-stage records poor. Hilo waterworks diverts water for domestic use from pool at control. Regulated by this diversion.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.7	8.1	12.5	272	19.5	8.1	43	78	317	12.5	58	88
2	.4	8.3	10.5	124	15	8.1	29	58	140	21	[a] 38	71
3	.1	9.5	9.3	84	12.5	8.1	16	46	73	16.5	71	44
4	0	9.5	9.5	84	67	7.8	12.5	37	50	10.5	36	37
5	1.0	11	9.0	58	42	7.6	10.5	32	36	17	28	40
6	4.8	28	9.0	50	24	7.4	9.5	146	29	19.5	58	35
7	3.2	12.5	19.5	44	25	6.7	8.3	242	22	24	58	24
8	1.7	14	54	34	58	6.1	9.3	132	17.5	14	48	19
9	2.3	10.5	23	30	168	5.8	9.5	115	16.5	18	104	15.5
10	2.6	13	15	26	209	5.8	14.5	358	14	[a] 15.5	50	14
11	4.7	24	176	87	153	5.6	22	232	12	[a] 62	34	17
12	4.2	13	324	351	135	5.2	16.5	232	10.5	96	27	12.5
13	3.2	11	} [b] 48	63	119	5.0	30	244	9.3	401	63	28
14	2.6	10.5		39	112	4.0	43	96	7.8	160	52	58
15	4.8	9.5	[a] 30	27	392	3.8	34	68	7.4	78	41	46
16	3.0	11.5	53	23	132	3.6	26	54	7.2	76	36	30
17	2.8	12.5	74	45	129	3.4	17	46	6.3	[a] 50	38	21
18	3.0	326	409	48	101	3.4	315	37	5.8	[a] 32	28	22
19	3.4	401	96	36	63	14.5	470	30	8.1	[a] 24	21	19.5
20	6.9	85	54	23	46	78	549	23	6.5	30	15	16.5
21	1,120	42	46	40	32	36	124	19.5	6.1	20	13	13
22	242	33	34	34	28	23	78	16.5	5.6	17	18	11
23	82	23	30	25	25	17.5	73	14.5	5.0	28	17	10
24	38	16	26	22	18	14.5	73	12.5	4.8	76	46	9.3
25	23	14.5	73	19	14.5	14.5	304	11	4.4	124	26	9.5
26	16	21	101	16	12.5	12	241	10	5.2	40	25	10.5
27	13	13.5	102	69	11	9.8	375	90	7.4	28	45	11.5
28	11.5	12	78	30	10.5	9.0	1,540	294	8.1	20	70	9.8
29	10.5	19.5	266	24	9.3	8.6	635	557	8.5	20	63	8.6
30	9.0	21	2,110	30	8.6	8.8	267	-------	20	85	54	7.2
31	8.6	18	-------	38	-------	19.5	116	-------	9.5	-------	63	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1,120	0	52.5	81.2	1,630	5,000
August	401	8.1	40.7	63.0	1,260	3,870
September	2,110	9.0	145	224	4,350	13,300
October	351	16	61.1	94.5	1,900	5,820
November	392	8.6	73.0	113	2,190	6,730
December	78	3.4	12.0	18.6	371	1,140
January	1,540	8.3	178	275	5,510	16,900
February	557	10	115	178	3,330	10,200
March	317	4.4	28.4	43.9	880	2,700
April	401	10.5	54.5	84.3	1,640	5,020
May	104	13	43.4	67.1	1,340	4,120
June	88	7.2	25.3	39.1	758	2,330
The year	2,110	0	68.7	106	25,200	77,100

[a] Partly estimated. [b] Estimated mean.

WAILUKU RIVER ABOVE HILO BOARDING SCHOOL DITCH INTAKE, NEAR HILO, HAWAII

LOCATION.—Water-stage recorder 1,000 feet above Hilo Boarding School Ditch intake, three quarters of a mile west of reservoir no. 1, and 4 miles west of Hilo.

DRAINAGE AREA.—124.5 square miles.

RECORDS AVAILABLE.—July 1928 to June 1932.

EXTREMES.—Maximum discharge during year uncertain, owing to faulty record, but estimated as 21,000 million gallons a day (32,500 second-feet) July 21; minimum, 1.5 million gallons a day (2.3 second-feet) July 5.

1928–32: Maximum discharge, that of July 21, 1931; minimum, that of July 5, 1931.

