

Surface Water Supply of Hawaii 1952-53

Prepared under the direction of J. V. B. WELLS, Chief, Surface Water Branch

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*Prepared in cooperation with the
Territory of Hawaii*



UNITED STATES DEPARTMENT OF THE INTERIOR

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PREFACE

This report was prepared by the Geological Survey in cooperation with the Territory of Hawaii by personnel of the Water Resources Division, C. G. Paulsen, chief, under the general direction of J. V. B. Wells, chief, Surface Water Branch, and B. J. Peterson, chief, Annual Reports Section.

The data were collected and computed under the supervision of M. H. Carson, district engineer, Honolulu, prior to April 1954, succeeded by H. S. Leak.

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SCOPE OF WORK

This volume contains records of daily flow of streams and ditches at 121 gaging stations in the Territory of Hawaii during the year ending June 30, 1953. In addition, discharge measurements only have been made at many other points, and rather extensive studies of ground water have been made on all the inhabited islands.

Since the beginning of stream-gaging work in Hawaii, in 1910, records of flow of streams and ditches have been obtained at about 579 stations for periods ranging from a few months to 42 years. Also, hundreds of discharge measurements only have been made at points other than gaging stations. Most of the results of ground-water studies have been published in bulletins of the Territorial Division of Hydrography.

COOPERATION

The work during the year ending June 30, 1953, was done under cooperative agreement with the Territory of Hawaii through the commissioner of public lands. Assistance in collecting records was rendered also on the island of Kauai by the Kekaha Sugar Co. Ltd., the McBryde Sugar Co. Ltd., the East Kauai Water Co. Ltd., the Kilauea Sugar Co. Ltd., and the Lihue Plantation Co. Ltd.; on the island of Oahu by the Wahiawa Agricultural Co. Ltd., and Waiahole Water Co. Ltd.; on the island of Maui by the Pioneer Mill Co. Ltd., the East Maui Irrigation Co. Ltd., the Maui County Engineer, Maui County Board of Water Works, and Territory of Hawaii Board of Agriculture and Forestry; and on the island of Hawaii by the City of Hilo Water Works, the Kohala Ditch Co. Ltd., and the Olaa Sugar Co. Ltd.

Acknowledgment of records collected by individuals or corporations is made in connection with the description of each station for which such records were furnished.

DIVISION OF WORK

The stream-gaging work was done by the Water Resources Division of the Geological Survey under the direction of personnel shown in the preface.

Information of a more detailed nature than that published for most of the gaging stations given in this report is on file in the district office, Room 225, Federal Building, Honolulu. Provisional records of discharge prior to publication, and other unpublished data concerning the gaging-station records may usually be obtained from the district office.

DEFINITION OF TERMS AND ABBREVIATIONS

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

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

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

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

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

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

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

In the Territory of Hawaii the unit most commonly used in measuring water is "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 sense "million gallons" as an absolute quantity is used in the measurement of storage capacities of reservoirs.

The following convenient approximate relations exist between cubic feet per second, million gallons a day, and acre-feet: 1 cubic foot per second flowing 24 hours equals about 2 acre-feet; 1,000,000 gallons equals about 3 acre-feet; and 1,000,000 gallons a day equals about 1.55 cubic feet per second.

DOWNSTREAM ORDER OF LISTING GAGING STATIONS

Beginning with the report for the year ending June 30, 1950, the order of listing gaging-station records was changed. Proceeding in a downstream direction along the main stem, all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. Tributary streams are indicated by indention. This downstream order and the system of indention show which gaging stations are on tributaries between any two stations on a main stem.

The order of listing used in previous reports listed first all stations on the main stem from headwaters toward mouth, then all stations on the uppermost tributary to the main stem from the tributary's source to mouth.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining

the daily flow. All records of stage are obtained from water-stage recorders that give continuous records of fluctuations. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge. Occasionally discharge is determined from a weir or rating flume, using standard formulas, and for several stations the high-water discharge has been determined from rating developed by the use of models.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is essentially the shifting-control method.

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge and runoff of the stream.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height and the minimum discharge. In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it

easier to find such revised records, a paragraph headed "Revisions (fiscal years)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the fiscal years for which figures are revised in that report. In listing the fiscal years only one number is given; for instance, 1933 stands for the fiscal year July 1, 1932, to June 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given.

Skeleton rating tables are published for all stations except for ditch or spring stations.

The daily table gives, in general, the discharge corresponding to the daily mean gage height. For stations subject to sudden or rapid diurnal fluctuation, the daily mean gage height may not indicate the true daily mean discharge, which must be obtained by averaging the discharge for parts of the day.

Records of daily discharge are published on the basis of Hawaiian standard time.

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

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures in million gallons. The mean for the month is given both in terms of million gallons a day (line headed "mgd") and in cubic feet per second (line headed "cfs"). The line headed "Ac-ft" gives the runoff for the month in acre-feet.

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

Peak discharges and the times of their occurrence and corresponding gage heights of most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for canals, ditches, springs, or for any stream for which the peaks are subject to substantial control by man.

Footnotes to the table of daily discharge indicate periods when discharge was computed or estimated by unusual or special methods during periods of no gage-height record or by other effects that reduce the degree of accuracy of the records.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

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

Computations are carried to not more than three significant figures, except that monthly and yearly total runoff (million gallons and acre-feet) above 10,000 are carried to four significant figures.

PUBLICATIONS

The following table lists, by years and numbers, the papers on the surface-water supply of Hawaii published during the period 1903-53 and, used in conjunction with the list of stations maintained, which is given in Water-Supply Paper 795, provides a convenient index for finding the data for any station. Except as indicated, the year or years covered by each report begin July 1 and end on June 30. The data for any particular station will be found in the reports covering the years during which that station was maintained, unless, owing to undeveloped rating curves, publication was postponed. Occasionally data are revised and republished in later papers. Miscellaneous discharge measurements made during any year at points other than regular gaging stations are included in the data published for that year.

Numbers of water-supply papers containing data on the surface water supply of Hawaii, 1903-53

Year	WSP	Year	WSP	Year	WSP	Year	WSP	Year	WSP
1903	*77	1919-20	516	1928-29	695	1937-38	865	1945-46	1065
1909-11†	318	1920-21	535	1929-30	710	1938-39	885	1946-47	1095
1912†	336	1921-22	555	1930-31	725	1939-40	905	1947-48	1125
1913†	373	1922-23	575	1931-32	740	1940-41	935	1948-49	1155
1913-15	430	1923-24	595	1932-33	755	1941-42	965	1949-50	1185
1915-16	445	1924-25	615	1933-34	770	1942-43	985	1950-51	1219
1916-17	465	1925-26	635	1934-35	795	1943-44	1015	1951-52	1249
1917-18	485	1926-27	655	1935-36	815	1944-45	1045	1952-53	1289
1918-19	515	1927-28	675	1936-37	835				

* This paper, entitled "Water resources of Molokai," by Waldemar Lindgren, contains data on both the surface and ground-water supplies of the island named.

† Calendar years. Data for the last half of the calendar year 1913 appears not only in Water-Supply Paper 373 but also in Water-Supply Paper 430, the first of the reports covering a year ending June 30.

A summary of records of flow in streams and ditches in the Territory of Hawaii was published in 1939 by the Territorial Planning Board. This report, entitled "Surface-water resources of the Territory of Hawaii, 1901-38," gives, by gaging stations for the periods of record, (1) monthly-discharge tables, which show for each month the maximum, minimum, and mean daily discharge and the total discharge, and (2) duration-discharge tables. Nearly all available records of flow in the Territory up to December 1938 were considered in making the summary. Some of these records are not contained in publications of the Geological Survey; some are revisions of records published in the Survey's water-supply papers.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table lists the gaging stations in the Territory of Hawaii at which records of discharge were collected during the fiscal year July 1952 to June 1953 by agencies.

other than the Geological Survey. The records for these stations are not contained in the publications of the Geological Survey, and, except as indicated, have not been published elsewhere.

Records of discharge collected by agencies other than the Geological Survey

ISLAND OF KAUAI			
Stream	Location	Period	Operated by
East Lawai storm ditch..	Near Government Road, near Kalaheo.	1924-53	McBryde Sugar Co.
Eleele ditch.....	do.....	1924-53	Do.
Hanalei ditch.....	Above Kalihiwai Reservoir, near Kilauea.	1923-53	Kilauea Sugar Plantation Co.
Hanamaulu ditch.....	Below intake, near Hanamaulu.....	1925-53	Lihue Plantation Co.
Hanaope field ditch....	Below Hanaope River intake, near Eleele.	1924-53	McBryde Sugar Co.
Hanaope Stream.....	At tidewater, near Eleele.....	1924-53	Do.
Kamooloa ditch.....	Below Kauai Belt Road crossing, near Koloa.	1924-53	Do.
Kealia River.....	1 mile west of Kaneha Reservoir and 5½ miles northwest of Kealia.	1936-53	Lihue Plantation Co.
Koloa ditch.....	4½ miles north of Koloa and 6½ miles west of Lihue.	1927-53	Do.
Koula ditch.....	In Hanonui Valley, near Makaweli...	1949-53	Gay & Robinson.
Lawai Stream.....	½ mile above cannery, near Kalaheo.	1924-53	McBryde Sugar Co.
Lihue lower ditch.....	Below intake, near Lihue.....	1925-53	Lihue Plantation Co.
Olokele ditch.....	do.....	1925-53	Do.
Olokele ditch.....	At powerhouse, near Makaweli.....	1926-53	Gay & Robinson.
Wahiawa main stream....	Above Alexander Reservoir, near Kalaheo.	1924-53	McBryde Sugar Co.
Wahiawa Stream, East Branch	do.....	1929-53	Do.
West Lawai ditch.....	Near camp 12, near Kalaheo.....	1924-53	Do.

ISLAND OF OAHU			
Alewa Heights Spring....	Below reservoir 3.....	1932-53*	Board of Water Supply, City and County of Honolulu.
Booth Springs.....	In Pauoa Valley, at altitude 685 feet.	1929-53*	Do.
Helemano ditch.....	About 3 miles below Upper Helemano Reservoir.	1933-53	Waialua Agricultural Co.
Hering Springs.....	In Makiki Valley, at altitude 970 feet.	1925-53*	Board of Water Supply, City and County of Honolulu.
Kahuawai Springs.....	In Pauoa Valley, at altitude 618 feet.	1925-53*	Do.
Kalihi tunnels.....	At diversion, at altitude 650 feet.	1926-53*	Do.
Kamananui ditch.....	In Kawailoa Gulch about 500 yards above third siphon from Government Road.	1934-53	Waialua Agricultural Co.
Kipapa Stream.....	At altitude 375 feet.....	1917-53	Waiahole Water Co.
Makiki Springs.....	In Makiki Valley, at altitude 350 feet.	1926-53*	Board of Water Supply, City and County of Honolulu.
Manoa tunnels.....	Upper Manoa Valley.....	1925-53*	Do.
Nuuanu tunnels.....	At Lower Luakaha.....	1926-53*	Do.
Nuuanu tunnel 3.....	At overflow, in upper Nuuanu Valley	1931-53*	Do.
Palolo tunnel.....	Upper Palolo Valley.....	1926-53*	Do.
Wahiawa Reservoir Outlet	About 1,200 feet below dam.....	1912-53*	Wahiawa Water Co.
Waiahole tunnel.....	At adit 8.....	1916-53	Waiahole Water Co.
Waiaua Stream.....	At altitude 750 feet.....	1917-53	Do.
Waikakalaua Stream.....	do.....	1917-53	Do.
Waimalu Stream.....	At altitude 555 feet, near Aiea....	1947-53	Do.

* Published in biennial reports of Honolulu Sewer & Water Commission and of Honolulu Board of Water Supply.

ISLAND OF MAUI (WEST MAUI)			
Everett ditch.....	Below intake, near Wailuku.....	1935-53	Wailuku Sugar Co.
Honokohau tunnel.....	At outlet of tunnel, at Mahinahina weir.	1917-53	Pioneer Mill Co.
Iao-Waikapu ditch.....	At lower end of tunnels, near Wailuku.	1923-53	Wailuku Sugar Co.
Kahoma tunnel.....	2,000 feet upstream from outlet, above Lahaina.	1920-53	Pioneer Mill Co.
Kama ditch.....	Below intake, near Wailuku.....	1933-53	Wailuku Sugar Co.
Kanaha ditch.....	At intake in Kanaha Gulch, above Lahainaluna.	1921-53	Pioneer Mill Co.
Kauaula tunnel.....	At outlet, above Lahaina.....	1920-53	Do.
K-3 flume.....	Above Lahainaluna.....	1931-53	Do.
Launipoko ditch.....	At outlet, above Lahaina.....	1921-53	Do.
Maniania ditch.....	Below intake, near Wailuku.....	1923-53	Wailuku Sugar Co.
North Waiehu Stream....	Near end of Waiehu Camp road, near Wailuku.	1922-53	Do.
South Waikapu ditch....	Above second lateral, near reservoir 1, near Waikapu.	1935-53	Do.
Speckels ditch.....	Below intake, near Waihee.....	1931-53	Do.
Ukumehame ditch.....	At outlet in Ukumehame Gulch, near Olowalu.	1931-53	Pioneer Mill Co.
Waihee ditch.....	Below intake, near Waihee.....	1931-53	Wailuku Sugar Co.

Records of discharge collected by agencies other than the Geological Survey--Continued

ISLAND OF MAUI (EAST MAUI)

Stream	Location	Period	Operated by
Hanawi Stream.....	Below Government Road, near Nahiku.	1927-32 1947-53	East Maui Irrigation Co.

ISLAND OF HAWAII

Hionamoa Gulch.....	Below all development tunnels, near Pahala.	1926-53	Hawaiian Agricultural Co.
Honokaape ditch.....	At Kukuihaele Village.....	1923-53	Hawaiian Irrigation Co.
Keaiwa Gulch.....	Below all development tunnels, near Pahala.	1926-53	Hawaiian Agricultural Co.
Kohala ditch.....	At Awini weir in Honokane, near Niulii.	1917-53†	Kohala Ditch Co.
Do.....	At Niulii weir, near Niulii.....	1917-53†	Do.
Lalakea ditch.....	At altitude 1,900 ft, near Waipio..	1905-53	Hawaiian Irrigation Co.
Lower Hamakua ditch.....	At main weir, near Kukuihaele.....	1921-53†	Do.
Moula Gulch.....	Below all development tunnels, near Pahala.	1929-53	Hawaiian Agricultural Co.
Noguchi tunnel 19.....	5.3 miles from Pahala, at altitude 3,500 feet.	1928-53	Do.
Pololu Inlet 1.....	At Pololu, near Niulii.....	1929-53	Kohala Ditch Co.
Pololu Inlet 2.....	In Waiakalae Gulch at Pololu, near Niulii.	1929-53	Do.
Pololu Inlet 3.....	In Opaepilau Gulch, above Kohala ditch, near Niulii.	1937-53	Do.
Pololu Inlet 5.....	In Niulii Gulch, above Kohala ditch, near Niulii.	1937-53	Do.
Pololu Inlet 6.....	In Waikane Gulch, above Kohala ditch, near Niulii.	1937-53	Do.
Puwaiole Stream.....	Above Kohala ditch, near Halawa....	1937-53	Do.
Waipuka Stream.....	Above Kohala ditch, near Niulii....	1929-53	Do.
Waipuhi Stream.....	Above Kohala ditch, near Halawa....	1933-53	Do.
Waipunalau Stream.....	do.....	1929-53	Do.

† Records for some earlier years published in water-supply papers of Geological Survey.

ISLAND OF KAUAI

Kawaikoi Stream near Waimea

Location.--Lat 22°08'00", long 159°37'15", on left bank at old trail crossing, 12.5 miles northeast of Waimea.

Drainage area.--4.1 sq mi.

Records available.--April 1909 to December 1916, July 1919 to June 1953.

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

Average discharge.--34 years (1919-53), 21.5 mgd (33.3 cfs).

Extremes.--Maximum discharge during year, 1,170 mgd (1,810 cfs) Feb. 13 (gage height, 7.28 ft), from rating curve extended as explained below; minimum, 1.16 mgd (1.79 cfs) Oct. 10.

1909-17, 1919-53: Maximum discharge, 6,900 mgd (10,700 cfs) Dec. 18, 1916 (gage height, 15.2 ft), from rating curve extended above 200 mgd on basis of slope-area determination at gage height 13.43 ft; minimum, 1.16 mgd (1.79 cfs) July 11, 1951, Oct. 10, 1952.

Remarks.--Records good.

Revisions (fiscal years).--WSP 1185: 1914-17(M), 1920-36(M), 1940-43(M), 1947(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.9	0.8	3.0	30
2.0	1.44	3.5	69
2.1	2.35	4.0	141
2.3	5.2	4.5	241
2.5	9.6	5.0	355
2.7	16.1		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.8	2.55	2.25	2.05	63	42	8.0	2.35	13.7	4.6	3.45	4.0
2	4.0	3.9	2.55	1.86	18.0	40	8.2	2.25	15.3	4.4	3.45	3.3
3	13.8	2.8	2.15	1.44	15.6	12.5	7.0	2.25	295	4.2	104	2.8
4	7.4	2.55	1.96	1.30	11.4	54	8.0	2.15	251	4.2	21	2.45
5	5.0	2.25	1.86	1.30	9.9	37	*6.8	2.15	97	4.0	20	2.25
6	3.9	2.15	2.35	1.60	9.7	21.5	5.8	2.15	229	3.9	38.5	2.15
7	3.45	2.25	4.6	1.68	7.0	12.2	4.7	2.05	37.5	3.75	20	2.15
8	3.2	2.6	5.4	*1.37	5.8	8.9	9.9	6.7	22	3.75	9.7	2.05
9	3.3	6.2	10.6	1.30	6.9	7.5	10.2	25	16.1	10.9	7.5	2.05
10	4.1	3.95	16.1	1.23	10.6	6.6	13.5	9.1	13.2	5.8	6.4	2.05
11	3.6	2.9	9.8	2.3	26	6.0	20	4.1	11.4	4.8	5.4	2.35
12	2.9	2.35	8.7	2.55	12.5	5.8	8.2	2.9	9.9	3.9	4.6	7.8
13	2.8	*2.15	3.6	1.78	14.0	5.0	6.0	275	8.9	3.45	4.4	12.7
14	2.6	2.05	2.55	2.45	16.7	4.6	4.6	138	8.0	3.3	4.0	8.7
15	96	1.96	2.15	89	56	4.6	4.4	19.2	7.7	83	3.9	6.3
16	27	1.86	1.96	16.5	43	4.4	4.0	29.5	7.0	22.5	3.9	3.75
17	15.4	1.76	1.76	37.5	13.2	4.4	3.75	18.4	17.3	45	3.6	2.9
18	15.3	1.76	1.68	164	19.9	11.0	3.45	20	18.5	53	3.3	22.5
19	12.3	1.68	1.60	16.0	20.5	70	5.3	65	*11.3	28	3.45	6.4
20	6.6	1.60	1.60	8.2	16.9	27	3.3	28.5	7.5	13.5	3.45	4.0
21	4.6	1.60	1.60	15.2	8.2	12.0	3.2	16.3	6.4	8.2	*3.3	3.05
22	3.9	1.97	3.15	6.6	6.4	11.5	3.05	9.6	5.8	6.6	3.05	2.45
23	3.3	2.55	2.05	45	5.6	6.6	2.9	*8.0	6.4	5.6	2.9	2.15
24	3.05	3.65	1.60	82	5.0	5.0	3.05	6.8	8.3	4.8	2.8	1.96
25	3.05	3.45	1.44	170	4.6	4.4	3.75	6.0	6.6	4.5	2.7	1.86
26	14.1	37	1.52	31.5	4.4	4.0	3.05	5.4	29.5	4.2	2.8	2.05
27	11.9	9.9	1.52	16.9	23.5	4.5	2.8	16.5	41	3.9	2.7	2.45
28	5.6	5.6	1.37	28	13.0	3.6	2.7	39.5	11.9	3.6	2.9	2.55
29	3.75	3.2	1.30	49	23.5	3.45	2.7	-	7.5	4.2	4.0	2.15
30	3.05	2.35	1.37	46	*74	3.3	2.7	-----	6.4	4.0	3.6	1.96
31	2.8	2.25	-----	32.5	-----	3.2	2.45	-----	5.4	-----	3.3	-----
Total	296.75	124.79	102.14	878.09	564.8	446.35	217.95	766.85	1,232.5	359.55	308.05	125.28
Mean:												
mgd	9.57	4.03	3.40	28.3	18.8	14.4	7.03	27.4	39.8	12.0	9.94	4.18
cfs	14.8	6.24	5.26	43.8	29.1	22.3	10.9	42.4	61.6	18.6	15.4	6.47
Ac-ft	911	383	313	2,690	1,730	1,370	669	2,350	3,780	1,100	945	384

Calendar year 1952: Max 372 Min 1.23 Mean(mgd) 17.2 Mean(cfs) 26.6 Ac-ft 19,320
 Fiscal year 1952-53: Max 295 Min 1.23 Mean(mgd) 14.9 Mean(cfs) 23.1 Ac-ft 16,620

Peak discharge (base, 850 mgd).--Feb. 13 (6 a.m.) 1,170 mgd (1,810 cfs), 7.28 ft; Mar. 6 (5 a.m.) 970 mgd (1,500 cfs), 6.77 ft.

* Discharge measurement made on this day.

Mohihi Stream at altitude 3,500 ft, near Waimea
(Formerly published as Mohihi Stream near Waimea)

Location.--Lat 22°07'05", long 159°36'15", on left bank at upper trail crossing, 3.8 miles northeast of confluence of Waiahulu and Poomao Streams and 12 miles northeast of Waimea.

Drainage area.--1.6 sq mi.

Records available.--June 1920 to October 1926, October 1936 to June 1953. April 1909 to December 1911 (fragmentary), July 1947 to June 1952, published as Mohihi Stream near Waimea; records 1909-11 at site 2 miles downstream, not equivalent owing to inflow.

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

Average discharge.--22 years (1920-26, 1937-53), 5.11 mgd (7.91 cfs).

Extremes.--Maximum discharge during year, 475 mgd (735 cfs) Mar. 4 (gage height, 5.23 ft), from rating curve extended above 21 mgd; minimum, 0.13 mgd (0.20 cfs) Oct. 10, 1920-26, 1936-53: Maximum discharge, 1,250 mgd (1,930 cfs) Aug. 15, 1950 (gage height, 7.23 ft), from rating curve extended above 21 mgd; minimum, 0.05 mgd (0.08 cfs) May 3, 4, 1941.

Remarks.--Records good except those for periods of no gage-height record, which are fair, and those above 21 mgd, which are poor.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.75	0.12	1.5	3.4
.8	.18	1.8	7.2
.9	.35	2.1	13.9
1.0	.59	2.5	27
1.1	.92	3.0	53
1.3	1.88	3.5	96

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.18	0.65	0.54	0.85	7.9	7.6	0.74	0.56	4.5	1.14	0.56	0.71
2	1.05	.59	.78	.71	4.3	10.0	.92	.54	2.4	1.01	.65	.65
3	1.14	.56	.62	.51	2.5	2.85	1.67	.51	37.5	.92	10.2	.56
4	1.35	.54	.56	.39	1.94	9.5	1.94	.51	78	.88	3.9	.49
5	1.14	.51	.49	.29	1.62	7.8	*1.56	.49	28.5	.92	1.84	.44
6	1.01	.49	a.60	.27	2.75	3.3	1.76	.46	49	.92	7.3	.39
7	.88	.49	a.80	.33	1.62	2.35	12.0	.46	11.7	.81	3.6	.37
8	.81	.54	a.90	*.26	1.22	1.77	2.55	.46	6.2	.81	1.86	.35
9	.78	.51	a1.1	.18	1.14	1.46	1.94	1.74	4.2	1.51	1.40	.37
10	.74	.51	a1.3	.14	1.90	1.31	3.5	1.22	3.2	1.09	1.18	.39
11	.65	.46	a1.1	.26	8.0	1.18	4.4	.81	2.7	*.88	.92	.44
12	.62	.42	.96	.53	3.55	1.09	2.25	.62	2.4	.81	.78	.49
13	.56	.39	a.65	.39	2.25	1.05	1.62	27.5	2.35	.71	.68	.65
14	.56	*.39	a.53	1.19	2.15	1.01	1.31	33	2.0	.68	.65	.85
15	8.1	.35	.46	30	5.5	.96	1.14	5.4	1.77	10.5	.65	.74
16	8.9	.51	.42	7.4	11.6	.92	1.05	6.8	1.62	6.5	.68	.65
17	2.6	.29	.37	2.25	2.85	.85	.96	5.3	1.81	5.1	.62	.62
18	2.05	.27	.37	23.5	9.5	.96	.88	6.2	5.6	8.4	.54	1.25
19	1.67	.26	.31	3.95	5.3	9.8	.85	25.5	2.65	4.1	.51	1.28
20	1.31	.26	.29	1.96	6.8	7.0	.81	12.3	1.72	2.5	.51	.85
21	1.05	.26	.27	2.05	2.55	2.7	.78	5.4	1.46	1.56	*.51	.65
22	.88	.35	.27	1.44	1.72	2.35	.74	2.8	1.31	1.18	.49	.51
23	.78	.44	.29	2.6	1.40	1.51	.74	*2.0	1.26	1.05	.44	.42
24	.71	.44	.29	14.8	1.22	1.18	.78	1.72	1.31	.88	.42	.35
25	.68	.46	.24	28.5	1.14	1.05	.85	1.46	1.31	.81	.42	.31
26	1.53	.86	.26	8.2	1.05	.92	.78	1.31	2.3	.71	.44	.31
27	3.8	1.14	.27	3.4	2.25	.85	.68	2.9	7.8	.65	.46	.37
28	1.82	.96	.26	4.8	2.8	.81	.65	8.2	4.7	.62	.68	.39
29	1.09	.65	.22	7.6	1.96	.81	.62	-	2.4	.59	1.18	.31
30	.85	.54	.32	11.5	*10.5	.78	.65	-----	1.77	.59	.85	.27
31	.71	.49	.32	8.4	-----	.74	.59	-----	1.31	-----	.68	-----
Total	51.00	15.38	15.84	168.65	110.78	86.46	51.71	156.17	274.75	58.83	45.80	16.43
Mean:												
mgd	1.65	0.496	0.528	5.44	3.69	2.79	1.67	5.58	8.86	1.96	1.46	0.546
cfs	2.55	0.767	0.817	8.42	5.71	4.32	2.58	8.63	13.7	3.03	2.29	0.848
Ac-ft	157	47	49	518	340	265	159	479	843	181	141	50

Calendar year 1952. Max 127 Min 0.14 Mean(mgd) 3.91 Mean(cfs) 6.05 Ac-ft 4,390
Fiscal year 1952-53: Max 76 Min 0.14 Mean(mgd) 2.88 Mean(cfs) 4.46 Ac-ft 3,230

Peak discharge (base, 200 mgd).--Mar. 4 (2:30 a.m.) 475 mgd (735 cfs), 5.23 ft.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for stations on nearby streams.

Kokee ditch near Waimea

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

Records available.--September 1926 to June 1953.

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

Average discharge.--26 years (1927-53), 16.1 mgd (24.9 cfs).

Extremes.--1926-53: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Kokee ditch diverts water at altitude 3,400 ft from all streams tributary to Waimea River west of Mohihi Stream for irrigation near Kekaha. Flow regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.5	3.8	3.8	3.4	16.3	36	7.3	3.5	24.5	6.5	5.3	4.8
2	6.8	5.5	4.1	3.3	18.5	36	10.1	3.4	28	8.0	5.2	4.2
3	13.9	4.7	3.8	2.55	18.8	16.3	9.0	3.3	65	7.6	39	3.8
4	10.3	4.2	3.55	2.3	14.4	30	10.3	3.3	65	7.4	25.5	3.4
5	7.5	4.1	3.4	2.2	12.4	28	9.4	3.2	46	7.0	18.9	3.3
6	6.7	3.95	3.55	2.3	11.8	20	*7.5	3.2	65	6.8	35.5	3.15
7	5.8	3.95	5.0	2.55	9.4	14.4	33	3.2	34	6.6	24	3.05
8	5.6	4.1	6.7	*2.2	8.1	11.8	15.3	10	30	6.6	12.8	2.9
9	5.6	7.2	11.4	2.0	7.5	9.9	13.1	20	26	16	10.1	2.9
10	6.5	6.2	15.6	1.91	12.8	9.0	20	11	22	9.5	8.8	2.9
11	6.0	4.7	10.5	2.3	24	8.1	26.5	6.0	21	*8.0	7.7	3.15
12	5.2	3.95	12.6	3.4	15.1	7.4	14.0	4.5	18.8	7.0	6.8	7.0
13	4.8	3.65	5.6	2.65	14.0	7.2	9.9	44	17.5	6.5	6.3	12.0
14	5.0	*3.65	4.1	3.1	21.5	6.5	8.3	38	15.1	6.2	6.0	9.2
15	26.5	3.55	3.4	42	30	6.3	9.2	28	14.6	31.5	5.8	7.9
16	31	3.4	3.15	26.5	37.5	6.2	6.7	28	13.5	26	5.6	5.0
17	18.8	3.4	2.9	11.3	17.5	5.8	6.2	26	21	28	5.2	4.1
18	17.5	3.3	2.8	41	22.5	8.6	5.8	28	25	41	5.0	19.7
19	15.1	3.15	2.8	24	19.8	39	5.5	34	18.8	34	5.0	8.6
20	9.8	3.05	2.55	12.6	24	30.5	5.2	28	15	18.8	5.0	5.6
21	7.5	2.9	2.65	17.4	11.8	14.0	5.0	24	13	11.8	4.8	4.2
22	6.5	3.05	3.95	9.4	9.2	14.4	4.8	18	12	9.4	4.6	3.55
23	5.8	3.95	3.15	24.5	7.9	9.0	4.6	*12	13	8.4	4.2	3.15
24	5.3	4.4	2.65	45	7.2	7.2	4.8	10.3	16	7.5	4.1	2.9
25	5.0	4.8	2.3	45	6.7	6.3	5.5	9.2	14	7.0	3.95	2.8
26	12.6	25	2.45	36	6.2	5.8	4.7	8.3	30	6.7	4.1	2.8
27	15.1	12.4	2.45	21	19.2	5.5	4.2	17.9	34	6.0	4.1	3.15
28	8.6	8.4	2.3	40	17.6	5.0	3.9	30.5	19	5.8	3.95	3.4
29	6.3	5.6	2.2	37.5	18.1	4.7	3.8	-	15	5.8	5.0	3.05
30	5.2	4.2	2.3	39	*43	4.7	3.7	-----	12	6.0	4.8	2.8
31	4.7	3.95	-----	19.9	-----	4.6	3.6	-----	10	-----	4.4	-----
Total	298.5	162.15	137.70	528.26	502.8	418.2	281.9	458.8	773.8	365.4	291.50	148.45
Mean	9.63	5.23	4.59	17.0	16.8	13.5	9.09	16.4	25.0	12.2	9.40	4.95
cfs	14.9	8.09	7.10	26.3	26.0	20.9	14.1	25.4	38.7	18.9	14.5	7.66
Ac-ft	916	498	423	1,620	1,540	1,280	865	1,410	2,370	1,120	895	456

Calendar year 1952: Max 45 Min 0 Mean(mgd) 14.3 Mean(cfs) 22.1 Ac-ft 16,090
 Fiscal year 1952-53: Max 65 Min 1.91 Mean(mgd) 12.0 Mean(cfs) 18.6 Ac-ft 13,590

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 23 to Feb. 23, Mar. 2-10, Mar. 20 to Apr. 11; discharge estimated on basis of records for nearby streams.

Waimea River at altitude 890 ft, near Waimea
(Formerly published as Waiiahulu Stream near Waimea)

Location.--Lat 22°04'45", long 159°39'15", on right bank in Waimea Canyon, 0.5 mile upstream from confluence with Koaie Stream and 8.8 miles north of Waimea.

Drainage area.--20.0 sq mi.

Records available.--February to October 1916, October 1917 to June 1918, May 1925 to June 1953. Prior to July 1, 1952, published as Waiiahulu Stream near Waimea.

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

Average discharge.--25 years (1925-48, 1951-53), 29.3 mgd (45.3 cfs).

Extremes.--Maximum discharge during year, 1,180 mgd (1,830 cfs) Feb. 13 (gage height, 6.30 ft), from rating curve extended above 320 mgd; minimum, 8.7 mgd (13.5 cfs) Oct. 10-12.

1916, 1917-18, 1925-53: Maximum discharge, 18,100 mgd (28,000 cfs) Aug. 17, 1950 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 320 mgd; minimum, 5.2 mgd (8.0 cfs) Nov. 4, 1927.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Kokee ditch diverts water above station for irrigation near Kekaha (see preceding page).

Revisions (fiscal years).--WSP 1095: 1928(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and
discharge, in million gallons a day)

1.9	6.5	3.5	130
2.0	8.9	4.0	222
2.3	19.1	4.5	350
2.6	34.5	5.0	530
3.0	65		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.4	10.3	9.7	9.7	51	60	9.5	10.3	25	10.0	8.9	9.5
2	11.1	10.0	9.7	9.5	16.7	55	11	9.7	14.1	9.7	8.9	9.5
3	11.1	10.0	10.0	9.2	12.7	17	12	9.5	297	9.7	88	9.5
4	12.0	10.0	9.7	8.9	11.4	46	11	9.5	444	9.7	19.4	9.2
5	11.4	10.0	9.5	8.9	10.9	28	10	9.2	183	9.7	11.4	9.2
6	11.1	10.0	9.5	8.9	11.7	22	10	9.2	406	9.7	27	8.9
7	11.1	10.0	9.7	8.9	10.0	17	48	8.9	81	9.7	14.4	8.9
8	10.9	10.0	11.1	8.9	9.7	14	16	8.9	34	*9.5	11.7	8.9
9	10.9	10.0	10.9	8.9	11	12	21	9.7	21	9.7	10.3	8.9
10	11.1	10.0	11.4	*8.7	19	11	23	11.4	15.9	10.3	9.7	*8.9
11	10.9	10.0	12.7	8.7	11.7	10	27	9.7	13.7	9.7	9.7	8.9
12	10.9	9.7	11.4	9.7	11	9.8	17.5	8.2	12.7	9.5	9.5	8.9
13	10.6	9.5	10.3	8.9	11	9.5	15.4	306	12.4	9.5	9.2	9.2
14	10.6	9.5	9.7	10.0	15	9.5	11.7	*218	12.0	9.5	9.2	9.7
15	80	*9.5	9.5	175	30	9.2	11.1	24	11.4	69	9.2	9.7
16	41	9.5	9.5	35	58	9.0	10.6	17.1	11.1	34.5	9.2	9.5
17	14.4	9.5	9.2	16.7	13.1	*9.1	10.3	15.9	11.1	29.5	9.2	9.5
18	12.7	9.5	9.2	130	18.3	8.9	9.7	*15.7	12.7	49	9.2	9.2
19	12.4	9.5	9.2	16.7	15.5	57	9.7	77	15.4	18.5	9.2	10.9
20	11.7	9.5	9.2	12.0	15.1	22.5	9.7	37.5	11.7	13.1	9.2	9.7
21	11.1	9.5	9.2	11.7	12	12.4	9.5	17.9	11.1	10.9	9.2	9.5
22	10.9	9.5	9.2	11.1	10	11.4	9.5	12.7	10.9	10.0	9.2	9.2
23	10.9	9.5	9.2	26	9.5	10.3	9.5	11.7	10.6	9.7	8.9	8.9
24	10.3	9.5	8.9	50	9.0	9.5	9.7	17.3	10.3	9.5	8.9	8.9
25	10.0	9.7	8.9	170	9.0	9.2	10.3	11.7	10.6	9.5	8.9	8.9
26	10.3	21	8.9	45	8.9	8.9	9.7	10.9	10.6	9.2	8.9	8.9
27	13.7	11.1	8.9	24	44	8.9	9.5	10.9	29	9.2	8.9	8.9
28	12.7	10.6	8.9	32	22	8.9	9.5	49	16.7	8.9	9.2	8.9
29	11.1	10.0	8.9	50	48	8.9	16.1	-	12.7	8.9	10.0	8.9
30	10.9	9.7	9.2	52	75	8.9	20	-----	11.4	8.9	9.7	8.9
31	10.6	9.7	-----	22	-----	8.9	11.4	-----	10.9	-----	9.5	-----
Total	449.8	315.8	291.3	1,006.0	610.2	536.7	426.9	966.5	1,788.0	444.2	403.8	276.5
Mean	14.5	10.2	9.71	32.5	20.3	17.3	13.8	34.5	57.7	14.8	13.0	9.22
cfs	22.4	15.8	15.0	50.3	31.4	26.8	21.4	53.4	89.3	22.9	20.1	14.3
Ac-ft	1,380	969	894	3,090	1,870	1,650	1,310	2,970	5,490	1,360	1,240	849

Calendar year 1952: Max 1,400 Min 8.7 Mean(mgd) 27.7 Mean(cfs) 42.9 Ac-ft 31,170
Fiscal year 1952-53: Max 444 Min 8.7 Mean(mgd) 20.6 Mean(cfs) 31.9 Ac-ft 23,070

Peak discharge (base, 1,200 mgd).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 18, 23-29, Nov. 3, 10, 12-14, Nov. 21 to Dec. 17, Dec. 25 to Jan. 8; discharge estimated on basis of records for nearby streams.

Waialae River at altitude 3,700 ft, near Waimea

Location.--Lat 22°05'05", long 159°35'00", on left bank 10.6 miles northeast of Waimea.

Drainage area.--3.3 sq mi.

Records available.--January 1920 to July 1932, June 1952 to June 1953.

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

Average discharge.--13 years (1920-32, 1952-53), 13.5 mgd (20.9 cfs).

Extremes.--Maximum discharge during period June 1952 to June 1953, 1,480 mgd (2,290 cfs) Mar. 4 (gage height, 4.62 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 0.95 mgd (1.47 cfs) Oct. 9, 10.
1920-32, 1952-53: Maximum discharge, 4,500 mgd (6,960 cfs) Jan. 16, 1921 (gage height, 8.44 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 0.7 mgd (1.1 cfs) Mar. 18-20, 1925, June 14, 15, 1931.

Remarks.--Records fair.

Discharge, in million gallons a day, 1952

June 27.....	8.2
28.....	11.1
29.....	3.5
30.....	2.55

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.82	1.3	16.4
.8	1.45	1.4	23.4
.9	2.3	1.7	51
1.0	3.5	2.0	96
1.1	5.2	2.4	178
1.2	8.7		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.05											
2	1.96	1.70	1.62	1.32	16.6	51	2.2	1.62	3.65	3.0	1.45	3.4
3	1.87	1.62	1.96	1.26	5.2	28.5	6.8	1.62	5.0	2.55	1.54	3.15
4	5.7	1.54	1.79	1.20	3.85	6.1	12.1	1.54	61	2.3	6.2	2.55
5	4.0	1.45	1.62	1.07	3.15	16.9	5.2	1.54	178	2.3	3.85	1.96
6	3.25	1.45	1.54	1.07	2.9	12.0	3.5	1.45	25.5	2.4	2.65	1.79
7												
8	2.4	1.39	3.05	1.14	2.8	6.8	6.5	1.54	49	*2.5	4.9	1.54
9	1.96	1.54	5.4	1.07	2.4	5.0	15.7	1.54	9.5	2.2	4.5	1.45
10	1.70	1.54	3.8	1.07	2.15	4.0	3.85	1.45	4.7	2.2	5.0	1.54
11	1.87	1.54	5.3	*.99	2.2	3.4	3.95	1.96	3.65	2.55	2.8	*1.62
12	1.70	1.45	11.9	.95	2.65	3.0	4.7	1.70	3.15	2.15	2.55	1.54
13	1.54	1.39	3.6	2.25	76	2.65	8.9	1.62	2.8	2.05	2.05	2.15
14	1.45	1.26	2.2	2.15	17.5	2.55	4.0	*1.45	3.0	1.96	1.79	3.25
15	1.39	1.26	1.70	1.70	8.6	2.4	3.15	32	4.7	1.79	1.62	13.6
16	1.45	1.26	1.54	16.5	10.9	2.3	2.65	57	3.5	1.70	1.62	7.1
17	59	1.20	1.45	95	26	2.2	2.55	8.5	3.0	2.4	2.15	4.7
18	54	1.20	1.54	17.8	19.0	*2.15	2.3	25	2.55	7.5	3.65	3.65
19	15.3	1.20	1.39	4.2	12.6	2.05	2.15	17.8	11.4	13.1	2.55	12.8
20	5.4	1.14	1.32	22	80	2.2	2.05	6.2	11.5	12.8	1.96	25.5
21	4.4	1.07	1.26	5.2	31	39.5	2.05	22	4.9	6.1	1.79	4.0
22	3.0	1.07	1.20	3.4	21.5	34.5	1.96	6.4	3.25	4.5	1.62	2.8
23												
24	2.3	1.07	1.20	3.15	5.2	10.5	1.96	5.0	2.8	3.15	2.9	2.2
25	1.96	1.62	1.14	2.55	4.0	4.5	1.88	3.4	2.55	2.55	2.4	1.96
26	1.79	1.26	1.07	7.0	3.4	3.25	1.88	3.25	2.4	2.15	1.88	1.79
27	1.88	1.79	1.07	18.3	3.15	2.65	2.05	3.5	13.3	2.05	1.70	1.62
28	1.88	1.88	1.01	58	3.0	2.55	2.15	3.0	3.5	1.88	1.62	1.62
29												
30	14.7	7.0	1.14	10.7	3.15	2.3	1.88	2.55	3.85	1.79	3.2	1.62
31	14.9	7.5	1.07	4.7	23	2.15	1.70	3.85	38	1.70	2.3	1.70
32	3.8	2.75	1.01	4.5	7.0	2.15	1.70	4.7	32	1.54	4.4	1.62
33	2.4	*1.78	1.01	17.7	16.6	2.15	1.70	-	10.8	1.54	7.9	1.62
34	30	1.96	1.45	1.07	24	55	2.05	1.96	5.2	1.45	3.25	1.54
35	1.88	1.32	-----	11.8	-----	2.05	1.70	-----	3.85	-----	3.8	-----
Total	222.97	56.69	65.97	343.74	470.50	265.50	116.62	223.18	509.80	119.45	128.19	117.38
Mean												
Mgd	7.19	1.83	2.20	11.1	15.7	8.56	3.76	7.97	16.4	3.98	4.14	3.91
Cfs	11.1	2.85	3.40	17.2	24.3	15.2	5.92	12.3	25.4	6.16	6.41	6.05
Ac-ft	684	174	202	1,050	1,440	815	358	655	1,560	367	593	360

Calendar year 1952: Max - Min 0.95 Mean(mgd) - Mean(cfs) - Ac-ft -
Fiscal year 1952-53: Max 178 Min 0.95 Mean(mgd) 7.23 Mean(cfs) 11.2 Ac-ft 8,090

Peak discharge (base, 900 mgd).--Mar. 4 (2 a.m.) 1,480 mgd (2,290 cfs), 4.62 ft.

* Discharge measurement made on this day.

Kekaha ditch at camp 1, near Waimea

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

Records available.--November 1907 to June 1953.

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

Average discharge.--34 years (1918-24, 1925-53), 35.5 mgd (54.9 cfs).

Extremes.--1907-53: Maximum daily discharge, 67 mgd (104 cfs) Jan. 6, Mar. 3, 6, 7, 17, 18, 24-26, 29-31, 1921; no flow at times.

Remarks.--Records excellent except those for period of no gage-height record, which are fair. Ditch diverts water from Waimea River 1 mile downstream from confluence with Waialae River. Flow regulated by headgates. Water used for irrigation in vicinity of Kekaha.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	34.5	30	28	28	25	51	28	28	36	34.5	25	32
2	34.5	30	32	26	30.5	51	30	26	39	30	25	30
3	37	30	30	28	46	51	30	26	41	30	43	30
4	41	30	30	26	41	51	33	26	29.5	28	48	28
5	39	28	28	26	36.5	41	39	25	28	30	36.5	25
6	36.5	28	32.5	26	43	30	39	25	28.5	30	48	25
7	32	28	38.5	25	32.5	33	51	25	17.2	28	48	24
8	32	30	42	25	30	41	51	25	15.5	30.5	39	21
9	32	28	45	25	30	36.5	36.5	28	19.2	32	32	24
10	32	28	46	25	34.5	34.5	30	20	30	30	32	a24
11	30	28	46	25.5	46	32	35.5	28	23	28	28	a24
12	30	28	36.5	32	51	30	51	26	28	28	28	a24
13	30	28	30	28	51	30	41	31.5	30	28	26	a28
14	30	28	28	28	38	30	36.5	30	30	28	25	33.5
15	39.5	*28	28	31.5	32	30	32	35.5	30	40	25	44
16	51	28	28	28	36.5	28	30	51	32	48	30	*32
17	51	28	28	28	51	*28	30	51	37	44	30	33.5
18	51	26	28	30	51	28	30	*51	51	48	26	51
19	42	26	26	28	51	31	28	51	48	51	26	40
20	39	26	26	30	46	30	28	41	30	47	25	50
21	36.5	26	26	28	36	36.5	28	30	26	36.5	26	28
22	32	26	26	34.5	30	45	28	33.5	28	32	30	26
23	32	26	26	36	32	34.5	28	36.5	30	30	26	25
24	30	30	26	41	34.5	30	28	39	42	28	25	24
25	30	30	25	39	34.5	30	30	36.5	39	28	25	24
26	35.5	41	26	39	32	28	28	32	36.5	26	28	24
27	44	48	26	44	40	28	28	30	37.5	26	28	24
28	48	39	25	51	39	28	26	32	30	25	38.5	24
29	36.5	32	25	51	30	28	28.5	-	34	25	44	24
30	32	28	26	51	36	28	38	-----	46	*25	34.5	24
31	32	28	-----	34.5	-----	28	28	-----	41	-----	30	-----
Total	1,132.5	920	913.5	996.0	1,146.5	1,061.0	1,028.0	929.5	1,002.9	970.5	980.5	853.0
Mean:												
mgd	36.5	29.7	30.4	32.1	38.2	34.2	33.2	33.2	32.4	32.4	31.6	28.4
cfs	56.5	46.0	47.0	49.7	59.1	52.9	51.4	51.4	50.1	50.1	48.9	43.9
Ac-ft	3,480	2,820	2,800	3,060	3,520	3,260	3,150	2,850	3,080	2,980	3,010	2,620
Calendar year 1952.	Max	53		Min	0	Mean(mgd)	36.2	Mean(cfs)	56.0	Ac-ft	40,620	
Fiscal year 1952-53:	Max	51		Min	15.5	Mean(mgd)	32.7	Mean(cfs)	50.6	Ac-ft	36,630	

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for stations on nearby streams and plantation records.

Waimea River below Kekaha ditch intake, near Waimea

Location.--Lat 22°02'40", long 159°38'35", on right bank in Waimea Canyon, 500 ft downstream from Kekaha ditch lower intake and 6.5 miles northeast of Waimea.

Drainage area.--45.0 sq mi.

Records available.--July 1921 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 490 ft (by barometer). Prior to May 7, 1926, at datum 3.85 ft higher.

Average discharge.--27 years (1925-47, 1948-53), 48.7 mgd (75.4 cfs).

Extremes.--Maximum discharge during year, 5,160 mgd (7,980 cfs) Mar. 4 (gage height, 14.63 ft), from rating curve extended as explained below; no flow June 5-9, 21-30, 1921-53: Maximum discharge, 20,000 mgd (30,900 cfs) Aug. 17, 1950 (gage height, about 25 ft, from floodmarks), from rating curve extended above 500 mgd by test on model of station site; no flow at times.

Remarks.--Records good except those below 20 mgd, which are poor. Kokee and Kekaha ditches divert practically all flow below medium stages for irrigation near Waimea and Kekaha.