REMARKS.—Records good for ordinary stages; poor for high stages and estimated periods. Hilo waterworks diverts about 1 million gallons a day from pool at Pukamaui, three quarters of a mile upstream.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	18	34		67	31	172		[a]1,400	48	170	300
2	3.2	22	26	[b]700	54	27	86		[a]550	67	113	229
3	2.4	24	24		46	25	54	[b]180	250	51	218	170
4	1.8	23	30	284	224	24	40		166	33	113	141
5	4.1	37	22	194	124	22	33			56	89	141
6	22	70	22	160	78	19.5	29			59	204	127
7	12.5	32	65	141	81	17	25	[b]650	[b]80	76	199	89
8	7.8	36	134	113	196	15.5	29			51		70
9	9.8	24	56	97	774	14	36			67		60
10	11	39	42	82	1,030	13.5	67		46	51	[b]200	51
11	17	58	[a]550	[a]280	677	12.5	100	[b]1,200	38	219		67
12	15	30	1,030	[a]1,400	680	12	60		33	432		48
13	11	24	290	200	589	11.5	123		29	2,070		80
14	9.6	24	152	141	558	11.5	139		27	709	154	178
15	17	27	110	101	2,020	11	113		24	317	139	159
16	11	36	177	81	652	11.5	89	[b]200	22	296	118	113
17	12	38	716	173	750	11	68		19	190	127	89
18	6.8	[b]1,800	1,590	142	444	11.5			17	127	97	81
19	14		400	113	262	69	[b]2,150		27	93	74	74
20	32	284	214	78	191	[c]106			21	97	57	64
21	[a]5,500	147	162	133	141				18.5	67	51	51
22	[a]1,250	98	114	105	122	[b]55	[b]360	[b]50	17.5	57	64	43
23		63	92	89	109				17	131	64	38
24	[b]180	46	96	74	85				16.5	422	136	33
25		40	223	67	70				16.5	398	78	33
26	51	60	367	57	57	[c]38			20	141	78	42
27	38	38	405	229	48	31	[b]2,250	[a]350	30	97	144	43
28	30	32	286	104	40	27		[b]1,900	33	67	236	33
29	24	54	[a]1,300	82	36	25			29	67	223	31
30	20	54	[a]8,500	109	33	24			67	328	190	27
31	18.5	46		107		67	[a]450		36		223	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July		1.8	248	384	7,700	23,600
August		18	165	255	5,120	15,700
September		22	574	888	17,200	52,900
October		57	227	351	7,040	21,600
November	2,020	33	341	528	10,200	31,400
December		11	31.1	48.1	963	2,960
January		25	745	1,150	23,100	70,900
February			483	747	14,000	43,000
March		16.5	109	169	3,370	10,300
April	2,070	33	229	354	6,880	21,100
May		51	147	227	4,560	14,000
June	300	27	90.2	140	2,700	8,300
The year		1.8	281	435	103,000	316,000

[a] Estimated. [b] Estimated mean. [c] Partly estimated.

HILO BOARDING SCHOOL DITCH AT INTAKE, NEAR HILO, HAWAII

LOCATION.—Water-stage recorder on Hilo Boarding School Ditch, 200 feet below intake diversion dam on Wailuku River and 3¾ miles northwest of Hilo.

RECORDS AVAILABLE.—October 1931 to June 1932.

EXTREMES.—Maximum gage height during period, 4.05 feet (discharge greater than 21 million gallons a day or 32 second-feet) Jan. 28; minimum discharge, 6.5 million gallons a day (10.1 second-feet) Nov. 30.

REMARKS.—Records excellent up to maximum capacity of Parshall flume control, which is 21 million gallons a day at gage height 2.5 feet. Above this stage control is drowned by overflow from Wailuku River.

Discharge, in million gallons, 1931–32

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		7.3	7.8	11	11	13	8.7	10	11
2		7.3	7.8	11	10.5	12	9.2	9.7	10.5
3		6.9	8.2	10.5	10	11	9.2	10.5	10
4		8.7	8.7	10.5	9.7	10.5	8.2	10	10
5		8.7	8.7	10	9.7	10	9.2	9.7	10
6		7.8	8.7	9.7	11	9.7	9.2	10	10
7		8.2	8.2	9.7	12.5	9.2	9.2	10.5	9.7
8		9.2	8.2	9.7	11	9.2	8.7	10	9.2
9		11	8.2	10	11	8.7	9.2	11	9.2
10		12	7.8	11	14	8.7	8.7	10	9.2
11		11	7.8	12	13	8.2	10.5	9.7	9.2
12		10.5	7.8	11	13.5	7.8	11	9.7	8.7
13		10.5	7.8	12	12.5	7.8	15.5	10	9.2
14		11	8.2	12	11	7.8	12	10	10.5
15		14.5	8.2	12	10.5	7.3	11	10	10
16		11	7.8	11	10.5	7.3	10.5	9.7	10
17		11.5	7.8	11	10	7.3	10.5	9.7	9.7
18		10.5	7.8	14	9.7	7.3	10	9.7	9.7
19		10.5	10	15	9.7	7.8	9.7	9.2	9.2
20		10	13	15	9.2	7.8	9.7	8.7	9.2
21		9.7	12	12.5	8.7	7.3	9.2	8.7	8.7
22		9.7	11	12	8.7	7.3	9.2	8.7	8.7
23		9.2	10.5	11	8.2	6.9	9.7	8.7	8.2
24		8.7	10.5	11	8.2	6.9	10.5	10	8.2
25		8.2	10.5	13.5	7.8	6.9	11	9.2	8.2
26		7.8	10	12.5	7.8	7.3	10	9.2	8.2
27		7.3	10	15	9.7	7.8	9.7	10	8.7
28		7.0	9.7	21+	13	8.2	9.2	10.5	8.2
29	7.8	6.9	9.7	15	15	7.8	9.2	10.5	7.8
30	7.8	7.3	9.7	12.5		9.2	10	10.5	7.8
31	7.8		10.5	12		8.2		10.5	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
November	14.5	6.9	9.33	14.4	280	859
December	13	7.8	9.12	14.1	283	867
January	21+	9.7	12.1	18.7	376	1,150
February	15	7.8	10.6	16.4	307	942
March	13	6.9	8.46	13.1	262	805
April	15.5	8.2	9.92	15.3	298	913
May	11	8.7	9.82	15.2	304	934
June	11	7.8	9.23	14.3	277	850
The period (243 days)	21+	6.9	9.82	15.2	2,390	7,320

NOTE.—Control was drowned by overflow from Wailuku River 9:30 p.m. Jan. 27 to 7:45 p.m. Jan. 28.

KAPEHU STREAM AT PIIHONUA, NEAR HILO, HAWAII

LOCATION.—Water-stage recorder at Piihonua, a quarter of a mile above confluence with Wailuku River and 3 miles west of Hilo.

DRAINAGE AREA.—4.9 square miles.

RECORDS AVAILABLE.—November 1928 to June 1932.

EXTREMES.—Maximum discharge during year, 3,130 million gallons a day (4,840 second-feet) July 21 (gage height, 9.98 feet); minimum, 1.9 million gallons a day (2.9 second-feet) July 5.

1928–32: Maximum discharge, 3,640 million gallons a day (5,630 second-feet) Aug. 12, 1930 (gage height, 9.98 feet); minimum, 1.2 million gallons a day (1.9 second-feet) Feb. 17, 1931.

REMARKS.—Records good for low and medium stages; poor for extremely high stages and estimated periods. Small diversion above station for fluming sugarcane.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	[a] 2.3	14.5	19	114	20	17	71	48	195	18	45	63
2		17.5	18	71	18.5	15.5	28	29	91	21	29	48
3		17	17	55	17	16	18	32	48	21	66	36
4		17	21	55	54	15	15.5	29	34	15	34	36
5		22	17.5	42	29	14	14	25	29	19	27	36
6		29	18	39	24	13.5	13	92	24	21	56	32
7		18	28	36	24	13	12.5	262	21	27	56	25
8		22	39	32	60	12	14	106	19.5	20	54	24
9		17	23	32	178	10	17	92	18.5	25	133	22
10		24	21	29	194	8.6	29	306	16.5	19	48	21
11		27	138	72	142	7.2	30	246	15	74	39	23
12	[a] 8	19	104	80	164	6.6	20	209	15.5	142	34	19
13		17	45	36	136	6.2	30	152	15	409	59	28
14		16.5	32	32	135	6.1	42	84	14	120	42	54
15		15	29	29	372	5.8	36	55	14	75	45	39
16		20	49	27	124	5.5	32	45	13	71	36	32
17		19.5	144	53	139	5.5	24	39	12	48	42	25
18		223	309	36	89	5.5	185	32	12.5	36	36	25
19	6.7	227	89	34	75	22	302	27	14	29	29	22
20	13	63	67	27	51	60	224	24	12.5	34	27	21
21	521	42	51	39	42	33	89	21	11.5	25	25	17.5
22	126	34	39	34	39	23	67	19	10.5	23	27	15.5
23	63	27	34	29	34	19.5	76	17.5	10	36	27	14.5
24	39	22	33	27	29	18.5	67	16.5	9.3	72	48	13
25	32	21	54	25	27	20	192	15.5	8.6	90	29	14
26	27	25	97	23	25	16	117	15	10.5	36	29	15
27	22	19.5	84	42	23	14	187	53	13.5	29	48	13
28	19	18.5	63	25	22	14	476	158	13	24	71	13
29	17.5	27	182	22	21	13	226	344	11.5	25	63	11
30	16	29	910	30	19	13	112	-------	22	85	55	10
31	15	24	-------	26	-------	23	67	-------	14	-------	68	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	521	----------	33.3	51.5	1,030	3,170
August	227	14.5	36.6	56.6	1,130	3,480
September	910	17	92.5	143	2,770	8,510
October	114	22	40.4	62.5	1,250	3,850
November	372	17	77.6	120	2,330	7,140
December	60	5.5	15.2	23.5	472	1,450
January	476	12.5	91.4	141	2,830	8,690
February	344	15	89.8	139	2,600	7,990
March	195	8.6	24.8	38.4	768	2,360
April	409	15	56.3	87.1	1,690	5,180
May	133	25	46.0	71.2	1,430	4,380
June	63	10	25.6	39.6	768	2,360
The year	910	----------	52.1	80.6	19,100	58,600

[a] Estimated mean.

HONOLII STREAM NEAR HILO, HAWAII

LOCATION.—Water-stage recorder 500 feet above intake of Hilo Sugar Co.'s upper ditch, 2 miles from end of Kaiwiki road, and 10 miles from Hilo.

DRAINAGE AREA.—8.3 square miles.

RECORDS AVAILABLE.—February 1924 to July 1932 (discontinued).

EXTREMES.—Maximum discharge during period, 2,130 million gallons a day (3,300 second-feet) July 21 (gage height, 13.40 feet); minimum, 0.8 million gallons a day (1.2 second-feet) Dec. 16-17.