Revisions (fiscal years).--WSP 740: 1921-31. WSP 1125: 1947.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

6.9	0	7.9	46
7.0	.3	8.2	85
7.1	1.2	8.6	178
7.2	3.1	9.0	330
7.3	5.9	9.5	595
7.4	9.8	10.0	940
7.6	20.5	10.5	1,290

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.4	0.4	0.2	0.6	68	62	0.3	0.3	21	1.0	0.2	0.2
2	.3	.5	.3	.6	28.5	114	5.2	.3	.2	.7	.2	.1
3	3.1	.6	.3	.6	.5	11.2	26	.3	411	.3	59	.1
4	5.5	.6	.3	.6	.3	35.5	18.9	.3	1,040	.3	12.7	.1
5	.6	.6	.4	.7	.3	42	.8	.3	207	.3	.3	0
6	.5	.6	.5	.8	.5	29	2.3	.3	405	.3	18.8	0
7	.4	.7	3.2	.7	.2	17.4	7.7	.3	102	.3	1.6	0
8	.4	.7	2.1	.8	.7	4	4.7	.3	56	1.4	.4	0
9	.4	.7	4.4	.8	.2	.2	13.2	.3	37	.3	.3	0
10	.4	.7	18.0	*.8	.3	.2	29	.3	30	.3	.3	.1
11	.4	.7	2.7	.8	109	.2	40	.2	23.5	.3	.3	.1
12	.4	.7	.4	1.0	29	.2	4.7	.2	14.5	.3	.3	.2
13	.4	.7	.3	.9	9.1	.2	.4	281	13.6	.2	.3	18.5
14	.5	.8	.3	2.8	19.6	.2	.3	517	15.1	.7	.3	10.5
15	126	.8	.3	314	46	.2	.3	40	9.4	61	.3	3.2
16	118	.7	.3	83	91	.2	.3	42	5.6	36	.4	.2
17	28	.7	.3	27	13.1	*.2	.3	28.5	8.5	15.4	.5	.2
18	9.3	.7	.3	217	129	.2	.3	10.0	22.5	50	.4	38
19	10.3	.7	.3	35	39.5	76	.3	88	8.7	13.5	.4	1.1
20	.9	.7	.3	11.5	59	76	.3	50	10.5	2.8	.3	.1
21	.4	.6	.4	7.1	20.5	24	.3	29	9.8	.3	.2	0
22	.4	.6	.3	2.8	17.5	.5	.3	11.6	6.2	.3	.3	0
23	.4	.7	.3	8.8	6.7	.2	.3	.4	1.4	.2	.2	0
24	.4	.7	.3	79	.3	.2	.4	4.1	12.5	.2	.2	0
25	.4	.7	.4	323	.3	.2	.4	.6	2.2	.3	.2	0
26	15.5	16.8	.4	59	.3	.2	.4	.1	1.0	.3	.3	0
27	36	3.7	.5	9.7	23	.2	.3	.1	.3	.3	.4	0
28	8.0	.5	.5	3.4	27	.2	.3	37	61	.3	41	0
29	.5	.2	.4	23	15.4	.2	1.4	-	23	.3	12.5	0
30	.3	.2	.5	84	129	.2	4.1	-----	3.9	.2	2.7	0
31	.3	.2	-----	42	-----	.3	.3	-----	1.2	-----	.2	-----
Total	368.8	38.2	39.2	1,341.8	883.3	491.9	233.1	942.8	2,617.3	187.6	155.5	72.7
Mean	11.9	1.23	1.31	43.3	29.4	15.9	7.52	33.7	84.4	6.25	5.02	2.42
mgd	18.4	1.90	2.03	67.0	45.5	24.6	11.6	52.1	131	9.67	7.77	3.74
cfs	1,130	117	120	4,120	2,710	1,510	715	2,890	8,030	576	477	223
Ac-ft												

Calendar year 1952: Max 2,100 Min 0.2 Mean(mgd) 37.9 Mean(cfs) 58.6 Ac-ft 42,610
Fiscal year 1952-53: Max 1,040 Min 0 Mean(mgd) 20.2 Mean(cfs) 31.3 Ac-ft 22,620

Peak discharge (base, 5,000 mgd).--Mar. 4 (2 a.m.) 5,160 mgd (7,980 cfs), 14.63 ft.

* Discharge measurement made on this day.

Waimea River near Waimea

Location.--Lat 21°58'55", long 159°39'50", on right bank 1.2 miles upstream from confluence with Makaweli River and 1.8 miles north of Waimea.

Drainage area.--57.8 sq mi.

Records available.--July 1910 to October 1919, November 1943 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 25 ft (by hand levels from estuary at confluence with Makaweli River). Prior to Oct. 5, 1911, staff gage at site 1 mile downstream at different datum. Oct. 5, 1911, to June 30, 1918, staff gage at same site at different datum.

Average discharge.--9 years (1944-53), 78.3 mgd (121 cfs).

Extremes.--Maximum discharge during year, 4,500 mgd (6,960 cfs) Mar. 4 (gage height, 8.66 ft), from rating curve extended as explained below; minimum, 0.70 mgd (1.08 cfs) June 21-23.

1943-53: Maximum discharge, 24,000 mgd (37,100 cfs) Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 3,300 mgd on basis of slope-area determinations at gage heights 10.28, 13.6 and 18.7 ft; minimum, less than 0.01 mgd (0.02 cfs) Sept. 27, 1948.

Remarks.--Records good except those below 10 mgd, which are poor. Several ditches divert most of low flow for irrigation of sugarcane.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

2.7	0	3.4	38
2.8	1.25	3.7	81
2.9	3.05	4.1	171
3.0	6.4	4.5	298
3.1	11.4	5.0	535
3.2	18.1	6.0	1,200

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.95	2.55	1.62	2.55	84	70	1.25	1.95	*34	2.15	1.35	1.62
2	1.78	2.55	1.78	1.95	43	159	1.45	1.62	5.0	*1.47	1.47	1.62
3	1.95	2.55	1.95	1.78	10.3	22.5	22.5	1.47	254	1.25	63	1.78
4	7.3	2.55	1.95	1.78	4.9	35.5	26.5	1.47	1,140	1.25	28.5	1.78
5	3.7	2.55	1.95	1.78	3.95	46	7.4	1.47	257	1.47	3.7	1.62
6	2.55	2.55	1.95	1.95	4.6	30	3.35	1.35	549	1.78	14.7	1.47
7	2.15	2.8	3.8	1.78	3.65	21	96	1.35	144	1.62	9.0	1.47
8	2.35	3.05	8.4	1.62	3.65	6.5	18.2	1.35	65	1.62	3.1	1.62
9	2.55	3.05	5.6	1.62	2.35	2.55	9.2	1.47	45	2.8	1.95	1.78
10	2.8	3.05	15.9	1.62	2.15	2.15	34.5	1.62	31.5	1.95	1.95	1.78
11	2.55	3.05	12.0	*1.78	123	1.95	47	1.47	24.5	1.78	1.95	1.78
12	2.55	*2.8	2.5	2.35	44	1.95	19.6	1.35	13.8	1.47	1.95	2.15
13	2.55	2.55	1.62	2.35	18.8	1.95	6.6	268	9.9	1.47	1.95	14.4
14	2.55	2.55	1.47	4.2	17.0	1.95	3.95	390	17.3	1.47	1.95	15.1
15	104	2.8	1.47	378	50	1.95	4.2	62	10.9	48	1.95	*9.3
16	191	2.8	1.62	141	125	1.78	4.9	47	6.4	62	2.35	2.8
17	28	3.05	1.62	35.5	18.1	1.78	4.9	35	3.95	5.6	3.05	1.95
18	19.3	3.05	1.62	250	161	1.78	4.6	20.5	21	56	2.8	34.5
19	10.9	2.8	1.62	53	40	77	4.2	99	18.9	23.5	2.35	7.4
20	9.9	2.8	1.62	21	93	*108	4.2	65	7.7	6.4	2.15	1.35
21	3.55	2.55	1.78	13.8	25.5	31.5	4.2	34.5	8.4	2.8	2.15	.83
22	2.15	2.8	1.95	10.5	15.9	10.8	*4.2	17.6	6.4	1.78	2.55	.70
23	1.95	2.8	1.78	2.8	*11.4	3.65	2.55	5.6	3.45	1.35	2.55	.83
24	1.95	2.8	1.78	77	5.0	2.35	1.95	2.0	6.4	1.25	1.95	.83
25	2.15	2.8	1.62	360	2.15	2.15	2.8	5.5	8.8	1.25	2.15	.96
26	5.4	11.7	1.62	101	1.95	1.78	2.35	1.62	2.15	1.25	2.15	1.10
27	34	10.8	1.62	19.0	15.7	1.62	1.62	1.25	27	1.47	2.8	1.25
28	21	6.8	1.62	9.9	31.5	1.62	1.78	27	86	1.25	39	1.25
29	3.95	1.78	1.78	13.1	13.4	1.62	1.78	-	33	1.25	13.6	1.25
30	2.8	1.62	1.95	115	159	1.47	8.0	-----	12.6	1.47	7.1	1.25
31	2.55	1.62	-----	45	-----	*1.25	3.55	-----	3.35	-----	1.78	-----
Total	483.83	103.57	89.56	1,674.71	1,131.95	655.10	359.28	1,099.51	2,875.40	240.17	228.95	117.52
Mean:												
mgd	15.6	3.34	2.99	54.0	37.7	21.1	11.6	39.3	92.8	8.01	7.39	3.92
cfs	24.1	5.17	4.63	83.6	56.3	32.6	17.9	60.8	144	12.4	11.4	6.07
Ac-ft	1,480	318	275	5,140	3,470	2,010	1,100	3,370	8,820	737	703	361
Calendar year 1952: Max	2,300			Min 1.25								
Fiscal year 1952-53: Max	1,140			Min 0.70								
Calendar year 1952: Max	2,300			Min 1.25								
Fiscal year 1952-53: Max	1,140			Min 0.70								

Peak discharge (base, 5,600 mgd).--No peak above base.

* Discharge measurement made on this day.

Makaweli River near Waimea

Location.--Lat 21°58'15", long 159°38'55", on left bank 0.7 mile upstream from mouth, 1.9 miles northeast of Waimea, and 3.8 miles northwest of Makaweli.

Drainage area.--25.0 sq mi.

Records available.--October 1911 to June 1917, July 1943 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 30 ft (by hand levels from estuary at confluence with Waimea River). Oct. 6, 1911, to June 30, 1917, staff gage at site 0.2 mile downstream at different datum.

Average discharge.--14 years (1912-17, 1944-53), 59.4 mgd (91.9 cfs).

Extremes.--Maximum discharge during year, 2,180 mgd (3,370 cfs) Nov. 18 (gage height, 6.18 ft), from rating curve extended above 110 mgd as explained below; minimum, 5.4 mgd (8.4 cfs) June 5.
1943-53: Maximum discharge, 8,800 mgd (13,600 cfs) Jan. 19, 1952 (gage height, 11.19 ft), from rating curve extended above 150 mgd on basis of slope-area determination at gage height 9.46 ft; minimum, 2.05 mgd (3.15 cfs) July 19, 1951.

Remarks.--Records good except those for periods of no gage-height record and those above 110 mgd, which are fair. Olokele ditch diverts all low water from Olokele Stream 9 miles above station for irrigation near Makaweli.

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 14 to Sept. 19,
Sept. 22, 23, Oct. 1, 2, 7-15)

July 1 to Aug. 13

Aug. 14 to June 30

1.2	7.2	3.0	181	0.6	3.9	1.7	77
1.5	22	3.5	275	.7	6.0	2.2	158
1.9	48	4.0	405	.8	8.8	2.7	274
2.5	110			1.0	16.8	3.3	460
				1.3	35.5		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.5	12.4	46	8.2	45	143	10.6	8.8	*11.2	13.6	6.8	11.6
2	9.5	12.4	27	8.2	21	132	*48	8.5	8.8	11.6	7.4	10.0
3	35.5	11.0	23.5	a7.7	16.4	33.5	27.5	7.4	39	10.2	22	8.0
4	25	10.5	14.7	a7.0	14.6	75	25.5	6.8	234	11.3	10.1	6.6
5	17.7	10.5	9.2	a7.0	14.1	54	16.8	6.6	53	13.2	7.7	5.8
6	11.4	10.5	33.5	a8.2	28.5	37.5	17.8	6.6	61	12.8	12.1	5.8
7	10.0	12.9	74	*7.2	15.4	18.4	86	6.8	24	10.6	8.2	6.6
8	9.5	12.9	18.8	6.6	15.6	15.4	25	6.6	15.4	12.4	6.0	*6.6
9	14.0	10.5	25	6.8	13.2	21	6.6	19.4	12.3	41	7.8	
10	13.4	11.4	91	6.3	17.6	12.0	29.5	6.6	20.5	10.2	8.5	7.8
11	10.0	11.4	34.5	44	240	11.6	39.5	6.3	18.9	9.5	6.8	16.7
12	9.5	*10.0	16.4	9.2	82	11.2	24	6.0	19.4	6.8	6.6	15.4
13	9.1	9.1	10.2	8.0	54	11.2	19.9	35.5	28	8.2	6.3	33.5
14	10.5	8.8	10.5	8.6	43	10.6	15.9	127	24	8.2	6.3	17.1
15	240	8.8	25.5	228	76	10.2	14.1	22.5	11.6	*47	20.5	14.0
16	333	8.2	9.5	78	66	9.8	12.8	66	12.2	28.5	14.2	11.8
17	97	8.2	8.8	24	39	9.5	11.6	37.5	64	22.5	8.5	16.2
18	56	8.5	8.5	30.5	430	9.5	11.2	16.8	26	24	7.1	72
19	41	8.5	7.7	21	118	63	10.9	21.5	16.1	16.1	8.0	14.8
20	52	8.2	a7.1	15.4	89	130	10.2	18.2	11.2	15.2	6.6	10.2
21	15.4	8.5	a7.0	15.2	28.5	72	9.5	17.4	15.1	10.6	16.7	9.5
22	13.4	18.2	10.4	12.8	20.5	47	*9.5	11.2	10.2	9.5	7.4	8.5
23	11.9	9.5	7.7	28	*17.8	29.5	9.5	10.9	10.2	9.2	6.6	8.0
24	15.4	20.5	a7.1	25	19.6	21.5	10.3	28.5	53	*8.2	6.3	7.4
25	12.4	10.6	a7.1	125	15.4	17.3	21	25.5	13.5	8.0	5.8	7.4
26	67	41	a7.0	35.5	12.8	14.1	12.0	9.5	16.1	8.0	16.4	7.4
27	91	92	a7.0	17.8	61	12.3	10.2	21.5	78	7.4	7.4	8.0
28	34.5	16.2	a7.0	15.4	25	12.0	9.2	20.5	96	7.1	117	8.0
29	42	9.8	a7.1	41	31.5	11.2	8.8	-	56	7.1	39	8.0
30	22.5	8.0	a7.2	65	172	10.6	17.3	-	38	6.8	9.8	8.0
31	11.9	8.7	-----	33	-----	*9.8	10.2	-----	22	-----	9.2	-----
Total	1,352.0	436.7	576.0	953.4	1,840.1	1,087.9	605.3	573.4	1,122.8	388.1	464.3	378.5
Mean:	43.6	14.1	19.2	30.8	61.3	34.4	19.5	20.5	36.2	12.9	15.0	12.6
mgd	67.5	21.8	29.7	47.7	94.8	53.2	30.2	31.7	56.0	20.0	23.2	19.5
cfs	4,150	1,340	1,770	2,930	5,650	3,280	1,860	1,760	3,450	1,190	1,420	1,160
Ac-ft												
Calendar year 1952: Max	1,160	Min	6.3	Mean(mgd)	52.5	Mean(cfs)	81.2	Ac-ft	59,010			
Fiscal year 1952-53: Max	430	Min	5.8	Mean(mgd)	26.7	Mean(cfs)	41.3	Ac-ft	29,960			

Peak discharge (base, 1,500 mgd).--Nov. 18 (5 a.m.) 2,180 mgd (3,370 cfs), 6.18 ft.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of probable decrease in flow.

Hanapepe River below Manuahi Stream, near Eleele
(Formerly published as Hanapepe River at Koula, near Eleele)

Location.--Lat 21°57'20", long 159°33'15", on left bank just downstream from Manuahi Stream, 4 miles northeast of Eleele.

Drainage area.--18.8 sq mi.

Records available.--May 1917 to January 1921, December 1926 to June 1953. Prior to July 1952, published as "at Koula, near Eleele." August 1910 to December 1916, at site half a mile upstream; records not equivalent due to inflow.

Gage.--Water-stage recorder. Altitude of gage is 150 ft (by barometer). Prior to Dec. 15, 1926, staff gage and Dec. 16, 1926, to June 30, 1951, water-stage recorder, at same site at datum 1.00 ft higher.

Average discharge.--29 years (1917-20, 1927-53), 56.0 mgd (86.6 cfs).

Extremes.--Maximum discharge during year, 2,260 mgd (3,500 cfs) Nov. 18 (gage height, 6.36 ft); minimum, 6.1 mgd (9.4 cfs) Oct. 22, 23, 28, 29.
1910-21, 1926-53: Maximum discharge, 10,400 mgd (16,100 cfs) Dec. 17, 1949 (gage height, 11.74 ft), from rating curve extended above 2,400 mgd by test on model of station site; minimum, that of Oct. 22, 23, 28, 29, 1952.

Remarks.--Records good. Hanapepe ditch diverts water from river 3 miles above station for irrigation in vicinity of Makaweli.

Rating table, fiscal year 1952-53 (gage height, in feet, and
discharge, in million gallons a day)

0.4	5.4	1.8	113
.5	7.8	2.0	145
.6	10.8	2.5	242
.8	18.8	3.0	360
1.1	37	3.5	520
1.4	64		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.0	14.4	45	8.4	51	149	50	9.3	10.2	12.2	7.1	17.7
2	32.5	11.9	38	8.7	11.7	*114	*52	8.7	8.4	10.2	7.3	21.2
3	37.5	9.9	48	7.8	8.4	57.5	26	6.7	12.7	9.0	12.0	9.2
4	34	9.0	19.3	7.8	7.6	50	17.0	8.4	77	10.8	7.6	7.3
5	16.9	8.4	10.7	8.1	9.4	23.5	12.6	8.4	21	10.5	7.1	6.8
6	13.0	8.1	33.5	8.4	51	23.5	14.2	8.4	25.5	9.9	12.5	6.6
7	10.8	13.9	110	7.6	16.8	14.0	51	9.4	14.3	8.4	8.1	7.9
8	10.2	9.3	31.5	8.1	9.0	11.9	14.4	8.4	9.6	13.2	9.1	7.6
9	29.5	8.1	22.5	8.1	9.8	10.5	16.0	8.4	8.4	10.9	58	8.4
10	20.5	11.5	91	7.3	10.9	9.6	22	8.1	7.8	8.7	8.1	8.7
11	10.5	8.4	73	*41	172	9.3	26	8.1	7.6	8.1	6.8	17.9
12	10.8	7.6	30	10.9	62	9.0	16.7	7.8	7.6	7.8	6.6	12.2
13	9.0	7.3	13.4	9.4	27.5	8.4	33.5	8.7	13.3	7.8	6.6	27
14	10.7	*7.3	11.6	14.5	22	8.4	29.5	88	13.7	7.6	6.8	12.4
15	434	7.6	26	166	77	8.1	41	12.0	9.3	*35.5	14.8	10.5
16	365	7.6	9.3	39.5	27.5	7.8	17.4	129	7.8	13.2	15.3	9.3
17	172	7.6	8.4	10.2	37	7.6	10.8	40	66	19.7	8.7	21.5
18	116	7.6	7.8	8.4	306	7.3	10.8	16.1	28	11.4	7.3	70
19	85	7.6	7.6	7.1	151	136	10.8	11.6	11.2	9.8	8.5	*12.5
20	39.5	8.7	7.3	6.6	163	107	10.8	9.5	9.0	9.6	7.3	8.7
21	31	8.1	8.3	8.6	56	61	10.8	13.0	8.4	7.8	13.1	7.8
22	21	17.5	9.2	6.4	17.9	18.4	10.2	13.1	9.3	8.0	7.3	7.3
23	15.3	9.6	7.6	9.4	13.3	11.9	9.0	35	9.4	9.1	7.6	6.8
24	18.7	17.8	7.3	13.3	19.1	10.5	12.2	47	41	7.6	7.3	6.6
25	12.2	9.0	7.3	51	11.5	9.9	16.1	41	10.5	7.3	7.3	7.1
26	68	34.5	7.6	10.9	9.8	9.3	9.0	10.2	14.2	7.6	14.0	7.3
27	95	81	7.6	6.8	57	9.0	8.4	*48	45	8.1	7.6	7.3
28	41	14.7	7.6	6.6	16.9	9.3	8.4	18.2	59	7.6	87	7.1
29	100	7.9	7.6	37	30	9.3	10.6	-	66	6.8	38	7.1
30	42	7.6	8.4	35	179	9.3	*21	-	129	7.1	9.0	6.8
31	20.5	8.5	---	22	---	8.7	10.2	-	27	---	23.5	---
Total	1,933.1	397.4	722.4	600.9	1,641.1	919.0	621.4	641.5	787.0	311.3	447.3	374.2
Mean:												
mgd	62.4	12.8	24.1	19.4	54.7	29.6	20.0	22.9	25.4	10.4	14.4	12.5
cfs	96.5	19.8	37.3	30.0	84.6	45.8	30.9	35.4	39.3	16.1	22.3	19.3
Ac-ft	5,930	1,220	2,220	1,840	5,040	2,820	1,910	1,970	2,420	955	1,370	1,150

Calendar year 1952: Max 1,270 Min 6.4 Mean(mgd) 54.4 Mean(cfs) 84.2 Ac-ft 61,160
Fiscal year 1952-53: Max 434 Min 6.4 Mean(mgd) 25.7 Mean(cfs) 39.8 Ac-ft 28,840

Peak discharge (base, 2,300 mgd).--No peak above base.

* Discharge measurement made on this day.

South Fork Waialua River near Lihue

Location.--Lat 22°02'10", long 159°22'55", on right bank 0.3 mile upstream from Waialua Falls and 5 miles north of Lihue.

Drainage area.--22.4 sq mi.

Records available.--December 1911 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 230 ft (by barometer). Prior to Nov. 18, 1918, at site 0.3 mile upstream at different datum.

Average discharge.--31 years (1921-24, 1925-53), 66.4 mgd (103 cfs).

Extremes.--Maximum discharge during year, 2,150 mgd (3,330 cfs) Jan. 1 (gage height, 5.65 ft); minimum, 1.82 mgd (2.82 cfs) June 30.
1911-53: Maximum discharge, 29,000 mgd (44,900 cfs) Jan. 16, 1920 (gage height, 11.25 ft), from rating curve extended above 9,000 mgd; minimum, 1.15 mgd (1.78 cfs) June 9-11, 1947.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Several ditches divert about 20 mgd for irrigation of cane lands above station.

Revisions (fiscal years).--WSP 1249: 1941-47(M), 1948-51(P).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.6	1.82	1.7	25.5
.7	2.45	2.0	47
.8	3.2	2.3	81
1.0	5.2	2.6	129
1.2	8.4	3.0	225
1.4	13.5	3.5	395

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.8	4.3	81	2.6	86	250	282	2.9	112	6.3	2.85	2.9
2	4.5	5.4	27.5	2.5	52	196	346	2.75	28.5	5.8	3.85	6.0
3	9.0	4.4	55	2.45	29	*114	85	2.75	53	*5.3	3.85	2.9
4	19.1	4.0	18.5	2.3	15.5	83	57	2.7	*369	5.1	3.45	2.6
5	10.5	3.75	5.0	2.5	12.8	55	46	2.6	172	5.1	3.05	2.4
6	23	3.75	28.5	2.75	68	52	41	2.5	139	6.6	3.3	2.3
7	8.0	4.9	147	2.7	44	43	58	2.6	73	4.5	3.2	3.0
8	4.0	4.9	57	2.3	16.5	35	28.5	2.6	52	5.5	3.05	2.5
9	17.6	4.2	37.5	2.2	16.2	7.6	29.5	2.75	30	8.3	33.5	2.7
10	22.5	4.0	73	2.2	17.2	9.1	34.5	2.7	22.5	4.1	4.6	2.6
11	5.1	3.85	68	13.3	172	10.4	34.5	2.6	9.5	3.85	3.0	3.2
12	4.3	3.75	16.9	4.3	88	16.7	34	2.7	9.1	3.65	2.7	3.3
13	4.0	3.55	10.5	2.7	62	32.5	125	3.15	76	3.55	2.5	7.0
14	4.1	3.4	12.3	2.5	44	20	19.3	78	93	3.55	2.4	3.4
15	282	3.4	27.5	106	90	24	12.0	7.9	64	4.6	2.5	3.0
16	328	3.3	5.2	14.1	56	5.5	5.1	62	42	4.6	2.7	2.8
17	156	3.3	3.9	3.75	63	4.9	4.9	63	94	4.0	2.75	2.6
18	160	*3.05	3.4	5.5	327	4.5	4.5	50	87	4.1	2.5	*16.3
19	178	3.05	3.05	11.8	171	133	4.4	56	48	3.9	2.45	3.8
20	98	3.05	2.8	20.5	300	154	4.3	31.5	33	3.65	2.45	2.6
21	62	2.7	2.75	32	100	79	*4.0	30.5	46	3.45	2.45	2.25
22	30.5	3.2	2.7	*19.7	55	24	3.45	31	45	3.3	2.4	2.45
23	12.8	3.45	2.7	4.3	45	17.3	3.45	19.8	34.5	3.55	2.5	6.4
24	6.0	2.6	2.5	4.9	70	16.5	3.4	11.7	52	3.1	2.4	2.35
25	5.0	2.8	2.45	163	50	26.5	3.3	10.2	13.4	3.0	2.3	2.05
26	39.5	6.8	2.45	73	40	37	3.3	7.7	8.4	2.8	2.5	2.15
27	95	40	2.4	28	90	39.5	3.1	85	39	2.9	2.4	2.15
28	73	5.7	2.3	8.8	60	29.5	3.05	197	56	2.75	2.95	2.0
29	53	3.2	2.4	14.7	80	25.5	3.05	---	46	2.7	4.5	2.0
30	25	2.75	2.6	67	200	*32	3.2	---	134	2.6	2.9	1.88
31	5.3	3.05	-----	25	-----	35	3.0	-----	17.4	-----	3.0	-----
Total	1,748.1	153.75	708.80	655.35	2,520.2	1,612.0	1,291.80	776.60	2,098.3	126.20	147.30	103.58
Mean:	56.3	4.96	23.6	21.1	84.0	52.0	41.7	27.7	67.7	4.21	4.75	3.45
cfs	87.1	7.67	36.5	32.6	130	80.5	64.5	42.9	105	6.51	7.35	5.34
Ac-ft	5,360	472	2,180	2,010	7,730	4,950	3,960	2,380	6,440	387	452	318
Calendar year 1952	Max	1,380	Min	2.2	Mean(mgd)	59.8	Mean(cfs)	92.5	Ac-ft	67,170		
Fiscal year 1952-53	Max	369	Min	1.88	Mean(mgd)	32.7	Mean(cfs)	50.6	Ac-ft	36,640		

Peak discharge (base, 3,700 mgd).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 20 to Dec. 1, Feb. 18-20, May 30 to June 17; discharge estimated on basis of recorded range in stage and records for North Fork Waialua River near Kapaa.

North Wailua ditch near Lihue

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

Records available.--July 1932 to June 1953 in reports of Geological Survey. October 1925 to June 1932 in files of Lihue Plantation Co.

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

Average discharge.--21 years (1932-53), 12.2 mgd (18.9 cfs).

Extremes.--1932-53: Maximum daily discharge, 38 mgd (59 cfs) Dec. 21, 1933, Apr. 24, 1934; no flow at times.

Remarks.--Records excellent. Water used for power and irrigation in vicinity of Lihue.

Revisions (fiscal years).--WSP 770: 1933.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.3	9.9	21.5	12.5	11.6	11.1	15.3	11.0	11.3	11.6	11.0	15.6
2	11.3	9.6	16.2	12.5	11.0	10.5	14.9	11.0	11.6	11.7	11.5	15.8
3	10.5	9.3	12.6	12.2	11.0	10.2	13.7	11.0	14.1	11.6	13.7	14.0
4	9.6	10.5	11.6	12.2	11.0	10.2	13.1	11.0	14.7	12.2	11.6	12.8
5	9.3	11.0	11.9	13.1	11.7	9.9	12.8	11.0	14.0	11.6	12.2	13.1
6	9.8	11.0	12.2	12.8	11.3	9.9	13.4	11.3	14.0	11.6	12.2	11.9
7	12.5	11.6	12.7	12.2	11.0	9.9	13.2	12.0	12.2	12.0	11.6	15.4
8	12.5	11.0	11.9	11.9	10.7	9.6	12.2	11.5	11.9	12.4	13.4	14.5
9	12.2	11.0	11.8	11.9	11.0	10.8	12.8	12.6	11.6	11.9	13.7	14.5
10	11.0	11.3	13.0	11.6	10.7	11.6	12.2	11.0	11.6	11.6	11.9	14.4
11	11.0	11.3	12.6	15.1	13.0	12.5	12.8	11.0	11.6	11.6	12.7	16.8
12	11.3	12.8	11.6	14.6	11.9	12.5	14.0	10.7	11.9	11.3	13.2	17.0
13	11.0	14.3	11.6	14.0	11.3	12.5	11.4	17.7	12.2	11.3	14.2	17.5
14	11.3	13.4	12.2	13.8	11.6	12.5	*11.9	17.6	12.2	11.3	14.3	16.5
15	11.0	13.7	11.6	14.3	12.2	12.5	12.8	15.3	11.9	14.0	17.4	15.9
16	9.8	13.4	11.3	12.2	11.6	12.2	12.5	17.2	11.6	12.8	16.3	15.3
17	10.0	13.1	11.3	14.0	12.3	12.4	12.2	13.4	13.4	14.7	15.3	18.1
18	8.8	*12.8	12.2	17.5	13.1	12.7	12.2	11.6	12.2	12.2	12.8	17.9
19	8.8	12.8	12.8	15.6	11.1	17.9	11.9	12.2	11.6	11.6	14.2	15.6
20	8.2	12.6	12.5	14.3	9.3	14.9	11.9	11.6	11.6	12.2	12.8	14.9
21	9.1	12.5	13.1	13.4	9.9	14.3	11.6	11.3	11.3	12.2	15.3	13.4
22	9.6	15.8	12.5	12.8	9.6	13.4	11.6	11.3	11.6	12.2	12.5	12.8
23	10.3	14.0	12.5	14.5	9.6	13.4	12.5	11.6	11.6	11.9	14.0	12.2
24	10.2	15.9	12.5	14.6	9.9	12.8	12.2	12.6	12.0	11.6	12.5	11.9
25	9.3	14.4	12.8	12.4	9.3	12.8	11.6	11.9	11.3	11.6	14.2	12.8
26	10.5	17.7	13.1	9.6	9.9	12.8	11.6	11.6	12.2	11.3	14.1	13.1
27	10.7	17.6	12.8	11.3	10.5	12.8	11.3	12.5	13.1	11.3	12.2	13.7
28	9.9	14.7	12.5	12.2	9.9	13.1	11.3	12.2	12.5	11.0	14.9	13.1
29	10.7	14.6	12.5	15.3	10.2	13.4	11.6	-	13.1	*11.0	14.0	13.1
30	9.6	14.3	12.5	14.6	11.0	12.6	11.3	-	13.5	10.7	14.6	11.9
31	9.6	17.5	-----	13.0	-----	12.2	11.2	-----	11.9	-----	16.2	-----
Total	320.7	405.4	381.9	412.0	328.2	379.9	384.8	346.7	381.3	356.0	420.3	435.5
Mean:	10.3	13.1	12.7	13.3	10.9	12.3	12.4	12.4	12.3	11.9	13.6	14.5
mgd	15.9	20.3	19.6	20.6	16.9	19.0	19.2	19.2	19.0	18.4	21.0	22.4
cfs	984	1,240	1,170	1,260	1,010	1,170	1,180	1,060	1,170	1,090	1,290	1,340
Ac-ft												
Calendar year 1952: Max	21.5											
Fiscal year 1952-53: Max	21.5											
Min	0											
Mean(mgd)	11.2											
Mean(cfs)	17.3											
Ac-ft	12,590											
13,960												

* Discharge measurement made on this day.

Stable storm ditch near Lihue

Location.--Lat 22°04'00", long 159°26'45", on left bank 100 ft downstream from intake, 7.8 miles northwest of Lihue, and 8.2 miles west of Kapaa.

Records available.--December 1936 to June 1953.

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

Average discharge.--16 years (1937-53), 7.15 mgd (11.1 cfs).

Extremes.--1936-53: Maximum daily discharge, 46 mgd (71 cfs) Apr. 3, 1948; no flow at times each year.

Remarks.--Records good. Ditch diverts water from North Fork Waialua River for irrigation of sugarcane in vicinity of Lihue. Flow regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	12.0	23	24.5	10.1	0	0	0.23	9.4	0.15	0.08	9.4	21.5	
2	16.3	4.7	24.5	10.6	0	.08	0	9.1	.08	.15	9.7	28	
3	12.6	.08	13.2	10.1	.11	.08	0	8.9	.15	.15	28	26	
4	.23	9.6	.23	10.1	.23	.05	0	8.9	.23	.15	15.1	24.5	
5	.15	13.0	.23	12.7	.23	0	0	8.9	.23	.03	16.9	23	
6	.15	12.4	.23	11.9	.23	0	0	8.9	.23	9.3	23	23	
7	8.2	17.4	.23	9.9	.23	0	0	9.1	.15	17.0	18.3	28	
8	11.4	12.4	.15	9.6	.15	0	0	10.3	.15	21	24.5	24.5	
9	25	11.7	.15	9.6	.15	0	0	14.3	.15	17.8	28	26	
10	22	15.4	.15	9.4	.08	0	0	9.1	.04	14.0	23	24.5	
11	14.9	11.7	.15	20	.19	0	0	8.9	0	12.7	16.3	29.5	
12	8.1	9.1	.03	18.1	.06	0	0	8.7	0	11.7	18.3	29.5	
13	.08	8.4	0	16.0	0	0	.15	27.5	0	11.4	22	31	
14	10.3	7.5	0	13.8	0	0	*.16	10.6	0	11.1	24.5	29.5	
15	14.9	7.5	0	18.4	0	0	11.2	.15	0	23	28	28	
16	.04	7.3	0	.06	0	0	8.8	.08	0	13.0	28	28	
17	.08	7.0	10.2	.08	0	7.4	.15	.08	0	18.3	28	31	
18	.08	*6.7	15.6	.08	.31	10.6	.15	.08	0	14.6	23	33	
19	.08	6.6	11.9	.04	.40	11.2	8.7	.15	0	15.7	26	29.5	
20	0	6.3	10.9	.06	.40	.31	12.2	.25	0	12.4	23	28	
21	0	6.2	14.1	.08	.31	.31	11.7	.08	0	10.1	28	24.5	
22	0	12.4	10.9	.08	.23	.31	11.4	.15	0	11.1	23	24.5	
23	0	6.6	9.6	.15	.23	.31	12.7	.15	0	9.9	24.5	8.7	
24	0	11.2	8.9	.15	.23	.31	11.4	.15	0	9.1	23	15.2	
25	12.6	7.5	7.9	.15	.15	.31	10.9	.06	0	8.9	24.5	21.5	
26	8.4	14.2	8.2	.05	.04	.31	10.4	0	0	8.7	28	23	
27	.15	28	7.5	0	0	.23	10.1	.10	0	8.4	23	23	
28	.15	12.4	7.3	0	0	.23	10.1	.15	0	7.3	16.1	21.5	
29	.15	7.5	6.8	0	0	.23	10.1	-	0	*7.5	17.1	23	
30	.08	17.4	7.7	0	0	.23	9.9	-----	0	7.5	24.5	21.5	
31	12.7	28	-----	0	-----	.15	9.6	-----	0	-----	23	-----	
Total	190.82	349.18	201.25	191.28	3.96	32.65	160.04	154.13	1.56	312.06	687.7	750.4	
Mean	6.16	11.3	6.71	6.17	0.132	1.05	5.16	5.50	0.050	10.4	22.2	25.0	
mgd	9.53	17.5	10.4	9.55	0.204	1.62	7.96	8.51	0.077	16.1	34.3	38.7	
cfs	586	1,070	618	587	12	100	491	473	4.8	958	2,110	2,300	
Ac-ft													
Calendar year 1952:	Max	28		Min	0		Mean(mgd)	4.23		Mean(cfs)	6.54	Ac-ft	4,750
Fiscal year 1952-53:	Max	35		Min	0		Mean(mgd)	8.32		Mean(cfs)	12.9	Ac-ft	9,310

* Discharge measurement made on this day.

North Fork Waialua River at altitude 650 ft, near Lihue

Location (revised).--Lat 22°03'50", long 159°26'20", on right bank 0.5 mile downstream from intake of Stable storm ditch and 7.8 miles northwest of Lihue.

Drainage area.--6.6 sq mi.

Records available.--September 1914 to June 1953.

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

Average discharge.--32 years (1921-53), 48.3 mgd (74.7 cfs).

Extremes.--Maximum discharge during year, 1,020 mgd (1,580 cfs) Mar. 4 (gage height, 6.53 ft), from rating curve extended above 240 mgd by test on model of station site; minimum, 0.48 mgd (0.74 cfs) Feb. 5-7, 11, 12.

1914-53: Maximum discharge, 4,020 mgd (6,220 cfs) June 2, 1943 (gage height, 9.96 ft, datum then in use), from rating curve extended above 600 mgd by test on model of station site; minimum, 0.27 mgd (0.42 cfs) June 28 to July 1, July 9-11, 19, 22, 23, 1951.

Remarks.--Records good except those for period of no gage-height record, which are poor. Since 1925 Hanalei tunnel has discharge into river, and North Waialua and Stable storm ditches have diverted water above station for irrigation in vicinity of Lihue.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.40	2.0	29.5
.8	.69	2.3	49
.9	1.11	2.6	73
1.0	1.76	3.0	118
1.2	3.8	3.5	197
1.4	7.0	4.0	297
1.7	15.5		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.2	3.2	6.5	0.66	44	78	66	0.54	31	23	0.80	10.0
2	1.62	14.2	14.5	.84	25.5	32	52	.61	24	19.5	.90	6.9
3	17.2	16.8	32.5	.65	25.5	35	23.5	.61	149	17.5	31	1.01
4	26	6.8	24	.61	22	41	19.1	.51	250	22.5	1.20	.78
5	21	.98	25.5	.61	50	28.5	16.5	.48	120	16.3	1.61	.69
6	20	.92	33	.60	48	28.5	16.8	.48	*144	6.6	7.7	.66
7	6.0	.89	52	.59	28.5	24.5	19.8	.48	56	3.1	.88	4.3
8	1.06	.85	26.5	.58	23.5	22	12.5	.51	41	8.6	12.3	1.16
9	18.3	.82	28	.58	24.5	18.7	13.2	1.34	32.5	2.9	42	1.52
10	6.3	1.10	66	.57	20.5	17.5	12.2	.51	28	.92	4.8	.95
11	.88	.88	64	14.4	77	15.9	12.4	.48	28.5	.84	1.81	5.7
12	8.7	.83	27.5	2.25	48	13.5	37.5	.48	33	.80	.72	5.4
13	13.5	.80	23.5	.87	30.5	12.9	100	55	39.5	.76	1.35	16.7
14	7.5	.75	37.5	.60	29.5	12.5	23	60	29	.72	.80	4.0
15	160	.70	32	*47	44	12.5	7.1	21.5	29	8.1	9.0	1.82
16	144	.67	20	19.4	34	11.6	*6.2	47	21.5	.95	5.3	1.38
17	77	.63	7.2	51	51	5.1	14.2	57	66	4.5	2.7	16.5
18	73	.60	1.21	79	119	1.06	13.5	33.5	36	.80	*78	23.5
19	77	*.57	1.01	26.5	88	42	5.4	44	25.5	.98	3.05	4.1
20	42	.57	.92	26.5	89	63	.92	28	24	.69	.72	2.05
21	38	.57	4.8	37.5	75	37	*.81	23	20.5	.80	5.0	.88
22	29	2.0	.78	19.5	50	19.1	.76	18.7	21.5	*.86	.69	.80
23	23.5	.70	.72	26	40	14.8	.80	17.5	20.5	.88	.98	16.6
24	28.5	.72	.70	37	35	15.8	.78	16.6	39	.72	.66	10.3
25	9.3	.57	.70	140	45	12.9	.69	19.5	18.7	.69	1.17	1.62
26	44	2.4	.69	47	*30	12.5	.63	14.2	33	.89	4.3	1.55
27	68	12.3	.69	28	46	12.2	.63	46	47	.66	.69	1.62
28	34.5	.88	.68	23.5	29.5	13.5	.60	54	44	.66	56	1.48
29	61	.69	.68	44	37.5	14.9	.60	-	35	.63	39.5	1.41
30	27.5	.63	.67	35	65	12.5	.60	-----	50	.63	5.7	1.41
31	9.5	6.9		33.5		10.8	.54	-----	29.5	-----	16.1	-----
Total	1,104.06	83.70	534.43	714.59	1,375.0	709.76	479.24	564.13	1,564.2	147.08	253.97	146.75
Mean	mgd	35.6	2.70	17.8	23.1	45.8	22.9	15.5	20.1	4.90	8.39	4.89
	cfs	55.1	4.18	27.5	35.7	70.9	35.4	24.0	31.1	7.58	13.0	7.57
Ac-ft	3,390	257	1,640	2,190	4,220	2,180	1,470	1,730	4,800	451	798	450
Calendar year 1952: Max	500			Min	0.57	Mean(mgd)	35.2	Mean(cfs)	54.4	Ac-ft	33,510	
Fiscal year 1952-53: Max	250			Min	0.48	Mean(mgd)	21.0	Mean(cfs)	32.5	Ac-ft	23,580	

Peak discharge (base, 1,200 mgd)--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 6-25, 29-31, Sept. 23-30, Oct. 2-10, 14, Nov. 21-26, Jan. 1; discharge estimated on basis of 1 discharge measurement, gage readings, recorded range in stage, probable decrease in flow and records for stations on nearby streams.

ISLAND OF KAUAI

Kanhaha ditch near Lihue

Location.--Lat 22°03'50", long 159°25'30", on right bank 750 ft downstream from intake and 7 miles northwest of Lihue.

Records available.--August 1910 to June 1953.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 540 ft (by barometer). Prior to May 28, 1913, staff gage at site 250 ft upstream at different datum. May 28, 1913, to July 24, 1921, staff gage at site 450 ft upstream at different datum. July 25, 1921, to Mar. 4, 1926, water-stage recorder at site 750 ft downstream at different datum. Mar. 5, 1926, to Sept. 13, 1932, water-stage recorder at site 1,750 ft downstream at different datum.

Extremes.--1910-53: Maximum daily discharge, 25.6 mgd (39.6 cfs) Aug. 8, 1918: no flow at times.

Remarks.--Records good. Ditch diverts water from North Fork Wailua River for domestic use only. Flow regulated by headgate.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	1.40	0.17	0.80	0.49	0.43	0.21	0.31	0.43	0.21	1.78
2	0	0	1.16	.12	.80	.43	.05	.21	.31	.43	.21	1.66
3	0	0	1.24	.21	.80	.43	0	.21	.31	.43	.12	.80
4	0	0	1.24	.21	.80	.43	0	.12	.21	.43	.46	.55
5	0	0	1.09	.21	.80	.43	1.11	0	.12	.31	.69	.43
6	0	0	1.09	.12	.55	.43	.94	0	.05	.31	1.58	.31
7	0	0	1.24	.05	.43	.43	.43	0	.05	.31	.67	.80
8	0	0	1.09	.03	.43	.43	.43	0	.05	.55	1.61	.43
9	0	0	.94	.03	.43	.43	.43	.31	.05	.55	2.8	.55
10	0	0	.88	.05	.43	.43	.43	.01	.85	.43	1.98	.57
11	0	0	.43	.12	.36	.43	.43	0	.94	.31	1.09	1.05
12	0	0	.21	.05	.31	.43	.31	.47	.94	.31	.67	1.40
13	0	0	.21	0	.31	.43	.46	2.65	.94	.31	.67	1.98
14	0	0	.21	.31	.31	.43	.67	3.5	.94	.31	.43	1.40
15	.06	0	.21	.72	.31	.43	.55	3.05	2.5	.31	.94	.80
16	.05	0	.21	.67	.31	.43	*.55	3.5	3.3	.21	1.09	.67
17	.05	0	.50	.55	.31	.43	.67	3.75	4.0	.21	.80	1.20
18	.05	0	.43	.55	.10	.43	.55	2.1	2.1	.21	.31	2.4
19	.05	0	.43	.43	*.71	.43	.43	1.58	1.09	.21	.67	1.58
20	.05	0	.43	.43	.94	.43	.43	1.58	1.09	.12	.24	1.09
21	.05	0	.31	.31	.67	.31	.43	1.40	1.09	.12	.67	.55
22	0	0	.21	.43	.43	.31	.43	1.24	1.09	.41	.21	.43
23	0	0	.21	.43	.55	.55	.43	1.24	1.09	.55	.21	1.66
24	0	0	.21	.43	.55	.67	.43	1.40	1.09	.43	.05	1.43
25	0	0	.21	.31	.55	.67	.31	.91	.94	.31	.12	.80
26	0	0	.21	.12	.55	.67	.31	.67	.94	.21	.55	.67
27	0	0	.12	.12	.55	.67	.31	.55	.94	.21	0	.67
28	0	0	.05	.21	.55	.67	.31	.43	.80	.21	1.90	.55
29	0	0	.03	.60	.55	.55	.31	-	.80	.21	2.2	.55
30	0	0	.05	.60	.55	.48	.31	-----	.55	.12	1.40	.43
31	0	.26	-----	.80	-----	.43	.21	-----	.43	-----	1.78	-----
Total	0.36	0.26	16.25	9.59	15.86	14.64	13.11	31.09	29.71	9.47	26.33	29.19
Mean:												
mgd	0.012	0.008	0.542	0.309	0.529	0.472	0.423	1.11	0.958	0.316	0.849	0.973
cfs	0.019	0.012	0.839	0.478	0.818	0.750	0.654	1.72	1.48	0.489	1.31	1.51
Ac-ft	1.1	0.8	50	29	49	45	40	95	91	29	81	90

Calendar year 1952: Max 1.40 Min 0 Mean(mgd) 0.228 Mean(cfs) 0.353 Ac-ft 257
 Fiscal year 1952-53: Max 4.0 Min 0 Mean(mgd) 0.537 Mean(cfs) 0.831 Ac-ft 601

* Discharge measurement made on this day.

East Branch of North Fork Wailua River near Lihue

Location.--Lat 22°04'10", long 159°25'05", on right bank 1,200 ft upstream from mouth and 7.5 miles northwest of Lihue.

Drainage area.--6.2 sq mi.

Records available.--July 1912 to June 1953.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (by barometer). Prior to Oct. 1, 1914, staff gage at site 725 ft downstream at different datum. Oct. 1, 1914, to May 10, 1934, water-stage recorder at site 75 ft upstream at same datum.

Average discharge.--33 years (1920-53), 30.2 mgd (46.7 cfs).

Extremes.--Maximum discharge during year, 434 mgd (671 cfs) Mar. 4 (gage height, 4.92 ft), from rating curve extended above 270 mgd by test on model of station site; minimum, 8.6 mgd (13.3 cfs) June 30.
1912-53: Maximum discharge, 3,340 mgd (5,170 cfs) Dec. 24, 1927 (gage height, 10.57 ft), from rating curve extended above 500 mgd; minimum, 4.4 mgd (6.8 cfs) July 3, 13, 1926.

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

Revisions (fiscal years).--WSP 770: 1932-33.

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Jan. 12				Jan. 13 to June 30			
1.0	8.7	1.8	42	1.0	7.4	2.0	55
1.2	14.1	2.0	57	1.2	12.4	2.5	101
1.4	21	2.5	113	1.4	19.3	3.0	155
1.6	30.5			1.6	26.5	3.5	215
				1.8	40		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	20	17.4	40	11.5	30	57	62	9.5	34.5	16.4	10.0	12.4
2	19.7	19.5	27	11.2	21	41	38	9.2	26.5	15.3	10.3	12.2
3	24.5	44	27	11.0	20.5	27.5	17.4	9.2	*77	*14.3	30.5	11.0
4	20	22	18.9	10.7	19.7	28	15.4	9.2	166	16.0	13.0	10.0
5	18.5	17.8	17.1	11.2	51	23.5	14.8	9.0	91	14.0	11.9	9.7
6	18.5	16.4	21.5	11.8	72	22	14.4	9.0	101	13.0	20	9.2
7	17.1	17.8	40	11.0	35	20	13.8	9.0	50	14.0	11.9	10.2
8	16.7	16.4	19.7	10.7	25.5	19.3	13.2	9.5	37	18.5	14.0	9.7
9	20.5	15.8	19.3	10.4	23.5	18.2	13.2	14.3	30.5	16.0	16.0	10.0
10	21	18.3	26	10.4	21	17.4	13.2	9.7	27	12.7	11.6	10.2
11	16.7	15.8	21	17.4	39.5	17.1	12.6	9.2	24	12.1	10.5	13.5
12	16.7	14.4	17.8	12.9	29	16.4	47	9.0	25.5	11.9	10.2	14.0
13	15.4	14.1	17.1	12.4	22.5	15.8	88	85	23.5	11.6	10.0	16.6
14	16.4	13.5	17.4	11.5	22	15.4	19.3	77	24.5	11.3	9.7	11.6
15	85	13.8	18.2	18.0	31.5	15.4	16.0	23.5	24.5	25	12.5	10.5
16	68	13.5	15.4	12.9	27	14.8	*14.4	32	19.3	15.0	13.7	10.8
17	49	12.9	14.8	19.6	24.5	14.8	13.7	61	42	16.9	11.3	15.5
18	44	12.8	14.4	82	49	14.8	13.0	34.5	30.5	15.0	10.0	23.5
19	41	*12.6	13.8	22.5	53	60	12.4	42	22	13.7	10.5	14.0
20	29	12.6	13.2	20	107	55	12.1	43	20	12.1	9.7	12.7
21	27	12.4	12.6	26	53	29.5	11.9	28	18.2	11.6	10.0	10.8
22	23.5	16.1	12.4	16.1	34	19.7	11.3	20	17.8	11.6	9.2	10.2
23	21	12.9	12.1	21.5	30	17.4	11.0	18.6	16.7	11.3	9.5	9.7
24	22	13.8	11.8	34.5	a30	16.4	11.0	22.5	23	10.5	9.2	9.5
25	20	13.8	11.8	105	a26	15.8	10.8	17.4	16.8	10.2	9.2	9.7
26	43	24	11.8	34	*a24	15.1	10.5	15.6	26	10.2	11.9	9.7
27	36	41	11.5	23.5	36	14.8	10.2	39.5	36.5	9.7	9.2	9.7
28	25.5	17.4	11.0	19.7	24.5	14.8	10.2	95	24	9.7	17.2	9.2
29	23	14.4	11.0	29	25.5	14.4	10.0	-	20	9.7	17.2	9.2
30	20	13.8	11.0	29	33	14.1	10.0	-----	26	9.5	11.6	8.8
31	18.5	15.1	-----	28.5	-----	13.2	9.7	-----	18.2	-----	16.8	-----
Total	859.2	535.9	536.6	705.9	1,040.2	698.6	580.5	770.4	1,139.5	398.8	388.3	343.8
Mean:												
mgd	27.7	17.3	17.9	22.8	34.7	22.5	18.7	27.5	36.8	13.3	12.5	11.5
cfs	42.9	26.8	27.7	35.3	53.7	34.8	28.9	42.5	56.9	20.6	19.3	17.8
Ac-ft	2,640	1,640	1,650	2,170	3,190	2,140	1,780	2,360	3,500	1,220	1,190	1,060

Calendar year 1952: Max 350 Min 10.4 Mean(mgd) 31.7 Mean(cfs) 49.0 Ac-ft 35,570
Fiscal year 1952-53: Max 166 Min 8.8 Mean(mgd) 21.9 Mean(cfs) 33.9 Ac-ft 24,540

* Peak discharge (base, 1,000 mgd).--No peak above base.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement, fieldman's notes, and records for stations on nearby streams.