1924–32: Maximum discharge, 3,060 million gallons a day (4,730 second-feet) Nov. 21, 1924 (gage height, 16.5 feet, estimated from flood marks); minimum, 0.1 million gallons a day (0.2 second-foot) Feb. 9, Apr. 14, 1926.

REMARKS.—Records good for ordinary stages except those estimated, which are poor. High-stage records poor. No diversions above station.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	2.0	3.2	7.6	67	10.5	3.4	63			[a] 16			10
2	1.7	4.5	5.0	37	7.9	3.0	27		[b]50				10
3	1.6	7.9	4.3	23	6.6	2.8	10.5	[b] 24					[b]10
4	1.3	7.9	9.4	38	100	3.4	6.8		11.5			[b] 42	10
5	2.1	12	5.0	17	36	2.8	5.4		9.2				10
6	8.1	26	6.3	13.5	14.5	2.5	4.5		7.4	[b] 19	[b]36		[a] 3.7
7	5.2	11	18	15	14	2.2	3.9		6.3				3.5
8	3.9	12.5	45	11.5	89	2.0	4.8		5.8				3.7
9	4.8	8.7	16	10	242	1.9	8.7		6.6				5.2
10	4.3	19.5	13	8.4	210	1.7	34	[b] 190	5.4			[b] 9	3.5
11	10	24	164	55	134	1.7	45		4.5				7.6
12	8.1	10.5	189	221	120	1.4	19.5		4.1		[a]10.0		24
13	5.2	8.1	43	21	89	1.2	38		3.7				117
14	4.1	8.1	17.5	11.5	83	1.1	49		3.5	[b] 150			36
15	6.1	6.3	12.5	9.0	304	.9	30		3.5		[b]36		33
16	3.7	11	33	7.4	70	.8	19	[b] 42	3.0			[b] 22	58
17	4.8	12.5	88	46	[a]206	.8	11.5		2.8				29
18	3.9	417	300	36		.9	284		3.0				14.5
19	3.7	314	50	20	[b]500	86	[a]320		4.3				11
20	13	42	28	10.5		238	[b]350		4.1	[b] 24	[b]12		14
21	599	16	26	14	10.5	88			4.1				
22	125	12.5	14	19.5	9.5	43	[b]75		3.4				
23	38	8.7	12.5	23	10.5	19.5		[b] 8	2.8				
24	13.5	6.8	12	13	8.1	16			2.8				
25	9.2	5.4	43	13.5	6.8	18.5			2.7	[b] 60		[b] 6	
26	7.4	8.4	101	10.5	6.1	9.8			2.8				
27	5.8	5.4	114	15	5.4	6.8	[b]280		12		[b]50		
28	5.0	5.2	76	9.0	4.8	5.6		[b] 240	7.9	[b] 22			
29	4.1	16	199	6.3	4.3	5.0			6.8				
30	3.5	17.5	781	28	3.7	4.5			18				
31	2.8	14		25		21			7.4				

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
1931-32						
July	599	1.3	29.4	45.5	911	2,800
August	417	3.2	34.9	54.0	1,080	3,320
September	781	4.3	81.1	125	2,430	7,470
October	221	6.3	27.6	42.7	855	2,620
November		3.7	110	170	3,310	10,100
December	238	.8	19.2	29.7	596	1,830
January		3.9	116	179	3,590	11,000
February			92	142	2,670	8,190
March		2.7	9.98	15.4	309	950
April			50.8	78.6	1,520	4,670
May			34.1	52.8	1,060	3,250
June			17.5	27.1	526	1,610
The year		.8	51.5	79.7	18,900	57,800
1932						
July 1–20	117		20.7	32.0	414	1,270

[a] Partly estimated. [b] Estimated mean. [c] Estimated.

AWINI DITCH AT EAST HONOKANEIKI GULCH, NEAR NIULII, HAWAII

LOCATION.—Water-stage recorder on Awini Ditch at flume across East Honokaneiki Gulch, 4½ miles southeast of Niulii.

RECORDS AVAILABLE.—October 1927 to June 1932.

EXTREMES.—Maximum discharge during year, 30 million gallons a day (46 second-feet) Feb. 26 or 27 (gage height, 3.66 feet); no flow Mar. 18, 19, when water was turned out of ditch.

1927–32: Maximum discharge, 32 million gallons a day (50 second-feet) Dec. 28, 1927, Sept. 10, 1928 (gage height, 3.51 feet); no flow when ditch is dry or water is turned out.