ISLAND OF KAUAI

Wailua ditch near Kapaa

Location.--Lat 22°04'25", long 159°24'05", on right bank 2,000 ft downstream from Wailua Reservoir, 5.2 miles west of Kapaa, and 7 miles north of Lihue.

Records available.--November 1936 to June 1953 in reports of Geological Survey. April 1932 to November 1936 in files of East Kauai Water Co.

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

Average discharge.--16 years (1937-53), 11.6 mgd (17.9 cfs).

Extremes.--1936-53: Maximum daily discharge, 41 mgd (63 cfs) June 4, 1937; no flow at times in 1940, 1950-51, 1953.

Remarks.--Records good. Ditch diverts water from North Fork Wailua River to reservoir 2,000 ft above station and thence to fields for irrigation of sugarcane. Flow regulated by gates at reservoir.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.7	25	8.4	13.2	0.36	0.36	1.02	5.1	0.72	0.72	12.6	10.9
2	13.8	19.1	14.2	4.8	.38	.36	1.44	9.8	.62	.72	12.6	14.3
3	14.3	14.3	14.3	19.7	1.10	.36	.36	12.1	.72	.72	13.2	14.3
4	14.3	9.6	14.3	18.3	1.41	.36	.36	11.0	.66	.78	*13.8	21
5	11.6	8.2	12.6	10.4	1.20	.36	1.65	9.4	.60	.78	13.8	22.5
6	8.4	14.3	9.4	16.5	1.08	.24	1.90	5.9	.42	3.7	14.3	14.3
7	11.0	16.5	9.4	21	1.02	.42	.30	3.9	.36	7.9	11.0	9.4
8	17.6	16.7	9.4	22.5	1.02	.42	.30	3.85	.36	9.9	6.9	11.0
9	17.6	14.3	14.6	16.8	.96	1.24	.24	4.0	.36	12.1	8.9	17.6
10	14.3	14.3	22.5	16.5	.72	2.55	.30	8.8	.30	12.1	6.9	21
11	11.6	15.4	25	9.1	.54	2.7	.24	13.2	.24	12.1	11.0	21
12	7.4	15.4	16.6	4.4	.54	2.75	5.8	13.2	*.18	12.1	13.2	17.6
13	10.4	18.8	10.4	4.4	.54	2.6	9.9	7.8	.12	12.1	15.4	10.4
14	17.6	18.8	9.9	7.9	.54	2.7	7.4	.96	.18	12.6	20	8.9
15	21	14.3	16.8	4.8	.48	2.75	6.9	.90	.18	11.0	21	11.0
16	16.5	14.3	25	1.02	.48	3.1	6.9	.90	.18	8.4	17.6	14.3
17	13.8	14.3	31.5	.84	.48	3.15	*4.6	.90	.24	6.3	12.6	14.3
18	11.0	17.6	29	.60	.48	1.80	3.0	.90	.24	3.4	16.3	13.2
19	8.4	21	16.4	.30	.54	.36	7.1	.90	.18	3.4	20	9.9
20	8.4	*25	8.4	*.24	.48	.36	11.6	.90	.18	7.3	18.8	3.35
21	11.0	29	8.4	.18	.48	.36	9.4	.90	.24	8.9	17.6	0
22	14.3	31.5	14.7	.72	.48	.90	4.6	.90	.36	8.9	17.6	7.4
23	17.6	22	22.5	.24	.42	.96	3.25	.90	.36	9.4	11.0	9.9
24	23.5	13.2	23.5	.30	.42	.48	2.2	.90	1.97	9.4	8.9	14.3
25	23.5	15.4	29	.36	.42	.42	.78	.90	3.8	9.4	8.9	25
26	15.1	18.8	19.6	.36	.36	.42	5.3	.96	3.8	9.4	11.0	26.5
27	8.9	21	8.4	.42	.36	.42	7.9	1.02	2.25	12.1	14.3	17.8
28	14.6	21	8.9	.42	.36	.42	10.4	.96	.72	12.6	20	9.9
29	23.5	15.7	23.5	.42	.36	.78	12.1	-	.72	12.6	23	16.5
30	25	7.9	29	.97	.36	3.2	7.0	-----	.72	12.6	14.7	21
31	25	6.0	-----	.42	-----	3.9	3.15	-----	.72	-----	8.4	-----
Total	461.7	530.7	505.6	199.43	18.35	41.20	137.39	121.95	22.70	243.42	433.3	425.55
Mean:	14.9	17.1	16.9	6.43	0.612	1.33	4.43	4.36	0.732	8.11	14.0	14.2
cfs	25.1	26.5	26.1	9.95	0.947	2.06	6.85	6.75	1.13	12.5	21.7	22.0
Ac-ft	1,420	1,630	1,550	612	56	126	422	374	70	747	1,330	1,310

Calendar year 1952: Max 31.5 Min 0.18 Mean(mgd) 9.03 Mean(cfs) 14.0 Ac-ft 10,140
 Fiscal year 1952-53: Max 31.5 Min 0 Mean(mgd) 8.61 Mean(cfs) 13.3 Ac-ft 9,650

* Discharge measurement made on this day.

North Fork Wailua River near Kapaa

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

Drainage area.--18.7 sq mi.

Records available.--July 1952 to June 1953.

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

Extremes.--Maximum discharge during year, 1,470 mgd (2,270 cfs) Mar. 4 (gage height, 6.00 ft); minimum, 2.9 mgd (4.5 cfs) Sept. 19, 20.

Remarks.--Records good. Wailua ditch diverts water between this station and station at altitude 650 ft.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.1	2.9	2.5	91
1.2	4.6	3.0	171
1.4	9.7	3.5	285
1.6	17.0	4.0	430
1.8	27	4.5	620
2.0	40		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	g24	4.1	87	4.1	83	165	155	13.4	108	43	6.2	17.6
2	g12	3.95	47	3.4	55	125	160	12.3	66	37.5	6.7	5.8
3	g38	25	61	3.25	54	79	51	4.5	208	33	24	4.3
4	a55	40	43	3.25	48	83	42	4.6	*501	39.5	5.8	3.8
5	a46	19.9	31	3.6	79	64	37	4.5	271	41	6.7	3.8
6	a44	8.1	62	3.6	163	62	33	4.1	273	25	6.2	3.95
7	g20	7.8	102	3.4	87	57	18.7	4.5	132	8.3	7.5	3.95
8	g9.7	8.0	51	3.25	65	53	18.1	4.5	98	12.3	23	4.1
9	g40	4.5	31.5	3.4	58	39	31	7.4	79	32.5	65	4.1
10	*22.5	9.1	46	3.6	58	7.7	32	12.5	70	17.6	20	4.1
11	7.5	6.8	82	4.3	132	20	31.5	5.1	63	6.2	*5.4	4.3
12	19.3	4.6	35	4.3	87	36	75	4.3	*69	6.2	4.5	4.3
13	29	3.95	46	3.95	62	26	259	36	78	6.9	5.8	4.5
14	23.5	3.8	56	4.3	58	13.3	37	184	71	5.6	4.9	4.5
15	232	3.95	55	*20.5	84	10.7	36	62	71	29.5	5.3	4.3
16	248	4.1	7.6	17.9	77	17.0	23.5	86	54	*29	4.6	4.5
17	163	4.3	4.4	27.5	79	24.5	33	145	117	28	4.6	4.5
18	140	4.5	3.4	234	202	17.5	34	81	104	28.5	4.6	19.6
19	140	4.5	3.1	82	146	*168	28	112	72	24	4.6	20.5
20	81	*4.3	3.95	50	332	150	6.3	82	39	17.7	4.6	17.0
21	16.3	4.3	4.3	79	179	87	4.1	67	16.2	6.4	4.6	13.8
22	48	4.9	4.1	43	103	48	3.95	49	16.2	6.2	4.6	*11.7
23	52	4.9	3.25	52	85	37	5.3	46	51	6.0	4.6	4.1
24	17.2	4.5	3.25	81	91	37.5	6.0	68	78	6.0	4.6	6.5
25	29.5	4.6	3.1	274	*72	36	6.0	53	48	6.0	4.6	4.6
26	73	4.6	3.4	106	68	*34.5	5.8	40	70	6.0	4.6	3.8
27	101	6.7	3.25	63	100	32.5	4.6	104	103	6.2	4.6	3.6
28	65	4.5	3.25	51	68	31	3.95	276	80	6.2	12.8	3.8
29	69	4.6	3.6	70	64	19.4	*3.8	-	89	5.6	9.7	3.6
30	34	4.3	3.6	83	101	6.9	4.0	-----	135	5.3	7.9	3.6
31	16.1	4.6	-----	70	-----	7.2	12.2	-----	52	-----	31.5	-----
Total	1,915.6	229.75	893.05	1,455.60	2,940	1,614.7	1,220.80	1,632.7	3,282.4	528.2	314.1	202.40
Mean												
mgd	61.8	7.41	29.8	47.0	98.0	52.1	39.4	58.3	106	17.6	10.1	6.75
cfs	85.6	11.5	46.1	72.7	152	80.6	61.0	80.2	164	27.2	15.6	10.4
Ac-ft	5,880	705	2,740	4,470	9,020	4,960	3,750	5,010	10,070	1,620	964	621
Calendar year 1952	Max	-	Min	-	Mean(mgd)	-	Mean(cfs)	-	Ac-ft	-		
Fiscal year 1952-53	Max	501	Min	3.1	Mean(mgd)	44.5	Mean(cfs)	68.9	Ac-ft	49,810		

Peak discharge (base, 1,100 mgd).--Jan. 1 (8:50 p.m.) 1,140 mgd (1,760 cfs), 5.49 ft; Jan. 13 (4 a.m.) 1,280 mgd (1,950 cfs), 5.72 ft; Mar. 4 (7:30 a.m.) 1,470 mgd (2,270 cfs), 6.00 ft.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for station at altitude 650 ft.

g Computed from twice-daily staff-gage readings.

Makaleha ditch near Kealia

Location.--Lat 22°06'55", long 159°22'05", on left bank at end of last tunnel from which water spills down slope into Mimino Reservoir, 3.9 miles northwest of Kealia and 4.1 miles northwest of Kapaa.

Records available.--December 1936 to June 1953 in reports of Geological Survey. July 1925 to November 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder and Parshall flume. Prior to December 1936, at site 150 ft downstream at different datum.

Average discharge.--16 years (1937-53), 3.83 mgd (5.93 cfs).

Extremes.--1936-53: Maximum daily discharge, 15.1 mgd (23.4 cfs) Oct. 27, 1938, Dec. 5, 1944, Mar. 27, 1945; minimum daily, 0.02 mgd (0.03 cfs) Nov. 28, 1942, Sept. 24-26, 1944, Aug. 31, 1947, Dec. 28, 1952.

Remarks.--Records good. Ditch diverts water from Makaleha Stream for irrigation of sugar-cane. Diversion is regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	3.95	5.8	5.4	0.46	0.22	0.99	4.8	1.78	5.5	5.6	7.8
2	4.2	4.6	6.0	5.4	.36	.34	.58	4.7	.89	5.4	6.9	7.8
3	5.3	4.6	6.9	5.2	.34	.25	.25	4.7	.90	5.1	10.9	6.9
4	4.6	4.5	5.4	5.0	.31	.22	.22	4.8	2.9	5.6	*8.3	5.8
5	4.3	4.0	5.2	6.6	<u>5.2</u>	.20	.17	4.8	1.82	5.3	8.3	5.7
6	5.2	3.9	6.4	6.9	2.45	.17	.25	4.7	2.05	5.0	9.8	5.4
7	4.5	4.2	6.4	5.8	1.54	.14	.12	4.8	1.29	7.1	7.4	7.7
8	4.1	4.1	5.7	5.2	.75	.12	.10	5.6	.75	8.8	9.3	6.9
9	5.5	3.9	5.7	5.1	.49	.10	.17	8.3	.46	7.4	9.8	7.4
10	5.5	4.0	6.9	5.0	.34	.10	<u>.08</u>	5.7	.36	5.6	6.9	6.9
11	4.8	3.9	6.0	8.2	.36	.10	.08	5.1	.31	5.3	6.0	9.8
12	5.0	3.6	4.9	8.3	.31	.08	6.7	5.0	.22	5.1	5.8	10.0
13	4.4	3.5	5.3	7.4	.25	.08	6.5	8.8	.17	5.0	6.0	9.8
14	5.1	3.45	5.3	6.0	.22	.08	1.50	9.8	.17	5.0	5.7	8.3
15	<u>6.4</u>	3.7	4.8	8.8	.28	3.55	.88	8.8	.14	<u>10.2</u>	8.3	7.8
16	5.5	3.5	<u>4.4</u>	6.4	.25	4.8	.54	8.8	<u>.12</u>	7.4	7.8	7.8
17	5.8	3.5	5.8	6.5	.22	5.3	.28	4.7	.20	9.3	6.9	9.3
18	5.9	3.45	6.4	<u>12.0</u>	.25	5.6	.22	.88	.20	8.8	5.8	<u>10.9</u>
19	5.8	<u>3.25</u>	5.8	9.3	.28	<u>9.3</u>	.17	.72	.20	7.8	6.9	8.9
20	5.4	<u>3.35</u>	5.5	3.6	3.8	8.8	*1.7	.72	.17	6.4	5.8	8.8
21	5.5	*3.3	5.6	.64	1.75	8.3	.10	.72	.14	5.8	7.4	6.4
22	5.3	4.3	5.4	<u>.36</u>	.79	3.15	2.9	.46	.12	5.8	5.7	6.4
23	4.6	3.45	5.2	<u>.46</u>	.49	.10	5.0	<u>.36</u>	3.15	5.3	6.9	5.8
24	4.8	3.8	4.4	.62	.39	.10	4.9	3.2	7.4	5.0	6.0	5.6
25	4.8	3.8	4.6	1.51	.28	.08	4.8	1.02	5.8	4.8	6.5	5.8
26	5.4	4.0	5.4	.92	.22	.08	4.7	.57	8.3	4.7	8.1	5.8
27	5.1	4.2	5.1	.53	.22	.06	4.7	.59	<u>9.0</u>	<u>4.6</u>	5.8	6.4
28	4.7	4.5	5.0	.36	.17	.02	4.6	4.2	3.6	<u>4.6</u>	9.4	5.4
29	4.6	4.5	5.1	.36	.17	.48	5.4	-	.14	4.9	9.6	6.4
30	4.6	4.4	5.2	.39	<u>.14</u>	1.02	5.4	-----	4.2	5.0	6.9	<u>5.2</u>
31	4.2	4.6	-----	.39	-----	.75	4.8	-----	5.8	-----	8.8	-----
Total	155.4	121.60	165.6	138.64	23.08	53.69	67.27	117.34	62.75	181.6	229.3	218.9
Mean:	5.01	3.92	5.52	4.47	0.769	1.73	2.17	4.19	2.02	6.05	7.40	7.30
mgd	7.75	6.07	8.54	6.92	1.19	2.68	3.36	6.48	3.13	9.36	11.4	11.3
cfs	477	373	508	425	71	165	206	360	193	557	704	672
Ac-ft												

Calendar year 1952: Max 12.0 Min 0.02 Mean(mgd) 3.02 Mean(cfs) 4.67 Ac-ft 3,390
 Fiscal year 1952-53: Max 12.0 Min 0.02 Mean(mgd) 4.21 Mean(cfs) 6.51 Ac-ft 4,710

* Discharge measurement made on this day.

ISLAND OF KAUAI

Kapahi ditch near Kealia

Location.--Lat 22°06'00", long 159°22'30", on right bank 500 ft downstream from intake and 4.5 miles west of Kealia.

Records available.--April 1909 to May 1914, May 1915 to June 1953.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 360 ft (by barometer). Prior to Nov. 26, 1936, water-stage recorder at site 61 ft upstream at datum 2.52 ft higher.

Average discharge.--35 years (1917-20, 1921-53), 5.30 mgd (8.20 cfs).

Extremes.--1909-14, 1915-53: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

Remarks.--Records good. Ditch diverts water from Kapaa River for irrigation in vicinity of Kapaa. Flow regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.45	3.25	8.7	2.25	0.34	0.31	0.29	2.35	0.02	4.6	3.05	3.1
2	3.25	3.9	4.3	1.77	.13	.13	.04	2.45	.02	4.5	4.9	2.85
3	7.3	3.05	7.2	1.99	.13	.10	.04	2.45	.02	4.2	12.9	2.65
4	3.7	6.0	3.45	1.90	.13	.13	.07	2.45	.02	4.3	*4.4	2.35
5	3.25	4.7	3.35	3.35	.55	.63	.44	2.45	.02	4.3	4.3	2.15
6	4.7	3.7	5.3	2.45	.08	.19	.19	2.45	.01	4.0	5.8	2.1
7	3.25	4.9	4.7	1.99	.01	.19	.40	2.45	.01	6.2	3.7	3.3
8	2.95	4.3	1.44	1.90	.01	.56	.16	2.75	.01	9.6	7.4	2.55
9	4.4	3.6	3.0	1.90	.01	.27	1.83	3.7	*5.3	6.0	6.4	2.55
10	4.9	4.7	7.2	1.90	.02	.72	1.48	3.15	.27	4.2	3.05	2.45
11	3.7	3.6	4.3	12.7	.07	.23	.19	2.75	.23	3.9	2.65	6.4
12	4.9	3.05	2.85	3.35	.37	.23	12.2	2.65	.19	3.8	2.55	4.8
13	3.25	2.85	3.15	2.65	.16	.56	6.6	2.05	.19	3.7	2.55	6.0
14	4.7	2.75	3.35	*2.35	.44	.23	.27	.13	.19	3.8	2.55	3.15
15	11.0	2.95	4.7	1.77	.23	3.75	.19	.73	.16	6.3	5.9	2.65
16	7.6	2.95	2.85	.01	.19	3.7	.88	1.40	.13	2.9	3.9	2.55
17	8.4	2.95	2.45	.28	.47	3.45	.16	1.40	.16	5.0	3.15	6.1
18	5.5	2.95	2.25	.14	.57	2.2	.13	1.62	4.4	2.55	2.65	9.3
19	2.6	3.05	2.1	.04	.27	1.39	.13	1.53	7.4	1.61	3.05	3.7
20	3.2	*3.05	1.99	.02	.16	.23	*4.1	1.07	3.25	4.6	2.75	4.5
21	6.5	2.95	1.99	.01	0	.19	1.90	.10	.10	4.2	3.15	2.85
22	6.0	5.4	1.99	.01	0	.16	2.75	.02	.13	4.2	2.55	2.6
23	4.3	3.15	2.1	.36	0	.16	1.76	.04	3.1	3.8	2.65	2.25
24	4.5	3.8	2.55	.62	0	.51	.04	.32	5.6	3.45	2.55	2.15
25	4.0	3.8	2.75	.21	.35	.23	0	.13	4.9	3.35	2.8	2.15
26	4.6	11.7	2.25	.42	.13	.19	1.46	.13	4.4	3.25	3.95	2.15
27	1.87	17.6	2.1	.80	.13	1.45	2.15	1.12	1.26	3.15	2.45	2.1
28	5.2	3.4	2.1	.80	*.81	.19	2.15	.15	.27	3.15	6.1	1.99
29	5.6	3.0	2.15	.80	.71	1.87	2.45	-	.23	2.95	6.1	2.1
30	4.4	2.65	2.25	.80	.31	3.7	2.55	-----	4.7	2.85	2.85	1.30
31	3.35	4.0	-----	.74	-----	2.45	2.35	-----	4.7	-----	3.6	-----
Total	146.32	133.70	100.86	50.28	6.78	30.30	49.35	43.99	46.62	124.41	126.35	97.44
Mean:	4.72	4.31	3.36	1.62	0.226	0.977	1.59	1.57	1.50	4.15	4.08	3.25
cfs	7.30	6.67	5.20	2.51	0.350	1.51	2.46	2.43	2.32	6.42	6.31	5.03
Ac-ft	449	410	310	154	21	93	151	135	143	352	368	299
Calendar year 1952: Max	17.6	Min	0	Mean(mgd)	3.01	Mean(cfs)	4.66	Ac-ft	3,380			
Fiscal year 1952-53: Max	17.6	Min	0	Mean(mgd)	2.62	Mean(cfs)	4.05	Ac-ft	2,940			

* Discharge measurement made on this day.

Kapaa River at Kapahi ditch intake, near Kapaa

Location.--Lat 22°06'05", long 159°22'30", on right bank at diversion dam, 4 miles north-west of Kapaa and 4.5 miles northwest of Wailua.

Drainage area.--3.3 sq mi.

Records available.--December 1936 to June 1953.

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

Average discharge.--16 years (1937-53), 13.0 mgd (20.1 cfs).

Extremes.--Maximum discharge during year, 890 mgd (1,380 cfs) Nov. 5 (gage height, 2.58 ft), from rating curve extended above 330 mgd by logarithmic plotting; no flow at times.

1936-53: Maximum discharge, 3,570 mgd (5,520 cfs) Feb. 7, 1949 (gage height, 4.65 ft), from rating curve extended as explained above; no flow at times.

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

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

-0.03	0	0.5	18.9
0.0	.10	.6	28.5
.1	.74	.8	54
.2	2.55	1.0	90
.3	6.1	1.2	140
.4	11.5		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	2.85	0	23	44	59	0	22.5	0	0	0.05
2	0	0	1.39	0	15.0	23.5	20.5	0	17.7	0	.05	0
3	.04	26.5	1.55	0	16.0	15.0	9.7	0	96	0	19.8	0
4	0	1.84	0	0	15.6	15.0	8.6	0	120	0	.69	0
5	0	.02	.18	0	61	10.9	8.0	0	58	0	.29	0
6	0	0	.94	0	50	11.5	7.5	0	81	0	6.6	0
7	0	.17	10.9	0	22	10.3	7.1	0	23.5	.14	0	0
8	0	.04	1.89	0	14.3	9.7	7.5	.51	16.5	3.65	2.7	0
9	0	.04	.29	0	12.2	9.1	5.8	6.9	13.4	0	0	0
10	0	.32	0	0	11.8	8.6	6.6	0	13.6	0	0	0
11	0	.04	0	.16	27.5	9.1	7.5	0	16.4	0	0	0
12	0	0	0	0	21	9.1	76	0	12.9	0	0	0
13	0	0	0	0	14.3	8.2	66	96	12.2	0	0	.07
14	0	0	.12	0	14.8	8.6	16.2	54	16.1	0	0	0
15	70	0	0	8.8	22	4.6	10.9	10.4	15.7	14.6	.09	0
16	14.8	0	0	2.3	15.7	0	9.1	16.9	11.5	2.6	0	0
17	18.4	0	0	16.5	15.7	.11	8.6	42	35	6.7	0	2.35
18	16.3	0	0	88	18.9	2.1	8.6	25.5	16.0	4.2	0	.39
19	17.0	0	0	12.6	30	41	8.0	23.5	5.6	4.0	0	0
20	4.9	0	0	18.8	76	25.5	3.3	30.5	9.0	0	0	0
21	3.2	0	0	20	22	13.4	5.2	16.5	10.3	0	0	0
22	.04	0	0	10.9	15.0	8.0	2.25	12.9	9.7	0	0	0
23	.04	0	0	18.6	13.6	9.7	1.38	12.9	3.75	0	0	0
24	.04	0	0	30.5	17.1	8.4	2.5	60	1.37	0	0	0
25	.07	0	0	113	11.6	8.0	2.55	16.5	0	0	0	0
26	19.1	.16	0	23.5	13.5	8.0	.73	12.9	6.1	0	0	0
27	11.9	10.2	0	13.6	22.5	6.6	0	37.5	16.3	0	0	0
28	1.30	1.99	0	12.9	*12.3	8.6	0	118	13.5	0	0	0
29	.31	.22	0	27.5	15.0	6.6	.21	-	12.2	0	0	0
30	0	0	0	23.5	17.3	4.1	.13	-----	3.75	0	0	0
31	0	0	-----	22.5	-----	4.4	0	-----	0	-----	.32	-----
Total	177.44	41.34	20.11	463.66	654.7	351.71	369.45	593.41	689.57	35.89	30.54	2.86
Mean:												
mgd	5.72	1.33	0.670	15.0	21.8	11.3	11.9	21.2	22.2	1.20	0.985	0.095
cfs	8.85	2.06	1.04	23.2	33.7	17.5	18.4	32.8	34.3	1.86	1.52	0.147
Ac-ft	545	127	62	1,420	2,010	1,080	1,130	1,820	2,120	110	94	8.8

Calendar year 1952: Max 333 Min 0 Mean(mgd) 12.0 Mean(cfs) 18.6 Ac-ft 13,470
 Fiscal year 1952-53: Max 120 Min 0 Mean(mgd) 9.40 Mean(cfs) 14.5 Ac-ft 10,550

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

* Discharge measurement made on this day.

Anahola ditch wasteway near Kealia

Location.--Lat 22°08'10", long 159°22'30", on right bank 300 ft downstream from wasteway gates on Anahola ditch, 500 ft upstream from Kaneha Reservoir, 3.8 miles west of Anahola, and 4.9 miles northwest of Kealia.

Records available.--December 1936 to June 1953.

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

Average discharge.--16 years (1937-53), 3.20 mgd (4.95 cfs).

Extremes.--1936-53: Maximum daily discharge, 48 mgd (74 cfs) Feb. 7, 1949; no flow at times.

Remarks.--Records good. Water that passes station is returned to Anahola River.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0.06	0.06	19.5	13.4	0.18	0.18	9.5	0.26	0.06	0.06
2	0	.02	.02	.06	12.6	7.9	3.8	.18	8.6	.26	.06	.02
3	.02	.12	.06	.06	11.4	4.6	*3.85	.18	29.5	.26	.18	.02
4	0	0	.02	.06	13.0	7.8	3.65	.18	38	.26	.06	.02
5	0	0	0	.06	20.5	4.3	3.3	.18	27	.34	.02	0
6	.02	0	.02	0	16.6	3.65	2.65	.18	34.5	.34	.06	0
7	.02	0	.02	0	8.4	3.65	.81	.18	16.1	.43	0	0
8	.02	0	0	0	6.1	3.3	.12	.26	9.7	.43	.03	0
9	.12	.02	0	0	5.8	1.83	.12	.26	7.6	.26	.02	0
10	.06	.06	0	0	5.2	.26	.18	.18	12.2	.26	0	0
11	0	.02	0	.06	16.4	.18	.18	.18	13.5	.18	0	.06
12	0	0	0	0	8.8	.26	2.7	.12	7.2	.18	0	.02
13	0	0	0	0	5.4	.18	13.6	.35	11.9	.12	0	.02
14	0	.02	0	0	4.6	.18	6.3	.34	8.7	.12	0	0
15	.18	.06	0	.02	7.9	.18	4.4	.12	7.6	.26	.02	0
16	.02	.06	0	.02	6.6	.18	3.65	.18	5.6	.12	.02	0
17	.06	.06	0	.06	7.0	.18	3.3	15.0	18.4	.12	.02	.02
18	.06	.06	0	.43	11.2	.18	3.0	14.0	*10.2	.06	0	.03
19	.06	.06	.02	.18	13.8	.43	.73	10.1	3.8	.02	0	0
20	0	.06	.06	.18	24	.26	.18	13.8	.34	.02	0	0
21	0	.06	.06	4.8	*7.2	.18	.18	6.9	.34	.02	0	0
22	0	.06	.06	5.2	5.2	.12	.18	4.8	.34	.02	0	0
23	0	0	.06	11.2	4.6	.12	.18	4.6	.34	.02	0	0
24	0	0	.06	18.8	5.0	.06	.18	15.7	.34	.02	0	0
25	0	.02	.06	51	4.2	.06	.18	6.1	.34	.02	0	0
26	.02	.06	.06	12.2	4.0	.06	.18	4.4	.43	.02	.02	0
27	.06	.06	.06	6.9	10.3	.06	.18	15.5	.59	.02	0	0
28	0	0	.06	6.3	4.6	.06	.18	26.5	.43	.02	.02	0
29	0	0	.06	11.5	5.5	.06	.18	-	.34	.02	.02	0
30	0	0	.06	11.1	5.6	.06	.18	-----	.34	.06	0	0
31	0	0	-----	11.5	-----	.06	.18	-----	.26	-----	.06	-----
Total	0.72	0.88	0.88	131.75	281.0	53.80	58.68	140.65	284.03	4.54	0.67	0.27
Mean:	0.023	0.028	0.029	4.25	9.37	1.74	1.89	5.02	9.16	0.151	0.022	0.009
cfs	0.036	0.043	0.045	6.58	14.5	2.69	2.92	7.77	14.2	0.234	0.034	0.014
Ac-ft	2.2	2.7	2.7	404	862	165	180	432	872	14	2.1	0.8

Calendar year 1952: Max 32.5 Min 0 Mean(mgd) 3.32 Mean(cfs) 5.14 Ac-ft 3,720
 Fiscal year 1952-53: Max 38 Min 0 Mean(mgd) 2.62 Mean(cfs) 4.05 Ac-ft 2,940

* Discharge measurement made on this day.

ISLAND OF KAUAI

Anahola ditch above Kaneha Reservoir, near Kealia

Location.--Lat 22°08'00", long 159°22'30", on left bank at point of discharge into Kaneha Reservoir, 500 ft below wasteway gates and 5 miles northwest of Kealia.

Records available.--December 1921 to June 1953. May 1915 to December 1921, at site 0.3 mile upstream; records not equivalent owing to diversion.

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

Average discharge.--30 years (1921-25, 1927-53), 3.27 mgd (5.06 cfs).

Extremes.--1921-53: Maximum daily discharge, 40 mgd (62 cfs) Nov. 12, 1947; no flow at times.

Remarks.--Records good. Ditch diverts water from Anahola River to Kaneha Reservoir, where it is stored for irrigation. Flow sometimes diverted by Anahola ditch wasteway (see preceding page).

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.2	2.5	8.9	2.3	0.06	0.09	18.0	1.42	0.09	3.55	1.90	3.85
2	3.0	3.0	5.9	1.82	.06	.06	5.0	1.42	.09	2.85	3.15	2.35
3	5.0	9.7	8.2	1.34	.06	.06	.06	1.42	.39	2.65	15.4	2.1
4	3.0	4.1	3.2	1.26	.06	.06	.06	1.42	.47	3.0	4.7	1.58
5	2.8	2.8	2.55	6.5	.09	.04	.06	1.42	.20	3.55	3.25	1.42
6	4.1	2.45	7.9	4.1	.06	.04	.06	*1.34	.29	3.2	7.8	1.34
7	2.65	2.55	11.7	1.91	.04	.04	2.05	1.26	.12	5.8	2.8	1.78
8	2.35	2.25	4.0	1.50	.04	.04	2.25	3.2	.09	9.7	5.3	1.70
9	10.4	2.35	3.8	1.34	.06	1.25	2.2	5.7	.09	4.7	5.8	2.2
10	8.0	5.4	7.5	1.26	.06	2.55	2.1	1.73	.06	2.7	2.55	2.0
11	3.1	2.35	5.7	10.4	.09	2.45	2.65	1.26	.09	2.25	2.2	5.4
12	3.2	2.0	3.15	2.65	.06	2.25	23.5	1.18	.06	2.2	2.0	6.0
13	2.65	1.82	4.2	2.8	.06	2.2	10.4	23	.06	2.0	1.91	6.4
14	3.6	1.73	4.5	1.73	.04	2.2	.04	26	.06	1.91	1.82	2.2
15	28	1.82	4.7	3.35	.04	2.45	.04	6.6	.09	17.5	2.45	2.1
16	11.6	2.2	2.8	2.0	.04	2.1	.04	14.6	.09	5.2	2.65	1.82
17	10.1	1.73	2.65	6.6	.04	2.2	.04	3.4	.16	8.1	1.82	4.5
18	10.5	1.64	2.2	25	.06	4.4	.04	.06	.04	6.8	1.64	6.8
19	13.1	1.58	2.0	14.2	.12	25	1.88	.06	2.1	5.2	2.0	4.8
20	5.7	1.58	1.91	10.8	.58	13.5	2.25	.06	4.5	3.55	1.73	2.9
21	7.6	*1.73	1.82	8.1	.06	11.6	2.1	.04	3.9	*2.95	2.0	2.2
22	4.5	3.75	1.82	.04	.06	4.6	2.0	.04	3.55	2.8	1.64	2.35
23	3.8	1.64	1.64	.04	.06	3.55	1.91	.04	3.45	2.35	1.82	2.0
24	3.45	1.82	1.58	.04	.06	3.1	1.82	.14	4.5	2.2	1.64	2.0
25	3.8	1.94	1.64	.16	.06	2.8	1.73	.06	4.3	2.1	1.58	2.45
26	9.3	7.0	1.38	.02	.06	2.65	1.64	.04	6.8	1.91	4.2	2.9
27	8.3	10.8	1.34	.02	.09	2.55	1.58	.08	12.7	1.82	1.64	2.45
28	3.65	3.5	1.34	.02	.04	2.35	1.50	.27	7.6	1.73	3.6	1.64
29	3.35	2.1	1.34	.04	.04	2.45	1.64	-	4.5	1.73	5.6	1.73
30	3.0	1.91	1.64	.04	.04	2.25	1.50	-----	5.9	1.64	2.1	1.42
31	2.45	3.2	-----	.04	-----	2.1	1.50	-----	3.35	-----	4.6	-----
Total	189.25	94.94	113.00	111.42	2.29	102.98	91.64	97.26	69.69	117.64	103.29	84.38
Mean	6.10	3.06	3.77	3.59	0.076	3.32	2.96	3.47	2.25	3.92	3.33	2.81
mgd	9.44	4.73	5.83	5.55	0.118	5.14	4.58	5.37	3.48	6.07	5.15	4.35
cfs	581	291	347	342	7.0	318	281	298	214	361	317	259
Ac-ft												
Calendar year 1952: Max	28				Min	0.01	Mean(mgd)	3.58	Mean(cfs)	5.54	Ac-ft	4,020
Fiscal year 1952-53: Max	28				Min	0.02	Mean(mgd)	3.23	Mean(cfs)	5.00	Ac-ft	3,610

* Discharge measurement made on this day.

Anahola River near Kealia

Location.--Lat 22°08'55", long 159°21'20", on right bank just upstream from intake of Lower Anahola ditch, 4.5 miles northwest of Kealia.

Drainage area.--5.5 sq mi.

Records available.--August to November 1910, December 1910 to November 1912 (fragmentary), December 1912 to June 1953.

Gage.--Water-stage recorder and concrete dam and orifice control. Datum of gage is 295.11 ft above mean sea level (Highway Department benchmark). Aug. 22 to Nov. 2, 1910, water-stage recorder, Dec. 15, 1910, to Dec. 29, 1912, staff gage, and Dec. 30, 1912, to May 3, 1934, water-stage recorder, at site one-eighth of a mile upstream at different datum.

Average discharge.--34 years (1919-53), 13.3 mgd (20.6 cfs).

Extremes.--Maximum discharge during year, 3,450 mgd (5,340 cfs) Nov. 20 (gage height, 7.58 ft), from rating curve extended above 230 mgd by logarithmic plotting; minimum, 2.25 mgd (3.48 cfs) Sept. 28, 29, Oct. 10, 1910, 1912-53: Maximum discharge, 7,940 mgd (12,300 cfs) Apr. 1, 1948 (gage height, 11.06 ft), from rating curve extended as explained above; minimum, slightly less than 1.4 mgd (about 2.2 cfs) Sept. 12, 13, 1923.

Remarks.--Records good. Anahola ditch diverts water 3 miles above station for irrigation in vicinity of Kealia (see preceding page).

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 27 to Nov. 3, Nov. 28 to Dec. 1)

July 1 to Mar. 3

Mar. 4 to June 30

0.9	2.25	2.0	38	0.8	2.1	1.8	25.5
1.0	2.9	2.3	65	.9	2.8	2.0	34
1.2	4.5	2.6	101	1.0	3.5	2.3	62
1.4	6.8	3.0	170	1.2	5.3	2.6	99
1.6	12.5	3.5	295	1.4	7.8	3.0	170
1.8	23			1.6	14.8	3.5	295

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.0	4.5	4.5	3.2	16.1	19.5	78	4.9	23.5	6.5	4.8	4.0
2	4.8	5.0	4.1	3.0	11.3	12.8	23.5	4.7	16.3	6.4	5.1	3.25
3	5.9	10.0	4.5	2.5	12.3	8.6	*10.3	4.5	115	6.3	15.8	3.0
4	5.1	6.1	3.65	2.45	12.3	9.2	8.9	4.4	215	6.2	6.2	2.95
5	4.7	4.7	3.05	4.3	72	7.1	8.4	4.3	53	6.1	5.2	2.85
6	5.0	4.3	4.8	5.5	29.5	6.7	7.5	*4.2	102	6.1	7.1	2.8
7	4.6	4.2	6.6	3.3	14.4	6.5	6.4	4.2	*33.5	7.3	4.8	3.0
8	4.3	4.1	3.9	2.7	10.9	6.4	5.0	4.0	24.5	20.5	4.4	2.95
9	4.9	4.0	3.65	2.45	9.8	6.1	5.0	5.1	20.5	9.6	5.0	3.0
10	6.8	4.5	5.4	2.3	8.9	6.1	4.7	4.2	35	7.2	4.3	2.95
11	4.6	4.0	5.3	5.4	12.3	5.8	4.6	3.8	34.5	6.5	4.0	4.6
12	4.4	3.65	3.75	3.75	8.6	5.8	63	3.75	19.3	6.1	3.95	5.7
13	4.2	3.5	3.5	4.0	7.7	5.6	195	38	25.5	5.7	3.85	5.1
14	4.8	3.4	4.0	3.1	6.5	5.5	25	55	17.3	5.6	3.7	3.3
15	4.2	3.65	3.65	5.6	6.5	5.8	16.3	8.4	15.8	17.8	3.85	3.0
16	13.3	3.4	3.1	4.2	6.5	5.2	12.5	8.6	13.1	7.5	3.85	2.8
17	9.5	3.35	2.9	17.4	6.4	5.1	11.3	17.5	20	8.0	3.7	2.8
18	7.7	3.2	2.85	89	7.6	5.5	9.8	10.1	*15.8	7.5	3.55	4.4
19	8.2	3.1	2.7	12.0	8.5	26.5	8.9	9.2	11.9	6.9	3.6	4.2
20	6.7	3.1	2.65	8.4	282	14.0	8.2	13.3	10.7	6.5	3.55	*3.45
21	6.8	*3.05	2.55	10.8	*34	12.2	7.7	7.3	9.6	*6.4	3.45	2.95
22	6.2	4.4	2.5	6.5	17.2	8.4	7.5	6.4	8.9	6.8	3.3	3.4
23	5.8	3.4	2.45	6.5	13.4	7.0	7.3	6.2	8.6	6.1	3.4	2.95
24	5.6	3.05	2.35	7.0	12.1	6.7	6.8	50	8.6	5.5	3.25	2.95
25	5.5	3.1	2.45	82	10.5	6.1	6.4	11.3	8.4	5.3	3.15	3.4
26	6.0	4.9	2.45	17.0	9.5	5.8	6.0	9.2	8.6	5.1	3.4	3.6
27	6.0	4.9	2.35	12.1	16.3	5.6	5.7	24	10.4	4.9	3.1	3.15
28	5.3	4.5	2.35	10.5	12.5	5.3	5.5	97	8.0	4.7	3.4	2.7
29	5.0	3.35	2.35	12.1	12.5	5.3	5.4	-	7.2	4.6	4.1	2.65
30	4.9	3.05	3.55	12.5	10.5	5.0	5.3	-----	7.0	4.6	3.4	2.5
31	4.5	3.75	-----	11.7	-----	4.8	5.0	-----	6.5	-----	3.95	-----
Total	218.1	127.20	103.90	373.25	698.6	246.0	600.9	423.55	914.0	214.3	138.20	100.35
mgd	7.04	4.10	3.46	12.0	23.3	7.94	19.4	15.1	29.5	7.14	4.46	3.34
cfs	10.9	6.34	5.35	18.6	36.1	12.3	30.0	23.4	45.6	11.0	6.90	5.17
Ac-ft	669	390	319	1,150	2,140	755	1,840	1,300	2,800	658	424	308

Calendar year 1952: Max 317 Min 2.3 Mean(mgd) 12.0 Mean(cfs) 18.6 Ac-ft 13,540
Fiscal year 1952-53: Max 282 Min 2.3 Mean(mgd) 11.4 Mean(cfs) 17.6 Ac-ft 12,750

Peak discharge (base, 900 mgd).--Nov. 5 (6 p.m.) 1,000 mgd (1,550 cfs), 5.00 ft; Nov. 20 (9:30 p.m.) 3,450 mgd (5,340 cfs), 7.58 ft; Jan. 12 (12 p.m.) 2,100 mgd (3,250 cfs), 6.28 ft; Mar. 4 (6:30 a.m.) 1,070 mgd (1,660 cfs), 5.09 ft.

* Discharge measurement made on this day.

Lower Anahola ditch near Kealia

Location.--Lat 22°08'00", long 159°19'30", on left bank 100 ft downstream from last wasteway, 1.3 miles southwest of mouth of Anahola River, and 2.5 miles northwest of Kealia.

Records available.--December 1936 to June 1953 in reports of Geological Survey. July 1935 to December 1936 in files of East Kauai Water Co.

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

Average discharge.--16 years (1937-53), 2.47 mgd (3.82 cfs).

Extremes.--1936-53: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times.

Remarks.--Records good. Ditch diverts water from Anahola River for irrigation of sugar-cane. Flow regulated by spillways and gates.

Discharge, in million gallons a day, fiscal year July 1952, to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.62	2.6	1.98	3.0	0	0	0	3.9	0	0.04	5.3	3.8
2	4.3	3.35	1.98	2.65	0	0	0	3.8	0	2.65	5.8	3.55
3	4.4	3.25	2.1	2.3	.54	0	0	3.7	0	.04	6.6	3.25
4	4.4	3.9	2.1	2.05	0	0	0	3.6	0	.03	3.9	3.2
5	2.5	3.35	2.1	2.65	4.7	0	0	3.9	0	.03	1.65	3.0
6	.03	3.2	2.6	4.6	4.5	0	4.8	5.0	0	3.9	2.3	2.9
7	.03	3.05	2.85	3.2	0	0	8.0	5.1	0	6.6	5.6	3.0
8	1.39	3.0	2.8	2.6	0	0	6.6	5.0	0	7.0	5.1	3.05
9	1.39	2.9	2.8	2.3	0	2.2	6.2	5.7	0	7.0	5.4	3.05
10	1.93	2.85	3.75	2.15	0	2.65	5.9	5.2	0	7.0	5.0	3.0
11	2.25	2.85	4.7	4.0	0	2.45	5.8	4.8	0	7.0	4.7	3.35
12	.96	2.8	4.0	3.45	0	3.45	3.35	4.7	0	6.6	4.5	4.0
13	0	2.65	3.6	3.4	0	6.6	3.2	6.6	0	6.6	4.4	4.0
14	0	2.6	3.7	3.0	0	6.2	2.05	8.0	0	6.2	4.3	3.45
15	0	2.6	3.55	4.6	0	6.6	1.92	7.0	0	7.0	4.2	3.2
16	0	2.55	3.05	3.9	0	6.2	2.2	2.75	0	7.0	4.3	2.85
17	0	2.45	2.7	3.7	0	6.2	.03	0	0	7.0	4.1	2.7
18	1.76	2.4	2.55	8.0	0	6.1	.03	0	0	7.0	4.0	3.2
19	1.56	2.3	2.3	5.6	0	8.0	4.0	0	5.3	6.6	4.0	3.25
20	.01	2.2	2.2	1.41	.05	8.0	1.46	0	6.8	6.6	4.0	3.2
21	1.33	*2.2	2.1	0	*.13	8.0	1.96	0	7.0	*6.6	3.9	2.85
22	.03	2.35	2.05	0	0	2.75	5.4	0	7.5	6.2	3.7	2.85
23	.01	2.35	1.98	0	0	0	5.4	0	7.5	6.2	3.6	2.8
24	.01	2.15	1.92	0	0	0	5.2	0	7.5	6.0	3.6	2.55
25	0	2.15	1.98	0	0	0	5.1	0	7.5	5.9	3.55	2.35
26	0	2.1	2.1	0	0	0	4.9	0	7.5	5.8	3.55	2.55
27	0	2.2	1.98	0	0	0	4.7	0	4.4	5.7	3.4	2.65
28	0	2.2	1.98	0	0	0	4.6	0	.04	5.6	3.45	2.55
29	0	2.1	2.1	0	0	0	4.5	-	.04	5.6	3.8	2.35
30	0	1.98	3.25	1.82	0	0	4.3	-----	2.4	5.4	3.6	2.35
31	1.10	1.98	-----	1.59	-----	0	4.0	-----	2.35	-----	3.6	-----
Total	31.01	80.61	78.63	71.97	9.92	75.40	105.60	78.75	65.83	160.79	128.90	90.85
Mean	1.00	2.60	2.62	2.32	0.331	2.43	3.41	2.81	2.12	5.36	4.16	3.03
mgd	1.55	4.02	4.05	3.59	0.512	3.76	5.28	4.35	3.28	8.29	6.44	4.69
cfs	95	247	241	221	30	231	324	242	202	493	596	279
Ac-ft												

Calendar year 1952: Max 8.0 Min 0 Mean(mgd) 1.50 Mean(cfs) 2.32 Ac-ft 1,680
 Fiscal year 1952-53: Max 8.0 Min 0 Mean(mgd) 2.68 Mean(cfs) 4.15 Ac-ft 3,000

* Discharge measurement made on this day.

Kalihiwai ditch near Kilauea

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

Records available.--June 1934 to June 1953.

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

Average discharge.--18 years (1934-42, 1943-53), 2.63 mgd (4.07 cfs).

Extremes.--1934-53: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Ditch diverts low-water flow from most branches of Pohakuhonu Stream at intakes, about 1 mile south of station. Diversion of flow to Kahililolo Stream, 0.1 mile above station, regulated by gates. Water discharges into Kalihiwai Reservoir, where it is stored for irrigation in vicinity of Kilauea.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.5	2.55	3.75	1.54	7.0	0.33	6.2	1.02	4.4	2.35	1.62	2.05
2	3.2	3.2	2.85	1.46	11.5	.37	4.4	1.09	3.25	2.25	1.75	1.87
3	4.8	4.7	3.15	1.30	8.6	.37	2.75	1.38	2.7	2.15	3.7	1.54
4	3.45	3.15	2.65	1.30	9.0	.37	2.65	1.38	.88	2.05	1.96	1.38
5	3.15	2.65	2.35	5.7	8.5	.37	1.70	1.30	.70	2.05	1.70	1.30
6	3.15	2.45	3.35	5.5	2.8	.37	1.15	1.46	.76	1.96	1.96	1.30
7	2.85	2.55	6.2	2.05	2.1	.37	2.15	1.46	.58	3.0	1.62	1.46
8	2.75	2.45	5.7	1.70	3.2	.33	1.96	1.54	.58	2.6	1.54	1.23
9	2.65	2.35	3.35	1.62	3.45	.33	1.46	1.70	.58	3.45	2.15	1.23
10	3.05	3.0	7.3	1.54	3.35	.29	.52	1.30	.52	2.85	1.62	1.16
11	2.65	2.35	4.6	2.95	3.9	.25	.58	1.23	.52	2.55	1.46	1.46
12	2.55	2.05	3.35	2.05	.76	.21	*.85	1.23	.47	2.45	1.38	2.2
13	2.35	1.96	3.15	1.96	.52	.21	.64	3.55	.47	2.25	1.38	2.35
14	2.45	1.87	3.05	1.70	.47	.25	.52	10.3	.47	2.25	1.38	1.54
15	13.2	1.96	2.95	2.0	.42	.21	.47	3.45	.42	3.75	1.54	1.30
16	11.3	1.96	2.45	1.78	.37	.21	1.42	4.9	.42	3.05	1.54	1.23
17	6.2	1.70	2.25	4.6	.37	.21	.42	5.7	.47	3.15	1.54	1.43
18	7.5	1.62	2.05	20.5	.70	.21	.42	3.45	.47	3.05	1.38	2.85
19	6.2	1.54	1.96	8.1	.58	.29	.65	2.75	.47	3.05	1.38	1.96
20	4.8	1.54	1.87	5.6	*.52	.33	1.09	2.65	.42	2.65	1.23	1.70
21	4.3	1.46	1.78	5.5	.37	.33	1.09	2.55	.52	2.45	1.30	1.38
22	3.7	*1.82	1.70	3.8	.33	.29	1.16	2.25	.64	2.35	1.16	1.46
23	3.35	1.54	1.62	4.4	.33	.25	1.16	1.96	.64	2.15	1.23	1.38
24	3.15	1.70	1.54	5.7	.29	.25	1.16	a6.0	1.37	2.05	1.23	1.38
25	3.05	1.62	1.62	14.3	.25	.25	1.09	2.45	2.55	1.96	1.16	1.46
26	5.2	4.2	1.46	6.5	.25	.25	1.09	2.15	2.55	1.96	1.38	1.46
27	5.8	9.1	1.46	4.6	.25	.25	1.09	5.7	3.25	1.78	1.09	1.38
28	3.7	3.6	1.46	5.9	.25	.25	1.09	10.6	2.95	1.78	2.15	1.30
29	3.15	2.45	1.30	7.3	.25	1.26	1.02	---	2.95	1.70	2.45	1.23
30	2.85	2.05	1.38	6.5	.25	1.87	1.02	---	3.05	1.70	1.46	1.16
31	2.65	2.25	-----	6.2	-----	1.87	1.02	-----	2.55	-----	1.70	-----
Total	134.65	78.49	81.65	143.65	70.93	13.00	42.93	86.50	42.57	75.79	50.17	46.13
Mean:	4.34	2.53	2.72	4.63	2.36	0.419	1.38	3.09	1.37	2.53	1.62	1.54
cfs	6.71	3.91	4.21	7.16	3.65	0.648	2.14	4.78	2.12	3.91	2.51	2.38
Ac-ft	413	241	251	441	218	40	132	265	131	233	154	142
Calendar year 1952:	Max	20.5	Min	0	Mean(mgd)	2.99	Mean(cfs)	4.63	Ac-ft	3,360		
Fiscal year 1952-53:	Max	20.5	Min	0.21	Mean(mgd)	2.37	Mean(cfs)	3.67	Ac-ft	2,660		

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and records for stations on nearby streams.

Ka Loko ditch near Kilauea

Location.--Lat 22°10'35", long 159°23'00", on left bank 35 ft downstream from Molooa ditch, 400 ft upstream from Ka Loko Reservoir, and 3.5 miles southeast of Kilauea.

Records available.--August 1932 to June 1953.

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

Average discharge.--20 years (1933-53), 3.65 mgd (5.65 cfs).

Extremes.--1932-53: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.46 mgd (0.71 cfs) Nov. 21, 22, 1949.

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Ditch diverts water from Molooa and Puu Ka Ele Streams, 0.5 mile southeast and 1.5 miles southwest of station, respectively. Water used for irrigation in vicinity of Kilauea. Flow regulated by wasteway gates.

Discharge, in million gallons a day, fiscal year July 1952, to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.55	2.65	2.95	2.6	5.4	9.1	15.4	1.71	8.0	2.85	1.98	2.1
2	2.7	2.95	1.80	1.5	5.0	5.4	6.4	1.63	4.6	2.65	2.05	1.39
3	4.1	3.6	2.75	1.4	5.0	3.45	2.95	1.63	4.6	2.45	5.0	1.31
4	2.55	2.65	1.80	1.2	6.2	4.4	3.05	1.54	18	2.45	2.25	1.23
5	2.35	2.35	1.54	3.6	12.2	2.95	2.65	1.63	4.6	2.6	1.98	1.16
6	2.55	2.25	2.35	4.6	8.7	2.85	2.35	1.63	3.5	2.65	2.55	1.09
7	2.25	2.25	4.2	1.39	4.6	2.85	2.45	1.63	1.2	4.3	1.98	1.23
8	2.15	2.15	1.98	1.16	3.7	2.65	2.05	1.54	3.9	18.6	2.15	1.16
9	2.85	2.05	1.98	1.09	3.45	2.45	2.5	1.98	1.5	5.8	2.25	1.16
10	3.15	2.6	3.35	1.02	3.35	2.35	2.25	1.54	5.9	3.7	1.80	1.16
11	2.15	1.98	2.45	3.65	6.6	2.35	4.3	1.39	2.4	3.15	1.71	2.25
12	2.25	1.89	1.71	1.84	4.8	2.25	*13.9	1.39	2.4	2.85	1.63	3.1
13	2.05	1.80	1.71	2.3	5.8	2.15	24.5	5.8	2.0	2.65	1.63	2.8
14	2.3	1.80	1.80	1.31	3.25	2.15	5.6	15.2	2.0	2.65	1.54	1.39
15	18.3	1.89	1.63	1.91	3.45	2.15	4.1	3.6	1.7	7.2	1.63	1.31
16	6.1	1.80	1.39	1.47	3.4	1.98	3.8	4.4	1.7	3.95	1.71	1.16
17	7.1	1.71	1.31	4.3	3.95	1.89	3.25	5.8	2.4	5.4	1.63	1.37
18	5.9	1.63	1.31	12.2	7.0	2.3	2.95	4.3	1.5	4.1	1.47	2.5
19	6.2	1.47	1.23	4.0	6.3	12.3	2.85	3.35	1.5	3.55	1.54	2.3
20	4.0	1.54	1.23	2.75	*23	7.0	2.65	3.95	3.7	3.15	1.47	1.54
21	4.5	1.54	1.16	2.8	6.2	6.9	2.55	2.7	4.6	2.85	1.54	1.23
22	3.7	*2.45	1.16	1.8	4.5	3.55	2.45	2.15	3.7	2.75	1.39	1.54
23	3.15	1.54	1.16	2.35	3.9	2.75	2.45	2.25	3.7	2.45	1.47	1.23
24	3.05	1.39	1.09	3.5	3.9	2.45	2.25	6.5	5.9	2.45	1.39	1.54
25	3.35	1.54	1.02	14.8	3.45	2.25	2.25	3.15	3.9	2.25	1.39	1.59
26	4.9	2.8	1.09	4.4	3.5	2.15	2.15	2.65	3.9	2.25	1.54	1.47
27	4.7	3.7	1.02	2.95	5.2	2.05	2.05	4.6	5.1	2.15	1.31	1.23
28	3.05	2.05	1.02	2.65	3.25	1.98	1.98	20	3.6	2.05	1.89	1.09
29	2.95	1.54	1.1	4.7	3.9	1.98	1.98	-	3.05	1.98	1.88	1.09
30	2.65	1.47	1.2	4.6	3.7	1.89	1.89	-----	*3.15	1.98	1.31	1.02
31	2.55	1.98	-----	3.8	-----	1.89	1.80	-----	2.75	-----	1.95	-----
Total	122.10	65.01	51.49	103.64	164.65	104.81	133.66	109.64	118.35	109.88	57.01	45.74
Mean	3.94	2.10	1.72	3.34	5.49	3.38	4.31	3.92	3.82	3.66	1.84	1.52
cfs	6.10	3.25	2.66	5.17	8.49	5.23	6.67	6.07	5.91	5.66	2.85	2.35
Ac-ft	375	200	158	318	505	322	410	336	363	337	175	140
Calendar year 1952: Max	23				Min 0.95	Mean(mgd)	3.69	Mean(cfs)	5.71	Ac-ft	4,150	
Fiscal year 1952-53: Max	24.5				Min 1.02	Mean(mgd)	3.25	Mean(cfs)	5.03	Ac-ft	3,640	

* Discharge measurement made this day.

Note.--No gage-height record Sept. 29 to Oct. 6, Feb. 27 to Mar. 24; discharge estimated on basis of recorded range in stage, ditchman's staff-gage readings made once daily, and records for nearby ditches.

Puu Ka Ele ditch near Kilauea

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

Records available.--August 1932 to June 1953.

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

Average discharge.--20 years (1933-53), 2.96 mgd (4.58 cfs).

Extremes.--1932-53: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	a3.4	3.05	a2.7	1.63	5.1	a6.0	1.38	0	5.4	2.25	2.25	2.15
2	3.15	3.15	a2.2	1.47	5.2	a.56	.28	0	3.9	2.15	2.45	1.89
3	4.7	4.2	a3.2	1.39	5.4	0	0	0	4.5	2.25	3.6	1.63
4	3.25	3.25	a2.6	1.31	a6.2	0	0	0	3.6	2.25	2.25	1.54
5	2.95	2.75	2.25	2.7	a 11	0	0	0	.52	2.15	2.25	1.47
6	2.95	2.55	2.85	3.45	9.1	0	1.77	0	1.63	2.25	2.35	1.47
7	2.75	2.55	4.5	1.63	6.2	0	1.63	0	.03	5.6	2.15	1.54
8	2.65	2.45	2.75	1.47	5.1	0	2.05	0	0	7.4	2.55	1.54
9	2.85	2.35	2.75	1.39	4.6	0	.99	0	0	2.75	2.15	1.54
10	2.95	2.45	4.1	1.31	4.5	0	0	0	.51	2.45	2.05	1.54
11	2.45	2.15	3.35	2.75	7.3	0	0	0	.43	2.65	1.98	1.98
12	2.45	2.05	2.75	1.98	2.55	0	*.73	0	0	2.75	1.98	2.7
13	2.35	2.05	2.65	2.15	0	0	1.09	0	.22	2.65	1.98	2.35
14	2.55	1.98	2.65	1.63	0	0	0	0	0	2.55	1.80	1.54
15	13.4	1.89	2.65	2.05	0	0	0	0	0	2.5	1.98	1.47
16	5.4	1.80	2.35	1.80	2.5	.13	0	0	0	1.71	1.98	1.39
17	6.0	1.80	2.05	3.8	5.2	0	0	0	0	3.45	1.98	2.15
18	5.9	1.80	2.1	10.1	9.6	0	0	0	0	2.95	1.71	2.4
19	5.6	a2.0	2.05	4.3	7.4	1.0	0	0	0	2.95	1.71	1.98
20	4.1	a1.9	2.05	2.95	*4.9	.18	0	0	0	2.75	1.63	1.63
21	4.3	a1.8	1.98	2.75	0	.38	0	0	0	2.55	1.80	1.47
22	3.7	*a2.2	1.98	2.35	0	0	0	0	0	2.45	1.54	1.71
23	3.45	a1.9	1.89	2.65	0	0	0	0	0	2.65	1.71	1.39
24	3.45	a2.1	1.80	3.15	0	0	0	0	0	2.75	1.54	1.54
25	3.35	a2.2	1.80	9.5	2.0	0	0	.03	1.46	2.65	1.63	1.54
26	5.0	a2.4	1.80	4.9	3.7	0	0	1.47	3.25	2.55	1.80	1.47
27	4.9	4.5	1.63	3.7	4.9	0	0	6.0	4.0	2.45	1.47	1.39
28	3.55	2.65	1.54	3.25	3.45	0	0	10.2	2.6	2.35	2.15	1.39
29	3.55	1.98	1.54	5.1	4.0	0	0	-	2.4	2.35	1.71	1.39
30	3.35	1.89	1.54	5.6	a3.8	0	0	-	2.45	2.25	1.54	1.31
31	3.05	2.25	-----	4.9	-----	0	0	-----	2.25	-----	1.71	-----
Total	123.45	74.04	72.05	99.11	123.70	8.25	9.92	17.70	39.15	83.41	61.38	50.50
Mean	3.98	2.39	2.40	3.20	4.12	0.266	0.320	0.632	1.26	2.78	1.98	1.68
mgd	6.16	3.70	3.71	4.95	6.37	0.412	0.495	0.978	1.95	4.30	3.06	2.60
cfs	379	227	221	304	380	25	30	54	120	256	188	155
Ac-ft												
Calendar year 1952: Max	13.4		Min	0		Mean(mgd)	2.93		Mean(cfs)	4.53	Ac-ft	3,290
Fiscal year 1952-53: Max	13.4		Min	0		Mean(mgd)	2.09		Mean(cfs)	3.23	Ac-ft	2,340

* Discharge measurement made this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement, ditchman's once-daily staff-gage readings, and records for stations on nearby streams.

Hanalei tunnel outlet near Lihue

Location.--Lat 22°05'00", long 159°28'15", on right bank at end of Hanalei tunnel, 2.2 miles downstream from intake on Kaapoko Stream and 9.8 miles northwest of Lihue.

Records available.--July 1932 to June 1953 in reports of the Geological Survey. October 1925 to June 1932 in files of Lihue Plantation Co.

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

Average discharge.--21 years (1932-53), 21.6 mgd (33.4 cfs).

Extremes.--1932-53: Maximum daily discharge, 64 mgd (99 cfs) Apr. 11, 25, 26, 1942; no flow Aug. 27, 1938, Apr. 4-9, 1945, June 23, 1948.

Remarks.--Records good. Tunnel diverts water from Kaapoko Stream and Hanalei River and empties into North Branch of North Fork Waialua River, from which it is later diverted and used for irrigation in vicinity of Lihue and Kapaa. Flow regulated by spillway and headgates.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.22	0.22	0.40	3.85	5.9	6.4	6.9	3.55	4.8	3.55	2.5	21
2	.22	.22	.22	4.6	3.8	5.1	3.95	3.35	4.5	3.35	3.0	22
3	.22	.22	.22	4.3	4.1	4.0	2.9	3.35	13.4	3.1	9.8	19.6
4	.22	.22	.22	4.3	3.55	a3.8	2.7	3.35	12.6	3.55	5.8	18.4
5	.22	.22	.22	5.1	5.1	a5.55	2.7	3.35	8.6	2.9	8.0	18.4
6	.14	.22	.22	4.8	4.3	a3.55	2.7	3.1	10.6	2.9	12.9	17.2
7	.14	.22	.22	4.6	3.55	a3.55	2.7	3.35	4.8	3.35	10.8	20.5
8	.14	.22	.22	4.3	3.35	*a3.1	2.5	4.3	3.8	4.4	7.4	19.6
9	.22	.22	.22	4.0	3.55	3.0	2.5	*6.2	3.55	3.35	16.7	20
10	.22	.22	.22	4.0	2.35	2.9	2.5	3.8	3.4	3.1	14.5	19.4
11	.22	.22	.22	6.8	8.0	2.9	2.5	3.8	3.35	2.9	9.0	23
12	.22	.22	.22	5.4	6.0	2.9	4.6	3.55	3.55	2.9	12.6	22.5
13	.22	.22	.22	4.8	4.0	2.7	7.8	12.0	3.6	2.7	15.3	24
14	.22	.22	.22	4.6	3.8	2.7	5.1	10.4	3.1	2.9	18.4	21.5
15	.40	.22	.22	8.3	5.4	2.7	4.8	6.0	3.1	5.1	17.5	20.5
16	.30	.22	a.22	4.6	4.6	2.7	4.3	7.6	3.1	3.35	21.5	20.5
17	.30	.22	a.22	6.0	6.2	2.7	4.3	7.6	5.5	3.8	21	25
18	.22	.22	a.22	11.5	8.9	2.9	4.0	5.9	3.65	18.4	18.4	25
19	.22	.22	a.22	7.1	7.2	8.1	4.0	7.5	3.35	3.35	20	21.5
20	.22	.22	a.22	6.5	6.6	6.0	4.0	5.6	3.1	2.9	18.6	21
21	.22	.22	a.22	6.6	5.1	4.7	4.0	4.6	2.9	2.9	21.5	18.8
22	.22	.30	a.22	5.2	3.8	3.35	4.0	4.0	3.1	2.8	18.0	18.0
23	.22	.22	a.22	6.6	3.55	3.0	4.6	4.0	3.1	2.7	19.6	17.6
24	.22	.22	a.40	7.8	4.0	2.9	4.0	5.7	3.7	2.5	17.6	17.2
25	.22	.22	a.40	12.1	5.1	2.9	3.8	4.6	2.9	2.5	19.0	17.2
26	.22	.30	.40	5.7	3.55	2.9	3.8	4.0	3.55	2.5	21	17.6
27	.30	.22	.40	4.3	4.3	2.9	3.55	6.3	4.0	2.5	17.6	18.0
28	.22	.22	.40	4.0	3.1	2.9	3.8	7.6	4.0	1.54	27	17.2
29	.22	.22	.40	6.5	4.0	3.1	3.8	-	5.6	2.1	24.5	18.0
30	.22	.22	1.53	5.4	5.7	2.9	3.55	-----	6.9	2.1	21	16.8
31	.22	.22	-----	5.1	-----	2.7	3.55	-----	3.35	-----	23	-----
Total	7.00	6.98	9.17	178.55	141.45	109.50	119.90	148.45	148.55	90.94	493.5	597.0
Mean:												
mgd	0.226	0.225	0.306	5.76	4.72	3.53	3.87	5.30	4.79	3.03	15.9	19.9
cfs	0.350	0.348	0.473	8.91	7.30	5.46	5.99	8.20	7.41	4.69	24.6	30.8
Ac-ft	21	21	28	548	434	336	368	456	456	279	1,510	1,830
Calendar year 1952:	Max 12.1			Min 0.14		Mean(mgd) 1.51		Mean(cfs) 2.34		Ac-ft 1,700		
Fiscal year 1952-53:	Max 27			Min 0.14		Mean(mgd) 5.82		Mean(cfs) 8.70		Ac-ft 6,290		

* Discharge measurement made on this day.

a No gage-height record: discharge estimated on basis of ditchmen's notes and records for stations on nearby streams.

Hanalei River at altitude 625 ft, near Hanalei

Location.--Lat 22°07'10", long 159°28'05", on right bank 0.4 mile downstream from Kaapoko Stream and 6.2 miles southeast of Hanalei.

Drainage area.--7.4 sq mi.

Records available.--January 1914 to January 1952, July 1952 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 625 ft (from topographic map). Prior to July 20, 1921, at site 300 ft downstream at same datum.

Average discharge.--34 years (1918-51, 1952-53), 46.8 mgd (72.4 cfs).

Extremes.--Maximum discharge during year, 950 mgd (1,470 cfs) Mar. 4 (gage height, 5.13 ft) from rating curve extended above 70 mgd as explained below; minimum, 8.8 mgd (13.6 cfs) June 30.

1914-53: Maximum discharge, 9,200 mgd (14,200 cfs) Jan. 3, 1952 (gage height, 13.0 ft, from floodmark), from rating curve extended above 200 mgd on basis of slope-area determination at gage height 10.12 ft; minimum, 5.8 mgd (9.0 cfs) Apr. 28, May 1-3, 1926.

Revisions.--The maximum discharge for the water year 1948 has been revised to 6,300 mgd (9,750 cfs) Apr. 1, 1948 (gage height, 11.20 ft), superseding figure published in WSP 1125.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Since 1925, Hanalei tunnel has diverted an average of about 25 mgd from Hanalei River and its tributary Kaapoko Stream at points about 2 miles above station, for irrigation in vicinity of Lihue.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.2	7.9	1.4	82
.3	11.0	1.7	113
.4	14.5	2.0	150
.5	18.7	2.5	225
.6	23.5	3.0	325
.8	34.5	3.5	440
1.1	56		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	42	44	114	25.5	78	97	104	20	40	36	20	16.2
2	40	37	88	24	52	70	57	20	39	32	20	17.9
3	50	48	67	23.5	48	48	32.5	20	267	30	100	13
4	40	36.5	44	23.5	44	56	31	20	360	34	46	11
5	38	35	44	25	62	44	28.5	20	220	30	30	10
6	37	34	52	25.5	69	41	27.5	20	240	28	40	9.4
7	34.5	41	37	23.5	44	39	29.5	20	120	32	26	13.0
8	34	35	52	24	38	34.5	26.5	22	80	46	28	10.7
9	54	34	48	22	39	*32	27	*40	70	36	32	10.7
10	41	36.5	75	22	36.5	31.5	26	*22.5	60	30	24	10.7
11	34	33.5	68	41	93	30.5	27	21	50	28	22	20.5
12	34.5	31	44	29.5	62	28.5	53	20	55	26	20	20.5
13	32.5	31	40	*29.5	44	28.5	83	197	50	26	*18.1	29.5
14	35	29.5	51	26.5	44	28	29	133	50	*26	12.8	15.3
15	196	31	44	62	67	28.5	27.5	52	50	77	31.5	12.8
16	169	30.5	38	28.5	54	27	25.5	80	40	38	20.5	13.8
17	104	*29.5	36	88	63	27	25	95	90	40	15.3	31.5
18	82	29	34.5	177	132	29.5	24.5	80	65	32	11.7	39.5
19	79	29	32	52	104	124	24	78	48	30	15.4	18.3
20	52	28.5	31.5	52	107	94	23.5	66	44	28	11.7	14.9
21	48	28.5	32.5	54	68	55	23	44	40	24	17.1	12.0
22	41	37.5	31	38.5	48	36	23	39	38	24	11.0	11.7
23	39	30.5	29.5	60	48	32	25	36.5	38	22	11.7	10.7
24	41	39.5	29	87	49	30.5	23	64	50	22	10.4	10.1
25	40	33.5	28.5	224	39.5	29	22.5	40	36	20	11.4	11.0
26	84	57	28.5	77	41	28.5	22	32.5	55	20	17.6	10.7
27	87	60	29.5	52	60	28.5	21.5	62	85	20	10.4	10.7
28	48	33	28	48	40	29	21.5	89	50	20	52	9.6
29	64	32.5	27.5	70	48	29	21.5	-	46	19	35.5	9.4
30	41	32	27	64	77	28.5	21.5	-----	55	19	14.2	8.8
31	39.5	44	-----	62	-----	26.5	22	-----	40	-----	26.5	-----
Total	1,801.0	1,137.5	1,368.0	1,661.0	1,799.0	1,291.0	978.0	1,431.5	2,571	895	762.8	444.1
Mean:												
mgd	58.1	36.7	45.6	53.6	60.0	41.6	31.5	51.1	82.9	29.8	24.6	14.8
cfs	89.9	56.8	70.6	82.9	92.8	64.4	48.7	79.1	128	48.1	38.1	22.9
Ac-ft	5,530	3,490	4,200	5,100	5,520	3,960	3,000	4,390	7,890	2,750	2,340	1,360
Calendar year 1952.	Max	-	Min	-	Mean(mgd)	-	Mean(cfs)	-	Ac-ft	-		
Fiscal year 1952-53:	Max	360	Min	8.8	Mean(mgd)	44.2	Mean(cfs)	68.4	Ac-ft	49,530		

Peak discharge (base, 2,000 mgd).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record July 1-5, Jan. 31 to Feb. 9, Mar. 4 to Apr. 14, Apr. 17 to May 12, June 3-5; discharge estimated on basis of recorded range in stage and record for station on East Branch of North Fork Wailua River.

Hanakapiai Stream near Hanalei

Location--Lat 22°11'20", long 159°35'50", on left bank 1.5 miles upstream from mouth and 6 miles west of Hanalei.

Drainage area--2.6 sq mi.

Records available--December 1931 to November 1952 (discontinued).

Gage--Water-stage recorder. Altitude of gage is 450 ft (by barometer).

Average discharge--20 years (1932-52), 11.0 mgd (17.0 cfs).

Extremes--Maximum discharge during period July to November 1952, 272 mgd (421 cfs)

Oct. 17 (gage height, 3.60 ft), from rating curve extended above 60 mgd; minimum, 2.8 mgd (4.3 cfs) Sept. 26-30, Oct. 3-5, 8-10, 14.

1931-52: Maximum discharge, 2,680 mgd (4,150 cfs) Dec. 23, 1937 (gage height, 8.41 ft), from rating curve extended above 60 mgd; minimum, 1.50 mgd (2.32 cfs) Oct. 14, 15, 1945.

Remarks--Records good.

Rating table, July 1 to Nov. 6, 1952 (gage height, in feet, and discharge, in million gallons a day)

0.3	2.1	1.0	12.5
.4	2.9	1.5	28
.5	4.0	2.0	55
.7	6.7	2.5	96

Discharge, in million gallons a day, fiscal year July to November 1952

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.8	4.0	3.55	3.8	21.5							
2	4.4	4.3	3.45	3.0	11.0							
3	10.1	3.8	3.45	2.8	10.8							
4	5.9	3.65	3.35	2.8	7.7							
5	4.9	3.65	3.35	4.2	6.1							
6	4.4	3.55	4.0	3.85	5.3							
7	4.1	3.8	4.3	3.0	-							
8	4.0	4.6	5.3	2.8	-							
9	4.4	5.4	6.5	2.8	-							
10	5.0	4.5	8.6	3.0	-							
11	4.0	3.9	4.5	5.0	-							
12	3.9	3.65	3.9	3.25	-							
13	3.8	3.55	3.35	3.0	-	+3.55						
14	3.9	3.45	3.25	4.1	-							
15	5.9	3.45	3.1	17.3	-							
16	15.3	3.45	3.1	6.0	-							
17	11.6	3.45	3.1	36	-							
18	12.0	3.35	3.0	66	-							
19	8.6	3.35	3.0	10.8	-							
20	6.0	3.25	3.0	8.9	-							
21	5.2	3.25	3.0	8.0	-							
22	4.6	4.0	3.0	5.3	-							
23	4.3	3.9	2.9	24	-							
24	4.1	4.8	2.9	37	-							
25	4.4	*4.0	2.9	88	-							
26	10.8	20.5	2.9	13.4	-							
27	7.1	7.4	2.8	8.8	-							
28	4.8	5.0	2.8	14.8	-							
29	4.3	3.9	2.8	32	-							
30	4.0	3.65	3.05	18.7	-							
31	3.8	3.55	-----	24	-----							
Total	237.5	140.05	108.20	466.20	-							
Mean:												
mgd	7.66	4.52	3.61	15.0	-							
cfs	11.9	6.99	5.59	23.2	-							
Ac-ft	729	430	332	1,430	-							

Calendar year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft
Fiscal year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft

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

* Discharge measurement made on this day.

† Result of discharge measurement.

Hanakoa Stream near Hanalei

Location.--Lat 22°11'00", long 159°37'35", on left bank 0.8 mile upstream from mouth and 8 miles west of Hanalei.

Drainage area.--1.1 sq mi.

Records available.--December 1931 to December 1952 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 470 ft (by barometer).

Average discharge.--20 years (1932-52), 3.64 mgd (5.63 cfs).

Extremes.--Maximum discharge during period July to December 1952, 132 mgd (204 cfs)

Oct. 18 (gage height, 3.27 ft), from rating curve extended above 30 mgd by area-square root of depth studies; minimum, 0.14 mgd (0.22 cfs) Oct. 9, 10.

1931-52: Maximum discharge, 1,100 mgd (1,700 cfs) Aug. 16, 1950 (gage height, 7.29 ft), from rating curve extended as explained above; minimum, that of Oct. 9, 10, 1952.

Remarks.--Records good except those above 30 mgd, which are fair.

Rating tables, July 1 to Dec. 9, 1952 (gage height, in feet, and discharge, in million gallons a day)

July 1-15					July 16 to Dec. 9			
0.9	0.14	1.5	4.6		0.9	0.10	1.5	8.2
1.0	.60	1.6	12.5		1.0	.47	1.7	14.2
1.1	1.47	2.0	27		1.1	1.2	2.0	26.5
1.2	2.8				1.2	2.35	2.2	37
					1.3	3.9		

Discharge, in million gallons a day, fiscal year July to December 1952

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.67	0.67	0.32	0.48	11.1	7.9						
2	.60	.53	.32	.25	3.1	5.9						
3	1.89	.43	.32	.17	2.65	2.2						
4	.96	.43	.32	.17	1.71	5.9						
5	.74	.43	.28	.17	1.40	4.3						
6	.60	.40	.36	.28	1.11	3.7						
7	.53	.43	.36	.21	.94	1.96						
8	.53	.59	.46	.17	.79	1.50						
9	.53	.72	.84	.14	.97	1.20						
10	.53	.59	1.72	.14	.87	†.93						
11	.48	.47	.53	.38	3.9	-						
12	.48	.43	.40	.28	1.50	-						
13	.43	.40	.32	.17	2.1	-						
14	.48	.40	.28	.17	2.05	-						
15	17.2	.36	.28	7.7	12.6	-						
16	3.2	.36	.25	1.78	6.3	-						
17	1.83	.36	.25	7.0	2.65	-						
18	1.83	.36	.25	35.5	3.25	-						
19	1.30	.36	.21	3.15	3.2	-						
20	.87	.32	.21	1.40	2.1	-						
21	.72	.32	.21	1.86	1.40	-						
22	.59	.43	.21	.94	1.11	-						
23	.53	*.45	.21	5.1	.94	-						
24	.47	.47	.21	9.9	.79	-						
25	.53	.43	.21	37	.79	-						
26	1.63	5.3	.21	5.5	.72	-						
27	.94	1.02	.21	2.65	3.5	-						
28	.53	.65	.21	4.1	1.45	-						
29	.47	.47	.21	10.5	2.7	-						
30	.43	.36	.21	7.6	13.5	-						
31	.43	.36	-----	5.5	-----	-						
Total	42.95	19.30	10.38	150.36	91.19	-						
Mean:												
mgd	1.39	0.623	0.346	4.85	3.04	-						
cfs	2.15	0.964	0.535	7.50	4.70	-						
Ac-ft	132	59	32	461	280	-						

Calendar year : Max Min Mean(mgd) Mean(cfs) Ac-ft
Fiscal year : Max Min Mean(mgd) Mean(cfs) Ac-ft

Peak discharge (base, 220 mgd).--No peak above base.

* Discharge measurement made on this day.

† Result of discharge measurement.

ISLAND OF KAUAI

Kalalau Stream near Hanalei

Location.--Lat 22°09'50", long 159°38'15", on left bank 2 miles upstream from mouth and 9 miles southwest of Hanalei.

Drainage area.--1.6 sq mi.

Records available.--November 1931 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 960 ft (by barometer).

Average discharge.--21 years (1932-53), 4.57 mgd (7.07 cfs).

Extremes.--Maximum discharge during year, 450 mgd (696 cfs) Mar. 4 (gage height, 4.09 ft), from rating curve extended above 18 mgd by logarithmic plotting; minimum, 2.3 mgd (3.6 cfs) Feb. 4-8, 10-12.
1931-53: Maximum discharge, 665 mgd (1,030 cfs) Aug. 15, 1950 (gage height, 4.55 ft), from rating curve extended as explained above; minimum, 1.73 mgd (2.68 cfs) June 2, 1945.

Remarks.--Records good except those above 18 mgd, which are fair.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.9	1.80	1.7	21
1.0	2.9	2.0	37
1.2	5.9	2.4	71
1.4	10.4	2.8	121

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.55	3.15	3.05	2.9	4.4	3.3	2.55	2.4	5.2	2.65	2.8	2.8
2	3.55	3.15	3.05	2.9	3.55	3.4	2.55	2.4	4.2	2.65	3.05	2.8
3	3.7	3.15	3.05	2.9	3.3	3.05	2.55	*2.4	48	2.65	4.2	2.8
4	3.55	3.15	3.05	2.8	3.15	3.4	2.65	2.4	115	2.65	3.3	2.8
5	3.55	3.15	3.05	2.8	3.05	3.3	2.55	2.3	18.1	2.65	3.3	2.8
6	3.55	3.15	3.05	2.8	2.9	3.15	3.15	2.3	83	2.65	3.55	2.8
7	3.4	3.15	3.05	2.65	3.9	3.05	4.20	2.3	37	2.65	3.3	2.8
8	3.55	3.15	3.15	2.65	2.8	2.9	3.15	2.55	12.3	2.9	3.15	2.8
9	3.8	3.15	3.15	2.8	2.8	2.8	3.75	2.65	6.5	2.8	3.05	2.8
10	3.7	3.05	3.05	2.8	2.65	2.65	3.95	2.55	5.4	2.65	2.9	2.8
11	3.55	3.05	3.05	2.8	2.8	*2.65	5.0	2.3	4.5	2.65	2.9	2.8
12	3.4	3.05	3.05	2.8	2.65	2.65	3.8	2.5	3.95	2.65	2.9	2.9
13	3.4	3.05	3.05	2.8	2.8	2.55	3.3	31	3.7	2.65	2.9	2.9
14	3.4	3.05	3.05	3.05	2.8	2.55	2.9	14.4	3.4	2.65	2.9	2.9
15	4.8	3.05	2.9	4.4	3.85	2.55	2.9	7.1	3.3	3.7	2.9	2.9
16	3.95	3.05	2.9	3.4	4.3	2.55	2.8	5.0	3.15	3.15	2.9	2.8
17	3.7	3.05	3.9	3.65	3.4	2.4	2.65	3.95	3.15	4.1	2.9	2.9
18	3.55	3.05	2.9	*10.1	3.3	2.55	2.55	4.1	3.05	4.5	*2.9	2.9
19	3.55	3.05	2.9	*4.1	3.15	3.55	2.55	6.0	2.9	3.95	2.9	2.9
20	3.4	3.05	2.9	3.3	3.05	3.15	2.55	5.9	2.9	3.4	2.8	2.9
21	3.3	3.05	2.9	3.05	2.9	3.1	2.55	4.7	2.9	3.15	2.8	2.9
22	3.3	2.9	3.9	2.9	2.9	3.05	2.55	4.1	2.8	3.05	2.8	2.9
23	3.3	*3.05	2.9	3.15	2.8	2.8	2.55	3.7	2.8	2.9	2.8	2.9
24	3.3	3.05	2.9	3.55	2.8	2.65	2.65	3.4	2.65	2.9	2.8	2.8
25	3.3	3.15	2.9	10.1	2.65	2.65	2.65	3.15	*2.65	2.9	2.8	2.8
26	3.3	3.3	2.9	5.9	2.65	2.55	2.55	3.05	2.9	2.9	2.8	2.9
27	3.3	3.15	2.9	4.1	2.65	2.55	2.55	3.15	3.05	2.9	2.8	*2.9
28	3.3	3.05	2.9	3.55	2.65	2.55	2.4	7.4	2.8	2.9	2.9	2.9
29	3.3	3.05	2.9	3.8	2.8	2.55	2.55	-	2.65	2.9	2.8	2.9
30	3.15	3.15	3.05	4.1	3.55	2.55	2.4	-----	2.65	2.8	2.8	2.9
31	3.15	3.05	-----	3.7	-----	2.55	2.4	-----	2.65	-----	2.8	2.9
Total	108.60	95.85	89.45	116.30	91.95	87.70	89.85	139.15	399.20	89.60	92.40	85.6
Mean:												
mgd	3.50	3.09	2.98	3.75	3.06	2.83	2.90	4.97	12.9	2.99	2.98	2.85
cfs	5.42	4.78	4.61	5.80	4.73	4.38	4.49	7.69	20.0	4.63	4.61	4.41
Ac-ft	333	294	275	357	282	269	276	427	1,230	275	284	263

Calendar year 1952: Max 34 Min 2.4 Mean(mgd) 3.76 Mean(cfs) 5.82 Ac-ft 4,220
Fiscal year 1952-53: Max 115 Min 2.3 Mean(mgd) 4.07 Mean(cfs) 6.36 Ac-ft 4,560

Peak discharge (base, 70 mgd).--Feb. 13 (3:30 a.m.) 76 mgd (118 cfs), 2.43 ft; Mar. 4 (12:30 a.m.) 450 mgd (696 cfs), 4.09 ft.

* Discharge measurement made on this day.

Miscellaneous discharge measurements

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

Miscellaneous discharge measurements on Kauai during fiscal year July 1952 to June 1953

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Feb. 24	Koale.....	Waimea River.....	At elevation 3,700 ft, near Waimea.	4.56	2.95
Mar. 17	Wahiawa.....	Pacific Ocean....	Above Alexander Reservoir, near Lawai.	44.1	26.5
17	Left Branch, Wa- hiawa.	Wahiawa Stream...	do.....	1.40	.905
Feb. 26	Wainiha River....	Pacific Ocean....	At 650 ft, near Hanalei.....	60.5	39.1
Oct. 12	Manoa.....	do.....	Above diversions, near Haena...	.146	.094
12	Limahuli.....	do.....	do.....	4.74	3.06

Left Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°31'10", long 157°56'55", on left bank 140 ft upstream from intake of Wahiawa Water Co.'s tunnel and confluence with Right Branch, and 5.5 miles northeast of Wahiawa.

Drainage area.--1.5 sq mi.

Records available.--May 1913 to July 1953 (discontinued).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,200 ft (from topographic map).

Average discharge.--36 years (1915-24, 1926-53), 10.6 mgd (16.4 cfs).

Extremes.--Maximum discharge during year, 960 mgd (1,490 cfs) Mar. 29 (gage height, 6.54 ft), from rating curve extended above 43 mgd by test on model of station site; minimum, 0.16 mgd (0.25 cfs) Feb. 13, 14.

1913-53: Maximum discharge, 3,550 mgd (5,490 cfs) Jan. 1, 1933 (gage height, 11.7 ft, from floodmarks), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.

Remarks.--Records good except those for period of no gage-height record and those above 50 mgd, which are fair.

Revisions (fiscal years).--WSP 1219: 1931-33(M), 1935(M), 1937-38(M).

Rating table, July 1, 1952, to July 20, 1953 (gage height, in feet, and discharge, in million gallons a day)

1.4	0.16	2.3	7.9
1.5	.31	2.5	13.4
1.6	.56	2.8	27.5
1.7	.93	3.0	42
1.8	1.45	3.4	86
1.9	2.15	3.8	148
2.1	4.3		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.3	47	7.4	2.85	12.8	27.5	1.8	0.30	4.5	3.6	2.05	9.6
2	12.2	17.9	11.4	2.0	20.5	8.6	1.9	.30	2.45	3.0	1.00	6.4
3	7.4	9.0	16.4	1.59	10.5	5.9	1.9	.30	11.2	2.6	25.5	4.3
4	6.1	6.9	14.5	1.86	5.9	8.4	1.7	.30	4.3	3.05	15.4	3.5
5	12.9	5.9	11.0	5.4	30	11.7	1.7	.30	2.9	2.45	2.3	2.75
6	7.4	5.3	11.0	2.1	8.5	5.4	1.5	.26	2.7	2.15	1.52	2.55
7	5.1	21	9.2	1.45	5.3	5.1	2.8	.35	2.95	1.96	11.4	2.55
8	8.9	5.4	6.9	1.35	4.3	4.2	1.5	.50	1.80	2.05	27	2.35
9	39.5	4.8	7.1	1.35	4.9	3.7	1.2	9.0	2.5	1.80	6.2	2.35
10	8.8	7.6	26	1.29	9.9	7.4	1.1	2.3	2.0	7.6	2.9	5.3
11	9.0	5.7	10.7	2.85	22	3.7	1.0	.35	25.5	2.85	2.6	10.7
12	10.6	6.1	8.5	17.3	10.3	3.1	2.2	.24	10.9	1.66	2.55	11.4
13	5.3	4.8	5.3	3.1	7.0	2.9	20	.18	22	1.40	3.95	4.1
14	8.3	3.95	60	1.59	4.6	2.7	2.4	.19	9.2	1.29	2.75	3.95
15	128	3.45	9.0	11.7	5.8	2.8	2.5	16.0	4.0	1.35	14.2	2.7
16	27.5	8.2	6.1	23	7.9	2.45	1.2	32.5	3.1	1.85	7.7	6.1
17	28	3.35	5.9	4.3	8.6	6.6	.90	14.0	9.8	2.65	6.4	19.5
18	34.5	5.3	7.8	58	4.9	5.0	.80	4.0	4.2	1.45	2.8	18.1
19	28.5	6.2	4.5	9.7	101	4.7	.75	6.6	1.73	2.6	7.4	
20	11.9	3.2	3.95	3.7	20.5	38.5	.66	2.05	2.8	1.73	2.7	6.0
21	9.2	2.8	3.6	10.4	24.5	5.5	.68	1.03	2.6	1.24	3.05	3.45
22	7.7	3.45	3.35	3.6	7.5	3.7	.68	1.19	6.3	1.09	1.87	3.2
23	7.3	3.1	3.0	17.9	14.9	3.0	.68	2.15	2.7	.93	8.0	3.0
24	9.4	2.6	3.8	8.2	7.4	2.7	.58	23	2.55	.86	1.94	3.9
25	7.2	2.7	3.2	10.3	4.9	2.45	.66	2.3	1.94	.74	8.1	6.3
26	46	14.6	*2.55	5.3	4.8	2.45	.56	1.85	10.1	.71	3.4	2.8
27	43	32.5	2.35	3.35	4.2	2.45	.50	11.9	10.4	.74	25	2.6
28	10.5	4.1	2.25	7.2	3.7	2.45	.45	24	4.8	.89	11.0	2.15
29	15.3	3.1	2.0	44	26	2.95	.45	-	84	.71	4.0	2.1
30	9.2	2.9	1.94	21	42	2.25	.36	-----	9.1	1.49	3.35	1.80
31	7.1	19.2	-----	19.9	-----	2.0	.36	-----	4.6	-----	15.2	-----
Total	579.1	272.10	267.69	287.63	445.1	192.25	55.41	153.44	274.49	57.22	228.43	162.90
Mean:	18.7	8.78	8.92	9.28	14.8	6.20	1.79	5.48	8.85	1.91	7.37	5.43
cfs	28.9	13.6	13.8	14.4	22.9	9.59	2.77	8.48	13.7	2.96	11.4	8.40
Ac-ft	1,780	835	822	883	1,370	590	170	471	842	176	701	500

Calendar year 1952: Max 128 Min 1.29 Mean(mgd) 11.5 Mean(cfs) 17.8 Ac-ft 12,870
Fiscal year 1952-53: Max 128 Min 0.16 Mean(mgd) 8.15 Mean(cfs) 12.6 Ac-ft 9,140

Peak discharge (base, 700 mgd).--Mar. 29 (9 a.m.) 960 mgd (1,490 cfs), 6.54 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 31 to Feb. 12; discharge estimated on basis of records for stations on the Right Branch and nearby streams.

Discharge, in million gallons a day, 1953

Day	Discharge	Day	Discharge	Day	Discharge
July 1	1.80	July 8	4.9	July 15	3.95
2	1.66	9	2.15	16	5.3
3	18.9	10	2.15	17	3.15
4	26.5	11	2.4	18	3.05
5	4.2	12	7.0	19	8.9
6	2.6	13	2.45	20	+10.0
7	2.45	14	10.8		

+ Result of discharge measurement.

Right Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°31'15", long 157°56'55", on left bank 190 ft upstream from confluence with Left Branch, 200 ft upstream from intake of Wahiawa Water Co.'s tunnel, and 5.5 miles northeast of Wahiawa.

Drainage area.--1.2 sq mi.

Records available.--May 1913 to January 1933, February 1934 to July 1953 (discontinued).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,200 ft (from topographic map).

Average discharge.--34 years (1915-24, 1926-32, 1934-53), 7.16 mgd (11.1 cfs).

Extremes.--Maximum discharge during year, 544 mgd (842 cfs) Mar. 29 (gage height, 6.60 ft), from rating curve extended as explained below; minimum, 0.25 mgd (0.39 cfs) Feb. 6.

1913-53: Maximum discharge, 1,500 mgd (2,320 cfs) Aug. 12, 1940 (gage height, 9.34 ft), from rating curve extended above 40 mgd by test on model of station site; minimum, 0.09 mgd (0.15 cfs) Mar. 22, 1926.

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

Rating table, July 1, 1952, to July 20, 1953 (gage height, in feet, and discharge, in million gallons a day)

2.6	0.29	3.4	14.9
2.7	.79	3.6	24.5
2.8	1.59	4.0	49
3.0	4.1	4.5	88
3.2	8.4		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.55	35.5	4.2	1.79	5.9	8.2	1.23	0.29	3.45	3.15	0.99	3.95
2	5.4	12.2	6.6	1.23	14.5	4.0	1.41	.29	2.1	2.6	.74	3.9
3	3.55	7.3	4.6	.99	6.1	3.0	1.14	.29	3.85	2.35	10.4	3.15
4	3.15	4.8	8.5	1.14	3.8	4.5	.99	.29	2.45	2.95	12.3	2.1
5	6.9	4.1	5.0	3.6	24.5	5.2	1.06	.29	2.85	2.35	1.50	1.70
6	3.15	3.8	7.3	1.23	5.9	2.85	.85	.29	2.1	2.1	.99	1.41
7	2.6	12.3	3.65	.85	3.7	2.85	1.72	.34	1.90	1.93	2.2	1.41
8	4.0	3.8	3.5	.79	3.15	2.35	.85	.29	1.32	1.79	26.5	1.32
9	18.6	3.55	4.2	.74	3.8	2.1	.74	7.1	2.45	1.68	5.7	1.23
10	4.6	4.5	10.0	.94	4.3	5.6	.74	.69	1.73	6.6	2.25	1.23
11	3.95	5.6	13.9	5.5	10.5	2.35	.74	.39	12.6	2.3	1.79	2.55
12	3.4	4.4	3.8	3.4	4.0	2.0	9.8	.29	8.9	1.50	1.58	3.45
13	2.75	4.0	2.8	1.06	3.15	1.79	8.7	.29	5.7	1.32	2.95	1.79
14	7.1	3.2	.44	.92	2.6	1.68	1.06	.29	4.3	1.14	2.85	1.50
15	66	3.0	4.5	10.2	2.75	1.68	1.42	3.5	2.1	1.23	8.1	1.14
16	29	7.0	3.2	13.1	4.3	1.50	.79	23	1.79	1.41	3.7	1.94
17	11.0	3.15	3.1	2.15	15.6	3.15	.69	17.7	4.5	1.98	4.5	15.1
18	13.1	2.45	4.0	23.5	5.7	3.15	.84	3.05	2.6	1.32	2.0	6.4
19	15.6	2.75	2.5	5.9	74	2.5	.59	2.75	2.0	1.41	1.79	3.25
20	6.4	2.1	2.2	2.35	12.3	16.5	.54	1.97	1.50	1.23	1.79	3.05
21	5.2	1.79	2.1	4.7	16.5	3.4	.54	1.06	2.65	.92	1.90	1.79
22	4.4	1.79	1.9	2.0	5.0	2.0	.54	1.38	3.2	.85	1.32	1.50
23	3.95	2.2	1.8	4.8	13.4	1.79	.54	2.95	1.68	.79	2.65	1.41
24	4.6	1.79	1.7	4.0	5.5	1.59	.49	16.8	1.41	.74	1.32	1.59
25	3.7	1.57	1.8	6.3	3.55	1.41	.64	2.0	1.23	.69	3.45	2.15
26	16.5	4.6	*1.6	2.6	3.25	1.41	.49	1.50	4.7	.64	2.5	1.32
27	26.5	19.2	1.41	1.90	3.0	1.72	.44	7.2	8.6	.69	21	1.14
28	7.6	2.1	1.41	3.45	2.6	1.79	.39	18.3	3.3	.64	9.6	1.23
29	33.5	1.68	1.23	21	7.6	2.65	.39	-	.81	.64	2.85	.99
30	6.9	1.68	1.23	10.6	16.2	*1.69	.34	-----	7.1	.92	2.0	.85
31	5.0	12.2	-----	12.9	-----	1.23	.34	-----	3.95	-----	5.1	-----
Total	331.65	180.10	157.73	155.63	287.15	97.63	40.84	114.58	189.01	49.86	148.32	75.54
Mean:												
mgd	10.7	5.81	5.26	5.02	9.57	3.15	1.32	4.09	6.10	1.66	4.78	2.52
cfs	16.6	8.99	8.14	7.77	14.8	4.87	2.04	6.33	9.44	2.57	7.40	3.90
Ac-ft	1,020	553	484	478	881	300	125	352	580	153	455	232

Calendar year 1952: Max 85 Min 0.74 Mean(mgd) 7.10 Mean(cfs) 11.0 Ac-ft 7,970

Fiscal year 1952-53: Max 81 Min 0.29 Mean(mgd) 5.01 Mean(cfs) 7.75 Ac-ft 5,610

Peak discharge (base, 420 mgd).--Mar. 29 (8 a.m.) 544 mgd (842 cfs), 6.60 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 12-16, Sept. 13-26; discharge estimated on basis of records for stations on the Left Branch and nearby streams.

Discharge, in million gallons a day, 1953

Day	Discharge	Day	Discharge
July 1	0.79	July 11	0.92
2	.79	12	2.25
3	2.55	13	.99
4	7.5	14	3.50
5	1.67	15	1.25
6	.99	16	1.32
7	.92	17	1.44
8	1.50	18	1.14
9	.92	19	2.6
10	1.14	20	†3.30

† Result of discharge measurement.

Kaukonahua ditch near Wahiawa

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

Records available.--March 1947 to June 1953.

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

Average discharge.--6 years, 2.61 mgd (4.04 cfs).

Extremes.--1947-53: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times each year.