REMARKS.—Records fair. Awini Ditch diverts water at about elevation 2,000 feet from all streams between Waikaloa and Honokane. Regulated by head gates and spillways.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.3	7.7	13	19.5	14	6.2	22	9.2	23	19.5	17	18
2	4.5	6.5	9.7	15	14.5	5.7	19.5	10	22	18	13.5	13.5
3	4.1	6.0	19	13	12	5.2	21	22	17.5	18	16	12
4	3.3	5.6	15	18	16.5	10.5	17	19.5	14.5	13	13.5	10.5
5	3.4	5.4	11.5	14	18	11.5	14.5	19.5	13	19.5	9.7	11
6	9.8	8.7	[a]14	13.5	15	12.5	13.5	19.5	22	20	11	11.5
7	12	17	[a]11.5	16	15	14	12	21	14.5	18	13	13.5
8	7.0	14.5	[a]10.5	16	13.5	8.0	11	22	17.5	15	14	18
9	7.0	12	[a]9.2	13.5	17	6.2	10.5	22	18	21	17	14
10	7.0	20	[a]8.6	10.5	19	5.9	9.7	24	14.5	19	14	13
11	14	14.5	[b]11.5	8.0	19	8.6	9.2	23	12	24	13.5	14
12	13.5	12	22	7.0	19	8.0	8.6	19.5	11.5	24	17	11.5
13	8.6	8.6	15	6.5	18	6.1	8.0	19	10.5	24	13.5	13.5
14	6.5	7.0	11.5	9.7	15	5.3	8.0	20	9.7	21	18	14.5
15	5.8	6.8	9.2	8.0	17.5	12	8.8	19	9.2	22	19	18
16	4.8	9.2	17	8.6	17	[c]19	14	18	8.0	21	8.0	19
17	6.0	8.6	19	22	17		9.7	16	8.0	12.5	7.0	17
18	6.4	23	22	19	19.5		7.5	13.5	14.5	10.5	5.4	17
19	12.5	19	15.5	12	18	24	6.5	12	14.5	14	7.0	14.5
20	15.5	13	12	10	15	23	6.0	11	19.5	18	6.5	13.5
21	20	10.5	14.5	23	13	23	5.5	9.7	17	15	12	11
22	17	11	14	19.5	13.5	20	6.6	9.2	14	16	17	10.5
23	18.5	10.5	11.5	21	17	21	13	9.2	11.5	20	12	19
24	14.5	8.6	8.0	17	13.5	22	17	9.2	10.5	16	18	13.5
25	13.5	7.5	10	16	10.5	21	19.5	8.6	9.2	15	11	17
26	13	7.5	14	17	9.2	17.5	17	[c]19	8.0	13	9.7	21
27	13	6.5	14.5	17.5	9.2	19	17.5		8.0	13.5	11	20
28	12	5.9	16	12	8.0	18	19.5		11.5	10.5	13	20
29	17	5.5	18	10.5	7.5	17.5	18	24	9.7	13.5	16	16
30	14.5	16.5	24	9.7	7.0	19.5	16	-------	14	15.5	14.5	13.5
31	9.7	19	-------	11.5	-------	22	11.5	-------	13	-------	17	-------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	20	3.3	10.3	15.9	320	981
August	23	5.4	10.8	16.7	334	1,030
September	24	8.0	14.0	21.7	421	1,290
October	23	6.5	14.0	21.7	434	1,330
November	19.5	7.0	14.6	22.6	438	1,340
December	24	5.2	14.5	22.4	450	1,380
January	22	5.5	12.8	19.8	398	1,220
February	-------	8.6	16.8	26.0	487	1,490
March	23	8.0	13.6	21.0	420	1,290
April	24	10.5	17.3	26.8	520	1,600
May	19	5.4	13.1	20.3	405	1,240
June	21	10.5	15.0	23.2	449	1,380
The year	-------	3.3	13.9	21.5	5,080	15,600

[a] Estimated. [b] Partly estimated. [c] Estimated mean.

EAST HONOKANEIKI INTAKE TO AWINI DITCH AT EAST HONOKANEIKI GULCH, NEAR NIULII, HAWAII

LOCATION.—Water-stage recorder on intake tunnel delivering water from East Honokaneiki Gulch to Awini Ditch on west side of the gulch, 4½ miles southeast of Niulii.

RECORDS AVAILABLE.—October 1927 to June 1932.

EXTREMES.—Maximum discharge during year, 7.6 million gallons a day (11.8 second-feet) Sept. 17 (gage height, 1.33 feet); no flow Mar. 7, when water was shut out of ditch.

1927–32: Maximum discharge, 10.8 million gallons a day (16.7 second-feet) Mar. 27, Apr. 2, 1930 (gage height, 1.35 feet); no flow when ditch is dry or water is shut out.