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

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	0	0.11	3.45	3.0	0.86	6.1	5.6	3.05	5.4
2	0	0	0	.04	.10	3.0	3.4	.82	4.8	5.3	2.25	4.0
3	0	.17	0	.04	4.2	2.7	3.0	.82	5.7	5.1	3.7	6.0
4	0	0	0	.04	5.8	2.7	2.7	.82	5.4	5.4	6.6	6.0
5	0	1.34	0	.05	6.5	3.0	2.8	.77	5.8	4.8	4.4	4.8
6	0	.81	0	.04	6.4	2.6	2.4	.72	4.5	4.8	3.0	4.4
7	0	0	0	.04	5.9	2.5	3.8	.82	5.1	4.3	4.8	4.4
8	0	*0	0	.04	5.8	4.0	2.35	.82	3.3	4.0	7.1	3.9
9	.08	0	.04	.04	5.8	5.3	2.1	4.2	3.9	3.6	8.1	3.7
10	.15	0	.05	.04	5.9	5.7	1.99	1.99	4.1	5.4	5.1	5.5
11	.09	0	.04	.04	6.6	1.75	1.82	*1.03	5.8	5.2	4.6	6.0
12	.06	0	.04	.04	8.2	0	2.15	.86	5.9	3.6	4.4	6.0
13	.05	0	.04	.04	4.7	0	5.4	.72	6.2	3.1	5.1	3.3
14	.05	0	.16	.04	3.7	0	2.8	.72	6.5	2.9	5.2	3.3
15	1.04	0	.08	.13	3.7	0	3.0	.85	5.7	2.7	6.8	3.9
16	.11	0	.04	.16	3.9	0	2.15	7.2	5.1	3.4	6.4	5.5
17	.04	0	0	.04	3.7	1.82	1.82	7.5	6.2	4.2	5.9	5.5
18	.05	0	.05	.13	3.7	5.0	1.74	5.8	5.8	3.2	5.0	6.0
19	.04	0	.04	.04	4.8	4.7	1.58	4.7	5.3	3.5	4.6	4.1
20	.04	0	0	.04	3.7	5.9	1.51	4.3	4.3	3.3	4.4	5.5
21	.04	0	.04	.04	3.5	5.1	1.51	2.35	5.1	2.7	4.8	3.9
22	.04	0	0	.04	3.0	4.7	1.37	2.45	5.7	2.35	3.4	4.2
23	.04	0	0	.08	3.5	4.5	1.37	4.5	4.3	2.1	5.3	4.0
24	.04	0	0	.04	3.0	4.3	1.30	6.5	4.0	1.90	3.6	6.0
25	.04	0	0	.04	2.8	3.9	1.37	4.8	3.3	1.74	4.7	6.5
26	.19	0	0	.04	2.6	3.8	1.24	3.2	5.3	1.65	5.2	*3.4
27	.04	0	0	.04	2.6	3.8	1.10	6.4	6.4	1.65	4.8	3.7
28	.04	0	0	.04	2.4	4.2	.96	7.2	5.7	1.90	6.2	3.5
29	.04	0	0	.36	2.95	4.2	.96	-	6.9	1.58	5.2	3.2
30	0	0	0	.22	4.5	4.0	.91	-	6.1	2.5	4.5	2.9
31	0	0	-----	.09	-----	3.2	.86	-----	5.7	-----	6.1	-----
Total	2.31	2.32	0.60	2.20	122.06	99.82	64.46	83.72	164.0	103.47	152.30	138.5
Mean:	0.075	0.075	0.020	0.071	4.07	3.22	2.08	2.99	5.29	3.45	4.91	4.62
cfs	0.116	0.116	0.031	0.110	6.30	4.98	3.22	4.63	8.18	5.34	7.60	7.15
Ac-ft	7.1	7.1	1.8	6.8	375	306	198	257	503	318	467	425
Calendar year 1952 :	Max 7.5			Min 0		Mean(mgd) 2.88		Mean(cfs) 4.46		Ac-ft 3,240		
Fiscal year 1952-53 :	Max 7.5			Min 0		Mean(mgd) 2.56		Mean(cfs) 3.96		Ac-ft 2,870		

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

Note.--No gage-height record June 2-26; discharge estimated on basis of records for stations on nearby streams.

North Fork Kaukonahua Stream near Wahiawa

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

Drainage area.--4.9 sq mi.

Records available.--September 1946 to June 1953.

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

Average discharge.--6 years (1947-53), 23.7 mgd (36.7 cfs).

Extremes.--Maximum discharge during year, 1,070 mgd (1,660 cfs) Mar. 29 (gage height, 8.23 ft), from rating curve extended as explained below; minimum, 0.20 mgd (0.31 cfs) Feb. 14.

1946-53: Maximum discharge, 1,610 mgd (2,490 cfs), revised, Apr. 3, 1948 (gage height, 11.34 ft), from rating curve extended above 180 mgd on basis of slope-area determination at 8.43 and 15.55 ft; minimum, that of Feb. 14, 1953.

Revisions.--The figures of maximum discharge for some fiscal years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Fiscal year	Date	Discharge		Gage height (feet)
			(mgd)	(cfs)	
1125	1947	(†)	1,310	2,030	†9.63
1125	1948	Apr. 3, 1948	1,610	2,490	11.34
1155	1949	Jan. 16, 1949	1,560	2,410	10.96
1185	1950	Jan. 22, 1950	1,430	2,210	10.28
1219	1951	Mar. 26, 1951	1,580	2,440	11.07
1249	1952	Mar. 4, 1952	1,540	2,380	10.90

† Occurred Dec. 22, 1946, and Mar. 30, 1947.

‡ Mar. 30, 1947.

Remarks.--Records good. Poamoho tunnel diverts floodwater from Poamoho Stream into North Fork Kaukonahua Stream about 1 mile above station. Kaukonahua ditch diverts water 2.6 miles above station for domestic use in Wahiawa (see preceding page).

Revisions (fiscal years).--Revised figures of discharge, in million gallons a day, for the fiscal years 1947-52, superseding those published in WSP 1125, 1155, 1185, 1219, and 1249, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1946		1947-Con.		1949-Con.		1951	
Nov. 11	126	Nov. 12	425	Jan. 16	502	Mar. 4	214
15	94	13	306	17	150	5	450
Dec. 6	176	14	303	19	130	11	201
17	69	17	127	Feb. 7	96	12	139
21	314	20	101	Dec. 18	189	21	108
22	276					25	346
		1948		1950		27	274
1947		Jan. 24	121	Jan. 7	179	Aug. 7	208
Mar. 1	115	27	267	22	188	Oct. 27	200
29	179	Apr. 3	391	23	306	Nov. 19	188
30	215	4	276	Apr. 23	227	Dec. 10	66
Aug. 1	87	May 1	69	24	270	31	336
17	185	27	209	May 16	139		
25	294	Aug. 16	346	18	165		
28	165	23	159	Aug. 3	321	1952	
Sept. 6	92	Nov. 26	292	15	170	Jan. 9	143
7	66			Nov. 20	194	Mar. 1	144
Oct. 25	104	1949		Dec. 3	166	4	215
		Jan. 2	144				

Month	Mgd-days	Maximum	Minimum	Mean		Runoff in acre-feet
				(mgd)	(cfs)	
November 1946.....	648.66	141	0.93	21.6	33.4	1,990
December.....	1,449.25	314	3.95	46.8	72.4	4,450
March 1947.....	723.83	215	.35	23.3	36.1	2,220
August.....	1,193.51	294	1.90	38.5	59.6	3,660
September.....	635.86	121	1.81	21.2	32.8	1,950
October.....	199.70	104	.80	6.44	9.96	613
November.....	1,613.78	425	.66	53.8	83.2	4,950
December.....	835.00	127	2.45	26.9	41.6	2,560
Calendar year 1947.....	6,998.49	425	.35	19.2	29.7	21,470
January 1948.....	844.89	267	1.90	27.3	42.2	2,590
April.....	1,293.40	391	3.65	43.1	66.7	3,970
May.....	1,319.6	209	3.4	42.6	65.9	4,050
Fiscal year 1947-48.....	10,237.39	425	.80	28.0	43.3	31,410
August 1948.....	1,169.53	346	1.72	37.7	58.3	3,590
November.....	1,108.8	292	5.4	37.0	57.2	3,400
Calendar year 1948.....	9,898.53	391	1.26	27.0	41.8	30,370
January 1949.....	1,802.9	502	13.5	58.2	90.0	5,530
February.....	612.9	124	6.4	21.9	33.9	1,880
Fiscal year 1948-49.....	8,220.34	502	1.26	22.5	34.8	25,210
December 1949.....	945.16	189	1.81	30.5	47.2	2,900
Calendar year 1949.....	6,071.54	502	.67	16.6	25.7	18,630
January 1950.....	1,300.5	306	6.6	42.0	65.0	3,990
April.....	2,063.9	270	8.6	68.8	106	6,330
May.....	1,558.0	163	13.2	50.3	77.8	4,780
Fiscal year 1949-50.....	8,803.30	306	.67	24.1	37.3	27,020
August 1950.....	1,025.5	321	5.7	33.1	51.2	3,150
November.....	524.76	194	1.32	17.5	27.1	1,610
December.....	561.25	166	2.35	18.1	28.0	1,720
Calendar year 1950.....	-	321	1.32	25.7	39.8	28,840

North Fork Kaulanahua Stream near Wahiawa--Continued

Monthly discharge, in million gallons a day, 1947-52--Continued

Month	Mgd-days	Maximum	Minimum	Mean (mgd)		Runoff in acre-feet
March 1951.....	3,167.5	450	20	102	158	9,720
Fiscal year 1950-51.....	-	450	.71	23.7	36.7	26,540
August 1951.....	441.78	208	.93	14.3	22.1	1,360
October.....	456.78	200	.64	14.7	22.7	1,400
November.....	721.03	188	1.45	24.0	37.1	2,210
December.....	871.75	336	2.6	28.1	43.5	2,680
Calendar year 1951.....	-	450	.47	22.5	34.8	25,210
January 1952.....	804.35	143	2.6	25.9	40.1	2,470
March.....	1,352.0	215	4.7	43.6	67.5	4,150
Fiscal year 1951-52.....	-	336	.47	18.8	29.1	21,110

Revised peak discharge.--1947-48: Aug. 1 (5 a.m.) 926 mgd (1,430 cfs); Sept. 6 (11 p.m.) 1,020 mgd (1,580 cfs); Nov. 14 (10 p.m.) 1,120 mgd (1,730 cfs); Dec. 17 (12:30 p.m.) 1,130 mgd (1,750 cfs); Jan. 27 (7 a.m.) 1,010 mgd (1,560 cfs); Apr. 3 (11:30 p.m.) 1,610 mgd (2,490 cfs).
 1948-49: Nov. 26 (2 a.m.) 958 mgd (1,480 cfs); Jan. 16 (9 p.m.) 1,540 mgd (2,380 cfs).
 1949-50: Dec. 18 (8:30 a.m.) 926 mgd (1,430 cfs), 7.30 ft; Jan. 7 (3 a.m.) 1,090 mgd (1,690 cfs), 8.31 ft; Jan. 22 (5 p.m.) 1,430 mgd (2,210 cfs), 10.28 ft.
 1950-51: Aug. 3 (1:30 a.m.) 1,200 mgd (1,860 cfs), 8.98 ft; Dec. 3 (7 p.m.) 1,170 mgd (1,810 cfs), 8.84 ft; Mar. 5 (5:30 p.m.) 1,200 mgd (1,860 cfs), 9.02 ft; Mar. 12 (11 p.m.) 1,250 mgd (1,930 cfs), 9.32 ft; Mar. 26 (6 a.m.) 1,580 mgd (2,440 cfs), 11.07 ft.
 1951-52: Dec. 31 (4 a.m.) 1,150 mgd (1,780 cfs), 8.66 ft; Mar. 1 (5:30 a.m.) 1,040 mgd (1,610 cfs), 8.05 ft; Mar. 4 (5 p.m.) 1,540 mgd (2,380 cfs), 10.90 ft.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.15	1.3	20
.5	.39	1.6	37.5
.4	.80	2.0	74
.5	1.45	2.5	140
.6	2.35	3.0	218
.8	5.0	3.5	303
1.0	9.1		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16.1	85	13.9	6.4	41	41	1.12	0.39	11.7	3.95	0.68	7.6
2	26.5	45	24	5.9	32	22	1.19	.43	2.25	2.6	.68	12.1
3	20	37.5	26	4.2	29.5	11.2	1.19	.43	8.3	1.90	18.5	6.2
4	13.5	17.8	29.5	4.2	7.7	15.8	1.12	.39	4.7	2.05	41	2.9
5	26.5	15.0	25.5	9.2	57	22.5	1.00	.39	2.7	3.0	2.3	1.99
6	14.6	13.2	19.2	7.0	16.6	10.6	.86	.39	1.81	2.25	.80	1.38
7	11.5	44	21	3.95	7.0	9.7	2.15	.51	3.05	2.35	3.75	1.19
8	11.7	14.8	15.7	3.4	4.4	6.8	1.38	.55	1.12	2.6	.55	1.32
9	70	12.5	19.8	3.25	3.5	3.4	.86	19.2	3.5	2.4	24	1.26
10	21	16.1	56	3.15	6.2	8.4	.86	2.4	4.6	10.3	3.65	3.0
11	16.7	14.7	35.5	5.4	49	8.6	.80	.54	68	3.3	1.81	7.6
12	18.3	12.5	16.1	27	14.0	8.0	.80	.32	32.5	1.32	1.72	19.2
13	10.9	12.5	12.5	9.2	7.5	7.3	.39	.25	20.5	1.06	1.63	6.7
14	10.3	9.1	152	4.1	8.1	6.6	1.59	.22	24	.93	5.4	5.7
15	251	8.6	25.5	35	8.1	6.6	.93	.27	3.95	.93	23.5	2.6
16	95	17.8	15.3	55	13.7	6.3	.76	95	2.25	1.12	21	7.6
17	50	9.7	13.5	18.2	*18.3	6.6	.64	111	11.4	1.45	9.7	29.5
18	81	8.6	16.3	74	22.5	8.8	.80	11.6	3.65	1.63	2.7	44
19	56	11.5	10.9	24	216	3.9	.55	3.5	4.5	1.38	1.45	10.9
20	25.5	9.1	9.4	10.3	34.5	58	.80	2.7	1.45	1.54	1.26	7.6
21	19.6	6.8	8.4	15.5	49	12.4	.55	1.63	1.72	1.26	1.90	3.5
22	17.0	7.7	*7.7	10.6	13.2	3.8	.51	1.32	5.5	.80	1.26	2.6
23	15.3	8.2	7.0	26	35.5	2.7	.60	2.45	2.25	.86	6.1	2.15
24	18.7	7.7	6.6	13.2	16.9	1.90	.64	48	1.32	.68	1.93	1.90
25	15.0	6.1	6.8	19.4	10.0	1.54	.72	3.2	1.06	.60	5.0	5.6
26	82	27.5	6.3	18.9	8.4	1.38	.55	1.38	14.2	.55	11.1	2.55
27	86	63	5.7	8.0	8.0	1.38	.47	11.1	23.5	.60	38.5	1.63
28	23	11.2	5.5	7.5	6.6	1.63	.39	63	11.0	.64	42	1.38
29	77	7.5	5.0	91	18.7	1.63	.39	-	161	.60	5.9	1.12
30	24	6.6	4.7	66	98	2.9	.39	-----	19.2	.80	2.7	1.00
31	18.3	33	-----	28.5	-----	1.26	.43	-----	5.8	-----	23	-----
Total	1,222.0	600.1	621.3	617.45	860.9	304.62	63.64	382.56	462.48	55.45	359.92	203.77
Mean:												
mgd	39.4	19.4	20.7	19.9	28.7	9.83	2.05	13.7	14.9	1.85	11.6	6.79
cfs	61.0	30.0	32.0	30.8	44.4	15.2	3.17	21.2	23.1	2.86	17.9	10.5
Ac-ft	3,750	1,840	1,910	1,900	2,640	935	195	1,170	1,420	170	1,100	625

Calendar year 1952: Max 251 Min 0.76 Mean(mgd) 22.8 Mean(cfs) 35.3 Ac-ft 25,580
 Fiscal year 1952-53: Max 251 Min 0.22 Mean(mgd) 15.8 Mean(cfs) 24.4 Ac-ft 17,660

Peak discharge (base, 1.100 mgd).--No peak above base.

* Discharge measurement made on this day.

South Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'05", long 157°56'50", on right bank at Canon Dam, 5.4 miles east of Wahiawa and 7.7 miles north of Pearl City.

Drainage area.--1.9 sq mi.

Records available.--May 1944 to June 1953.

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

Average discharge.--9 years, 6.95 mgd (10.8 cfs).

Extremes.--Maximum discharge during year, 413 mgd (639 cfs) Mar. 11 (gage height, 4.32 ft), from rating curve extended as explained below; minimum, 0.09 mgd (0.14 cfs) Feb. 13, 14, 1944-53: Maximum discharge, 765 mgd (1,180 cfs) Mar. 26, 1951 (gage height, 5.86 ft), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 1945.

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

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.09	1.1	5.5
.4	.17	1.2	9.8
.5	.30	1.4	19.2
.6	.47	1.7	38
.7	.68	2.0	64
.8	.95	2.5	122
.9	1.33	3.0	191
1.0	2.3		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*5.7	*19	3.3	*1.06	21	*23.5	0.98	0.15	6.0	1.63	*0.36	*3.0
2	7.4	12	*3.15	.92	28.5	8.5	1.30	.14	2.05	1.44	.30	2.15
3	5.9	7.0	8.1	.68	15.1	5.9	1.09	.15	12.7	1.21	20.5	1.17
4	3.6	5.0	5.1	.68	8.5	12.2	.92	.12	6.5	1.37	24.5	.89
5	4.3	4.5	4.3	3.25	23.5	14.9	.89	.10	5.5	1.33	27.05	.75
6	3.95	4.3	3.95	1.34	10.0	6.4	.89	.11	5.1	1.09	1.20	.68
7	3.0	7.5	5.1	.68	6.4	6.4	3.15	.12	6.5	.95	2.55	.64
8	5.2	5.5	2.5	.53	4.7	4.7	.88	.11	1.45	.89	6.8	.64
9	17.3	4.0	3.4	.51	6.0	3.95	.70	10.2	2.7	.83	3.2	.96
10	6.4	13	11.0	.49	6.0	3.95	.61	.77	2.5	5.1	1.15	5.55
11	4.3	4.5	3.6	1.50	13.9	3.3	.66	.20	46	1.85	.89	7.1
12	5.9	4.0	2.75	9.2	9.4	3.0	.62	.10	3.2	.88	.89	9.4
13	2.75	5.5	2.3	1.45	8.6	2.75	9.4	.09	28.5	.66	.66	2.05
14	8.7	3.5	17.8	.64	5.1	2.75	.91	.10	12.1	.57	.57	1.73
15	142	2.9	4.9	7.8	5.1	2.75	.75	.13	5.1	1.11	5.1	1.33
16	18.9	2.7	2.3	25.5	7.4	2.05	.68	12.5	3.6	4.3	4.9	3.45
17	23.5	2.2	2.75	2.8	4.7	7.0	.49	8.0	5.3	4.9	1.27	2.4
18	25.5	1.8	5.3	28	3.95	4.6	.41	1.42	7.4	1.40	.77	12.9
19	14.8	3.6	2.05	5.7	72	3.4	.41	2.95	3.95	1.25	.85	11.2
20	9.4	2.8	1.73	2.5	22.5	24.5	.41	2.05	2.3	.86	1.25	7.3
21	7.2	1.5	1.45	4.9	21	3.6	.36	.51	2.05	.64	.92	2.5
22	5.9	5.0	1.29	2.65	6.5	2.5	.34	.30	6.6	.57	.55	2.5
23	5.1	4.8	1.17	17.8	11.2	2.05	.31	.38	1.84	.49	1.98	2.05
24	5.1	1.7	1.05	16.9	5.1	1.73	.31	17.0	1.84	.43	.80	5.6
25	9.7	2.45	.98	19.7	3.95	1.56	.32	1.13	1.41	.37	1.54	4.8
26	43	14.1	.92	6.9	3.6	1.45	.28	.51	12.1	.36	1.54	2.3
27	36.5	13.7	.86	3.0	3.3	1.33	.25	24	5.1	.37	2.45	1.63
28	8.9	2.75	.83	7.9	2.75	1.33	.23	26	2.5	.39	6.5	1.21
29	6.8	1.84	.77	70	5.2	1.45	.23	-	12.2	.49	1.09	1.05
30	5.9	1.84	.73	38.5	35.5	1.21	*1.18	-----	3.35	.49	1.14	*.90
31	4.7	9.0	-----	*27	-----	*1.02	.16	-----	1.84	-----	15.1	-----
Total	457.30	173.98	105.43	310.48	380.45	165.73	29.12	109.32	225.28	38.22	111.37	95.83
Mean:												
mgd	14.8	5.61	3.51	10.0	12.7	5.35	0.939	3.90	7.27	1.27	3.59	3.19
cfs	22.9	8.68	5.43	15.5	19.6	8.28	1.45	6.03	11.2	1.96	5.55	4.94
Ac-ft	1,400	534	324	953	1,170	509	89	335	691	117	342	294

Calendar year 1952: Max 142 Min 0.49 Mean(mgd) 8.16 Mean(cfs) 12.6 Ac-ft 9,170
Fiscal year 1952-53: Max 142 Min 0.09 Mean(mgd) 6.03 Mean(cfs) 9.33 Ac-ft 6,760

Peak discharge (base, 400 mgd).--Mar. 11 (8:30 a.m.) 413 mgd (639 cfs), 4.32 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 1-24; discharge estimated on basis of records for stations on nearby streams.

South Fork Kaukonahua Stream above Wahiawa Reservoir, near Wahiawa

Location--Lat 21°29'35", long 157°59'55", on right bank 2 miles southeast of Wahiawa and 7.5 miles north of Waipahu.

Drainage area--5.2 sq mi.

Records available--October 1946 to June 1953.

Gage--Water-stage recorder and concrete control. Datum of gage is 844.51 ft above mean sea level.

Average discharge--6 years (1947-53), 16.2 mgd (25.1 cfs).

Extremes--Maximum discharge during year, 590 mgd (913 cfs) Mar. 11 (gage height, 5.82 ft), from rating curve extended above 80 mgd; minimum, 0.65 mgd (1.01 cfs) June 8, 1946-53. Maximum discharge uncertain, occurred Jan. 16, 1949 (gage height, 12.71 ft, backwater from Wahiawa Reservoir); minimum, 0.48 mgd (0.74 cfs) Oct. 29, 1946.

Revisions--The maximum discharge for the fiscal year 1948-49 as published in WSP 1155 is in error and should not be used.

Remarks--Records good except those for periods of no gage-height record and those above 80 mgd, which are fair.

Revisions (fiscal years)--WSP 1249: 1951(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.44	1.3	20.5
.4	.90	1.5	30.5
.5	1.58	1.7	43
.6	2.55	2.0	70
.7	3.7	2.5	131
.8	5.3	3.0	193
.9	7.2	3.5	257
1.1	12.6		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10	19	7.5	1.64	54	35	6.4	1.09	14.5	6.8	1.23	5.1
2	12	24.5	7.2	2.1	32	26	5.6	1.09	4.8	6.1	1.16	4.4
3	10	14.9	11.2	1.16	30	14.5	2.95	1.09	11.8	5.7	9.0	2.05
4	4.0	9.8	10.9	1.02	12.6	21	2.75	1.09	7.7	5.7	39.5	1.30
5	5.0	8.0	11.7	2.65	22.5	32.5	2.25	1.09	9.4	5.9	4.5	.90
6	4.8	7.0	10.3	3.1	17.5	17.7	2.35	1.09	4.4	5.7	2.45	.80
7	3.5	12.0	9.8	1.30	10.3	15.6	4.2	1.09	9.8	5.9	2.9	.75
8	7.0	8.6	7.7	.80	7.2	13.7	2.65	1.09	3.7	5.7	5.1	.75
9	22	7.6	10.8	6.7	11.8	1.94	8.3	3.65	6.1	6.3	1.02	
10	8.0	16.9	23	.75	9.7	10.9	2.05	2.8	6.0	8.9	2.25	5.2
11	5.5	7.4	10.6	.75	24.5	10.4	1.85	1.37	83	7.6	1.37	13.2
12	7.0	6.6	7.5	9.4	16.4	9.5	1.76	1.16	22	5.3	1.45	21
13	40	7.7	7.5	4.1	10.7	9.0	1.17	1.09	49	4.7	1.16	5.5
14	15	5.9	22.5	1.44	12.0	8.8	5.1	1.09	31.5	4.5	1.09	4.4
15	200	5.0	11.6	16.5	9.2	8.8	2.05	1.16	11.5	4.7	3.05	4.4
16	24	5.0	7.1	40	12.6	8.0	1.76	14.0	9.3	9.7	15.3	8.8
17	30	3.9	6.8	15.7	8.1	8.6	1.51	42	12.3	10.0	3.1	6.1
18	36	2.75	11.1	31	6.9	14.2	1.44	8.6	11.2	6.0	1.76	19.1
19	22	4.5	6.5	13.8	90	9.3	1.37	3.3	12.5	6.0	1.37	16.8
20	15	3.8	6.1	10.0	23.5	34.5	1.30	6.0	7.7	3.5	1.70	11.7
21	13	2.5	5.7	9.2	34	15.0	1.37	2.45	6.8	2.5	1.58	6.9
22	12	5.9	3.8	8.8	9.4	9.3	1.30	1.67	11.6	2.1	.96	5.9
23	12	5.7	1.09	26	16.2	8.2	1.30	1.51	7.5	1.8	1.65	5.3
24	11	2.7	1.02	24	9.3	8.0	1.23	16.6	6.4	1.5	1.44	5.8
25	15	3.4	1.02	23.5	6.8	7.5	1.44	3.85	6.2	1.3	1.02	7.5
26	70	26	1.02	24	5.9	7.2	1.37	1.76	23	1.2	3.65	5.5
27	60	22	1.02	9.8	6.1	6.8	1.23	*16.6	15.4	1.3	1.16	5.5
28	16	6.1	.96	9.0	5.3	6.8	1.23	48	10.4	1.4	9.5	5.0
29	13	3.5	.85	90	10.2	6.8	1.16	—	19.0	1.6	2.65	4.2
30	11	3.3	1.02	77	78	6.6	*1.09	—	10.5	1.5	1.44	3.7
31	10	8.5	—	25	—	*6.2	1.09	—	7.0	—	23	—
Total	723.8	270.45	224.90	484.26	597.6	408.2	74.79	192.03	449.55	140.7	153.79	188.57
Mean	23.3	8.72	7.50	15.6	19.9	13.2	2.41	6.86	14.5	4.69	4.96	6.29
cfs	36.1	13.5	11.6	24.1	30.8	20.4	3.73	10.6	22.4	7.25	7.67	9.73
Ac-ft	2,220	830	690	1,490	1,308	1,250	230	589	1,380	432	472	579

Calendar year 1952: Max 200 Min 0.75 Mean(mgd) 14.7 Mean(cfs) 22.7 Ac-ft 16,500
Fiscal year 1952-53: Max 200 Min 0.75 Mean(mgd) 10.7 Mean(cfs) 16.6 Ac-ft 11,990

* Discharge measurements made on this day.

Note.--No gage-height record July 1 to Aug. 1, Apr. 17-30; discharge estimated on basis of recorded range in stage and records for stations on nearby streams.

Poamoho Stream near Wahiawa

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

Drainage area.--1.8 sq mi.

Records available.--January 1947 to June 1953.

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

Average discharge.--6 years, 3.41 mgd (5.28 cfs).

Extremes.--Maximum discharge during year, 90 mgd (139 cfs) Nov. 19 (gage height, 2.13 ft), from rating curve extended above 48 mgd by test on model of station site; no flow for part of Mar. 10.

1947-53: Maximum discharge, 916 mgd (1,420 cfs) Mar. 30, 1947 (gage height, 5.68 ft), from rating curve extended as explained above; no flow Feb. 4, 1948.

Remarks.--Records good. Poamoho tunnel diverts floodwater into North Fork Kaukonahua Stream about 175 ft above station.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.03	0.7	3.6
.2	.14	.8	5.2
.3	.37	1.0	9.8
.4	.76	1.2	16.2
.5	1.44	1.4	25.5
.6	2.45	1.6	39.5

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.91	12.7	2.3	0.80	6.0	4.7	0.88	0.14	3.5	1.71	0.34	0.89
2	1.71	10.1	3.15	.94	5.3	3.95	1.00	.14	1.71	1.28	.28	1.13
3	1.44	6.6	1.62	.54	5.4	2.1	1.00	.12	1.72	1.13	.25	.88
4	1.20	3.25	3.1	.46	2.55	4.3	.82	.11	1.55	1.44	13.1	.58
5	2.55	2.45	2.0	2.4	5.8	4.5	.82	.11	1.71	1.66	1.18	.43
6	1.46	2.25	3.9	1.35	4.7	2.55	.71	.11	1.47	1.71	.58	.31
7	1.06	6.4	2.25	.82	2.4	2.55	1.64	.11	2.75	1.62	.54	.73
8	1.31	*2.45	1.62	.43	1.71	1.91	.76	.12	1.00	1.74	3.25	.34
9	9.0	1.91	1.39	.37	1.79	1.62	.62	7.8	1.60	1.08	.20	.28
10	3.2	3.1	5.3	.37	2.5	4.2	.62	1.00	1.66	4.7	.18	.31
11	1.71	3.55	8.1	.74	5.4	2.1	.54	.33	3.25	1.92	.18	.93
12	1.35	2.1	2.4	2.6	2.65	1.44	.54	.22	3.5	.94	.37	1.91
13	1.06	1.71	1.36	.78	1.71	1.28	9.9	.16	2.9	.66	.82	.95
14	1.00	1.44	16.7	.46	1.71	1.20	.88	.11	2.55	.62	2.2	.46
15	23	1.28	5.2	8.5	1.82	1.13	1.10	.19	1.20	.62	5.1	.31
16	16.5	5.1	2.35	10.6	2.6	1.06	.66	20	1.00	.94	2.7	.34
17	7.2	1.71	1.91	4.1	8.9	1.86	.50	16.4	2.35	.88	1.37	5.7
18	6.6	1.28	1.62	10.7	11.7	4.1	.43	5.7	1.36	.66	.66	5.5
19	8.7	1.28	1.28	5.2	36	1.71	.40	2.8	1.20	.62	.54	1.71
20	3.8	1.20	1.06	2.2	8.7	11.0	.40	2.4	.88	.66	.62	1.60
21	2.8	1.00	.94	2.95	11.2	5.4	.37	1.20	1.92	.46	.54	.66
22	2.35	1.00	.88	2.0	3.35	1.71	.34	.94	2.6	.43	.40	.45
23	2.1	1.27	.76	3.05	10.7	1.28	.34	2.95	1.34	.40	.26	*.40
24	1.91	1.36	.71	2.9	4.1	1.20	.31	4.4	.88	.34	.39	.46
25	1.71	.94	.66	3.9	2.65	1.00	.54	1.98	.71	.31	.13	.46
26	8.8	3.8	.71	4.3	2.35	.94	.40	1.20	1.78	.28	1.30	.37
27	11.6	6.4	.71	1.53	2.35	.94	.26	2.75	5.6	.24	5.8	.34
28	2.65	1.46	.62	1.20	1.91	1.20	.24	5.0	2.95	.76	8.7	.40
29	15.6	.94	.58	7.3	2.85	1.51	.22	19.0	.28	1.31	.43	.42
30	3.85	.82	.54	8.8	13.1	1.69	.20	5.8	.31	.71	.71	.28
31	2.8	5.9	-----	4.3	-----	.94	.18	-----	2.35	-----	0.6	-----
Total	152.11	96.75	75.72	96.69	173.70	77.07	27.62	78.49	83.49	29.90	56.90	29.01
Mean	4.91	3.12	2.52	3.12	5.79	2.49	0.891	2.80	2.69	0.997	1.84	0.967
cfs	7.60	4.83	3.90	4.83	8.96	3.85	1.38	4.33	4.16	1.54	2.85	1.50
Ac-ft	467	297	237	297	533	237	85	241	256	92	175	89

Calendar year 1952: Max 36 Min 0.1 Mean(mgd) 4.34 Mean(cfs) 6.71 Ac-ft 4,880

Fiscal year 1952-53: Max 36 Min 0.11 Mean(mgd) 2.68 Mean(cfs) 4.15 Ac-ft 3,000

Peak discharge (base, 130 mgd).--No peak above base.

* Discharge measurement made on this day.

Waikele Stream at Waipahu

Location.--Lat 21°23'10", long 158°00'50", on left bank at Farrington Highway bridge 0.3 mile south of Waipahu and 2.5 miles west of Pearl City.

Drainage area.--45.4 sq mi.

Records available.--June 1951 to March 1952 (fragmentary), April 1952 to June 1953.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2.67 ft above mean sea level.

Extremes.--1951-52: Maximum discharge recorded during fiscal year, 1,030 mgd (1,590 cfs) Dec. 31 (gage height, 5.81 ft); minimum not determined.
1952-53: Maximum discharge during fiscal year, 530 mgd (820 cfs) Mar. 11 (gage height, 4.48 ft); minimum, 8.0 mgd (12.4 cfs) June 30.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are poor. Flow regulated by plantation operations.

Rating table, June 28, 1951, to June 30, 1953 (gage height, in feet, and discharge, in million gallons a day)

1.9	6.7	2.8	67
2.1	11.3	3.1	119
2.3	18.8	3.3	168
2.5	33		

Discharge, in million gallons a day, 1951

June 28.....	*12.1
29.....	13.8
30.....	14.6

* Discharge measurement made on this day.

Discharge, in million gallons a day, fiscal year July 1951 to June 1952

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.5	11.3	16.4			-	-	25.5	-	16.9	12.1	14.6
2	13.3	11.1	16.4			-	-	25	d48	15.0	13.0	11.9
3	14.6	12.1	13.8			-	-	22	d21.5	14.1	22	11.6
4	13.8	12.7	16.0			-	-	16.9	d93	13.5	23	11.1
5	16.4	11.9	13.0			-	-	17.4	d106	15.0	13.2	11.3
6	16.9	11.6	12.1			-	-	16.0	d32	19.5	12.7	11.3
7	17.9	29.5	11.6			+11.2	-	14.6	d25	16.4	*13.3	14.6
8	15.5	15.5	13.0			d16.9	-	16.4	29	16.4	12.4	17.4
9	14.6	14.6	11.9			d16.4	-	22	25.5	15.5	13.3	11.6
10	14.6	16.4	12.1			d25.5	-	20	19.5	15.5	16.9	11.6
11	15.5	16.9	12.1			d29	-	15.0	*18.2	23	15.5	11.3
12	13.5	13.3	*12.1			d32.5	-	13.8	21	16.0	11.3	11.6
13	13.0	14.6	12.4			d24	-	13.5	20	16.9	12.1	12.7
14	13.8	14.1	11.6			d21.5	-	13.3	21	16.0	12.4	13.8
15	13.5	13.8	12.7			d20	-	15.0	22	15.0	11.9	16.0
16	11.6	13.0	11.9			-	-	21	23.5	12.7	11.9	23.5
17	11.3	12.1	11.6			-	-	48	18.3	13.5	13.0	19.1
18	11.3	12.4	11.9			39.5	-	d32	23	12.7	14.6	11.6
19	*11.1	12.1	19.6			32	-	d54	17.9	16.0	11.9	12.3
20	11.1	11.3	-			27	-	d20	18.8	16.9	12.1	11.6
21	12.7	11.6	-			25	-	d17	19.5	12.7	10.8	13.3
22	13.5	11.9	-	+26.5		23	-	d18	18.8	12.1	11.9	15.0
23	11.6	12.1	-			22	-	d21	17.4	12.4	13.0	11.6
24	11.1	13.0	-			22	-	d18	14.1	12.4	14.1	11.9
25	11.9	15.6	-			21.5	-	-	13.5	12.4	14.6	12.1
26	11.3	16.4	-			21.5	-	-	20.5	13.3	12.7	11.9
27	11.1	18.8	-			22	-	-	41	14.6	11.9	11.3
28	12.1	15.0	-			21.5	+24.5	-	27.5	12.4	11.3	11.6
29	12.7	13.3	-			21.5	28.5	-	28.5	12.4	11.3	10.8
30	10.8	15.0	-			29	28	-----	23.5	12.4	12.1	11.6
31	10.8	17.4	-----	-----	-----	389	27	-----	17.9	-----	12.4	-----
Total	406.4	440.4	-	-	-	-	-	-	-	443.6	414.7	391.6
Mean:												
mgd	13.1	14.2	-	-	-	-	-	-	-	14.8	13.4	13.1
cfs	20.3	22.0	-	-	-	-	-	-	-	22.9	20.7	20.3
Ac-ft	1,250	1,350	-	-	-	-	-	-	-	1,360	1,270	1,200

Calendar year : Max Min Mean(mgd) Mean(cfs) Ac-ft
Fiscal year : Max Min Mean(mgd) Mean(cfs) Ac-ft

* Discharge measurement made on this day.

+ Result of discharge measurement.

d Doubtful gage-height record; discharge estimated on basis of reconstructed gage-height graph based on recorded graph and probable increase or decrease in flow.

Note.--Data insufficient to estimate discharge for days for which no figures are given.

Waikole Stream at Waipahu--Continued

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.4	9.9	12.1	8.9	46	20	14.6	13.8	17.4	10.8	9.1	10.8
2	12.1	10.8	12.1	9.1	28	23	15.0	11.1	14.1	10.6	10.1	8.9
3	12.4	11.9	11.9	9.4	23.5	19.5	15.0	11.9	13.5	12.4	9.4	8.7
4	13.5	10.3	11.3	10.1	18.3	21	15.5	11.3	13.0	14.1	10.3	8.5
5	15.0	10.1	10.8	10.3	17.4	19.5	13.0	11.3	13.0	14.6	12.7	8.9
6	13.8	10.3	11.1	9.4	28	16.4	11.6	12.1	13.0	11.9	12.4	8.9
7	13.3	10.6	11.9	8.7	24	16.4	11.6	13.3	15.5	14.8	12.4	8.5
8	13.3	10.3	13.5	8.9	19.5	16.9	11.3	13.5	16.4	13.8	11.1	9.6
9	16.0	10.8	13.0	9.6	18.8	16.4	12.4	11.6	13.8	13.5	10.8	9.4
10	12.1	11.1	11.6	9.9	19.5	16.0	16.0	10.8	15.0	12.4	10.8	8.7
11	11.3	9.9	11.6	10.6	18.8	16.0	16.0	10.3	15.3	13.3	10.3	9.4
12	12.4	9.9	11.6	10.3	18.8	15.5	13.5	10.1	42	16.0	10.6	9.9
13	13.3	9.6	11.9	12.4	18.3	15.5	23	10.1	a24	12.1	10.3	10.6
14	10.1	9.6	12.7	14.1	17.9	15.5	14.6	11.9	a28	11.6	10.1	10.8
15	71	9.6	13.5	15.0	18.3	15.5	14.1	14.6	a17	11.9	9.6	9.1
16	60	10.6	10.8	25.5	18.8	13.9	13.8	10.6	a14	10.8	9.4	9.6
17	12.7	11.6	10.6	33	18.8	11.1	14.1	10.6	a13	10.8	10.6	8.9
18	12.1	10.6	*10.3	32.5	18.3	10.8	14.6	10.8	a12	13.0	9.9	8.5
19	12.7	11.1	10.8	34.5	106	11.9	12.4	10.6	a13	16.0	10.3	8.2
20	13.8	11.1	9.6	18.3	61	15.0	11.3	10.8	a13	13.0	9.9	8.5
21	10.8	10.8	10.1	15.5	67	16.0	11.6	13.7	a14	12.4	9.6	10.1
22	10.8	10.8	9.6	15.5	24	16.9	13.0	14.4	a15	13.3	9.4	11.9
23	10.3	11.6	9.4	16.4	24	15.5	13.5	12.1	a14	13.0	9.6	8.9
24	9.9	11.9	9.1	18.3	21	14.6	15.5	11.6	a12	10.8	9.6	8.2
25	9.9	10.8	8.9	17.4	16.9	15.0	13.3	12.4	a12	13.3	9.9	8.5
26	11.3	10.8	8.7	23.5	15.5	15.0	11.3	11.9	11.6	13.3	10.1	8.7
27	11.9	10.3	8.9	17.4	16.4	15.0	11.1	12.1	10.6	11.6	10.6	9.4
28	11.9	10.1	9.1	16.9	15.5	15.0	12.1	14.1	11.6	11.9	10.6	10.1
29	11.6	10.1	9.4	20.5	15.5	15.5	12.7	-----	13.3	11.3	10.1	8.7
30	11.1	10.1	9.4	53	24.5	13.0	14.6	-----	12.1	9.4	9.9	8.5
31	10.6	11.6	-----	26.5	-----	13.0	14.6	-----	11.1	-----	11.1	-----
Total	483.4	328.6	325.3	541.4	798.3	490.3	426.7	533.4	612.0	377.7	320.6	277.4
Mean:												
mgd	15.6	10.6	10.8	17.5	26.6	15.8	13.8	11.9	19.7	12.6	10.3	9.25
cfs	24.1	16.4	16.7	27.1	41.2	24.4	21.4	18.4	30.5	19.5	15.9	14.3
Ac-ft	1,480	1,010	998	1,660	2,450	1,500	1,310	1,020	1,880	1,160	984	851
Calendar year 1952: Max	-	-	-	Min	-	Mean(mgd)	-	Mean(cfs)	-	Ac-ft	-	
Fiscal year 1952-53: Max	153			Min	8.2	Mean(mgd)	14.6	Mean(cfs)	22.6	Ac-ft	16,300	

Peak discharge (base, 700 mgd).--No peak above base.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of probable decrease or increase in flow.

Pearl Harbor Springs at Waiawa, near Pearl City

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

Records available.--March 1931 to June 1934, July 1937 to June 1953.

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

Average discharge.--19 years (1931-34, 1937-53), 12.2 mgd (18.9 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-53: Maximum daily discharge, 18.7 mgd (28.9 cfs) Feb. 27, 1949; minimum daily, 6.0 mgd (9.3 cfs) for several days in 1941 and 1947.

Remarks.--Records good. Oahu Sugar Co.'s pump 9 diverts about 3 mgd at times when water is needed for irrigation of sugarcane. Surface runoff from floods not included in figures of discharge given below.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.3	12.3	13.9	10.2	13.9	12.0	14.8	14.8	13.9	13.5	12.7	12.3
2	13.9	12.3	13.9	10.5	13.9	12.7	14.8	14.3	14.3	13.5	13.1	10.9
3	14.3	14.3	13.9	12.3	14.3	12.0	14.8	14.3	14.3	13.5	13.1	10.5
4	14.3	*12.3	13.5	13.5	14.3	12.3	14.8	14.3	14.3	13.5	11.3	12.3
5	14.3	12.3	13.9	12.3	14.3	13.9	14.8	13.9	14.3	13.9	8.8	12.0
6	14.8	12.3	13.9	11.6	14.3	13.9	12.7	13.9	14.3	13.9	8.8	12.0
7	12.3	12.3	13.5	10.2	14.3	13.9	13.1	14.3	14.3	13.5	8.8	12.0
8	12.3	12.3	13.5	10.2	14.3	13.9	13.1	14.8	14.8	13.1	8.8	12.0
9	13.9	12.0	12.3	10.5	14.3	13.9	14.8	14.3	14.8	13.1	10.5	12.0
10	12.7	13.9	12.3	11.6	14.3	13.9	14.8	15.9	14.8	13.1	12.7	12.0
11	12.0	10.5	10.9	13.1	11.3	13.9	14.8	14.3	14.8	13.9	10.2	12.0
12	13.9	10.9	12.0	13.1	14.3	14.8	14.8	13.9	14.3	13.9	9.1	12.0
13	13.9	13.9	12.3	13.1	14.3	14.8	14.8	13.9	14.8	13.9	9.5	12.0
14	12.7	12.3	13.9	13.1	14.3	14.8	14.8	13.9	14.8	13.9	10.9	12.0
15	12.3	12.3	12.0	13.1	14.8	14.8	14.8	14.3	14.8	13.9	11.3	12.0
16	12.3	12.0	10.2	13.1	14.8	14.8	14.3	14.3	14.3	13.9	10.9	11.6
17	12.3	13.9	10.2	13.5	14.8	12.7	14.8	14.3	14.8	13.5	12.7	12.0
18	12.3	12.0	11.6	13.5	12.3	12.7	14.8	13.9	14.8	13.9	11.3	11.6
19	12.3	12.0	11.6	13.9	13.9	12.7	14.8	13.9	14.3	13.9	13.1	11.6
20	12.7	12.3	13.9	13.9	14.3	14.3	14.8	13.9	14.3	13.5	13.2	9.1
21	12.7	12.3	13.9	13.9	14.3	14.8	14.8	13.9	14.3	13.1	14.8	10.5
22	11.3	12.3	10.5	13.9	14.3	12.7	14.8	13.9	14.8	13.1	13.5	11.6
23	10.9	12.0	10.5	13.9	14.3	12.7	14.8	13.9	14.3	12.7	11.3	10.2
24	10.9	13.9	10.5	13.9	14.3	12.3	14.8	13.9	14.3	12.3	12.7	10.5
25	11.3	12.0	11.6	13.9	14.3	14.8	14.8	13.9	13.9	12.7	12.3	10.5
26	12.3	12.0	11.6	13.9	13.9	12.3	14.8	13.9	13.9	13.1	12.3	10.2
27	14.3	12.3	12.0	13.9	13.9	14.8	14.8	13.9	11.3	13.1	12.3	10.2
28	12.7	10.9	13.5	13.9	13.9	14.8	14.3	14.3	13.5	13.1	12.3	12.3
29	12.7	10.9	10.5	*13.9	13.9	14.8	14.3	-	13.5	12.7	12.3	10.2
30	12.3	13.5	10.5	13.9	13.9	14.8	14.3	-	10.9	12.7	12.3	11.6
31	12.3	13.5	-----	13.9	-----	14.8	14.8	-----	13.9	-----	12.3	-----
Total	395.5	384.0	368.3	399.2	425.3	426.3	451.3	395.0	438.3	401.4	361.2	341.7
Mean	12.8	12.4	12.3	12.9	14.2	13.8	14.6	14.1	14.1	13.4	11.7	11.4
cfs	19.8	19.2	19.0	20.0	22.0	21.4	22.6	21.8	21.8	20.7	18.1	17.6
Ac-ft	1,210	1,180	1,130	1,230	1,310	1,310	1,380	1,210	1,350	1,230	1,110	1,050
Calendar year 1952: Max	16.4			Min	10.2	Mean(mgd)	13.7	Mean(cfs)	21.2	Ac-ft	15,370	
Fiscal year 1952-53: Max	15.2			Min	8.8	Mean(mgd)	13.1	Mean(cfs)	20.3	Ac-ft	14,700	

* Discharge measurement made on this day.

Morikone pond outlet at Pearl City

Location.--Lat 21°23'30", long 157°59'10", on left bank of Waiawa Springs flow, 0.7 mile west of Pearl City, 1.5 miles east of Waipahu, and 9.8 miles northwest of Honolulu.

Records available.--August 1951 to June 1953.

Gage.--Water-stage recorder and submerged orifice control.

Extremes.--1951-53: Maximum daily discharge, 1.99 mgd (3.08 cfs) Oct. 31, 1951; no flow Aug. 31, 1952.

Remarks.--Records poor.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.35	0.64	1.28	0.68	1.02	1.06	0.73	0.59	0.76	0.35	0.18	0.30
2	.18	.68	.71	.70	1.07	.91	.71	.61	.41	.35	.41	.35
3	.24	.74	.61	.64	.94	.90	.76	.61	.41	.35	.63	.35
4	.30	.82	.59	.66	.87	.94	.76	.63	.30	.35	.30	.35
5	.41	.84	.30	.63	.73	.81	.63	.59	.63	.70	.18	.47
6	.47	.71	.35	.63	.63	.73	.61	.63	.59	.71	.18	.53
7	.35	.71	.41	.53	.61	.74	.63	.64	.30	.53	.35	.59
8	.24	.73	.41	.47	.65	.74	.59	.66	.47	.74	.18	.47
9	.47	.76	.30	.59	.64	.71	.64	.77	.47	.74	.61	.41
10	.47	.84	.18	.41	.71	.76	.66	.73	.53	.73	.61	.30
11	.30	1.04	.12	.47	.66	.81	.64	.71	.61	.61	.59	.30
12	.47	.73	.18	.59	.74	.94	.66	.74	.41	.18	.24	.18
13	.59	.68	.18	.63	.71	.88	.71	.73	.78	.41	.47	.24
14	.61	.61	.24	.68	.74	.87	.76	.76	.63	.64	.47	.18
15	.63	.66	.24	.91	.74	.91	.66	.73	.61	.59	.41	.24
16	.53	.66	.30	1.28	.87	1.28	.64	.66	.61	.53	.41	.47
17	.47	.68	.30	1.02	.87	.98	.71	.71	.59	.47	.59	.30
18	.47	.68	.41	.76	.94	.84	.68	.64	.18	.30	.53	.41
19	.59	.64	.41	.91	.88	.87	.63	.68	.30	.30	.18	.41
20	.47	.64	.35	.84	.81	.78	.61	.41	.61	.61	.18	.35
21	.53	.47	.63	.73	.73	.71	.63	.30	.61	.53	.18	.35
22	.53	.35	.12	.64	.70	.76	.64	.55	.41	.68	.41	.24
23	.53	.53	.12	.76	.71	.84	.68	.47	.61	.64	.47	.18
24	.53	.47	.68	.74	.71	.79	.64	.30	.61	.59	.53	.06
25	.59	.41	.63	.73	.71	.64	.35	.76	.47	.61	.41	.12
26	.53	.47	.59	.84	.71	.79	.53	.70	.51	.59	.35	.12
27	.59	.47	.61	.81	.84	.79	.66	.74	.41	.59	.30	.12
28	.61	.30	.74	.84	.84	.63	.63	.81	.59	.59	.41	.12
29	.59	.47	.66	.96	.91	.71	.61	.63	.61	.61	.30	.06
30	.47	.06	.74	1.05	1.05	.76	.63	-----	.59	.41	.30	.06
31	.63	Q	-----	1.02	-----	.68	.63	-----	.59	-----	.24	-----
Total	14.74	18.26	13.39	23.15	23.72	25.56	20.05	17.66	16.21	16.03	11.60	8.63
Mean:	0.475	0.589	0.446	0.747	0.791	0.825	0.647	0.631	0.523	0.534	0.374	0.288
mgd	0.735	0.911	0.690	1.16	1.22	1.28	1.00	0.976	0.809	0.826	0.579	0.446
cfs	45	56	41	71	73	78	62	54	50	49	36	26
Ac-ft												
Calendar year 1952: Max	1.78			Min 0		Mean(mgd)	0.717	Mean(cfs)	1.11	Ac-ft	804	
Fiscal year 1952-53: Max	1.28			Min 0		Mean(mgd)	0.573	Mean(cfs)	0.887	Ac-ft	641	

Waiawa Stream near Pearl City

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

Drainage area.--25.4 sq mi.