REMARKS.—Records fair except those estimated, which are poor. Diverts water from East Honokaneiki Gulch to Awini Ditch.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.23	0.35	0.41	1.75	[a]1.25				3.4	4.1	1.05	2.1
2	.14	.29	.29	.87	[a]1.2	[b]0.2	[b]2.7	[b]1.2	2.8	2.4	.75	.92
3	.14	.20	4.9	.75	.79				1.75	2.6	1.15	.60
4	.14	.17	3.5	1.5	3.7				1.25	.79	.56	.35
5	.31	2.8	.87	.79	[c]3.2			2.3	1.1	2.9	.96	.23
6	3.6	1.8	1.6	.64	1.4	[b]2.1		3.4	3.7	2.3	.75	.20
7	1.35	.97	1.25	.97	1.4			5.1	1.25	2.3	.68	.64
8	.79	.75	.79	.97	.60			4.3	2.2	.78	.56	2.5
9	1.0	.32	.56	.68	2.1			3.7	2.2	2.9	.97	1.65
10	.79	3.3	.44	.38	4.4	[b].4	[b].4	4.8	.97	1.8	1.2	1.4
11	3.4	2.4	1.5	.26	4.4			3.6	.71	3.2	.92	1.6
12	1.2	1.65	2.4	.20	4.3	[c].41		2.0	.56	3.0	1.8	1.15
13	.44	.79	.87	.17	[c]2.1	[d].35		2.2	.41	2.8	3.4	1.75
14	.10	.38	.56	.23		[c].29		2.6	.35	3.4	1.7	1.95
15	.10	.23	.44	.23		1.45		1.45	.29	4.0	3.7	2.4
16	.10	.26	3.1	.34		3.2	[b]1.0	1.15	.23	3.5	2.3	2.7
17	.12	.23	2.7	5.4		2.2		1.05	.44	2.3	3.3	1.55
18	.20	5.9	4.3	4.8		2.2		.64	3.2	1.55	3.4	1.3
19	4.9	4.0	1.25	2.5	[b]1.7	3.6		.56	2.9	1.15	1.8	.83
20	5.4	1.7	.68	2.3		4.3		.60	2.1	2.3	1.25	.60
21	5.1	.97	1.2	5.1			[b].3	.56	1.4	1.05	1.15	.38
22	4.8	.64	.64	3.3				.44	.92	2.1	1.5	.41
23	2.5	.52	.41	1.45				.41	.68	2.5	1.25	2.6
24	.97	.41	.41	1.4				.38	.64	1.75	2.0	.92
25	.92	.32	1.2	1.1				.35	.41	2.0	1.8	.97
26	.68	.29	1.35	2.4		[b]2.9		.48	.41	1.0	1.15	.97
27	.68	.26	1.25	1.8	[b].5		[b]2.3	[a]2.2	.56	1.2	2.4	.97
28	.83	.23	1.4	.79				3.2	.92	.68	1.75	.97
29	3.8	.23	2.9	.97				4.0	.56	1.45	1.85	1.45
30	3.8	4.8	3.9	.71				------	1.15	2.6	1.65	1.05
31	1.85	[c]2.4	------	[c].79	------			------	.93	------	2.2	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	5.4	0.10	1.63	2.52	50.4	155
August	5.9	.17	1.28	1.98	39.6	121
September	4.9	.29	1.57	2.43	47.1	144
October	5.4	.17	1.47	2.27	45.5	140
November	4.4	----------	1.71	2.65	51.3	158
December	----------	----------	1.95	3.02	60.5	186
January	----------	----------	1.31	2.03	40.7	125
February	5.1	.35	1.94	3.00	56.3	173
March	3.7	.23	1.30	2.01	40.4	124
April	4.1	.68	2.21	3.42	66.4	204
May	3.7	.56	1.64	2.54	50.9	156
June	2.7	.20	1.24	1.92	37.1	114
The year	----------	.10	1.60	2.48	586	1,800

[a] Estimated. [b] Estimated mean. [c] Partly estimated. [d] Interpolated.

KOHALA DITCH AT POLOLU, NEAR NIULII, HAWAII

LOCATION.—Water-stage recorder on open section of ditch in Pololu Valley just below boundary between Bishop Estate land of Honokane and Territorial land of Pololu, 2¾ miles above mouth of Pololu Stream, and 4 miles south of Niulii.

RECORDS AVAILABLE.—August 1927 to June 1932.

EXTREMES.—Maximum discharge during year, 67 million gallons a day (104 second feet) July 21 (gage height, 4.20 feet); minimum, 2.7 million gallons a day (4.2 second-feet) Nov. 14.

1927–32: Maximum discharge, that of July 21, 1931; no flow Nov. 13, 1930, when water was shut out of ditch.

REMARKS.—Records fair. Regulated by head gates. Kohala Ditch receives flow of Awini Ditch and diverts at elevation of about 1,200 feet from all streams west of Honokane.

Discharge, in million gallons, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	18.5	22	27	33	27	17.5	41	[a] 24		52	33	37
2	17.5	21	24	27	29	17.5	38			41	29	29
3	16.5	20	39	25	24	16.5	37			33	31	27
4	16.5	18.5	33	29	37	24	33			27	29	25
5	15.5	21	25	27	35	25	29		[a] 32		29	24
6	22	27	37	25	33	29	29			[a] 38	31	25
7	24	31	35	29	31	29	29				29	27
8	21	31	27	27	29	22	27				29	41
9	20	29	24	25	43	20	27		29		30	33
10	20	37	25	22	45	18.5	25	[a] 40	27	34	27	29
11	26	33	23	20	43	21	25		25	48	29	[b] 45
12	24	29	33	17.5	41	22	24		25	31	33	35
13	18.5	25	19.5	16.5	33	18.5	23		24	27	35	39
14	16.5	22	23	20	24	16.5	23		23	25	33	[b] 41
15	15.5	23	21	18.5	25	28	24		23	[c] 25	33	[b] 45
16	15	25	33	18.5	33	45	29		23	[b] 25	31	[b] 43
17	15.5	26	34	34	27	37	24		22	28	33	33
18	16.5	48	45	39	25	41			39	24	35	33
19	26	37	31	33	35	50			50	48	29	31
20	32	[c] 33	25	21	29	43			37	48	24	29
21	47	[c] 27	29	45	27	48		[a] 24	35	48	25	25
22	31	[b] 25	25	37	31	43			31	31	29	24
23	35	24	24	37	33	43			29	41	27	35
24	33	22	22	31	27	41	[a] 30		25	39	29	31
25	29	21	29	29	24	33			24	39	27	35
26	29	21	[b] 27	31	23	29			21	31	24	52
27	27	20	29	31	23	29		[a] 46	27	31	25	45
28	27	18.5	31	27	22	33			31	48	29	50
29	39	17.5	38	27	21	35			25	30	31	37
30	29	37	48	25	18.5	37		------	29	39	31	31
31	24	37	------	25	------	45		------	28	------	33	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	47	15	24.1	37.3	747	2,290
August	48	17.5	26.7	41.3	828	2,540
September	48	19.5	29.5	45.6	886	2,720
October	45	16.5	27.5	42.5	852	2,610
November	45	18.5	29.9	46.3	898	2,750
December	50	16.5	30.9	47.8	957	2,940
January	----------	----------	29.3	45.3	907	2,780
February	----------	----------	35.9	55.5	1,040	3,190
March	----------	21	29.3	45.3	908	2,790
April	52	24	36.1	55.9	1,080	3,320
May	35	24	29.7	46.0	922	2,830
June	52	24	34.5	53.4	1,040	3,180
The year	----------	15	30.2	46.7	11.100	33,900