Records available.--June 1952 to June 1953.

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

Extremes.--Maximum discharge during year, 1,160 mgd (1,790 cfs) Nov. 19 (gage height, 7.90 ft); minimum, 2.15 mgd (3.33 cfs) May 1.

Remarks.--Records good. Small quantity of water diverted occasionally for irrigation.

Rating table, June 5, 1952, to June 30, 1953 (gage height, in feet, and discharge, in million gallons a day)

1.5	1.67	2.5	29.5
1.6	2.6	2.8	54
1.8	5.4	3.1	88
2.0	9.2	3.5	155
2.2	14.9	4.0	271

Discharge, in million gallons a day, 1952

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
1952		1952-Con.		1952-Con.		1952-Con.	
June 1	-	June 9	3.65	June 17	16.0	June 25	5.2
2	-	10	3.5	18	7.4	26	4.4
3	-	11	4.0	19	25	27	4.3
4	-	12	7.8	20	12.8	28	4.4
5	*3.6	13	6.4	21	33	29	4.2
6	3.5	14	5.4	22	20.5	30	6.4
7	4.0	15	10.3	23	9.8		
8	3.65	16	34.5	24	6.6		

Peak discharge (base, 800 mgd).--No peak above base.

* Discharge measurement made on this day.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.0	4.2	3.2	3.2	65	19.5	2.7	2.6	25	3.1	2.3	3.5
2	4.6	2.9	3.2	3.35	36	21	2.7	2.5	8.8	2.7	2.3	3.1
3	4.0	7.9	3.2	3.2	36.5	8.3	2.85	2.5	5.9	2.6	2.45	2.7
4	3.85	4.8	3.1	3.35	12.2	8.3	2.85	2.5	5.4	2.7	4.7	2.7
5	3.6	3.7	3.35	3.35	23	12.7	2.85	2.5	4.4	2.6	10.0	2.6
6	3.5	*3.6	3.35	3.2	14.9	10.7	2.7	2.5	3.85	2.6	5.2	2.7
7	3.2	3.7	3.2	3.2	7.7	6.9	2.85	2.4	3.6	2.7	4.9	2.6
8	3.2	3.7	3.2	3.35	5.5	5.2	2.85	2.6	3.35	3.95	8.2	2.6
9	34	4.0	3.2	3.5	4.4	4.3	3.0	*2.6	3.2	10.6	16.8	2.6
10	16.9	4.0	3.2	3.7	7.7	3.6	3.0	2.5	4.2	12.2	6.7	2.7
11	6.5	3.85	3.1	3.6	16.5	3.35	2.85	2.5	69	10.0	4.9	2.7
12	4.9	3.7	3.2	3.5	10.3	3.2	2.7	2.7	23.5	5.3	5.7	2.7
13	5.0	3.6	3.35	3.35	6.5	3.2	88	3.0	10.8	3.6	4.6	2.7
14	3.7	3.6	13.7	3.35	5.0	2.85	8.0	3.0	10.5	3.1	3.85	2.6
15	170	3.85	11.3	3.7	4.6	3.0	4.5	3.0	6.0	2.8	3.85	2.5
16	88	3.7	4.3	28.5	35	2.85	3.6	6.4	4.4	2.7	3.6	2.6
17	28	3.7	*3.35	27	12.4	2.85	3.2	38	3.85	2.6	3.65	2.6
18	25	3.6	3.2	53	8.1	3.7	3.0	29.5	3.6	2.6	3.5	2.6
19	24	3.5	3.5	41	223	3.6	2.7	10.6	3.75	2.6	3.2	2.6
20	14.0	3.1	3.6	12.3	93	10.1	2.7	16.3	3.2	2.6	3.1	3.0
21	8.3	3.1	3.35	21.5	78	11.4	2.7	7.3	3.1	2.5	3.0	3.35
22	6.0	3.2	3.2	13.0	14.1	5.5	2.6	4.9	3.0	2.5	3.1	3.0
23	4.3	3.2	3.4	9.6	18.3	3.85	2.6	4.2	2.85	2.4	3.1	2.85
24	4.2	3.35	3.35	7.8	9.9	3.35	2.6	3.85	2.85	2.4	2.85	2.7
25	4.0	3.35	3.35	8.7	6.4	3.1	2.7	3.7	2.85	2.4	2.85	2.7
26	3.85	3.35	3.5	23	4.8	3.0	2.6	3.5	2.7	2.4	3.0	3.0
27	11.1	3.35	3.55	7.0	4.2	2.85	2.6	3.35	2.7	2.3	3.0	3.0
28	7.0	3.5	3.2	4.8	3.6	2.85	2.6	15.5	2.6	2.4	2.85	3.1
29	5.4	3.5	3.1	65	2.5	2.85	2.6	3.1	2.4	2.85	3.1	3.1
30	5.7	3.35	3.1	98	2.7	2.6	2.6	-----	9.1	2.3	2.7	3.1
31	4.4	3.35	-----	26	2.6	2.6	2.6	-----	4.0	-----	2.7	-----
Total	517.80	141.30	117.90	497.10	796.1	183.25	178.30	186.50	245.15	107.70	177.80	84.30
Mean	16.7	4.56	3.83	16.0	26.5	5.91	5.75	6.66	7.91	3.59	5.74	2.81
mgd	25.8	7.06	6.08	24.8	41.0	9.14	8.90	10.3	12.2	5.55	8.88	4.35
cfs	1,590	434	362	1,530	2,440	562	547	572	752	331	548	259

Calendar year 1952: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
 Fiscal year 1952-53: Max 223 Min 2.3 Mean(mgd) 8.86 Mean(cfs) 13.7 Ac-ft 9,920

Peak discharge (base, 800 mgd).--Nov. 19 (10 a.m.) 1,160 mgd (1,790 cfs), 7.90 ft.

* Discharge measurement made on this day.

Hawaiian Electric Co. tunnel at Waiiau, near Pearl City

Location.--Lat 21°23'30", long 157°57'55", on right bank of ditch at Hawaiian Electric Co.'s Waiiau powerplant, 0.6 mile east of Pearl City and 8.8 miles northwest of Honolulu.

Records available.--October 1939 to December 1945, July 1952 to June 1953.

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

Extremes.--1939-45, 1952-53: Maximum daily discharge, 17.3 mgd (26.8 cfs) Mar. 26, 27, 1940; minimum daily, 6.0 mgd (9.3 cfs) Aug. 3, 1941.

Remarks.--Records fair. Flow regulated by valves. Water used for cooling condensers of powerplant, and afterwards for irrigation of sugarcane.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.7	8.85	8.85	13.4	9.8	10.7	11.7	9.8	8.85	9.8	10.6	10.7
2	12.1	8.85	9.0	11.9	8.85	11.3	11.7	10.0	8.85	10.6	9.2	10.7
3	10.2	8.85	10.9	12.5	10.9	11.7	11.3	9.4	9.4	10.0	10.6	11.1
4	8.85	8.85	11.1	9.6	11.7	11.1	11.7	8.85	9.4	10.9	10.6	8.85
5	9.8	*8.85	10.0	9.0	11.1	10.9	12.3	11.1	9.8	8.85	*11.5	11.7
6	8.85	8.85	8.85	9.6	10.9	10.7	13.4	8.85	9.6	11.5	11.3	13.4
7	10.9	8.85	8.85	10.6	11.1	10.9	13.2	8.85	8.85	11.7	11.3	8.85
8	10.7	8.85	8.85	11.1	8.85	11.1	12.6	8.85	8.85	11.7	10.6	10.2
9	10.7	8.85	10.0	11.3	8.85	10.9	12.3	*10.0	10.0	11.3	9.6	10.0
10	8.85	8.85	9.8	11.5	10.6	11.1	12.1	10.0	11.1	10.9	9.4	9.6
11	8.85	8.85	10.0	9.6	11.1	10.2	12.1	8.85	8.85	9.2	9.4	10.0
12	8.85	8.85	10.7	10.4	11.7	11.3	12.3	8.85	8.85	9.4	9.8	9.8
13	8.85	8.85	9.4	11.1	11.7	11.3	*12.3	8.85	9.2	10.7	9.8	10.2
14	8.85	9.4	8.85	11.7	11.3	11.5	12.3	8.85	8.85	11.9	8.85	8.85
15	8.85	9.4	9.6	11.5	9.8	11.7	11.9	8.85	8.85	11.8	9.8	11.5
16	8.85	10.0	10.2	10.0	9.6	11.5	12.5	8.85	10.6	11.7	9.4	12.3
17	9.6	8.85	*11.7	10.2	11.3	12.1	9.6	8.85	10.4	10.4	8.85	12.6
18	11.5	10.2	13.4	8.85	11.1	11.9	9.6	10.7	12.5	9.6	10.4	12.6
19	8.85	9.8	13.4	10.0	10.9	11.9	8.85	8.85	11.1	8.85	11.5	*13.4
20	8.85	10.0	13.4	10.9	8.85	11.3	10.7	8.85	10.9	9.4	11.7	11.9
21	8.85	*11.5	13.0	10.2	10.0	11.7	11.1	8.85	11.7	9.6	11.5	10.9
22	8.85	11.5	13.4	10.7	9.6	12.5	11.9	8.85	8.85	10.0	11.7	11.1
23	8.85	11.7	13.4	8.85	8.85	12.6	11.7	11.1	11.7	9.6	9.2	10.7
24	8.85	9.4	13.4	10.2	9.4	12.5	10.4	11.7	11.9	10.6	9.4	9.8
25	8.85	11.9	12.1	9.8	10.0	10.4	9.8	11.5	11.9	10.0	9.6	12.3
26	8.85	11.7	12.1	9.8	11.7	11.9	11.9	11.3	*12.3	8.85	10.2	11.9
27	8.85	11.3	10.6	9.6	10.2	11.1	11.5	8.85	11.5	9.6	9.8	10.7
28	8.85	13.4	9.6	10.6	11.1	11.5	8.85	8.85	10.9	9.8	10.4	11.1
29	8.85	11.7	10.9	10.0	9.8	11.9	8.85	-	12.5	8.85	10.6	11.7
30	8.85	10.9	13.0	10.0	10.2	11.9	9.8	-----	11.1	8.85	9.6	11.7
31	8.85	9.2	-----	*8.85	-----	11.9	8.85	-----	10.4	-----	8.85	-----
Total	292.90	306.90	328.35	323.35	310.85	355.2	349.10	267.05	319.55	306.55	315.05	330.55
Mean:												
mgd	9.45	9.90	10.9	10.4	10.4	11.5	11.3	9.54	10.3	10.2	10.2	11.0
cfs	14.6	15.3	16.9	16.1	16.1	17.8	17.9	14.8	15.9	15.9	15.8	17.0
Ac-ft	899	942	1,010	992	954	1,090	1,070	820	981	941	967	1,010
Calendar year 1952: Max	-	-	Min	-	Min(mgd)	-	Mean(cfs)	-	Ac-ft	-		
Fiscal year 1952-53: Max	13.4	Min	8.85	Mean(mgd)	10.4	Mean(cfs)	16.1	Ac-ft	11,680			

* Discharge measurement made on this day.

Pearl Harbor Springs at Kaluaoopu, near Pearl City

Location.--Lat 21°23'30", long 157°57'55", on right bank of stream 0.2 mile below Kamehameha Highway, 0.7 mile east of Pearl City, and 8.7 miles northwest of Honolulu.

Records available.--August 1931 to June 1937, November 1943 to October 1947, February 1952 to June 1953.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 0.15 ft above mean sea level.

Extremes.--Not determined because of incomplete record.

Remarks.--Records fair. Flow regulated by Hawaiian Electric Co. powerplant.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.07	6.4	-	0.13	2.25	1.76	2.55	0.69	1.61	1.46	0.29	0.58
2	.81	7.6	-	.29	1.76	1.61	2.55	.13	.38	1.46	1.20	.81
3	1.76	14.5	-	.38	1.76	.81	2.55	.69	.38	2.75	2.55	.38
4	2.55	9.8	-	1.76	.69	2.4	1.46	.29	.38	2.9	.81	.07
5	2.75	*8.6	-	1.33	1.33	2.4	1.33	.38	.38	2.05	.81	.07
6	1.91	8.1	-	.69	.58	2.4	1.46	.69	.94	1.33	.69	.69
7	1.07	8.4	-	.47	1.76	2.25	1.07	1.91	1.61	1.20	.38	.81
8	1.33	7.4	-	.38	2.4	1.46	1.07	.81	.81	.94	.94	.20
9	1.33	6.4	-	.29	1.76	2.25	1.76	.13	.38	.81	1.61	.07
10	.94	8.6	-	.20	.47	2.05	2.55	.07	2.25	1.07	2.25	.47
11	1.07	5.6	-	1.61	.58	2.4	1.61	.07	2.25	2.75	1.33	.94
12	.94	3.3	-	1.61	.81	1.91	1.91	.13	1.46	2.25	1.76	.20
13	1.46	6.7	-	.81	.94	2.4	1.76	.69	1.76	1.07	.94	.69
14	1.07	3.65	-	.29	1.46	1.61	1.76	1.61	1.33	.69	.38	.94
15	.81	3.65	-	1.76	2.25	1.33	1.61	.69	1.07	.58	1.07	.29
16	.94	6.2	-	3.1	1.91	1.33	1.76	0	.58	.94	.94	.13
17	.94	9.8	-	2.25	.38	.94	1.07	.13	.69	1.07	1.76	.47
18	2.25	4.5	-	1.91	.58	.20	1.20	.13	1.07	2.4	.69	.29
19	7.4	3.1	.94	1.91	2.55	.94	.94	.13	.69	1.61	.69	.47
20	10.6	3.65	1.46	2.25	2.25	2.25	.20	.47	1.33	.81	1.07	1.61
21	8.8	1.20	2.05	2.05	2.25	1.20	.13	1.46	2.75	.29	1.46	2.25
22	7.6	.02	.94	2.4	2.25	1.46	.38	.47	1.91	.38	.69	1.76
23	7.4	.29	.81	2.25	2.25	.69	1.07	.07	1.07	.38	1.33	.81
24	7.6	.20	.69	2.25	2.25	1.07	1.91	.13	2.05	.81	1.20	1.07
25	8.4	.07	1.07	2.25	2.25	1.46	.47	.13	2.55	2.4	.47	1.07
26	9.6	.07	.20	2.05	2.25	.94	.20	.13	1.61	1.91	1.07	.94
27	15.4	-	.20	1.76	2.25	2.4	.13	.58	1.61	1.07	1.46	.58
28	6.2	-	1.20	1.61	2.55	1.46	.13	1.76	1.61	.20	.69	1.91
29	8.8	-	.02	2.25	2.55	.38	.13	-	2.05	.58	.38	.58
30	5.6	-	.20	.94	2.25	.58	1.76	-----	2.55	.81	.94	.29
31	5.3	-	-----	1.20	-----	1.76	1.61	-----	1.46	-----	1.91	-----
Total	133.70	-	-	44.43	51.57	48.10	40.09	14.57	42.57	38.97	33.64	21.44
Mean:												
mgd	4.31	-	-	1.43	1.72	1.55	1.29	0.520	1.37	1.30	1.09	0.715
cfs	6.67	-	-	2.21	2.66	2.40	2.00	0.805	2.12	2.01	1.69	1.11
Ac-ft	410	-	-	136	158	148	123	45	131	120	103	66

Calendar year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft
Fiscal year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft

* Discharge measurement made on this day.

Note.--Data insufficient to estimate discharge for days for which no figures are given.

Waimalu Stream near Aiea

Location.--Lat 21°23'35", long 157°57'05", on right bank of stream just downstream from bridge on Moanalua Highway, 1.5 miles northwest of Aiea and 1.6 miles east of Pearl City.

Drainage area.--6.1 sq mi.

Records available.--January 1952 to June 1953.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 5 ft (from topographic map).

Extremes.--Maximum discharge during year, 694 mgd (1,070 cfs) Jan. 13 (gage height, 5.70 ft); minimum, 0.17 mgd (0.26 cfs) Sept. 16.
1952-53: Maximum discharge, 860 mgd (1,330 cfs) Mar. 16, 1952 (gage height, 6.27 ft); minimum, 0.01 mgd (0.02 cfs) Jan. 18, 1952.

Remarks.--Records good. Small quantity of water diverted for irrigation.

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 14 to June 26)

July 1 to June 26					June 27-30	
0.2	0.21	0.8	10.4		0.2	0.32
.3	.66	1.0	19.7		.3	1.01
.4	1.46	1.2	33.5			
.5	2.75	1.5	64			
.6	4.6	1.8	107			

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.1	3.35	2.35	0.34	15.7	2.2	0.30	0.60	4.5	0.74	0.98	0.98
2	1.47	10.3	1.72	.39	16.7	2.7	.27	.44	1.30	.49	1.60	.82
3	1.14	1.54	1.94	.30	9.4	.94	.30	.60	.66	.49	2.9	.66
4	.90	1.14	1.59	.39	1.66	1.06	.27	.44	.66	.39	40	.49
5	.54	1.11	1.59	.39	7.2	2.1	.30	.54	.54	.44	2.05	1.00
6	.93	1.38	1.14	.44	2.45	1.85	.21	.49	.44	.39	1.59	1.06
7	.39	1.22	1.22	.39	1.06	1.22	.30	.66	.60	.30	1.95	.66
8	.49	.98	.79	.54	.82	.82	.39	.66	.30	.39	1.61	.54
9	16.1	1.14	.34	.85	.54	.54	.39	.80	.34	.54	2.25	.49
10	5.4	.90	.66	.74	.54	.44	.34	1.58	.24	.99	1.06	.54
11	2.1	.98	.82	.74	.78	.39	.39	1.85	11.9	.44	.90	.60
12	2.4	.74	.54	.82	1.37	.34	.49	1.98	2.35	.74	.82	.66
13	1.14	.62	.39	.66	.98	.34	86	1.98	1.82	.49	.74	.74
14	.60	.70	.44	.66	.82	.34	1.46	2.1	.93	.54	.60	.60
15	62	1.03	.34	.88	.82	.30	.82	1.72	.39	.44	.49	.66
16	20	.49	.28	6.2	8.8	.27	.66	5.0	.34	.54	.49	.39
17	9.1	.49	*.39	4.8	2.7	.24	.60	4.0	.27	.49	.44	.39
18	9.9	.66	.34	29.5	1.30	.61	.49	1.98	.39	.80	.54	.34
19	8.9	.39	.34	14.6	50	.93	.60	.82	.44	.54	.66	.44
20	5.0	.39	.44	1.94	11.0	1.24	.49	.74	.60	.60	1.16	.39
21	2.75	.57	.34	6.6	6.3	.86	.54	.60	.60	1.06	.82	.39
22	1.59	.44	.39	1.66	1.66	.69	.60	.54	.44	1.06	.66	.49
23	1.30	.66	.61	.74	1.14	.49	.66	1.06	.54	1.30	.49	.90
24	1.06	.74	.96	.54	.74	.44	.60	1.06	.49	1.38	.39	*1.49
25	1.06	1.36	1.22	1.54	.54	.34	.49	.82	.66	1.06	.49	1.38
26	4.8	1.38	.90	8.5	.49	.30	.54	.98	*.44	1.06	.34	1.05
27	4.9	1.30	.66	.86	.44	.30	.84	.82	.49	1.06	.44	.76
28	1.11	2.25	.54	.34	.39	.30	.74	14.6	.34	.66	.64	.80
29	1.03	2.6	.39	23	.30	.30	.54	-	.34	.60	1.17	.54
30	*.90	2.5	.44	28.5	.50	.21	.54	-	.34	.61	.90	.60
31	.49	3.1	-----	4.5	-----	.24	.54	-----	.71	-----	.98	-----
Total	178.59	46.45	24.10	142.34	147.34	23.34	101.70	49.26	34.40	20.43	70.05	20.65
Mean	5.76	1.50	0.803	4.59	4.91	0.753	3.28	1.76	1.11	0.661	2.26	0.688
cfs	8.91	2.32	1.24	7.10	7.60	1.17	5.07	2.72	1.72	1.05	3.50	1.06
Ac-ft	548	143	74	437	452	72	312	151	106	63	215	63

Calendar year 1952: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
Fiscal year 1952-53: Max 86 Min 0.21 Mean(mgd) 2.35 Mean(cfs) 3.64 Ac-ft 2,640

Peak discharge (base, 250 mgd).--Nov. 19 (8:30 a.m.) 260 mgd (402 cfs), 3.15 ft; Jan. 13 (2 a.m.) 694 mgd (1,070 cfs), 5.70 ft.

* Discharge measurement made on this day.

Pearl Harbor Springs at Kalauao, near Aiea

Location.--Lat 21°23'05", long 157°56'47", on left bank 900 ft downstream from Oahu Sugar Co.'s pump 6, 1.1 miles west of Aiea, and 7.6 miles northwest of Honolulu.

Records available.--March 1931 to June 1953.

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

Average discharge.--22 years, 16.0 mgd (24.8 cfs), unadjusted for pumpage.

Extremes.--1931-53: Maximum daily discharge, 25 mgd (39 cfs) Feb. 17-26, 1938; minimum daily, 7.2 mgd (11.1 cfs) Aug. 25, Sept. 2, 1947.

Remarks.--Records good except those for period of no gage-height record, which are fair. When water is needed for irrigation of sugarcane, Oahu Sugar Co's pump 6 diverts about 7 mgd as a high-lift pump or 9 mgd as a low-lift pump. Surface runoff from floods not included in figures of discharge given below.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.2	12.9	19.0	11.7	19.8	15.0	19.8	16.7	19.8	12.5	12.1	11.7
2	13.3	15.9	15.9	*12.5	19.8	17.2	20.5	12.1	19.8	15.9	15.9	10.6
3	15.4	18.0	14.2	12.5	19.8	15.4	20.5	12.1	19.4	19.8	17.6	11.0
4	19.4	12.9	12.5	16.7	14.6	18.0	19.8	13.3	19.4	20.5	15.0	11.0
5	19.4	12.5	14.2	16.3	15.4	20.5	13.3	15.0	19.4	17.6	14.9	12.5
6	18.0	13.3	19.0	*11.0	16.7	20.5	12.9	17.2	19.4	12.5	14.6	13.3
7	11.7	12.5	19.0	11.3	19.8	20.5	13.3	19.8	19.8	12.5	10.6	16.7
8	12.9	15.0	19.0	11.3	19.8	20.5	12.9	16.7	19.0	12.5	15.3	13.3
9	12.9	16.3	12.5	11.3	19.8	20.5	15.4	12.1	13.3	12.5	16.3	13.3
10	13.8	17.2	11.7	13.8	19.8	19.8	20.5	11.7	18.5	16.3	19.0	10.2
11	13.3	13.8	11.7	15.9	19.0	15.4	18.5	11.7	19.8	20.5	19.0	11.0
12	15.4	15.4	16.7	15.9	19.8	18.0	16.3	*11.7	19.8	19.0	18.5	11.3
13	18.0	15.0	19.0	10.6	19.8	20.5	15.9	13.8	19.4	14.6	14.6	12.9
14	14.2	14.6	16.7	10.6	16.7	17.2	17.6	19.0	19.8	12.5	10.6	14.2
15	14.2	15.0	11.7	13.3	19.8	12.9	19.8	16.7	15.9	12.1	10.6	12.5
16	14.2	15.0	11.7	19.0	19.8	13.3	19.8	13.3	14.6	12.1	10.6	9.8
17	13.8	18.0	*11.7	19.0	15.0	13.3	20.5	18.0	13.3	15.9	16.7	12.9
18	15.0	15.4	11.7	19.0	12.9	13.3	19.8	15.9	12.1	19.8	10.6	11.3
19	15.9	14.6	12.5	19.0	17.2	16.3	16.7	16.3	12.5	16.7	10.6	12.1
20	17.6	11.3	14.6	19.4	19.8	19.8	16.7	19.0	15.0	13.3	10.6	10.6
21	13.8	12.5	15.4	19.4	19.8	19.0	12.1	19.4	19.8	14.6	12.5	14.2
22	15.9	12.9	11.7	19.4	19.8	14.6	12.1	19.4	19.4	14.2	10.6	15.4
23	14.6	13.8	11.7	19.8	20.5	16.7	15.0	15.0	13.8	11.7	13.8	14.6
24	13.8	12.1	11.7	19.8	15.0	16.7	19.4	16.7	15.0	13.3	14.2	10.2
25	14.6	14.2	11.3	19.8	15.0	17.6	17.2	15.9	15.0	18.5	10.6	11.3
26	15.4	13.3	11.3	19.8	15.9	16.7	13.8	12.1	14.8	15.9	10.6	11.0
27	18.0	12.9	14.6	16.7	17.6	19.8	13.3	15.4	17.6	11.7	12.5	11.7
28	12.9	13.3	16.7	16.7	15.4	20.5	13.3	19.4	19.8	11.7	10.6	15.9
29	12.5	12.5	10.6	16.3	20.5	17.2	13.3	-	19.0	11.3	10.6	9.8
30	13.8	13.8	11.0	16.7	20.5	12.9	14.6	12.5	11.3	12.1	10.2	10.2
31	13.3	19.0	-----	16.7	-----	18.5	19.8	-----	12.1	-----	11.7	-----
Total	461.2	444.9	421.0	491.2	545.1	538.1	514.4	435.4	528.8	443.3	411.5	366.5
Mean:	14.9	14.4	14.0	15.8	18.2	17.4	16.6	15.6	17.1	14.8	13.3	12.2
mgd	23.1	22.3	21.7	24.4	28.2	26.9	25.7	24.1	26.5	22.9	20.6	18.9
cfs	1,420	1,370	1,290	1,510	1,670	1,650	1,580	1,340	1,620	1,360	1,260	1,120
Ac-ft												
Calendar year 1952:	Max	23	Min	10.6	Mean(mgd)	17.2	Mean(cfs)	26.6	Ac-ft	19,280		
Fiscal year 1952-53:	Max	20.5	Min	9.8	Mean(mgd)	15.3	Mean(cfs)	23.7	Ac-ft	17,190		

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 25 to Sept. 16; discharge estimated on basis of probable spring flow and record of pumpage.

Moanalua Stream near Honolulu

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

Drainage area.--2.8 sq mi.

Records available.--June 1926 to June 1953.

Gage.--Water-stage recorder and concrete weir. Datum of gage is 339.12 ft above mean sea level (city and county of Honolulu benchmark).

Average discharge.--27 years, 2.07 mgd (3.20 cfs).

Extremes.--Maximum discharge during year, 170 mgd (263 cfs) Nov. 2 (gage height, 3.21 ft), from rating curve extended as explained below; no flow for most of year.
1926-53: Maximum discharge, 2,960 mgd (4,580 cfs) Nov. 18, 1930 (gage height, 11.58 ft), from rating curve extended above 71 mgd by test on model of station site; no flow at times each year.

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

Revisions (fiscal years).--WSP 935: 1931(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

-0.2	0	0.5	1.86
-.1	.01	.6	2.85
0.0	.03	.8	5.7
.1	.10	1.0	10.2
.2	.30	1.5	27
.3	.63	2.0	55
.4	1.13		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	7.4	0	0	9.6	0.48	0	0	2.5	0	0	
2	0	8.5	0	0	17.5	.55	0	0	1.0	0	0	
3	0	.92	0	0	8.8	.28	0	0	6.2	0	0	
4	0	.24	0	0	3.6	.13	0	0	.76	0	0	
5	0	.04	0	0	2.65	.98	0	0	.30	0	0	
6	0	.02	0	0	1.70	.67	0	0	.12	0	0	
7	0	.02	0	0	.91	.33	0	0	.06	0	0	
8	0	.02	0	0	.48	.13	0	0	.02	0	0	
9	5.9	.01	0	0	.25	.07	0	0	0	0	0	
10	.34	0	0	0	.08	.04	0	0	0	1.13	0	
11	.02	0	0	0	.06	.04	0	0	0	.08	0	
12	.01	0	0	0	.04	.03	1.37	0	0	0	0	
13	0	0	0	0	.04	.02	7.0	0	0	0	0	
14	0	0	1.39	0	.03	.02	.16	0	0	0	0	
15	28	0	.02	0	.02	0	.03	0	0	0	0	
16	9.0	0	0	4.1	.80	0	.02	7.6	0	0	0	
17	3.35	0	0	.49	.23	0	.02	2.0	0	0	0	
18	3.9	0	0	7.4	.06	0	.01	.6	0	0	0	
19	3.3	0	0	4.9	18.2	0	0	*3.4	0	0	0	
20	1.27	0	0	.57	4.9	1.15	0	.9	0	0	0	
21	.55	0	0	1.36	2.55	.63	0	.1	0	0	0	
22	.23	0	0	.46	1.27	.14	0	.12	0	0	0	
23	.08	0	0	1.78	.96	.03	0	.1	0	0	0	
24	.02	0	0	6.6	.41	.02	0	.04	0	0	0	
25	.02	0	0	6.8	.15	.02	0	.03	0	0	0	
26	.21	0	0	5.1	.06	.01	0	.02	0	0	0	
27	.40	0	0	1.34	.04	.01	0	.04	0	0	0	
28	.06	0	0	*.55	.04	0	0	1.4	0	0	0	
29	.02	0	0	23.5	.03	0	0	0	5.0	0	0	
30	.02	0	0	14.4	.20	0	0	0	0	0	0	
31	.02	0	0	10.7	0	0	0	0	.03	0	0	
Total	56.70	15.17	1.41	90.05	75.66	5.78	8.61	16.35	15.99	1.21	2.65	0
Mean:	1.83	0.489	0.047	2.90	2.52	0.186	0.278	0.584	0.516	0.040	0.085	0
mgd	2.83	0.757	0.073	4.49	3.90	0.288	0.430	0.904	0.798	0.062	0.132	0
cfs	174	47	4.3	276	232	18	26	50	49	3.7	8.1	0
Ac-ft												
Calendar year 1952 : Max	71			Min	0	Mean(mgd)	1.75	Mean(cfs)	2.71	Ac-ft	1,960	
Fiscal year 1952-53 : Max	28			Min	0	Mean(mgd)	0.793	Mean(cfs)	1.23	Ac-ft	888	

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 27 to Feb. 18, Feb. 20 to Mar. 3, Mar. 8-30; discharge estimated on basis of recorded range in stage and records for stations on nearby streams.

ISLAND OF OAHU

Kalihi Stream near Honolulu

Location.--Lat 21°22'00", long 157°50'45", on right bank at Kioi Pool, 0.4 mile upstream from Catholic Orphanage and 4.1 miles north of Honolulu Post Office.

Drainage area.--2.7 sq mi.

Records available.--September 1913 to June 1953.

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

Average discharge.--36 years (1916-20, 1921-53), 4.63 mgd (7.16 cfs).

Extremes.--Maximum discharge during year, 161 mgd (249 cfs) July 15 (gage height, 5.26 ft), from rating curve extended as explained below; minimum, 0.37 mgd (0.57 cfs) June 29, 30.

1913-53: Maximum discharge, 10,900 mgd (16,900 cfs) Nov. 18, 1930 (gage height, 13.81 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 0.06 mgd (0.09 cfs) Oct. 22, 1933.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water for domestic use diverted from stream above station.

Revisions (fiscal years).--WSP 795: 1921-32(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

2.1	0.37	2.7	10.9
2.2	1.05	3.0	19.2
2.3	2.2	3.5	38
2.4	3.9	4.0	63

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.2	11	1.4	0.72	15.2	3.7	1.54	0.72	5.5	1.43	0.96	0.96
2	2.5	11	1.4	.79	23	3.3	1.62	.72	3.3	1.43	1.72	.96
3	2.35	3.1	1.5	.72	15.0	2.8	1.54	.72	9.5	1.32	3.05	.79
4	2.2	3.0	1.3	.87	9.0	2.8	1.74	.72	5.5	1.43	7.2	.72
5	3.05	2.7	1.2	1.92	7.4	3.3	2.2	.65	3.9	1.32	2.8	.72
6	2.2	2.6	1.2	1.05	7.9	2.5	1.78	.72	3.3	1.22	1.90	.65
7	2.05	2.6	1.2	.79	6.0	2.35	2.55	.72	2.95	1.13	1.43	.65
8	1.90	2.4	1.2	.72	5.0	2.05	1.54	.72	2.5	1.13	2.35	.65
9	15.9	2.3	1.2	.65	4.6	1.90	1.32	1.17	2.35	1.22	2.2	.65
10	6.0	2.3	1.3	.79	4.4	2.2	1.22	.79	2.2	5.1	1.54	.65
11	3.9	2.2	1.2	1.05	3.9	1.90	1.13	.72	2.65	2.65	1.32	1.05
12	4.2	2.0	1.2	1.22	3.7	1.78	5.2	.72	2.35	1.78	1.22	.96
13	2.95	1.9	1.1	.87	3.3	1.54	9.7	.65	3.65	1.43	1.13	.72
14	4.8	1.8	8.0	.79	2.95	1.43	2.5	.72	3.15	1.32	1.13	.72
15	52	1.8	1.6	1.22	3.1	1.54	1.90	.72	2.5	1.22	1.13	.72
16	11.2	1.8	1.2	9.0	4.8	1.43	1.54	16.3	2.05	1.32	1.32	.72
17	7.8	1.8	1.2	4.5	2.95	2.0	1.43	6.5	2.05	1.43	1.05	1.02
18	9.4	1.8	1.0	14.2	2.65	2.4	1.32	5.0	2.85	1.13	.96	1.72
19	7.8	1.8	*1.0	10.8	21	2.05	1.22	3.5	2.2	1.13	1.13	1.54
20	6.0	1.8	.96	4.4	9.0	5.4	1.22	2.65	1.66	1.05	.96	1.22
21	5.0	1.9	.87	7.3	7.6	3.7	1.13	2.05	1.54	.96	.96	.79
22	4.4	1.9	.87	4.4	5.0	2.65	1.33	3.15	1.54	.96	.79	.72
23	3.7	1.8	.79	6.3	5.3	2.05	1.05	2.8	1.32	.96	.96	.58
24	3.3	1.7	.79	7.4	4.4	1.78	1.05	2.05	1.32	.96	.87	.58
25	3.3	1.7	.72	10.8	3.5	1.66	.96	1.66	1.22	.87	.96	.58
26	5.2	1.8	.79	8.0	3.1	1.54	.96	1.54	1.65	.79	.79	.52
27	3.9	1.9	.79	5.0	2.8	1.43	.96	2.05	1.43	.87	.87	.47
28	3.3	1.7	.72	*4.4	2.8	1.43	.87	4.7	1.32	.79	.87	.47
29	4.5	1.6	.65	54	2.8	1.43	.87		5.35	.79	.79	.42
30	*3.7	1.5	.65	24	4.6	1.32	.79		1.78	1.13	.79	.37
31	3.2	1.4	-----	17.8	-----	1.22	.79	-----	1.54	-----	1.05	-----
Total	193.90	81.6	39.00	186.47	196.75	68.58	54.77	65.13	84.12	40.27	46.20	23.29
Mean:												
mgd	6.25	2.63	1.30	6.02	6.56	2.21	1.77	2.33	2.71	1.34	1.49	0.776
cfs	9.67	4.07	2.01	9.31	10.1	3.42	2.74	3.61	4.19	2.07	2.31	1.20
Ac-ft	595	250	120	572	604	210	168	200	258	124	142	71
Calendar year 1952: Max	79			Min	0.65	Mean(mgd)	4.43	Mean(cfs)	6.85	Ac-ft	4,970	
Fiscal year 1952-53: Max	52			Min	0.37	Mean(mgd)	2.96	Mean(cfs)	4.58	Ac-ft	3,310	

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

* Discharge measurement made on this day.

Note.--No gage-height record July 30 to Sept. 19; discharge estimated on basis of 2 discharge measurements and records for Nuuanu Stream below reservoir 2 wasteway.

Nuuanu Stream below reservoir 2 wasteway, near Honolulu

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

Drainage area.--3.4 sq mi.

Records available.--October 1913 to June 1953.

Gage.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level. Prior to Sept. 7, 1915, staff gage at same site at datum 0.03 ft lower. Sept. 7, 1915, to Apr. 4, 1918, staff gage at same site and datum.

Average discharge.--34 years (1917-20, 1922-53), 4.95 mgd (7.66 cfs).

Extremes.--Maximum discharge during year, 78 mgd (121 cfs) Nov. 19 (gage height, 2.64 ft); minimum, 0.63 mgd (0.98 cfs) May 26.

1913-53: Maximum discharge, 4,520 mgd (6,990 cfs) Jan. 16, 1921 (gage height, 8.74 ft, from floodmarks), from rating curve extended above 300 mgd by test on model of station site; minimum, 0.06 mgd (0.09 cfs) Sept. 10, 11, 1925.

Remarks.--Records good. Reservoirs 2, 3, and 4 (capacities, 21, 34, and 1,630 acre-ft respectively) regulate flow. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.

Revisions (fiscal years).--WSP 985: 1921-35(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 31 to Nov. 7, Dec. 7-18, 22-29)

0.3	0.69	1.1	5.2
.4	1.05	1.3	9.7
.5	1.45	1.7	23
.6	1.90	2.0	37.5
.8	2.95	2.5	68
1.0	4.1		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.55	4.5	2.0	1.50	5.9	4.4	5.1	1.25	4.6	2.05	1.45	1.58
2	2.9	4.5	1.95	1.41	7.4	3.8	5.2	1.25	2.4	2.0	1.54	1.50
3	2.4	3.0	2.05	1.37	5.4	3.6	9.2	1.33	12.2	1.90	3.25	1.33
4	2.3	3.0	1.95	1.58	5.3	4.2	9.2	1.33	4.0	2.0	5.7	1.25
5	2.85	2.8	1.86	1.82	5.7	4.4	9.2	1.09	3.1	1.90	2.1	1.25
6	2.35	2.7	1.86	1.37	4.8	3.7	4.4	.87	2.85	1.90	1.76	1.25
7	2.15	3.1	1.86	1.29	4.3	3.7	5.3	1.01	2.55	1.86	1.72	1.21
8	2.45	2.8	1.90	1.25	4.3	3.55	1.95	1.13	2.5	1.81	2.75	1.21
9	9.7	2.8	1.86	1.25	4.2	3.55	1.12	1.33	2.55	2.05	2.5	1.21
10	3.05	2.6	2.1	1.45	4.4	3.6	1.50	1.09	2.4	3.85	1.81	1.35
11	2.55	2.6	1.95	1.25	4.2	3.55	1.45	1.05	2.7	2.15	1.68	1.37
12	3.05	2.5	1.81	1.33	4.0	3.55	5.6	1.05	2.4	1.95	1.68	1.37
13	2.3	2.4	1.72	1.21	3.85	3.55	6.5	1.05	2.65	1.86	1.83	1.25
14	2.95	2.35	5.3	1.17	3.75	3.5	1.81	.98	2.35	1.81	1.58	1.21
15	22.5	2.35	2.35	1.29	3.85	5.3	1.72	1.01	2.25	1.86	1.72	1.21
16	6.0	2.4	1.95	4.1	4.0	12.0	1.58	11.6	2.25	1.76	1.72	1.29
17	3.85	2.4	1.86	1.68	3.85	20.5	1.54	5.1	2.35	2.35	1.58	1.79
18	4.1	2.4	1.86	11.9	3.6	38.5	1.54	3.4	2.55	1.41	1.50	1.63
19	3.7	2.4	1.76	4.5	15.5	48	1.58	4.9	2.25	1.63	1.58	1.45
20	3.4	2.35	1.68	2.1	6.4	31.5	1.45	2.5	2.15	1.72	1.45	1.33
21	2.7	2.35	1.68	3.0	5.4	11.3	1.41	1.90	2.15	1.64	1.45	1.25
22	3.55	2.4	1.65	1.90	4.6	16.0	1.41	2.25	2.15	1.71	1.37	1.21
23	3.5	2.3	1.58	3.1	4.8	15.5	1.37	1.90	2.05	1.63	1.50	.97
24	3.45	2.25	1.54	3.5	4.1	6.8	1.37	1.72	2.0	1.54	1.37	.83
25	3.55	2.35	1.50	5.0	3.85	6.6	1.37	1.68	2.0	1.54	1.54	.98
26	4.2	2.5	1.50	3.2	3.75	6.4	1.33	1.84	2.2	1.54	1.09	1.05
27	3.0	2.7	1.54	2.35	3.55	6.4	1.33	2.05	2.05	1.63	1.58	1.01
28	2.8	2.2	1.50	2.7	3.6	6.2	1.33	4.2	2.05	1.50	1.45	1.05
29	3.35	2.1	1.41	17.8	5.7	8.0	1.29	-	8.0	1.50	1.33	.98
30	2.95	2.0	1.41	9.7	4.6	9.3	1.29	-----	2.15	1.68	1.37	.94
31	2.7	2.1	-----	8.6	-----	5.1	1.25	-----	2.0	-----	1.75	-----
Total	123.85	81.20	56.92	105.67	146.55	304.15	89.69	62.06	91.85	55.73	56.70	37.31
Mean:												
mgd	4.00	2.62	1.90	3.41	4.88	9.81	2.89	2.22	2.96	1.86	1.83	1.24
cfs	6.19	4.05	2.94	5.28	7.55	15.2	4.47	3.43	4.58	2.88	2.83	1.92
Ac-ft	380	249	175	324	450	933	275	190	282	171	174	114

Calendar year 1952: Max 68 Min 1.17 Mean(mgd) 5.15 Mean(cfs) 7.97 Ac-ft 5,780
Fiscal year 1952-53: Max 46 Min 0.83 Mean(mgd) 3.32 Mean(cfs) 5.14 Ac-ft 3,720

Peak discharge (base, 150 mgd).--No peak above base.

East Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long 157°48'10", on right bank just downstream from highway bridge, 400 ft upstream from confluence with West Branch and 4 miles northeast of Honolulu Post Office.

Drainage area.--1.0 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1953.

Gage.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft above mean sea level (Honolulu Board of Water Supply benchmark). Prior to May 20, 1914, staff gage at site 200 ft upstream at different datum. May 20, 1914, to Jan. 16, 1921, water-stage recorder at site 50 ft upstream at different datum. Aug. 18, 1925, to Oct. 18, 1933, water-stage recorder at present site at datum 0.41 ft higher.

Average discharge.--34 years (1913-20, 1926-53), 3.11 mgd (4.81 cfs).

Extremes.--Maximum discharge during year, 425 mgd (658 cfs) Jan. 12 (gage height, 4.10 ft), from rating curve extended above 21 mgd by test on model of station site; minimum, 1.29 mgd (2.00 cfs) June 10.

1913-21, 1925-53: Maximum gage height, 10.4 ft Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,000 mgd or 3,090 cfs, estimated from rating curve extended above 37 mgd); minimum discharge, 0.4 mgd (0.6 cfs) June 7, 8, 1926.

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

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 16-29, Aug. 7-9)

July 1 to Jan. 12

Jan. 13 to June 30

0.3	1.39	1.3	15.3	0.3	1.15	1.2	11.5
.5	2.9	1.7	30	.5	2.65	1.4	18.3
.7	4.8	2.0	46	1.0	7.9		
1.0	8.8						

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9	10.3	2.6	1.8	9.0	5.7	2.75	1.85	6.7	1.93	2.4	2.15
2	2.75	5.6	2.6	1.8	14	3.8	2.95	1.85	2.5	1.78	2.1	1.78
3	2.5	3.45	3.1	1.8	7.0	3.2	3.1	1.85	10.2	1.78	5.7	1.71
4	2.45	3.2	2.75	1.8	5.0	5.9	2.85	1.85	3.6	1.85	7.8	1.64
5	3.35	3.0	2.5	5.0	6.0	5.5	3.2	1.85	2.9	1.78	2.8	1.57
6	2.7	2.9	2.35	2.5	4.3	3.55	3.0	1.85	2.8	1.85	2.15	1.50
7	2.45	3.25	2.45	2.1	3.9	3.75	3.45	1.85	2.9	1.78	3.15	1.36
8	3.15	2.9	2.3	2.0	3.65	3.35	2.7	1.93	2.35	1.71	4.7	1.36
9	16.5	3.6	2.3	1.9	3.65	3.1	2.6	2.4	2.4	1.78	3.1	1.36
10	3.8	2.9	2.5	2.2	3.85	3.1	2.6	1.93	2.35	3.5	2.25	1.43
11	4.8	3.5	2.3	2.0	3.9	2.85	2.6	1.85	2.75	2.0	2.0	1.98
12	4.3	2.9	2.2	1.9	3.95	2.7	25.5	1.85	2.35	1.78	1.93	1.71
13	2.9	2.75	2.2	1.8	3.45	2.7	13.8	1.85	2.6	1.71	1.85	1.57
14	6.6	2.7	11	1.8	3.3	2.7	3.15	1.85	2.15	1.71	1.85	1.43
15	35.5	2.7	*3.0	1.8	5.4	2.7	*2.65	1.85	2.0	1.78	1.99	1.43
16	7.9	3.2	2.2	6.0	5.9	2.6	2.5	6.9	2.0	1.78	2.1	1.43
17	7.0	2.7	2.2	2.7	3.55	3.1	2.4	2.8	2.25	1.93	1.85	2.8
18	8.5	2.7	2.1	13	3.2	6.7	2.35	3.6	3.55	1.85	1.78	3.0
19	5.2	2.9	2.05	5.3	16.6	3.65	2.25	3.75	2.35	1.71	2.15	3.0
20	4.1	2.6	2.0	2.7	7.3	5.2	2.25	2.5	2.0	1.71	1.78	2.9
21	3.45	2.6	2.0	4.0	4.1	3.75	2.15	2.25	1.93	1.64	1.71	1.85
22	3.1	2.8	2.0	2.6	3.55	3.35	2.15	2.7	2.1	1.78	1.64	1.71
23	2.85	2.6	2.0	4.5	4.9	3.0	2.1	2.5	1.85	1.71	2.5	1.64
24	2.75	2.6	1.9	5.0	3.55	3.1	2.1	2.1	1.85	1.71	1.78	1.64
25	2.75	2.7	1.9	7.0	3.1	2.9	2.1	2.0	1.91	1.64	1.93	1.50
26	8.0	4.0	1.9	4.7	2.9	2.85	*2.1	2.1	2.0	1.64	1.71	1.50
27	3.45	3.6	1.9	3.1	2.85	2.75	2.0	2.65	1.78	1.99	1.78	1.50
28	3.1	2.7	1.8	4.5	2.75	2.7	1.93	4.5	1.85	1.71	1.71	1.50
29	*3.8	2.5	1.8	35	2.85	2.7	1.93	-	3.55	1.78	1.64	1.50
30	3.2	2.7	1.8	*20	5.8	2.6	1.85	-----	2.0	2.45	1.71	1.43
31	3.0	3.45	-----	13	-----	2.5	1.85	-----	2.0	-----	2.0	-----
Total	168.80	102.00	75.70	185.3	153.0	108.05	111.91	68.81	85.42	55.75	75.54	52.88
Mean:	5.45	3.29	2.52	5.33	5.10	3.49	3.61	2.46	2.76	1.86	2.44	1.76
mgd	8.43	5.09	3.90	8.25	7.89	5.40	5.59	3.81	4.27	2.88	3.78	2.72
Ac-ft	518	313	232	507	470	332	343	211	262	171	232	162

Calendar year 1952: Max 36 Min 1.8 Mean(mgd) 3.78 Mean(cfs) 5.85 Ac-ft 4,240
Fiscal year 1952-53: Max 35.5 Min 1.36 Mean(mgd) 3.35 Mean(cfs) 5.18 Ac-ft 3,750

Peak discharge (base, 200 mgd).--Jan. 12 (9:30 p.m.) 425 mgd (658 cfs), 4.10 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 8-15, Sept. 20 to Nov. 5; discharge estimated on basis of 2 discharge measurements, recorded range in stage, and records for stations on nearby streams.

West Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long 157°48'15", on left bank 100 ft upstream from highway bridge and 4.2 miles northeast of Honolulu Post Office.

Drainage area.--1.1 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1953.

Gage.--Water-stage recorder and combination Parshall flume and V-notch weir. Datum of gage is 290.84 ft above mean sea level (Honolulu Board of Water Supply benchmark). Prior to June 17, 1914, staff gage at same site at different datum. June 17, 1914, to Jan. 16, 1921, water-stage recorder at site 150 ft upstream at different datum. Aug. 4, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 3.40 ft lower.

Average discharge.--34 years (1913-20, 1926-53), 2.53 mgd (3.91 cfs).

Extremes.--Maximum discharge during year, 225 mgd (348 cfs) Nov. 19 (gage height, 3.27 ft), from rating curve extended above 33 mgd by test on model of station site; minimum, 0.19 mgd (0.29 cfs) Feb. 12.

1913-21, 1925-53: Maximum gage height, 10.4 ft Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,100 mgd or 3,250 cfs, estimated from rating curve extended above 40 mgd); minimum discharge, about 0.05 mgd (0.08 cfs) Mar. 16, 22, 1926.

Remarks.--Records good except those for periods of indefinite stage-discharge relation, which are poor. Small quantity of water is diverted above station occasionally for irrigation.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.25	6.9	0.74	0.34	6.7	5.5	0.73	0.26	3.25	0.79	0.57	0.89
2	2.1	3.2	.66	.32	10.1	2.95	.85	.26	1.57	.67	.52	.79
3	1.71	1.95	.68	.32	5.1	1.86	1.46	.22	14.8	.57	2.95	.57
4	1.57	1.50	.66	.32	3.4	4.7	1.39	.22	4.4	.62	5.0	.52
5	3.1	1.35	.62	1.7	4.2	5.7	1.21	.22	2.3	.52	1.77	.42
6	2.0	1.3	.58	.78	2.85	2.4	1.05	.22	1.96	.52	.98	.38
7	1.64	1.3	.58	.35	2.35	2.4	1.58	.22	1.80	.47	1.40	.38
8	2.05	1.4	.61	.33	1.93	1.71	.79	.22	1.16	.42	3.65	.34
9	11.7	1.6	.58	.33	1.71	1.57	.73	.64	1.24	.47	2.3	.30
10	2.8	1.2	.64	.35	2.25	1.50	.67	.26	.98	2.45	1.51	.34
11	2.35	1.8	.58	.32	2.3	1.16	.62	.22	1.41	.73	1.16	.88
12	2.65	1.2	.54	.33	2.4	1.04	10.1	.19	.91	.47	.91	.67
13	1.50	1.1	.52	.32	1.71	.98	6.6	.22	.99	.42	.85	.52
14	3.3	1.1	7.8	.30	1.50	.85	1.28	.26	.73	.38	.85	.42
15	30	1.0	*1.15	.40	3.5	.79	*1.02	.30	.57	.47	1.00	.38
16	8.0	1.0	.67	5.0	3.9	.73	.91	5.2	.57	.52	.85	.42
17	5.4	.95	.62	2.0	2.35	1.21	.73	2.3	1.07	.57	.70	2.35
18	6.6	.95	.62	9.0	1.71	4.3	.67	2.25	2.1	.52	.62	2.45
19	4.4	.97	.42	3.5	17.4	1.94	.62	2.7	1.16	.47	1.30	2.4
20	3.15	.90	.38	2.4	5.1	4.5	.57	1.72	.85	.42	.62	2.0
21	2.6	.88	.38	3.0	2.75	2.35	.57	1.04	.67	.38	.57	.98
22	2.25	.94	.38	1.9	2.1	1.64	.52	1.52	.65	.47	.50	.85
23	2.1	.90	.38	2.8	2.95	1.22	.52	1.11	.57	.42	1.28	.62
24	1.86	.86	.37	3.3	1.86	1.31	.47	.67	.52	.38	.47	.57
25	1.78	.90	.37	3.5	1.50	1.04	.47	.57	.52	.34	.62	.47
26	7.4	.95	.36	2.2	1.35	.91	*.42	.57	.83	.30	.47	.47
27	2.8	1.1	.35	1.2	1.22	.91	.38	1.15	.67	.71	.65	.42
28	1.93	.84	.35	3.4	1.16	.79	.34	3.05	.66	.42	.57	.38
29	2.55	.78	.34	.33	1.31	.79	.34	-	5.4	.47	.47	.38
30	*1.71	.74	.34	*16	6.2	.67	.30	-----	1.41	1.17	.47	.34
31	1.42	.78	-----	9.4	-----	.62	.26	-----	1.00	-----	1.05	-----
Total	126.67	42.32	23.27	108.41	104.86	60.04	38.18	27.82	56.72	17.53	36.63	22.90
Mean:												
mgd	4.09	1.37	0.776	3.50	3.50	1.94	1.23	0.994	1.83	0.584	1.18	0.763
cfs	6.33	2.12	1.20	5.42	5.42	3.00	1.90	1.54	2.83	0.904	1.83	1.18
Ac-ft	389	130	71	333	322	184	117	85	174	54	112	70

Calendar year 1952: Max 34.5 Min 0.30 Mean(mgd) 2.45 Mean(cfs) 3.79 Ac-ft 2,750

Fiscal year 1952-53: Max 33 Min 0.19 Mean(mgd) 1.82 Mean(cfs) 2.82 Ac-ft 2,040

Peak discharge (base, 200 mgd).--Nov. 19 (2 p.m.) 225 mgd (348 cfs), 3.27 ft; Jan. 12 (9:30 p.m.) 205 mgd (317 cfs), 3.21 ft.

* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Aug. 6 to Sept. 14, Sept. 22 to Oct. 30; discharge estimated on basis of records for stations on nearby streams.

ISLAND OF OAHU

Pukele Stream near Honolulu

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

Drainage area.--1.2 sq mi.

Records available.--April 1912 to September 1913, June 1926 to June 1953.

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 344.78 ft above mean sea level (Honolulu Board of Water Supply benchmark). Apr. 16, 1912, to Sept. 30, 1913, staff gage just above present site at different datum.

Average discharge.--27 years (1926-53), 1.27 mgd (1.96 cfs).

Extremes.--Maximum discharge during year, 380 mgd (588 cfs) Jan. 12 (gage height, 4.99 ft), from rating curve extended above 36 mgd as explained below; minimum, 0.25 mgd (0.39 cfs) Oct. 15, 16, June 27, 28.
1912-13, 1926-53: Maximum discharge, 1,680 mgd (2,600 cfs) Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 14 mgd by test on model of station site; minimum, 0.07 mgd (0.11 cfs) Nov. 15-25, 1945.

Remarks.--Records good. A 2-inch pipe diverts water from stream above station.

Revisions (fiscal years).--WSP 835: 1930(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.0	0.23	1.8	8.0
1.1	.55	2.0	12.5
1.2	1.00	2.3	23
1.4	2.7	2.6	36
1.6	4.9		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.67	1.58	0.43	0.31	3.2	1.67	0.71	0.40	2.45	0.47	0.31	0.37
2	.67	1.75	.43	.28	3.85	1.21	.67	.40	.75	.43	.31	.37
3	.67	.80	.40	.28	*2.85	1.00	.63	.40	6.7	.43	1.50	.34
4	.67	.80	.40	.28	1.64	1.87	.66	.40	1.21	.43	5.5	.34
5	.67	.85	.40	.45	1.82	2.65	.59	.37	.95	.43	.66	.34
6	.63	.85	.37	.31	1.49	1.42	.59	*.34	.90	.43	.43	.34
7	.63	.75	.37	.31	1.42	1.42	.68	.34	.90	.40	.51	.31
8	.59	.67	.37	.31	1.35	1.28	.63	.34	.90	.40	.67	.31
9	3.8	.59	.37	.31	1.35	1.21	.63	.34	.85	.40	.90	.31
10	.67	.59	.37	.31	1.28	1.21	.63	.34	.87	.43	.67	.31
11	.67	.63	.37	.31	1.21	1.07	.63	.31	.86	.40	.71	.31
12	.92	.59	.34	.28	1.00	1.00	35	.31	.75	.37	.75	.31
13	.71	.55	.34	.28	1.00	1.00	3.55	.31	.74	.37	.71	.31
14	1.40	.55	1.80	.28	.90	.90	.85	.31	.67	.37	.67	.31
15	15.6	.55	*.34	.28	.95	.80	*.75	.31	.63	.37	.71	.28
16	2.3	.51	.31	1.76	1.40	.75	.75	.55	.63	.37	.63	.31
17	1.35	.47	.34	.35	.88	.80	.75	.37	.66	.37	.55	.31
18	2.3	.47	.34	8.8	.85	1.32	.75	.49	.70	.37	.51	.31
19	1.28	.43	.34	2.45	8.6	.80	.71	.69	.55	.37	.47	.31
20	1.21	.43	.34	.55	3.9	1.22	.67	.40	.55	.34	.43	.28
21	1.21	.43	.34	.96	1.35	1.00	.67	.37	.55	.34	.40	.28
22	1.14	.43	.34	.63	1.07	1.09	.63	.46	.55	.37	.40	.28
23	1.14	.43	.34	1.48	1.86	.90	.59	.40	.55	.34	.43	.28
24	1.07	.43	.34	2.1	1.14	.90	.55	.43	.55	.34	.40	.28
25	1.00	.43	.34	1.76	1.07	.90	.55	.43	.55	.31	.37	.31
26	1.22	.43	.31	1.32	1.00	.85	.51	.51	.55	.31	.37	.28
27	.90	.43	.31	.90	1.00	.85	.47	.55	.55	.31	.37	.25
28	.85	.43	.31	1.56	1.00	.80	.47	2.05	.54	.31	.37	.25
29	*.85	.43	.31	14.5	.90	.75	.47	-	.57	.31	.37	.28
30	.80	.43	.31	10.1	1.59	.75	.43	-----	.47	.31	.37	.28
31	.75	.43	-----	3.7	-----	.71	.43	-----	.47	-----	.40	-----
Total	48.34	19.14	11.82	57.50	52.92	34.10	56.60	12.92	29.12	11.20	21.85	9.15
Mean:												
mgd	1.56	0.617	0.394	1.85	1.76	1.10	1.83	0.461	0.939	0.373	0.705	0.305
cfs	2.41	0.955	0.610	2.86	2.72	1.70	2.83	0.713	1.45	0.577	1.09	0.472
Ac-ft	148	59	36	176	162	105	174	40	89	34	67	28

Calendar year 1952: Max 26.5 Min 0.28 Mean(mgd) 1.07 Mean(cfs) 1.66 Ac-ft 1,200

Fiscal year 1952-53: Max 35 Min 0.25 Mean(mgd) 0.999 Mean(cfs) 1.55 Ac-ft 1,120

Peak discharge (base, 90 mgd),--Nov. 19 (2 p.m.) 135 mgd (209 cfs), 3.81 ft; Jan. 12 (10 p.m.) 380 mgd (588 cfs), 4.99 ft; Mar. 3 (3:30 a.m.) 90 mgd (139 cfs), 3.42 ft.

* Discharge measurement made on this day.

Waiomao Stream above Pukele Stream, near Honolulu

Location.--Lat 21°18'30", long 157°47'10", on left bank 300 ft west of road, 1 mile up-stream from confluence with Pukele Stream, and 5 miles east of Honolulu Post Office.

Drainage area.--1.0 sq mi.

Records available.--April 1911 to December 1912, June 1926 to June 1953.

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 373.66 ft above mean sea level (Honolulu Board of Water Supply benchmark). Apr. 12, 1911, to Dec. 31, 1912, staff gage at site 0.3 mile downstream at different datum.

Average discharge.--27 years (1926-53), 1.16 mgd (1.79 cfs).

Extremes.--Maximum discharge during year, 590 mgd (913 cfs) Jan. 12 (gage height, 5.42 ft), from rating curve extended as explained below; no flow Sept. 27 to Oct. 3, June 7-10.
1911-12, 1926-53: Maximum discharge, 602 mgd (931 cfs) Oct. 15, 1938 (gage height, 5.43 ft), from rating curve extended above 65 mgd by test on model of station site; no flow at times.

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

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.84	0	1.5	2.7
1.0	.06	1.7	5.2
1.1	.22	1.9	8.5
1.2	.55	2.2	16.5
1.3	1.07	2.5	29
1.4	1.78	2.8	44

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.43	2.55	0.14	0	4.0	1.68	0.23	0.04	3.35	0.16	0.58	0.12
2	.30	<u>3.35</u>	.06	0	4.7	1.22	<u>*.45</u>	.04	.96	.09	.72	.08
3	.22	.68	.06	0	3.55	.55	.65	.04	<u>11.9</u>	.06	1.10	.06
4	<u>.18</u>	.40	.06	.97	1.57	1.73	.66	.03	1.69	.07	<u>6.2</u>	.04
5	.36	.30	.05	1.53	1.42	<u>2.4</u>	.89	.02	1.00	.08	1.42	.03
6	.30	.25	.04	.56	.94	1.06	.51	<u>*.02</u>	.59	.09	.88	.02
7	.20	.28	.04	.28	.68	.72	1.02	<u>.01</u>	1.27	.06	.88	0
8	.36	.25	.03	.14	.47	.43	.40	<u>.02</u>	.51	.05	1.26	0
9	9.1	.30	.03	.12	.43	.36	.28	.38	.36	.04	1.47	0
10	1.83	.25	.03	<u>*.11</u>	.43	.30	.25	.18	.36	<u>1.91</u>	.63	0
11	1.62	.37	.04	.12	.55	<u>*.25</u>	.22	.08	1.22	.78	.36	.13
12	1.74	.28	.04	.26	.55	.20	<u>.42</u>	.05	.63	.30	.28	.14
13	.55	.20	.03	.14	.56	.18	<u>13.2</u>	.03	.70	.18	.25	.06
14	1.13	.16	<u>2.4</u>	.09	.30	.14	1.61	.02	.47	.12	.20	.02
15	<u>25</u>	.16	<u>*.74</u>	.26	.35	.12	<u>*.82</u>	.02	.30	.11	.20	.03
16	3.4	.50	.28	2.1	1.41	<u>.11</u>	.51	.54	.22	.14	.22	.02
17	2.35	.20	.14	1.66	.47	.15	.36	.47	.30	.12	.16	.14
18	3.6	.18	.12	14.6	.36	1.00	.30	.99	1.16	.11	.11	.82
19	1.64	.16	.08	5.7	<u>9.3</u>	.51	.25	1.30	.72	.09	.18	.78
20	.88	.12	.06	1.62	<u>6.2</u>	1.42	.22	.68	.53	.07	.18	.64
21	.63	.11	.04	2.25	1.85	.92	.20	.51	.25	.06	.12	.28
22	.47	.08	.03	1.12	.94	.68	.16	.79	.22	.07	<u>.09</u>	.18
23	.36	.07	.02	2.6	2.25	.36	.12	.63	.16	.09	.46	.12
24	.30	<u>.06</u>	.02	2.75	.83	.47	.11	.33	.14	.06	.20	.11
25	.28	.07	.02	1.97	.47	.30	.11	.25	.11	.03	.18	.08
26	1.67	.20	.01	1.77	.36	.28	.08	.28	.12	<u>.02</u>	.16	.06
27	.79	.62	0	.72	.30	.22	.08	.55	.12	<u>.05</u>	.17	.05
28	.36	.16	0	.83	<u>.25</u>	.18	.07	<u>2.95</u>	.09	.09	.25	.05
29	<u>*.36</u>	.09	0	<u>17.3</u>	.25	.20	.06	-	.44	.05	.18	.04
30	.30	.06	0	<u>11.8</u>	1.73	.16	.06	-----	.28	.18	.16	.02
31	.28	.10	-----	4.4	-----	.12	<u>.05</u>	-----	.14	-----	.30	-----
Total	60.99	12.56	4.61	77.77	47.27	18.42	65.93	11.45	30.11	5.33	19.55	4.12
Mean												
mgd	1.97	0.405	0.154	2.51	1.58	0.594	2.13	0.409	0.971	0.178	0.631	0.137
cfs	3.05	0.627	0.238	3.88	2.44	0.919	3.30	0.633	1.50	0.275	0.978	0.212
Ac-ft	187	39	14	239	145	57	202	35	92	16	60	13

Calendar year 1952: Max 34 Min 0 Mean(mgd) 1.08 Mean(cfs) 1.67 Ac-ft 1,220
Fiscal year 1952-53: Max 42 Min 0 Mean(mgd) 0.991 Mean(cfs) 1.52 Ac-ft 1,100

Peak discharge (base, 70 mgd).--Nov. 19 (3 p.m.) 83 mgd (128 cfs), 3.38 ft; Jan. 12 (9 p.m.) 590 mgd (913 cfs), 5.42 ft; Mar. 5 (5 a.m.) 115 mgd (178 cfs), 3.61 ft.

* Discharge measurement made on this day.

Palolo Stream near Honolulu

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

Drainage area.--3.0 sq mi.

Records available.--April 1952 to June 1953.

Gage.--Water-stage recorder and steel plate in concrete-lined channel. Altitude of gage is 95 ft (from topographic map).

Extremes.--Maximum discharge during year, 830 mgd (1,280 cfs) Mar. 3 (gage height, 3.49 ft), from rating curve extended above 22 mgd by test on model of station site; minimum, 0.16 mgd (0.25 cfs) June 29, 30.

1952-53: Maximum discharge, that of Mar. 3, 1953; minimum, that of June 29, 30, 1953.

Remarks.--Records poor.

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 15-31, Nov. 22-28,
Dec. 14-20, Jan. 17-20)

July 1 to Jan. 27

Jan. 28 to June 30

1.0	0.49	1.6	4.0	1.3	0.24	1.8	13.0
1.1	.64	1.8	14.0	1.4	.50	2.0	33
1.2	.81	2.0	33	1.5	1.00	2.2	60
1.3	1.01	2.2	60	1.6	2.0	2.4	130
1.4	1.40			1.7	4.5		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.08	4.9	0.74	0.72	14.1	5.7	1.80	0.58	17.0	1.00	1.44	0.62
2	.88	7.7	.74	.71	15.8	5.0	2.1	.76	3.8	.82	1.88	.66
3	.78	2.25	.74	.71	12.9	2.95	2.75	.76	73	.76	5.7	.54
4	.78	1.40	.74	1.63	6.9	7.6	2.7	.50	8.2	.76	18.6	.46
5	1.07	1.20	.74	2.8	6.5	9.2	3.0	.46	2.95	.91	2.95	.39
6	.93	1.13	.74	1.05	6.2	5.1	1.98	.42	2.55	.88	2.55	.36
7	.81	.99	.74	.72	4.4	4.7	4.4	.39	2.55	.71	2.55	.36
8	1.00	.76	.74	.71	3.8	3.8	1.32	.39	1.76	.66	2.75	.36
9	17.3	.76	.74	.71	3.5	3.65	.99	.86	1.65	.71	2.95	.36
10	4.0	.76	.74	.71	3.3	3.5	1.05	.66	1.77	2.9	1.55	.36
11	3.8	.79	.74	.71	3.3	3.1	.95	.54	4.5	1.76	1.35	.66
12	3.8	.79	.74	.74	2.95	2.6	53	.46	2.35	1.16	1.16	.76
13	1.40	.76	.76	.71	2.5	1.91	30.5	.39	2.55	.88	1.08	.60
14	2.8	.76	6.2	.71	1.48	1.52	3.8	.35	2.35	.71	1.08	.50
15	22	.76	*1.40	.98	2.5	1.40	2.6	.40	1.55	.76	1.30	.36
16	3.8	.79	.76	7.9	5.9	1.36	1.74	1.88	1.35	.71	1.16	.34
17	2.8	.76	.76	3.8	3.0	1.80	1.13	2.2	1.60	.76	1.00	.52
18	3.75	.76	.76	23	2.15	4.2	.85	3.0	2.8	.71	.94	1.45
19	2.0	.76	.74	12.0	23.5	2.4	.78	3.6	1.68	.82	1.08	1.65
20	1.66	.76	.74	3.65	14.4	4.6	.75	1.88	1.35	.54	1.00	1.45
21	1.40	.76	.72	4.9	5.8	3.8	.71	1.55	1.25	.58	.88	.88
22	1.32	.76	.72	3.05	2.4	3.8	.69	2.85	1.16	2.05	.76	.76
23	1.32	.76	.71	6.9	4.4	2.25	.66	2.0	1.00	.88	1.47	.71
24	1.09	.74	.71	7.0	2.1	3.1	.62	1.65	.94	.86	1.00	.71
25	.95	.74	.71	4.3	1.74	2.1	.62	1.55	1.00	.54	.88	.54
26	2.0	.78	.71	4.5	1.57	1.82	.61	1.88	1.59	.50	.82	.46
27	1.60	.95	.72	3.3	1.57	1.48	.61	2.75	1.19	.54	.96	.46
28	1.08	.74	.72	3.65	1.40	1.32	.62	14.8	.94	.62	.82	.39
29	*1.24	.74	.71	37	1.43	1.36	.62	-	1.77	.71	.62	.34
30	1.17	.74	.71	*29	5.7	1.01	.58	-	1.08	.94	.54	.37
31	1.09	.74	-----	15.5	-----	.87	.58	-----	1.00	-----	1.11	-----
Total	90.70	38.10	28.16	183.77	167.19	99.00	125.11	49.52	150.43	26.74	63.93	18.38
Mean:												
mgd	2.93	1.23	0.939	5.93	5.57	3.19	4.04	1.77	4.85	0.891	2.06	0.613
cfs	4.53	1.90	1.45	9.18	8.62	4.94	6.25	2.74	7.50	1.38	3.19	0.948
Ac-ft	278	117	86	564	513	304	384	152	462	82	196	56

Calendar year 1952: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
Fiscal year 1952-53: Max 73 Min 0.34 Mean(mgd) 2.85 Mean(cfs) 4.41 Ac-ft 3,190

Peak discharge (base, 220 mgd).--Nov. 19 (2:30 p.m.) 220 mgd (340 cfs), 2.50 ft; Jan. 12 (9:30 p.m.) 755 mgd (1,170 cfs), 3.37 ft; Mar. 3 (3:30 a.m.) 830 mgd (1,280 cfs), 3.49 ft.

* Discharge measurement made on this day.

Haiku Stream near Heeia

Location.--Lat 21°24'40", long 157°49'40", on left bank 1.7 miles west of Kaneohe Post Office and 1.8 miles southwest of Heeia.

Drainage area.--1.0 sq mi.

Records available.--January 1914 to October 1919, July 1939 to June 1953.

Gage.--Water-stage recorder. Prior to Apr. 28, 1914, staff gage and Apr. 29, 1914, to Oct. 25, 1919, water-stage recorder, at same site at different datum.

Extremes.--Maximum discharge during year, 136 mgd (210 cfs) Mar. 13 (gage height, 2.90 ft), from rating curve extended as explained below; minimum, 0.46 mgd (0.71 cfs) Oct. 8. 1914-19, 1939-53: Maximum discharge, 1,150 mgd (1,780 cfs) Mar. 26, 1951 (gage height, 5.39 ft), from rating curve extended above 13 mgd by test on model of station site; minimum, 0.17 mgd (0.26 cfs) Oct. 25, 1946.

Remarks.--Records good. Suburban Water System diverts ground water from tunnel in drainage area.

Revisions (fiscal years).--WSP 935: 1940.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in cubic feet per second)

1.0	0.53	1.3	2.1
1.1	.92	1.5	4.2
1.2	1.45	1.7	9.2

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.97	2.5	0.76	0.76	2.35	1.08	1.03	0.80	1.59	1.03	0.92	0.80
2	.97	2.15	.76	.76	5.4	1.08	1.08	.80	1.18	1.03	.92	.80
3	.97	1.13	.76	.76	2.9	1.08	1.13	*.80	1.40	1.03	.97	.76
4	.97	.92	.76	.84	1.71	1.08	1.24	.80	1.18	1.03	1.03	.76
5	.97	.92	.76	1.02	2.4	1.08	1.18	.80	1.13	.97	.97	.76
6	.92	.88	.76	.84	1.78	1.08	1.13	.80	1.08	1.03	.92	.76
7	.92	*.88	.72	.80	1.45	1.08	1.23	.84	1.18	.97	.92	.76
8	.97	.84	.72	.80	1.34	1.08	1.13	.88	1.08	.88	.92	.76
9	1.29	.88	.69	.80	1.21	1.08	1.08	1.26	1.03	1.03	.92	.76
10	1.29	.88	.72	.88	1.18	1.08	1.08	1.03	1.08	2.45	.91	.76
11	1.18	.88	.69	.84	1.13	1.05	.97	.92	1.82	1.78	.88	.80
12	1.13	.84	.69	.84	1.13	1.03	1.03	.88	1.34	1.22	.88	.76
13	1.03	.84	.69	.88	1.13	1.02	1.61	.88	9.1	1.03	.88	.76
14	.92	.84	.80	.84	1.08	.97	1.03	.84	2.2	.97	.88	.76
15	1.88	.84	.76	.95	1.08	1.03	.92	.84	1.34	.97	.88	.72
16	1.45	.88	.69	2.85	1.24	1.03	.97	2.35	1.18	.97	.88	.69
17	1.08	.84	.69	1.47	1.13	1.08	.92	1.40	1.18	1.03	.88	.72
18	1.03	.80	.65	3.75	1.05	1.08	.84	1.08	1.08	1.03	.88	.80
19	1.08	.80	.61	2.65	4.5	1.08	.88	1.82	1.03	1.03	.88	.80
20	1.03	.80	.61	1.29	2.2	1.29	.84	1.59	1.03	.97	.88	.76
21	.92	.76	.61	1.37	2.15	1.18	.84	1.18	1.03	1.03	.88	.76
22	.92	.76	.61	1.18	1.47	1.13	.84	1.08	1.03	1.03	.88	.76
23	.92	.76	.64	1.18	1.40	1.08	.84	1.00	1.03	1.04	.88	.76
24	.92	.76	.69	2.75	1.29	1.05	.84	1.03	1.03	.88	.88	.76
25	.97	.76	.69	2.3	1.18	1.03	.90	1.03	1.03	.90	.88	.72
26	1.03	.80	.72	1.71	1.13	1.03	.84	1.03	1.08	.85	.88	.72
27	1.03	.80	.72	1.29	1.08	1.03	.84	1.13	1.08	.88	.92	.69
28	1.03	.76	.72	1.18	1.08	1.03	.84	1.85	1.03	.84	.84	.69
29	.92	.76	.76	3.3	1.08	1.03	.76	-	1.03	.88	.84	*.69
30	.92	.76	.76	2.1	1.13	.97	.80	-----	1.03	.88	.84	.69
31	.92	.76	-----	2.15	-----	.97	.80	-----	1.08	-----	.80	-----
Total	32.55	28.78	21.21	45.13	50.38	32.99	30.46	30.74	44.71	31.66	27.72	22.49
Mean:	1.05	0.928	0.707	1.46	1.68	1.06	0.983	1.10	1.44	1.06	0.894	0.750
cfs	1.62	1.44	1.09	2.26	2.60	1.64	1.52	1.70	2.23	1.64	1.38	1.16
Ac-ft	100	88	65	138	155	101	93	94	137	97	85	69

Calendar year 1952: Max 20.5 Min 0.61 Mean(mgd) 1.30 Mean(cfs) 2.01 Ac-ft 1,460
Fiscal year 1952-53: Max 9.1 Min 0.61 Mean(mgd) 1.09 Mean(cfs) 1.69 Ac-ft 1,220

Peak discharge (base, 100 mgd).--Mar. 13 (5 p.m.) 136 mgd (210 cfs), 2.90 ft.

* Discharge measurement made on this day.

Iolekaa Stream mauka near Heeia

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

Drainage area--0.3 sq mi.

Records available--March 1940 to June 1953.

Gage--Water-stage recorder and concrete control. Datum of gage is 320 ± 1.0 ft above mean sea level (transit levels by U. S. Navy).

Average discharge--12 years (1940-42, 1943-53), 0.363 mgd (0.562 cfs).

Extremes--Maximum discharge during year, 10.0 mgd (15.5 cfs) Nov. 19 (gage height, 1.38 ft); minimum, 0.23 mgd (0.36 cfs) Sept. 24, 25, 26, 27.
1940-53: Maximum discharge, 69 mgd (107 cfs) Oct. 22, 1941 (gage height, 2.40 ft), from rating curve extended above 4.0 mgd by rating for Columbus-type control and test on model of station site; minimum daily, 0.10 mgd (0.16 cfs) Oct. 31 to Nov. 9, Nov. 24, 27, 1946.

Remarks--Records fair.

Revisions (fiscal years)--WSP 935: 1940.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in millionsgallons a day)

0.5	0.18	0.8	1.20
.6	.35	.9	1.92
.7	.68	1.0	2.9

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.32	1.17	0.28	0.28	0.84	0.28	0.35	0.28	0.58	0.32	0.33	0.32
2	.32	.62	.28	.26	1.18	.28	.32	.28	.48	.32	.38	.32
3	.32	.35	.33	.26	.85	.28	.30	*.28	.51	.32	.38	.32
4	.32	.33	.28	.33	.58	.30	.48	.28	.42	.32	.33	.30
5	.33	.32	.28	.56	.74	.28	.37	.28	.38	.30	.32	.30
6	.32	.32	.28	.28	.45	.28	.32	.28	.38	.32	.32	.30
7	.32	.32	.28	.26	.38	.28	.49	.30	.38	.30	.33	.30
8	.33	.32	.28	.26	.38	.28	.33	.32	.35	.30	.38	.30
9	.57	.32	.28	.26	.33	.28	.32	1.45	.35	.36	.33	.30
10	.33	.32	.30	.32	.32	.26	.32	.45	.35	1.45	.32	.30
11	.33	.32	.28	.30	.32	.26	.32	.35	1.12	.70	.32	.32
12	.32	.33	.28	.30	.32	.26	.37	.33	.52	.45	.32	.30
13	.32	.33	.28	.28	.32	.26	.51	.32	1.20	.35	.32	.30
14	.33	.32	.43	.28	.32	.26	.32	.30	.61	.53	.32	.30
15	1.22	.32	.30	.32	.32	.26	.32	.30	.48	.32	.33	.30
16	.42	.33	.28	.90	.33	.26	.30	.67	.42	.32	.32	.32
17	.38	.32	.28	.39	.30	.30	.30	.38	.43	.32	.32	.32
18	.38	.30	.26	1.94	.30	.28	.30	.35	.38	.32	.32	.33
19	.35	.30	.26	1.06	1.61	.31	.30	1.08	.35	.32	.32	.32
20	.35	.30	.25	.52	1.59	.39	.30	.66	.35	.30	.32	.30
21	.33	.30	.25	.55	1.37	.28	.30	.48	.35	.30	.32	.30
22	.33	.30	.25	.35	.55	.28	.30	.45	.35	.32	.32	.30
23	.33	.30	.25	.35	.42	.28	.30	.42	.33	.30	.32	.30
24	.33	.30	.25	.54	.35	.26	.32	.42	*.33	.30	.32	.28
25	.33	.30	.25	.94	.32	.26	.32	.35	.32	.30	.32	.28
26	.41	.32	.25	.61	.32	.25	.30	.35	.32	.30	.32	.26
27	.42	.32	.25	.48	.30	.25	.30	.38	.32	.30	.33	.28
28	.35	.30	.26	.38	.28	.26	.28	.96	.32	.30	.33	.28
29	.35	.30	.28	.93	.28	.26	.28	-	.32	.30	.32	.26
30	.35	.30	.26	.65	.28	.26	.28	-----	.32	.30	.32	.26
31	.35	.32	-----	.76	-----	.25	.28	-----	.32	-----	.33	-----
Total	11.76	10.92	8.32	15.90	16.22	8.49	10.20	12.75	13.64	11.06	10.18	8.93
Mean:	0.379	0.352	0.277	0.513	0.541	0.274	0.329	0.455	0.440	0.369	0.328	0.298
cfs	0.586	0.545	0.429	0.794	0.937	0.424	0.509	0.704	0.681	0.571	0.507	0.461
Ac-ft	36	34	26	49	50	26	31	39	42	34	31	27

Calendar year 1952: Max 4.3 Min 0.25 Mean(mgd) 0.401 Mean(cfs) 0.620 Ac-ft 451
Fiscal year 1952-53: Max 1.94 Min 0.25 Mean(mgd) 0.379 Mean(cfs) 0.586 Ac-ft 425

Peak discharge (base, 15 mgd).--No peak above base.

* Discharge measurement made on this day.

Kahaluu Stream near Heeia

Location.--Lat 21°26'20", long 157°51'05", on left bank 40 ft upstream from intake of Libby ditch, 0.5 mile upstream from forest-reserve boundary, and 3.0 miles northwest of Heeia.

Drainage area.--0.4 sq mi.

Records available.--October 1935 to June 1953.

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

Extremes.--Maximum discharge during year, 56 mgd (87 cfs) Jan. 13 (gage height, 2.68 ft), from rating curve extended above 9 mgd by test on model of station site; minimum, 0.18 mgd (0.28 cfs) Aug. 13 to Sept. 4, Sept. 11-14, 19-30.
1935-53: Maximum discharge, 290 mgd (449 cfs) Sept. 27, 1937 (gage height, 5.47 ft, control then in use), from rating curve computed from 11 to 240 mgd by Parshall flume formula and extended above; minimum daily, 0.07 mgd (0.11 cfs) Mar. 19, 1947.

Remarks.--Records good. Suburban Water System has diverted ground water from tunnel in drainage area since 1948. Continuous records of rainfall are obtained at station.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.14	0.4	1.60
.2	.43	.5	2.45
.3	.92	.7	4.6

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.35	0.49	0.23	0.23	0.43	0.51	0.56	0.51	0.66	0.76	0.81	0.71
2	.35	.39	.20	.23	1.24	.51	.56	.51	.56	.81	.92	.71
3	.35	.29	.18	.23	.47	.51	.61	.51	.71	.81	.86	.66
4	.35	.26	.18	.30	.39	.56	.61	.51	.97	.81	.86	.66
5	.32	.23	.20	.32	.77	.51	.61	.51	.76	.81	.81	.66
6	.35	.23	.20	.26	.43	.51	.63	.51	.76	.86	.81	.66
7	.32	*.25	.20	.26	.39	.51	.66	.51	.76	.81	.81	.66
8	.35	.23	.20	.26	.35	.51	.61	.51	.71	.81	.92	.61
9	.71	.23	.20	.26	.35	.51	.61	1.87	.79	.86	.86	.56
10	.39	.26	.20	.26	.35	.51	.56	.56	.86	1.56	.81	.56
11	.32	.23	.20	.26	.35	.51	.61	.51	3.45	1.36	.81	.56
12	.29	.26	.18	.26	.35	.51	1.34	.51	.88	.92	.76	.66
13	.29	.20	.18	.26	.35	.51	2.7	.51	1.04	.86	.76	.61
14	.35	.20	.20	.26	.35	.51	.66	.51	.76	.81	.76	.61
15	.93	.20	.23	.35	.35	.51	.66	.51	.71	.81	.76	.61
16	.43	.23	.20	.60	.43	.51	.61	1.05	.71	.81	.76	.61
17	.35	.23	.20	.35	.35	.56	.61	.66	.71	.81	.71	.61
18	.35	.20	.23	2.25	.55	.56	.61	.61	.71	.81	.71	.61
19	.35	.18	.20	.68	2.95	.51	.61	.66	.71	.81	.71	.66
20	.35	.20	.20	.35	3.1	.61	.61	.61	.71	.76	.71	.66
21	.32	.18	.18	1.18	1.12	.51	.61	.56	.71	.76	.71	.61
22	.29	.18	.18	.39	.61	.51	.61	.61	.71	.76	.71	.61
23	.26	.20	*.18	.35	.56	.51	.61	.61	*.76	.76	.71	.61
24	.26	.20	.18	.35	.51	.51	.61	.61	.76	.76	.71	.61
25	.26	.20	.18	.59	.51	.51	.61	.56	.76	.76	.66	.56
26	.32	.20	.18	.43	.47	.51	.51	.56	.81	.76	.71	.56
27	.35	.23	.18	.35	.47	.51	.51	.61	.81	.76	.71	.56
28	.29	.20	.18	.32	.51	.51	.51	2.1	.76	.76	.66	.56
29	.29	.20	.20	.46	.51	.51	.51	—	.81	.76	.66	.56
30	.26	.20	.20	.43	.51	.51	.51	—	.76	.81	.71	.56
31	.26	.26	-----	.65	-----	.51	.51	-----	.76	-----	.71	-----
Total	11.01	7.24	5.85	13.73	19.88	16.06	21.15	18.87	26.34	25.31	23.58	18.45
Mean	0.355	0.234	0.195	0.443	0.663	0.518	0.692	0.674	0.850	0.844	0.761	0.615
mgd	0.549	0.362	0.302	0.685	1.03	0.801	1.06	1.04	1.32	1.31	1.13	0.952
cfs	34	22	18	42	61	49	65	58	81	78	72	57
Ac-ft												

Calendar year 1952: Max 4.5 Min 0.18 Mean(mgd) 0.577 Mean(cfs) 0.893 Ac-ft 647
Fiscal year 1952-53: Max 3.45 Min 0.18 Mean(mgd) 0.568 Mean(cfs) 0.879 Ac-ft 637

Peak discharge (base, 30 mgd).--Jan. 13 (1 a.m.) 56 mgd (87 cfs), 2.68 ft; Feb. 28 (1:30 p.m.) 42 mgd (65 cfs), 2.29 ft.

* Discharge measurement made on this day.

Waihee Stream near Heeia

Location.--Lat 21°27'05", long 157°51'35", on left bank 70 ft upstream from intake of Kihne ditch, 120 ft downstream from forest-reserve boundary, and 4.1 miles northwest of Heeia.

Drainage area.--1.1 sq mi.

Records available.--December 1935 to June 1953.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 193 ft (from topographic map).

Average discharge.--17 years (1936-53), 6.31 mgd (9.76 cfs).

Extremes.--Maximum discharge during year, 255 mgd (395 cfs) Nov. 19 (gage height, 5.0 ft, from floodmark); minimum daily, 4.9 mgd (7.6 cfs) Dec. 6-17, May 29.
1935-53: Maximum discharge, 465 mgd (719 cfs) Feb. 28, 1939 (gage height, 5.47 ft, control then in use), from rating curve computed from 20 to 230 mgd by Parshall flume formula and extended above; minimum, 3.2 mgd (5.0 cfs) Oct. 1, 1946.

Remarks.--Records good except those for periods of fragmentary or no gage-height record, which are fair. A 2-inch pipeline diverts water above station for domestic use.

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Oct. 18			Oct. 18 to June 30		
0.7	4.1		0.8	4.8	
.9	7.1		1.0	7.8	
1.2	12.8		1.2	11.6	
1.6	23		1.6	21.5	

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.5	6.3	5.7	5.7	6.2	5.2	5.2	5.2	6.7	5.6	5.5	5.2
2	5.5	7.2	5.7	5.5	8.5	5.1	5.2	5.2	6.1	5.6	5.6	5.1
3	5.5	6.1	5.5	5.4	6.2	5.1	5.2	5.2	5.8	5.6	5.5	5.1
4	5.5	6.0	5.5	5.8	5.8	5.2	5.4	5.2	5.8	5.6	5.9	5.1
5	5.5	5.8	5.5	5.8	6.7	5.1	5.4	5.2	5.6	5.6	5.4	5.1
6	5.5	5.8	5.8	5.5	6.0	4.9	5.2	5.2	5.6	5.6	5.4	5.1
7	5.5	6.0	5.5	5.5	5.7	4.9	5.7	5.2	5.6	5.6	5.5	5.1
8	5.5	6.0	5.5	5.4	5.5	4.9	5.2	5.5	5.5	5.6	7.6	5.1
9	7.5	6.1	5.5	5.4	5.5	4.9	5.2	7.4	7.8	5.8	5.8	5.1
10	6.1	6.0	5.7	5.7	5.5	4.9	5.2	5.5	6.4	7.6	5.5	5.1
11	5.8	6.0	5.5	5.4	5.5	4.9	5.2	5.4	14.8	6.1	5.4	5.1
12	5.7	6.0	5.5	5.2	5.5	4.9	18.0	5.2	7.6	5.9	5.2	5.1
13	5.7	6.0	5.5	5.2	5.5	4.9	11.7	5.2	7.7	5.8	5.2	5.1
14	5.8	6.0	6.1	5.2	5.5	4.9	5.8	5.2	6.7	5.6	5.2	5.1
15	9.4	6.1	5.8	6.3	5.5	4.9	5.6	5.2	6.5	5.6	5.2	5.1
16	6.9	6.4	5.5	8.1	6.0	4.9	5.5	8.2	6.2	5.6	5.2	5.2
17	6.3	6.0	5.7	6.3	5.8	4.9	5.5	5.9	6.1	5.6	5.1	5.1
18	6.3	6.0	5.5	21	5.5	5.0	5.4	5.9	6.1	5.5	5.1	5.1
19	6.4	5.8	5.5	11.2	*20	5.5	5.4	6.2	5.9	5.5	5.1	5.1
20	6.1	5.8	5.5	6.5	f15.1	5.4	5.4	5.9	5.9	5.5	5.1	5.1
21	6.0	5.7	5.5	9.3	f12.0	5.2	5.4	5.6	5.9	5.5	5.1	5.1
22	5.8	5.7	5.5	6.2	6.7	5.1	5.2	5.6	5.9	5.5	5.1	5.1
23	5.8	5.7	*5.5	5.8	6.5	5.1	5.2	5.8	5.8	5.5	5.1	5.1
24	5.8	5.7	5.5	5.6	5.9	5.1	5.2	6.2	*5.6	5.5	5.1	5.2
25	5.8	5.7	5.5	6.0	5.5	5.1	5.4	5.6	5.8	5.4	5.1	5.2
26	6.0	5.7	5.5	5.8	5.5	5.1	5.2	5.6	6.1	5.4	5.1	5.2
27	6.2	5.7	5.5	5.4	5.4	5.1	5.2	5.6	5.8	5.4	5.1	5.2
28	5.8	5.5	5.5	5.2	5.2	5.1	5.2	8.9	5.8	5.4	5.1	5.1
29	5.7	5.5	5.7	5.9	5.2	5.1	5.2	-	5.8	5.4	4.9	5.1
30	5.7	5.5	5.5	6.1	5.4	5.1	5.2	-----	5.6	5.4	5.1	5.1
31	5.7	6.0	-----	6.7	-----	5.2	5.2	-----	5.6	-----	5.2	-----
Total	186.3	183.8	167.2	204.1	204.8	156.7	174.0	162.0	198.1	169.3	165.5	153.6
Mean	6.01	5.93	5.57	6.58	6.83	5.05	5.61	5.79	6.39	5.64	5.34	5.12
mgd	9.30	9.18	8.62	10.2	10.6	7.81	8.68	8.96	9.69	8.73	8.26	7.92
cfs	572	564	513	626	629	481	534	497	608	520	508	471

Calendar year 1952: Max 21 Min 4.9 Mean(mgd) 6.05 Mean(cfs) 9.36 Ac-ft 6,790
Fiscal year 1952-53: Max 21 Min 4.9 Mean(mgd) 5.82 Mean(cfs) 9.00 Ac-ft 6,520

Peak discharge (base, 90 mgd).--Nov. 19 (8 a.m.) 255 mgd (395 cfs), 5.0 ft.

* Discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Note.--No gage-height record Nov. 1-19, Dec. 13-23; discharge estimated on basis of records for stations on nearby streams.

Waiahole tunnel at Waiānu, near Waiahole

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

Records available.--December 1950 to June 1953 in reports of Geological Survey. June 1916 to November 1950 in files of Waiahole Water Co.

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

Extremes.--1950-53: Maximum daily discharge, 66 mgd (102 cfs) July 15, 1952; minimum daily, 16.0 mgd (24.8 cfs) Jan. 24-29, 1952.

Remarks.--Records excellent. Tunnel diverts water from headwaters of nearly all streams from Waiahole Valley to Kahana Valley for irrigation in Central Oahu. Water may be diverted at various intakes above station.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.5	*38.5	24	23	32.5	30	25	23.5	25.5	*23.5	22	21
2	23.5	30.5	*24	23	35	26.5	25	23.5	24	23	22	21
3	23.5	24.5	25	23	30.5	26	24.5	23.5	26.5	23	28.5	21
4	23	24	26.5	23.5	26.5	27	24.5	23.5	24.5	23	35	20.5
5	23.5	24	23.5	26	43	27.5	24.5	23.5	24.5	23	23	20.5
6	23.5	24	26.5	23.5	30	26	24.5	23.5	30.5	23	22	20.5
7	23	25.5	24.5	23	26	26	25	23	33	23	23	20.5
8	23.5	23.5	23.5	23	25.5	25.5	24.5	23.5	25	22.5	30	20.5
9	46	23.5	23.5	23	25.5	25.5	24.5	26.5	29	22.5	23.5	20.5
10	27	24.5	24.5	23	25	26	24.5	23.5	25	27	22.5	20.5
11	24.5	24	24.5	23.5	26	25.5	24	23	38	23.5	22	23.5
12	25.5	24.5	23.5	25.5	25.5	25.5	27	23	26	23	22	21
13	23.5	23.5	23.5	23.5	25	25.5	31	23	28.5	25	22	20.5
14	23.5	23.5	37	23	25	25.5	25	23	25.5	22.5	22	20.5
15	66	23.5	25	26	25	25.5	24.5	23	24	23	22	20.5
16	30	27	24	37	25	25	24.5	26	24	22.5	22	20.5
17	31	23.5	23.5	25.5	25	26	24	24	24	22.5	22	21
18	31	23.5	23.5	53	24.5	25.5	24	23	24	22.5	21.5	22
19	34.5	23.5	23.5	34.5	60	25.5	24	24	23.5	22.5	21.5	22
20	26.5	23.5	23.5	32	53	31.5	24	23.5	23.5	22.5	21.5	21
21	21	23.5	23.5	37	42	26	24	23.5	23.5	22	21.5	20.5
22	24.5	23.5	23.5	26.5	28.5	25.5	24	23.5	24.5	22	21	20
23	24.5	23.5	23.5	32	31	25	24	25.5	23.5	22	22	20
24	24	23.5	23.5	27	27	25	24	47	23.5	22	21	20.5
25	24.5	23	23	36	26	25	23.5	25.5	23.5	22	21	20
26	28.5	24	23	26	26	25	23.5	24	24.5	22	21	20
27	46	27.5	23	25.5	26	25	23.5	25.5	23.5	22	22.5	19.9
28	26	23.5	23	26	26	25	23.5	30	23.5	22	22	19.9
29	25	23	23	33	27.5	25	23.5	-	31	22	21	19.9
30	24	23.5	23	32	32.5	25	23.5	-	24.5	22	21	19.9
31	23	29	-	31.5	-	25	23.5	-	23.5	-	21.5	-
Total	871.0	770.0	729.0	872.0	906.0	803.5	759.0	699.5	797.5	681.0	705.5	619.6
Mean	28.1	24.8	24.3	28.1	30.2	25.9	24.5	25.0	25.7	22.7	22.6	20.7
cfs	43.5	36.4	37.6	43.5	46.7	40.1	37.9	38.7	39.8	35.1	35.3	32.0
Ac-ft	2,670	2,360	2,240	2,680	2,780	2,470	2,330	2,150	2,450	2,090	2,170	1,900
Calendar year 1952: Max	66			Min	16.0	Mean(mgd)	25.9	Mean(cfs)	40.1	Ac-ft	29,050	
Fiscal year 1952-53: Max	66			Min	19.9	Mean(mgd)	25.2	Mean(cfs)	39.0	Ac-ft	28,290	

* Discharge measurement made on this day.

ISLAND OF OAHU

Waiahole tunnel wasteway at intake 31, near Waiahole

Location.--Lat 21°28'30", long 157°53'15", on left bank 150 ft below wasteway gates of Intake No. 31 of Waiahole tunnel and 2.2 miles southwest of Waiahole.

Records available.--January 1951 to June 1953.

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

Extremes.--1951-53: Maximum daily discharge, 29 mgd (45 cfs) Mar. 26, 1951; no flow most of time.

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

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				0	0		0					
2				0	0		0					
3				0	0		0					
4				0	0		0					
5				0	0		0					
6				0	0		0					
7				0	0		0					
8				0	0		0					
9				0	0		0					
10				0	0		0					
11				0	0		0					
12				0	0		0					
13				0	0		0					
14				0	0		0					
15				0	0		0					
16				0	0		0					
17				0	0		0					
18				0	0		0					
19				0	0		0					
20				0	0		0					
21				0	0		0					
22				0	0		0					
23				0	0		0					
24				0	0		0					
25				0	0		0					
26				0	0		0					
27				0	0		0					
28				0	0		0					
29				0	0		0					
30				0	0		0					
31				0	0		0					
Total	0	0	0	0.07	3.00	0	0.03	0	0	0	0	0
Mean	0	0	0	0.002	0.100	0	0.001	0	0	0	0	0
mgd	0	0	0	0.003	0.155	0	0.002	0	0	0	0	0
cfs	0	0	0	0.2	9.2	0	0.1	0	0	0	0	0
Ac-ft	0	0	0	0	0	0	0	0	0	0	0	0
Calendar year 1952: Max	12.2	Min	0	Mean(mgd)	0.060	Mean(cfs)	0.093	Ac-ft	68			
Fiscal year 1952-53: Max	1.70	Min	0	Mean(mgd)	0.008	Mean(cfs)	0.012	Ac-ft	9.5			

Waiahole tunnel at north portal, near Waiahole

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

Records available.--January 1951 to June 1953 in reports of Geological Survey. May 1916 to December 1950 in files of Waiahole Water Co.

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

Extremes.--1951-53: Maximum daily discharge, 68 mgd (105 cfs) July 15, 1952; minimum daily, 7.0 mgd (10.8 cfs) Jan. 24, 25, 1951.