[a] Estimated mean. [b] Partly estimated. [c] Estimated.

KEHENA DITCH NEAR KOHALA, HAWAII

LOCATION.—Water-stage recorder at old Honokane Weir, near head of West Branch of Honokanenui Gulch and 8½ miles southeast of Kohala.

RECORDS AVAILABLE.—December 1917 to November 1919; April 1928 to June 1932.

EXTREMES.—Maximum discharge during year, 48 million gallons a day (74 second-feet) sometime between Nov. 17 and Jan. 1 (gage height, 1.16 feet); no flow Sept. 13, Nov. 14.

Maximum discharge for year ending June 30, 1930, has been revised to 54 million gallons a day (84 second-feet) Aug. 10 (gage height, 1.24 feet).

1917–19, 1928–32: Maximum discharge, 86 million gallons a day (133 second-feet) Jan. 27, 1918 (gage height, 2.16 feet); no flow when ditch was dry.

REMARKS.—Records good except those for estimated periods, which are poor. Regulated by several gates above station. Intake on Honokanenui Stream 2 miles above station, at elevation of about 4,200 feet.

Revised discharge, in million gallons, 1929–30

Day	July	Aug.	Sept.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	0.9	0.6	0	43	9.4		17.5	3.4	26	16
2	5.4	.8	1.4	0	27	5.0		38	33	22	17
3	2.0	.6	1.2	0	7.8	16.5		35	32	15	10.5
4	1.2	.6	.9	0	3.2	10	[b] 3.6	27	30	6.4	28
5	.9	.6	.6	0	1.8	5.5		37	15	36	11.5
6	.6	.6	.5	0	3.2	3.7		35	30	38	8.7
7	.6	3.2	0	0	2.6	2.8		27	37	15	7.5
8	.6	[b] 8	0	0	1.6	7.8	[b] 17	15	36	6.7	4.2
9	.5		0	0	1.1	3.5		10	35	7.2	2.8
10	1.1	[a] 29	0	0	.8	2.4		7.0	25	4.5	1.8
11	3.2	24	0	0	.6	3.1		18	16	5.0	12
12	1.2	5.0	0	0	.4	2.4		19.5	26	4.8	36
13	.9	2.4	0	0	.4	34	[b] 2.2	6.7	33	13	19.5
14	1.2	1.4	0	0	[b] 4	10.5		4.0	9.9	26	18.5
15	6.4	1.1	0	0		4.0		20	4.2	19.5	13
16	33	.9	0	0	[b] 20	2.8		22	3.2	16	8.7
17	10	.8	0	7.7		2.0		7.0	2.8	25	5.3
18	3.2	.6	0	30	23	13.5		3.7	2.4	25	3.5
19	1.8	.5	0	17.5	31	8.9		2.6	6.1	11.5	2.6
20	1.2	.4	0		24	6.4	[b] 10	2.6	17	5.8	2.0
21	10.5	.6	0	[b] 15	7.1	4.2		4.2	11	3.7	2.2
22	3.7	1.4	0		3.7	2.8		2.6	26	17	5.7
23	2.4	.9	0	[a] 4.8	2.4	2.0		1.6	19	7.6	24
24	1.6	.5	0	[a] 8.7	16	1.4		1.2	15.5	3.5	38
25	5.1	5.2	0		12.5	[b] 14	[b] 22	1.1	8.7	2.6	28
26	4.0	8.4	0	[b] 13	16			.9	6.4	2.2	27
27	9.5	2.4	0		36			17.5	3.7	2.0	16.5
28	3.5	1.2	0		33	[b] 5.5	36	19	5.0	5.4	22
29	1.8	.8	0		35			7.0	6.9	5.8	38
30	1.2	[a] .8	0	[a] 17.5	38			3.7	30	3.5	28
31	1.1	[a] 1.2			28	[c] 23		2.4		5.3	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	33	0.5	4.24	6.56	131	403
August	29	.4	3.64	5.63	113	346
September	1.4	0	.17	.26	5.2	16
November		0	6.54	10.1	196	602
December	43		14.2	22.0	440	1,350
January	34	1.4	7.66	11.9	238	729
February			10.6	16.4	298	915
March	38	.9	13.4	20.7	416	1,280
April	37	2.4	17.6	27.2	529	1,620
May	38	2.0	12.5	19.3	387	1,190
June	38	1.8	15.3	23.7	458	1,410
The year	43	0	8.80	13.6	3,210	9,860

[a] Partly estimated. [b] Estimated mean. [c] Estimated.

NOTE.—No flow in October. Records of discharge in the above table supersede those published in Water-Supply Paper 710, owing to revision of records Feb. 22 to May 5, 1930.

Discharge, in million gallons, of Kehena Ditch near Kohala, Hawaii, 1931–32

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.7	1.3	2.2	7.9	2.6		[a] 18	2.0	21	38	24	11.5
2	.5	.9	1.8	3.7	4.2		11.5	1.6	16	13	10	6.1
3	.3	.8	10.5	2.6	3.5		7.0	7.3	5.3	8.4	22	4.5
4	.2	.7	4.7	5.0	23		3.5	12	3.5	12.5	8.6	2.6
5	.3	9	4.2	2.8	11		2.6	24	2.6	20	9.8	1.8
6	2.4	5.0	11	2.8	14.5		2.0	13	11.5	25	23	1.6
7	2.2	9.2	7.4	5.3	11		1.8	38	5.3	11.5	13	4.5
8	.8	5.5	4.2	4.5	12.5	[b] 1.2	1.4	30	14	10	7.2	20
9	.7	3.5	2.4	2.8	28		1.4	19.5	18	17.5	21	7.5
10	.7	24	2.6	1.6	27		1.2	33	4.2	22	7.8	8.8
11	11	7.8	6.8	1.2	23		1.2	19	2.8	42	4.0	17
12	3.8	4.0	7.8	.9	21		1.2	8.4	2.0	30	9.4	11
13	1.8	1.8	1.5	.6	9.1		2.4	9.8	1.6	29	28	20
14	1.3	.9	2.2	.6	1.1		2.2	29	1.2	16.5	11.5	22
15	.9	1.1	2.0	.8	2.5		1.8	8.8	1.1	30	20	18.5
16	.7	1.5	17.5	.6	5.3		1.8	4.2	.9	19	17	20
17	.9	8.2	16.5	13.5			1.4	5.7	.9	10	29	7.5
18	1.1	33	19.5	18			1.2	4.8	5.6	5.0	23	9.4
19	5.1	14	5.3	9.5			1.1	2.6	25	6.3	12	5.3
20	17.5	5.2	2.8	4.6	[b] 7.5		.9	2.0	7.2	12.5	5.0	3.7
21	29	2.4	6.6	27			.9	1.8	6.6	7.8	3.5	2.0
22	18	2.0	3.7	11			.8	1.6	9.6	16	7.5	1.6
23	10.5	1.7	4.2	6.4		[b] 18	3.6	1.4	4.5	17	4.0	15
24	3.8	1.1	2.2	3.0			14	1.2	3.5	21	3.5	6.0
25	2.4	.9	9.6	4.8			25	1.2	2.4	15.5	11	11
26	2.2	.9	12.5	4.8			12	9.8	1.6	6.7	11.5	29
27	3.3	.7	15	4.7	[b] .7		21	40	16	7.5	19.5	15
28	8.3	.5	17	2.6			23	18	8.4	4.2	13.5	22
29	24	1.6	24	3.7			17.5	21	5.0	6.7	15	7.0
30	5.0	27	29	2.6			9.0	------	10.5	22	14	3.0
31	2.2	8.8	------	2.2	------		3.5	------	18.5	------	10.5	------

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	29	0.2	5.21	8.06	162	496
August	33	.5	5.71	8.83	177	543
September	29	1.5	8.56	13.2	257	788
October	27	.6	5.23	8.09	162	497
November	28	----------	8.78	13.6	264	809
December	----------	----------	9.87	15.3	306	939
January	----------	.8	6.32	9.78	196	601
February	40	1.2	12.8	19.8	371	1,140
March	25	.9	7.62	11.8	236	725
April	42	4.2	16.8	26.0	503	1,540
May	29	3.5	13.5	20.9	419	1,290
June	29	1.6	10.5	16.2	315	966
The year	----------	.2	9.20	14.2	3,370	10,300

[a] Partly estimated. [b] Estimated mean.

MISCELLANEOUS MEASUREMENTS

Measurements of streams and ditches on the island of Hawaii at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on island of Hawaii, 1931–32

Date	Stream	Tributary to—	Locality	Discharge	
				Second-feet	Million gallons a day
Oct. 27	Awini Ditch	Kohala Ditch	Honokane Weir near Niulii	25.4	16.4
May 10	do	do	do	17.9	11.6
Oct. 27	Kohala Ditch	Honokane Stream.	Niulii Weir near Niulii	48.5	31.3

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