Remarks.--Records excellent. Tunnel diverts water from headwaters of nearly all streams from Waiahole Valley to Kahana Valley for irrigation in Central Oahu. Numerous intakes can divert water above station.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	27	*40	27	26	33.5	32	27	25	27.5	24.5	24.5	22.5
2	27	34	*27	26	38.5	28.5	26.5	25.5	25.5	25	25	22.5
3	26.5	27.5	28	26	32	27.5	26.5	25.5	28.5	25.5	30.5	22.5
4	26.5	27.5	29	27	28	29	27	25	26.5	25.5	37	22.5
5	26.5	27	27	29.5	44	29	26.5	25	26	25.5	25.5	22.5
6	26.5	27	30	26.5	32	27.5	26	25	32	25.5	24.5	22.5
7	26	28	27.5	26	28	27.5	27	25	34.5	25.5	25.5	22.5
8	27.5	27	27	26	27.5	27.5	26	25.5	27	25	32	22.5
9	49	27	26.5	25.5	27.5	27.5	26	31	31.5	25.5	26	22.5
10	30.5	28	28	26	26.5	27.5	26	25.5	27	30.5	24.5	22.5
11	27.5	27.5	27.5	26	27.5	27.5	26	25	41	26.5	24.5	25
12	29	27.5	27	28	27.5	27	29	25	28	25.5	24.5	23.5
13	26.5	27	26.5	26	27	27	33.5	25	30.5	25.5	24.5	23
14	28.5	26.5	40	25.5	26.5	27	26.5	24.5	27	25	24	22.5
15	58	27	28	29	26.5	27	26	24.5	26	25	24	22.5
16	33.5	31.5	27	41	27	27	26	28	25.5	24.5	24	22.5
17	33	27	27	27	26.5	27.5	26	26	26	25	24	23
18	34	26.5	27	56	26	27	26	25	26	25	24	24
19	36.5	27	26.5	37	64	27	26	26.5	25.5	25	24	24
20	29	26.5	26.5	33	57	34	26	25	25.5	24.5	23.5	23.5
21	28	26.5	26.5	41	44	27.5	25.5	25	25.5	24.5	23.5	22.5
22	27.5	26.5	26	27.5	30	27	25.5	25	26.5	24.5	23.5	22.5
23	27.5	26	26	33	33	27	25.5	29	25	24.5	24	22.5
24	27.5	26	26	26.5	28.5	27	25.5	47	*25	24.5	23.5	22.5
25	27.5	26.5	26	38	28	26.5	25.5	27	24.5	24.5	23.5	22.5
26	31.5	27.5	26	29	27.5	26.5	25.5	26	26.5	24.5	23.5	22.5
27	48	31	26	26.5	27.5	26.5	25.5	27.5	25.5	24.5	24	22
28	29	26.5	26	27.5	27.5	26.5	25.5	32.5	25	24	24.5	22
29	28.5	26.5	26	34	28.5	26.5	25.5	-	33	24.5	23.5	22
30	27.5	27	26	32.5	34.5	26.5	25	-----	26	24.5	23	22
31	27.5	32	-----	34.5	-----	26.5	25	-----	25	-----	24	-----
Total	967.5	869.0	820.5	945.0	962.0	855.5	815.0	751.5	854.5	754.0	776.5	681.5
Mean:												
mgd	31.2	28.0	27.4	30.5	32.1	27.6	26.3	26.8	27.6	25.1	25.0	22.7
cfs	48.3	43.3	42.4	47.2	49.7	42.7	40.7	41.5	42.7	38.8	38.7	35.1
Ac-ft	2,970	2,670	2,520	2,900	2,950	2,630	2,500	2,310	2,620	2,310	2,380	2,090
Calendar year 1952: Max	68			Min	16.0	Mean(mgd)	26.4	Mean(cfs)	43.9	Ac-ft	31,940	
Fiscal year 1952-53: Max	68			Min	22	Mean(mgd)	27.5	Mean(cfs)	42.5	Ac-ft	30,850	

* Discharge measurement made on this day.

Miscellaneous discharge measurements

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

Miscellaneous discharge measurements on Oahu during fiscal year July 1952 to June 1953

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Sept. 25	Makaha tunnel.	Farm land.....	At mouth in Makaha Valley, near Waianae.	0.971	0.628
Dec. 4	do.....	do.....	do.....	.937	.606
Feb. 3	do.....	do.....	do.....	1.01	.655
Apr. 7	do.....	do.....	do.....	.917	.591
July 23	Tunnel 19.....	Kanewai Stream	At weir 28, near Waianae.....	1.22	.789
Sept. 24	do.....	do.....	do.....	1.08	.696
Dec. 3	do.....	do.....	do.....	1.17	.756
Feb. 4	do.....	do.....	do.....	.983	.635
Apr. 7	do.....	do.....	do.....	.786	.508
July 23	Tunnel 2.....	do.....	At weir 8, near Waianae.....	-	0
Sept. 23	Tunnel 6.....	do.....	At weir 7, near Waianae.....	.170	.110
Sept. 24	do.....	do.....	do.....	.144	.093
Dec. 3	do.....	do.....	do.....	.144	.093
Feb. 4	do.....	do.....	do.....	.124	.080
Apr. 8	do.....	do.....	do.....	.135	.087
July 23	Tunnel 6-A.....	do.....	At weir 20, near Waianae.....	.029	.019
Sept. 24	do.....	do.....	do.....	.029	.019
Dec. 3	do.....	do.....	do.....	.040	.026
Feb. 4	do.....	do.....	do.....	.036	.023
Apr. 8	do.....	do.....	do.....	.036	.023
July 23	Tunnel 7.....	do.....	At weir 21, near Waianae.....	.063	.041
Sept. 24	do.....	do.....	do.....	.060	.039
Dec. 3	do.....	do.....	do.....	.070	.045
Feb. 4	do.....	do.....	do.....	.090	.058
Apr. 8	do.....	do.....	do.....	.070	.045
July 23	Tunnel 8.....	do.....	At weir 22, near Waianae.....	-	0
Sept. 23	Tunnel 9.....	do.....	At weir 23, near Waianae.....	.057	.037
Sept. 24	do.....	do.....	do.....	.048	.031
Dec. 3	do.....	do.....	do.....	.057	.037
Feb. 4	do.....	do.....	do.....	.051	.033
Apr. 8	do.....	do.....	do.....	.060	.039
July 23	Kanewai.....	Honua Stream..	Above flume entrance, near Waianae....	1.44	.931
Sept. 24	do.....	do.....	do.....	1.40	.905
Dec. 3	do.....	do.....	do.....	1.53	.989
Feb. 4	do.....	do.....	do.....	1.34	.863
Apr. 7	do.....	do.....	do.....	1.18	.764
July 22	Right Branch of West Fork Kalalula.	West Fork Kal- alula Stream	At weir 25, above tunnel 14, near Waianae.	.170	.110
Sept. 23	do.....	do.....	do.....	.098	.063
Dec. 2	do.....	do.....	do.....	.084	.054
Feb. 4	do.....	do.....	do.....	.057	.037
Apr. 8	do.....	do.....	do.....	.084	.054
July 22	Tunnel 14.....	Right Branch of West Fork Kalalula Stream.	At weir 24, near Waianae.....	.104	.067
Sept. 23	do.....	do.....	do.....	.104	.067
Dec. 2	do.....	do.....	do.....	.093	.060
Feb. 4	do.....	do.....	do.....	.107	.069
Apr. 8	do.....	do.....	do.....	.098	.063
July 22	Right Branch of West Fork Kalalula.	West Fork Kal- alula Stream.	At weir 10, near Waianae.....	.227	.147
Sept. 23	do.....	do.....	do.....	.193	.125
Dec. 2	do.....	do.....	do.....	.227	.147
Feb. 4	do.....	do.....	do.....	.203	.131
Apr. 8	do.....	do.....	do.....	.170	.110
July 22	Left Branch of West Fork Kalalula.	do.....	At wier 9, below tunnel 11, near Waianae.	.076	.049
Sept. 23	do.....	do.....	do.....	.016	.010
Dec. 2	do.....	do.....	do.....	.022	.014
Feb. 4	do.....	do.....	do.....	.011	.007
Apr. 8	do.....	do.....	do.....	.012	.008
July 22	Tunnel 15.....	do.....	At weir 13, near Waianae.....	.401	.259
Sept. 23	do.....	do.....	do.....	.451	.291
Dec. 2	do.....	do.....	do.....	.457	.295
Feb. 4	do.....	do.....	do.....	.455	.281
Apr. 7	do.....	do.....	do.....	.324	.209
July 22	West Fork Kalalula.	Kalalula Stream.	At weir 14, below tunnel 15, above pipeline diversion, near Waianae.	.728	.471
Sept. 23	do.....	do.....	do.....	.654	.423
Dec. 2	do.....	do.....	do.....	.696	.450
Feb. 4	do.....	do.....	do.....	.577	.373
Apr. 7	do.....	do.....	do.....	.568	.360

Miscellaneous discharge measurements

Miscellaneous discharge measurements on Oahu during fiscal year July 1952 to June 1953 --Continued

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
July 22	East Fork Kalalula.	Kalalula Stream.	At weir 30, near Waianae.....	-	0
Dec. 2	do.....	do.....	do.....	-	(a)
July 24	Kalalula.....	Honua Stream..	At weir 15, near Waianae.....	.006	.004
Sept. 24	do.....	do.....	do.....	.002	.001
Dec. 3	do.....	do.....	do.....	.017	.011
Feb. 4	do.....	do.....	do.....	.011	.007
Apr. 9	do.....	do.....	do.....	.051	.033
July 24	Hiu.....	do.....	At weir 26, above flume outlet, near Waianae.	.028	.018
Sept. 25	do.....	do.....	do.....	.029	.019
Dec. 4	do.....	do.....	do.....	.078	.049
Feb. 5	do.....	do.....	do.....	.040	.026
Apr. 9	do.....	do.....	do.....	.051	.033
June 30	do.....	do.....	do.....	.032	.021
July 24	do.....	do.....	At weir 17, near Waianae.....	.098	.063
Sept. 25	do.....	do.....	do.....	.084	.054
Dec. 4	do.....	do.....	do.....	.248	.160
Feb. 5	do.....	do.....	do.....	.107	.069
June 30	do.....	do.....	do.....	.060	.039
July 24	Kumaipo.....	do.....	At weir 11, below tunnel 16, near Waianae.	.070	.045
Sept. 25	do.....	do.....	do.....	.051	.033
Dec. 4	do.....	do.....	do.....	.098	.063
Feb. 5	do.....	do.....	do.....	.079	.051
June 30	do.....	do.....	do.....	.048	.031
July 24	do.....	do.....	At weir 12, above diversion flume to Hiu Stream, near Waianae.	.093	.060
Sept. 25	do.....	do.....	do.....	.073	.047
June 30	do.....	do.....	do.....	.070	.045
July 24	Punanaula.....	do.....	At weir 16, below tunnel 17, near Waianae.	.040	.026
Sept. 25	do.....	do.....	do.....	.040	.026
Dec. 4	do.....	do.....	do.....	.042	.027
Feb. 5	do.....	do.....	do.....	.034	.022
June 30	do.....	do.....	do.....	.040	.026
July 24	City and county of Honolulu tunnel.	do.....	40 ft below tunnel portal, near Waianae (formerly published as "at 9-inch Parshall flume just below mouth of tunnel").	2.81	1.82
Sept. 24	do.....	do.....	do.....	2.70	1.75
Dec. 3	do.....	do.....	do.....	2.70	1.75
Feb. 3	do.....	do.....	do.....	2.36	1.53
Apr. 9	do.....	do.....	do.....	2.18	1.41
June 30	do.....	do.....	do.....	1.99	1.29
July 24	Puea mauka ditch.	Farm land.....	At 2-foot Parshall flume below power- plant, near Waianae.	2.18	1.41
Sept. 25	do.....	do.....	do.....	2.87	1.85
Dec. 3	do.....	do.....	do.....	1.88	1.22
Feb. 3	do.....	do.....	do.....	2.07	1.34
Apr. 9	do.....	do.....	do.....	1.83	1.18
June 30	do.....	do.....	do.....	2.30	1.49
Apr. 2	Baskerville Springs.	Keaahala Stream.	1,000 ft downstream from head of valley, near Kaneohe.	.432	.279
May 26	do.....	do.....	At old rice mill, 0.6 mile downstream from head of valley, near Kaneohe.	3.23	2.09
June 24	do.....	do.....	do.....	3.30	2.13
May 26	Keaahala.....	Pacific Ocean.	Just below inflow from Baskerville Springs about 500 ft above Kamehameha Highway, near Kaneohe.	2.82	1.82
June 24	do.....	do.....	do.....	2.89	1.87
Sept. 29	Ahuimanu.....	do.....	At altitude 350 ft, 100 ft northwest of Hygienic Dairy intake, near Heeia.	2.66	1.72
Dec. 17	do.....	do.....	do.....	.38	.25
17	Right Branch Ahuimanu.	Ahuimanu Stream.	Near Heeia.....	.42	.27
17	Unnamed trib- utary.	Kahaluu Stream.	50 ft left of gaging station on Kahaluu Stream.	.61	.40
				.21	.14

a Practically no flow.

Halawa Stream near Halawa

Location.--Lat 21°09'30", long 156°46'00", on right bank 500 ft downstream from confluence of two main branches, 1.8 miles west of Halawa, and 6 miles northeast of Pukoo.

Drainage area.--4.5 sq mi.

Records available.--August 1917 to July 1932, November 1937 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 200 ft (from topographic map). Prior to June 24, 1923, at site 250 ft upstream at different datum.

Average discharge.--29 years (1918-32, 1938-53), 19.1 mgd (29.6 cfs).

Extremes.--Maximum discharge during year, 3,070 mgd (4,750 cfs) Nov. 21 (gage height, 9.28 ft), from rating curve extended as explained below; minimum, 2.45 mgd (3.79 cfs) Feb. 6, 7.

1917-32, 1937-53: Maximum discharge, 5,420 mgd (8,390 cfs) Dec. 3, 1950 (gage height, 11.55 ft), from rating curve extended above 45 mgd on basis of slope-area determination at gage height 6.7 ft; maximum gage height, 12.30 ft Apr. 2, 1948; minimum discharge, 0.8 mgd (1.2 cfs) Oct. 13-15, 19, 1917.

Remarks.--Records poor. A 2-inch pipeline diverts water about a quarter of a mile above station for domestic use of Halawa village.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.7	2.45	2.0	42
.8	3.1	2.5	77
1.0	4.7	3.0	130
1.2	6.9	3.5	200
1.4	10.4	4.0	294
1.6	18.0	4.5	405

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.4	24	9.4	5.7	26	23.5	5.7	2.8	7.6	4.7	16.5	6.9
2	8.3	16.1	8.2	5.2	76	26	5.2	2.8	10.3	5.2	47	9.3
3	8.3	7.6	21.5	4.7	28	11.7	5.2	2.8	21.5	4.2	168	7.6
4	7.6	6.3	6.9	*21.5	15.5	11.6	6.2	2.8	10.8	15.8	128	6.3
5	36	5.7	7.4	35	15.5	26.5	12.9	2.8	9.8	16.4	23.5	5.7
6	12.7	5.7	8.5	6.3	12.0	*16.9	5.7	2.45	8.1	5.7	18.0	5.2
7	8.3	26.5	7.6	5.2	9.4	48	5.7	3.1	70	33	18.0	5.7
8	19.0	6.9	6.3	5.2	7.6	77	5.2	3.45	23	6.9	29.5	5.7
9	84	44	6.9	28.5	6.9	41	4.7	3.1	42	18.9	18.0	6.0
10	18.0	22.5	7.6	16.1	15.2	18.0	4.7	2.8	20	78	15.0	13.7
11	28	22	7.9	26	16.4	11.7	4.7	2.8	136	24	9.4	32.5
12	23.5	*10.3	6.3	14.1	10.6	10.4	13.1	2.8	33	10.9	13.2	21.5
13	10.4	10.7	10.2	7.6	22	8.3	6.9	5.9	15.5	8.3	13.0	9.4
14	19.8	8.3	38	5.7	18.4	7.6	5.2	8.4	14.3	7.6	13.6	18.4
15	178	15.7	8.3	23.5	17.2	7.6	4.7	4.7	9.4	6.9	16.7	14.1
16	30	14.8	6.3	6.9	27	7.6	5.2	3.8	7.6	6.3	14.7	9.4
17	31.5	10.1	5.7	5.7	10.4	69	4.7	9.6	10.0	7.6	10.4	22
18	23.5	11.9	7.6	175	8.3	49	4.2	36	*g18	6.9	7.6	42
19	15.5	11.4	5.7	23	136	11.7	4.2	90	g8.3	6.9	17.4	42
20	13.0	6.9	5.2	10.4	27	13.2	4.7	29.5	g6.9	6.3	11.7	24
21	9.4	6.3	4.7	28	336	9.4	4.7	8.3	g9.0	5.7	11.6	11.0
22	8.3	5.7	4.2	21	47	20.5	4.2	12.7	g15	6.3	*7.6	21
23	8.3	5.7	4.2	43	23	9.4	4.2	8.3	*g7.0	5.7	18.5	18.0
24	7.6	5.2	4.2	29	15.5	9.4	4.2	14.1	g7.0	5.7	10.4	11.7
25	7.6	5.2	4.2	43	11.7	7.6	3.8	7.6	5.2	5.2	12.5	9.4
26	27	28	3.8	47	10.4	7.6	3.45	12.7	8.0	4.7	10.1	11.9
27	12.2	9.3	3.8	13.1	9.4	6.9	3.45	14.3	6.9	5.2	16.6	8.3
28	7.6	6.3	43	15.0	8.3	7.6	3.45	11.6	5.7	6.9	23.5	6.9
29	9.4	5.7	28	67	9.8	9.5	*3.45	-	5.7	8.8	10.4	6.3
30	8.3	5.2	11.9	71	60	6.9	3.1	-	5.2	13.2	7.6	5.7
31	7.6	22	-	42	-	5.7	3.1	-	4.7	-	10.3	-
Total	699.1	392.0	303.5	846.4	1,036.5	596.8	159.90	314.00	560.2	345.4	741.3	417.6
Mean:												
mgd	22.6	12.6	10.1	27.3	34.6	19.3	5.16	11.2	18.1	11.5	23.9	13.9
cfs	35.0	19.5	15.6	42.2	53.5	29.9	7.98	17.3	28.0	17.8	37.0	21.5
Ac-ft	2,150	1,200	931	2,600	3,180	1,830	491	964	1,720	1,060	2,270	1,280

Calendar year 1952: Max 374 Min 3.8 Mean(mgd) 19.1 Mean(cfs) 29.6 Ac-ft 21,440

Fiscal year 1952-53: Max 336 Min 2.45 Mean(mgd) 17.6 Mean(cfs) 27.2 Ac-ft 19,680

Peak discharge (base, 950 mgd).--July 15 (5:30 a.m.) 1,330 mgd (2,060 cfs), 6.90 ft; Oct. 18 (3 p.m.) 1,180 mgd (1,830 cfs), 6.55 ft; Nov. 21 (8 a.m.) 3,070 mgd (4,750 cfs), 9.28 ft; Mar. 11 (3 a.m.) 2,160 mgd (3,340 cfs), 8.22 ft.

* Discharge measurement made on this day.

g Computed from once- or twice-daily staff-gage readings.

Walaieakua Stream near Wailau

Location.--Lat 21°07'30", long 156°49'40", on right bank 0.8 mile upstream from confluence with Pulena Stream, 3.2 miles south of Wailau, and 3.8 miles northwest of Fukoo.

Drainage area.--1.4 sq mi.

Records available.--November 1919 to September 1929, September 1937 to June 1953.

Gage.--Water-stage recorder. Datum of gage is 698 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Dec. 6, 1919, at datum 0.17 ft higher.

Average discharge.--24 years (1920-29, 1938-53), 7.53 mgd (11.7 cfs).

Extremes.--Maximum discharge during year, 710 mgd (1,100 cfs) Nov. 21 (gage height, 6.57 ft), from rating curve extended as explained below; minimum, 2.25 mgd (3.48 cfs) Feb. 9-13, 15.

1919-29, 1937-53: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 26, Apr. 2, 1948, from rating curve extended above 25 mgd by test on model of station site; maximum gage height, 9.90 ft Jan. 26, 1948; minimum discharge, 1.15 mgd (1.78 cfs) Nov. 1, 1949.

Remarks.--Records poor. No diversions.

Revisions (fiscal years).--WSP 1249: 1920(M), 1923(M), 1939(M), 1943(M), 1947(M), 1948(P).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.7	1.85	2.5	26
1.8	3.15	3.0	56
2.0	7.1	3.5	98
2.2	13.1		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.1	5.8	4.2	2.9	9.8	9.8	4.0	2.5	4.7	3.7	2.9	4.2
2	6.4	4.7	4.9	2.9	18.5	11.5	4.0	2.5	3.0	3.3	3.25	4.4
3	5.8	4.2	5.8	2.65	11.4	6.9	3.85	2.5	26	3.45	29	3.85
4	5.1	4.0	3.85	11.6	8.6	6.9	3.85	*2.5	11.7	6.0	31.5	3.7
5	13.6	3.85	4.3	8.0	7.1	9.5	4.0	2.5	8.4	6.0	7.1	a3.4
6	6.9	3.85	4.9	3.5	5.6	9.5	3.7	2.5	6.7	3.7	6.4	a3.2
7	5.3	*12.2	4.2	*3.15	4.9	*30	4.0	2.5	9.7	15.6	6.0	a3.3
8	7.1	4.2	3.85	3.15	4.6	35.5	3.5	2.35	6.4	4.4	9.0	a3.4
9	29.5	16.9	4.1	*11.0	4.4	17.5	3.5	2.25	7.7	4.0	6.0	*a4.0
10	8.4	8.1	4.6	7.0	5.4	11.4	3.3	2.25	6.9	6.8	6.0	4.8
11	11.8	7.8	3.85	9.6	6.7	8.4	3.15	2.25	12.1	4.4	4.7	15.9
12	8.7	5.1	3.7	5.3	5.5	7.1	3.3	2.25	5.8	3.85	7.2	8.7
13	5.8	4.7	8.0	4.2	10.7	6.4	3.15	3.5	7.1	3.5	5.1	4.6
14	18.6	4.4	15.9	3.7	7.1	6.0	3.15	3.0	5.8	3.3	5.3	6.7
15	72	6.0	5.1	11.6	10.4	6.0	3.15	2.5	4.9	3.15	5.8	6.4
16	18.6	4.7	4.4	4.4	10.5	5.6	3.0	2.5	4.8	3.15	5.6	4.6
17	20.5	4.8	4.4	4.0	5.3	24	3.0	3.6	6.7	3.15	4.6	8.5
18	15.2	5.3	4.6	4.9	4.7	21	2.9	10.6	10.2	3.0	4.4	19.9
19	9.8	4.7	3.7	8.4	43	6.7	2.9	27.5	5.6	3.0	4.7	21.5
20	8.4	4.0	3.5	5.6	18.3	6.9	3.15	8.9	4.9	2.9	4.7	10.4
21	6.9	3.85	3.15	7.5	76	8.2	2.9	4.7	6.5	2.75	4.4	6.7
22	6.2	3.7	3.0	6.2	23.5	8.4	3.0	5.1	9.8	2.65	4.0	9.1
23	5.8	3.5	2.9	14.7	11.4	5.8	2.9	4.0	5.1	2.5	6.9	7.1
24	5.3	3.3	2.9	17.1	8.4	5.8	2.75	5.9	4.7	2.85	4.6	5.8
25	5.1	3.75	2.9	24	7.1	5.3	2.75	4.2	4.4	2.5	6.4	5.1
26	7.4	12.5	2.75	16.0	6.7	5.1	2.65	8.4	4.9	2.5	4.0	5.6
27	5.6	4.4	2.65	7.1	6.0	4.9	2.65	9.3	*4.4	2.5	9.2	4.6
28	4.9	3.7	9.8	8.0	5.6	4.7	2.5	6.0	4.4	2.65	5.6	4.2
29	5.3	3.5	4.4	31.5	6.0	4.9	2.5	-	5.4	2.9	4.7	4.0
30	5.3	3.9	3.15	27	27.5	4.4	2.5	-----	3.85	3.0	4.4	3.7
31	4.6	7.4	-----	17.8	-----	4.2	2.5	-----	3.7	-----	5.9	-----
Total	347.0	172.80	139.45	338.55	380.7	308.3	98.15	136.55	243.25	116.95	219.35	201.35
Mean:												
mgd	11.2	5.57	4.65	10.9	12.7	9.95	3.17	4.88	7.85	3.90	7.08	6.71
cfs	17.3	8.62	7.19	16.9	19.6	15.4	4.90	7.55	12.1	6.03	11.0	10.4
Ac-ft	1,060	530	428	1,040	1,170	946	301	419	747	359	673	618

Calendar year 1952: Max 122 Min 2.25 Mean(mgd) 8.13 Mean(cfs) 12.6 Ac-ft 9,150
Fiscal year 1952-53: Max 76 Min 2.25 Mean(mgd) 7.40 Mean(cfs) 11.4 Ac-ft 8,290

Peak discharge (base, 240 mgd).--July 15 (5 a.m.) 270 mgd (418 cfs), 4.79 ft; Oct. 18 (11:30 a.m.) 330 mgd (511 cfs), 5.14 ft; Nov. 21 (8:30 p.m.) 710 mgd (1,100 cfs), 6.57 ft; Mar. 30 (11 p.m.) 330 mgd (511 cfs), 5.14 ft.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for stations on nearby streams.

Pulena Stream near Wallau

Location.--Lat 21°07'40", long 156°49'50", on left bank 0.5 mile upstream from confluence with Waiakaeakua Stream, 3 miles south of Wallau, and 4 miles northwest of Pukoo.

Drainage area.--4.4 sq mi.

Records available.--October 1919 to December 1928, September 1937 to June 1953.

Gage.--Water-stage recorder. Datum of gage is 591 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Dec. 5, 1928, at site 150 ft upstream at different datum.

Average discharge.--23 years (1920-28, 1938-53), 22.1 mgd (34.2 cfs).

Extremes.--Maximum discharge during year, 710 mgd (1,110 cfs) Mar. 2 (gage height, 4.73 ft), from rating curve extended as explained below; minimum, 3.0 mgd (4.6 cfs) Oct. 8, 1919-28, 1937-53: Maximum discharge, 5,970 mgd (9,240 cfs) Jan. 26, 1948 (gage height, 13.16 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 3.0 mgd (4.6 cfs) June 28, July 14, 1920, Oct. 8, 1952.
Flood of Jan. 20, 1929, reached a stage of at least 22 ft (discharge approximately 11,000 mgd, 17,000 cfs).

Remarks.--Records good. No diversions.

Revisions (fiscal years).--WSP 1185: 1938-48(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.5	3.0	1.7	55
.6	4.6	2.0	80
.8	9.0	2.5	138
1.0	15.5	3.0	225
1.3	29		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	20.5	10.4	6.0	3.65	34	30	8.3	4.4	9.9	6.4	4.1	9.9
2	18.3	8.3	6.2	4.5	31	31.5	9.0	4.3	78	5.8	3.95	9.0
3	15.1	7.6	7.7	3.65	31	19.5	9.9	*4.1	48	6.0	46	8.3
4	12.6	7.1	5.2	8.0	19.5	19.3	10.0	3.8	24.5	11.7	56	7.3
5	26	6.6	8.3	10.5	15.5	26.5	9.3	3.8	17.1	8.8	17.9	6.8
6	14.8	6.6	6.6	4.1	13.0	26	8.5	3.8	11.9	6.2	18.7	6.6
7	11.6	17.3	6.0	3.5	11.3	71	15.2	4.3	25.5	7.1	11.9	6.8
8	15.2	*7.3	6.4	*3.5	10.2	57	8.3	4.1	14.4	5.4	22.5	7.3
9	31	21	10.1	*8.6	10.2	43	7.3	3.95	17.9	5.8	13.0	*13.8
10	14.8	13.8	13.5	*5.8	12.0	32.5	7.3	3.65	27	15.9	11.0	19.6
11	14.4	10.4	7.1	11.8	26.5	23.5	6.6	3.65	14.1	8.8	9.9	42
12	12.3	8.0	6.4	7.4	19.9	19.5	7.6	3.65	11.6	6.2	17.8	36
13	9.9	7.3	14.2	4.4	28	16.7	6.6	5.2	16.0	5.6	13.0	16.7
14	29	6.6	21	3.95	25	15.1	6.4	7.3	15.3	5.2	13.0	21.5
15	159	6.6	9.0	74	24	14.1	6.4	4.3	9.9	5.4	16.7	19.5
16	47	7.8	7.1	13.8	31	13.0	5.8	5.6	8.5	5.4	14.4	14.8
17	52	6.0	9.0	9.6	16.7	28	5.8	7.0	16.3	5.6	10.7	18.4
18	51	7.6	11.5	82	14.1	27.5	5.8	24.5	19.2	5.4	9.0	48
19	30	8.4	6.2	26.5	82	16.3	5.8	66	10.7	5.8	13.0	45
20	21.5	6.0	5.4	14.4	37	19.9	6.2	18.4	8.8	6.6	14.1	27
21	18.3	5.8	5.0	14.2	71	15.5	5.6	8.8	8.8	4.4	9.9	18.3
22	14.8	6.0	4.6	11.9	44	17.1	5.4	8.5	16.4	4.3	8.5	19.1
23	13.0	5.4	4.6	29.5	29.5	12.3	5.4	6.8	8.5	3.95	16.7	14.8
24	11.6	5.2	4.3	35.5	23	14.1	5.2	13.4	7.8	4.1	9.6	12.3
25	11.3	6.5	4.8	40	18.7	12.3	5.4	9.0	6.8	3.95	15.0	11.0
26	16.3	21.5	4.3	49	15.5	11.3	4.8	13.5	9.8	3.65	9.9	14.8
27	10.4	10.1	3.95	21.5	14.1	10.7	4.6	17.9	*8.6	4.1	23.5	12.3
28	9.6	6.2	3.8	17.5	14.8	10.7	4.6	14.2	8.3	5.2	18.9	9.9
29	12.0	5.4	4.1	65	13.3	13.0	4.6	-	10.5	5.0	14.4	9.0
30	13.1	5.8	3.8	58	47	9.3	4.4	-----	7.1	5.0	10.4	8.5
31	9.6	8.5	-----	45	-----	8.5	4.4	-----	6.2	-----	15.5	-----
Total	746.0	267.1	216.15	690.75	782.8	684.7	210.5	277.90	499.2	180.75	488.95	514.3
Mean:												
mgd	24.1	8.62	7.20	22.3	26.1	22.1	6.79	9.92	16.1	6.02	15.8	17.1
cfs	37.3	13.3	11.1	34.5	40.4	34.2	10.5	15.3	24.9	9.31	24.4	26.5
Ac-ft	2,290	820	663	2,120	2,400	2,100	646	853	1,530	555	1,500	1,580
Calendar year 1952: Max	513			Min	3.5	Mean(mgd)	20.0	Mean(cfs)	30.9	Ac-ft	22,430	
Fiscal year 1952-53: Max	159			Min	3.5	Mean(mgd)	15.2	Mean(cfs)	23.5	Ac-ft	17,080	

* Peak discharge (base, 1,800 mgd).--No peak above base.

* Discharge measurement made on this day.

Pelekunu Stream near Pelekunu

Location.--Lat 21°08'20", long 156°52'50", on right bank 0.8 mile upstream from Lanipuni Stream, 1.8 miles south of Pelekunu, and 6.8 miles northwest of Pukoo.

Drainage area.--2.4 sq mi.

Records available.--December 1919 to January 1929, September 1937 to June 1953.

Gage.--Water-stage recorder. Datum of gage is 546 ft above mean sea level (levels by Bureau of Reclamation). Prior to Sept. 15, 1937, at site 250 ft upstream at different datum.

Average discharge.--22 years (1920-28, 1938-47, 1948-53), 10.8 mgd (16.7 cfs).

Extremes.--Maximum discharge during year not determined, occurred July 15; minimum 2.4 mgd (3.7 cfs) Feb. 12, 13 (gage height, 0.74 ft).

1919-29, 1937-53: Maximum discharge observed, 3,080 mgd (4,770 cfs) Nov. 20, 1940 (gage height, 6.81 ft), from rating curve extended above 80 mgd by logarithmic plotting, but may have been greater Jan. 26, 1948, when flood of undetermined magnitude destroyed station; minimum, 1.46 mgd (2.26 cfs) Nov. 26, 27, 1943.

Remarks.--Records fair. No diversions.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 16 to Oct. 14)

0.7	2.2	1.4	14.3
.8	2.65	1.6	23.5
.9	3.2	1.8	38
1.0	4.1	2.1	72
1.2	8.3		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.3	4.9	3.6	2.9	13.0	17.0	3.9	2.65	3.9	3.45	2.8	4.7
2	7.6	4.4	3.55	3.3	12.6	15.8	4.1	2.7	6.2	3.3	2.75	4.2
3	6.8	4.2	3.8	2.7	12.0	10.2	5.5	2.65	7.4	3.3	4.2	3.8
4	6.0	4.0	3.3	4.4	11.0	10.4	4.8	2.6	9.0	4.9	5.8	*3.45
5	9.6	3.95	3.9	5.1	8.6	13.4	4.4	2.6	7.3	3.65	13.2	3.2
6	6.0	3.95	3.65	3.1	7.6	11.7	4.3	2.6	5.5	3.4	11.5	3.05
7	5.5	6.4	3.4	2.9	6.8	21	9.3	*2.6	20	3.15	8.0	3.05
8	5.8	4.2	3.65	2.85	6.3	16.4	4.4	2.65	9.6	3.1	8.9	3.2
9	5.8	*6.9	5.5	3.85	6.0	14.3	4.0	2.6	8.4	3.1	7.5	6.2
10	5.6	5.3	6.4	4.6	7.4	12.0	3.9	2.5	14.4	7.6	6.0	7.2
11	5.3	4.5	3.95	5.6	14.7	9.6	3.85	2.45	15.6	*5.4	5.2	12.5
12	4.8	4.2	3.65	4.4	10.6	8.3	3.9	2.4	13.5	3.65	7.5	11.7
13	4.6	3.95	4.4	3.25	12.3	7.6	3.55	3.0	10.7	3.3	6.2	7.5
14	8.3	3.7	6.1	*3.0	11.4	6.8	3.45	4.9	9.4	3.15	6.5	9.1
15	ago	3.7	3.95	5.0	12.5	6.6	3.4	2.85	7.8	3.15	7.0	7.8
16	11.5	4.0	3.65	9.4	13.9	6.0	3.3	3.05	6.6	3.2	6.8	6.5
17	12.4	3.65	4.0	7.0	10.5	10.0	3.2	3.15	8.9	3.3	5.0	7.3
18	16.3	3.9	5.2	32.5	9.1	12.9	3.2	8.8	8.8	3.3	4.7	12.2
19	10.7	4.0	3.55	13.3	32.5	7.8	3.15	13.0	6.6	3.45	5.2	10.5
20	8.8	3.65	3.3	8.8	14.4	8.3	3.2	6.2	5.8	3.05	6.2	8.0
21	7.8	3.6	3.2	8.6	12.0	6.6	3.1	5.2	5.5	3.0	4.7	6.2
22	7.1	3.6	3.1	7.3	9.9	6.6	3.1	4.1	5.6	2.85	4.0	6.0
23	6.5	3.5	3.05	12.7	8.8	5.8	3.05	3.45	4.8	2.8	7.3	5.0
24	6.0	3.55	2.95	11.7	7.6	7.3	3.0	6.9	4.3	2.8	4.5	4.5
25	5.8	3.95	3.05	17.9	6.8	5.8	3.15	4.8	3.9	2.7	6.3	4.0
26	7.1	8.5	2.9	23.5	6.6	5.5	3.0	4.7	4.8	2.65	4.8	5.2
27	5.5	5.6	2.85	11.3	6.0	5.1	2.9	5.6	4.6	2.75	8.4	4.8
28	5.1	3.95	2.75	9.6	5.8	5.0	2.85	5.0	4.4	3.2	8.7	3.6
29	5.6	3.6	2.7	17.5	6.7	5.1	2.85	-	5.0	3.05	7.2	3.3
30	5.7	3.65	2.7	17.9	21	4.1	2.8	-	3.75	3.4	5.2	3.1
31	4.9	4.2	-----	16.0	-----	4.0	2.7	-----	3.55	-----	5.8	-----
Total	279.8	135.15	111.75	326.95	324.4	287.0	115.30	115.70	235.60	103.10	287.85	180.85
Mean:												
mgd	9.03	4.36	3.72	10.5	10.8	9.26	3.72	4.13	7.60	3.44	9.29	6.03
cfs	14.0	6.75	5.76	16.2	16.7	14.3	5.76	6.39	11.8	5.32	14.4	9.33
Ac-ft	859	415	343	1,000	996	881	354	355	723	316	883	555

Calendar year 1952. Max 350 Min 2.7 Mean(mgd) 9.34 Mean(cfs) 14.5 Ac-ft 10,490
Fiscal year 1952-53: Max 60 Min 2.4 Mean(mgd) 6.86 Mean(cfs) 10.6 Ac-ft 7,680

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for stations on nearby streams.

Lanipuni Stream near Pelekunu

Location.--Lat 21°08'40", long 156°52'30", on left bank 0.4 mile upstream from mouth, 1.5 miles southeast of Pelekunu, and 6.8 miles northwest of Pukoo.

Drainage area.--0.8 sq mi.

Records available.--December 1919 to September 1929, September 1937 to June 1953.

Gage.--Water-stage recorder. Datum of gage is 418 ft above mean sea level (hand levels from Geological Survey benchmark).

Average discharge.--23 years (1920-29, 1938-47, 1948-53), 9.38 mgd (14.5 cfs).

Extremes.--Maximum discharge during year, 430 mgd (665 cfs) Oct. 18 (gage height, 5.13 ft), from rating curve extended as explained below; minimum, 1.80 mgd (2.79 cfs) Feb. 11, 12.
1919-29, 1937-53: Maximum discharge, 1,550 mgd (2,400 cfs) Mar. 18, 1943 (gage height, 9.02 ft), from rating curve extended above 35 mgd by test on model of station site; minimum, 1.45 mgd (2.24 cfs) Jan. 29, 1944.

Remarks.--Records fair. No diversions.

Revisions (fiscal year).--WSP 1249: 1943(M).

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

July 1-15		July 15 to June 30		
0.4	2.95	0.2	1.23	0.8
.5	4.7	.3	2.25	1.0
.7	9.4	.4	3.6	2.0
1.0	19.5	.6	7.4	57
1.4	33.5			

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.6	5.0	3.6	2.5	12.5	16.0	3.3	2.0	3.3	2.5	2.5	4.8
2	6.2	3.95	3.4	2.75	18.2	13.7	3.15	2.0	5.8	2.25	2.8	4.1
3	5.3	3.6	3.95	2.35	19.0	7.0	3.15	2.0	5.6	2.5	40	3.6
4	4.7	3.45	3.15	4.9	8.3	7.0	3.45	2.0	6.2	3.2	46	*3.3
5	9.5	3.45	5.1	4.1	6.8	12.7	3.15	2.0	5.1	2.6	13.0	3.3
6	5.1	3.6	4.1	2.6	5.7	12.5	3.0	2.0	3.95	2.25	12.3	3.15
7	4.4	6.3	3.3	2.5	5.3	26	3.5	*2.0	9.2	2.15	7.9	3.15
8	6.8	3.6	3.75	2.35	5.0	15.6	2.85	2.25	5.1	2.0	9.3	3.15
9	10.0	*12.0	7.7	3.05	5.0	12.8	2.75	2.0	6.2	2.3	6.8	8.6
10	6.2	6.6	7.5	5.1	9.4	8.6	2.75	1.91	9.4	15.0	5.7	7.7
11	5.8	5.3	4.4	5.8	18.5	6.8	2.75	1.91	6.0	*6.2	5.0	16.5
12	4.5	4.8	3.95	4.1	9.7	5.9	3.3	1.91	5.5	3.6	7.0	12.6
13	4.2	4.1	5.5	2.85	11.2	5.3	2.75	2.75	5.0	3.15	5.9	6.8
14	17.2	3.6	6.2	*2.6	9.5	5.0	2.75	3.4	4.8	2.85	5.9	7.4
15	32	3.95	3.95	11.8	12.9	5.0	2.75	2.0	3.75	2.85	7.6	7.0
16	9.4	4.5	3.6	4.4	12.0	4.4	2.6	2.5	3.3	2.85	6.7	6.1
17	15.8	3.95	4.0	3.6	8.4	13.5	2.5	3.65	4.2	3.3	5.0	9.7
18	15.7	4.5	4.9	54	7.0	18.6	2.5	9.0	5.6	3.15	4.4	17.2
19	7.9	4.1	3.3	11.1	24	6.4	2.5	14.1	3.6	2.75	5.3	13.3
20	6.8	3.95	3.15	6.4	9.2	7.7	2.5	4.9	3.15	2.6	6.4	7.9
21	5.9	3.45	2.85	8.1	7.9	5.7	2.5	3.3	3.15	2.5	4.8	6.1
22	5.3	3.45	2.85	6.3	6.1	5.1	2.5	3.6	3.3	2.5	4.1	6.1
23	4.8	3.15	2.75	15.8	5.7	4.8	2.5	2.75	2.75	2.25	7.6	5.0
24	4.4	3.15	2.6	15.6	5.0	5.3	2.35	4.8	2.6	2.5	4.6	4.4
25	5.0	4.0	2.85	18.2	4.8	4.8	2.35	3.15	2.5	2.25	7.6	4.1
26	8.0	10.6	2.6	18.4	4.3	4.1	2.25	4.3	4.1	2.15	5.1	6.4
27	4.4	6.0	2.6	7.4	3.95	4.1	2.35	5.2	3.15	2.55	10.5	5.0
28	4.4	4.1	2.5	7.4	3.95	3.95	2.35	5.1	3.0	3.5	10.3	3.95
29	4.8	3.6	2.5	19.4	5.7	4.8	2.25	3.15	3.15	2.75	6.8	3.75
30	5.4	3.75	2.5	20.5	25	3.6	2.15	-----	2.5	3.0	5.1	3.3
31	4.1	4.4	-----	23	-----	3.3	2.0	-----	2.5	-----	5.8	-----
Total	240.6	143.95	115.10	296.95	290.00	255.05	83.50	98.48	137.45	96.00	277.8	197.45
Mean:	7.76	4.64	3.84	9.58	9.67	8.23	2.69	3.52	4.43	3.20	8.96	6.58
mgd	12.0	7.18	5.94	14.8	15.0	12.7	4.16	5.45	6.85	4.95	13.9	10.2
cfs	758	442	353	911	890	783	256	302	422	295	853	606
Ac-ft												

Calendar year 1952: Max 87 Min 2.1 Mean(mgd) 7.24 Mean(cfs) 11.2 Ac-ft 8,130

Fiscal year 1952-53: Max 54 Min 1.91 Mean(mgd) 6.12 Mean(cfs) 9.47 Ac-ft 6,850

Peak discharge (base, 300 mgd).--Oct. 18 (10:30 a.m.) 430 mgd (665 cfs), 5.13 ft.

* Discharge measurement made on this day.

Waikolu Stream below pipeline crossing, near Kalaupapa

Location.--Lat 21°09'50", long 156°56'00", on left bank 0.8 mile upstream from mouth and 3.9 miles southeast of Kalaupapa Post Office.

Drainage area.--4.0 sq mi.

Records available.--June 1919 to July 1932, September 1937 to June 1953. Prior to November 1930, published as Waikolu Stream at pipeline crossing.

Gage.--Water-stage recorder and artificial control. Datum of gage is 253 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Nov. 18, 1930, water-stage recorder at site 500 ft upstream at different datum. Sept. 20, 1937, to July 1948, water-stage recorder at present site at datum 0.49 ft higher.

Average discharge.--23 years (1919-29, 1938-47, 1949-53), 11.6 mgd (17.9 cfs).

Extremes.--Maximum discharge during year, 415 mgd (642 cfs) Oct. 18 (gage height, 4.52 ft), from rating curve extended as explained below; minimum, 3.7 mgd (5.7 cfs) Apr. 9, 1919-32, 1937-53: Maximum discharge, 3,700 mgd (5,720 cfs) Jan. 26, 1948 (gage height, about 10.25 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 1.3 mgd (2.0 cfs) Nov. 1, 2, 1925, June 5, 1926.

Remarks.--Records good. Kalaupapa water-supply system diverts water above station.

Revisions (fiscal years).--WSP 1155: 1932(M), 1938-48(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.8	2.85	2.3	19.5
1.9	4.7	2.5	35
2.0	7.2	2.8	68
2.1	10.3	3.3	140
2.2	14.3		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.4	4.7	4.9	3.9	12.6	16.0	5.8	5.1	5.1	4.3	4.7	5.4
2	5.1	4.7	4.7	*4.2	18.5	13.5	5.8	5.1	4.9	4.3	4.5	4.9
3	4.9	4.7	4.5	4.1	23	6.4	6.4	5.1	5.8	4.3	32	*4.5
4	4.7	4.5	4.5	7.3	13.1	*6.9	6.6	5.1	6.3	4.5	127	4.5
5	5.8	4.5	4.3	8.8	8.8	17.5	6.6	5.1	6.1	4.5	13.1	4.5
6	5.4	4.5	4.3	4.7	6.6	13.2	6.9	4.7	5.1	4.5	18.6	4.7
7	4.9	4.9	4.3	4.3	6.4	40	14.6	4.5	5.4	4.3	10.3	4.7
8	4.9	4.9	4.3	4.3	6.1	11.5	6.6	4.5	10.4	4.3	7.2	4.7
9	7.2	9.1	4.9	4.3	6.4	15.0	6.1	4.9	5.8	4.6	7.8	5.2
10	5.4	*8.1	8.0	5.1	7.3	10.7	5.8	4.5	6.6	21	6.4	10.3
11	5.1	5.1	4.7	6.4	23	7.8	5.8	4.5	13.9	9.7	5.8	13.9
12	4.9	5.4	4.5	6.4	11.1	6.6	6.1	4.5	8.0	5.4	6.4	13.7
13	4.7	5.4	4.3	4.7	14.8	6.4	5.8	4.5	7.9	4.9	7.2	6.9
14	18.0	4.9	5.4	4.3	13.1	6.1	5.6	5.1	5.4	4.7	7.8	10.0
15	5.9	4.9	4.7	4.2	15.8	6.4	5.6	5.1	5.1	4.5	6.9	8.1
16	8.1	4.7	4.5	7.2	13.1	6.1	5.8	4.7	4.9	4.5	6.6	8.1
17	6.6	4.7	4.3	6.6	6.9	20	5.6	4.7	5.1	4.5	5.8	6.1
18	11.5	4.9	4.7	10.2	6.6	22.5	5.6	9.3	5.4	4.5	5.4	10.3
19	6.6	4.7	4.3	11.8	27	7.8	5.4	19.3	5.4	4.7	5.4	11.5
20	5.4	4.7	4.1	6.9	7.5	7.8	5.4	6.1	4.7	4.5	7.8	6.6
21	5.1	4.7	4.1	8.0	6.4	7.2	5.4	6.1	4.7	4.3	6.6	5.4
22	5.1	4.7	3.9	6.9	5.8	6.4	5.4	8.2	4.5	4.3	5.6	5.4
23	4.7	4.5	3.9	14.7	5.8	6.4	5.4	5.4	4.3	4.3	6.6	4.9
24	4.7	4.5	3.9	8.1	5.6	6.4	5.4	4.9	4.3	4.3	5.8	4.7
25	4.7	5.4	3.9	22.5	5.6	6.4	5.4	4.9	4.3	4.3	6.4	4.7
26	4.9	8.5	3.9	21.5	5.4	6.4	5.4	4.7	4.3	4.3	6.9	4.9
27	4.9	7.5	3.9	7.5	5.4	6.1	5.4	5.4	4.3	4.5	6.1	5.4
28	4.9	5.1	3.9	6.6	5.4	6.1	5.4	5.8	4.3	6.1	12.1	5.1
29	5.1	4.7	3.9	19.8	5.4	6.6	5.4	--	4.3	4.9	7.2	4.7
30	4.9	4.7	3.9	23.5	20.5	6.6	5.4	-----	*4.3	5.4	6.1	4.7
31	4.7	4.7	-----	31.5	-----	6.1	*5.4	-----	4.3	-----	5.6	-----
Total	237.3	163.0	133.4	420.3	319.0	318.9	187.1	161.8	223.8	159.2	431.7	198.5
Mean	7.65	5.26	4.45	13.6	10.6	10.3	6.04	5.78	7.22	5.31	13.9	6.62
mgd	11.8	8.14	6.89	21.0	16.4	15.9	9.35	8.94	11.2	8.22	21.5	10.2
cfs	728	500	409	1,290	979	979	574	497	687	489	1,320	609
Ac-ft												
Calendar year 1952: Max	187			Min	3.9	Mean(mgd)	9.25	Mean(cfs)	14.3	Ac-ft	10,390	
Fiscal year 1952-53: Max	127			Min	3.9	Mean(mgd)	8.09	Mean(cfs)	12.5	Ac-ft	9,060	

Peak discharge (base, 450 mgd).--No peak above base.

* Discharge measurement made on this day.

ISLAND OF MOLOKAI

Waiialala Springs near Kalae

Location--Lat 21°10'20", long 157°00'05", on left bank on highway from Kalae to Kalaupapa Pali, 0.8 mile northeast of Kalae and 5.7 miles northeast of Kaunakakai Post Office.

Records available--September 1940 to June 1953.

Gage--Water-stage recorder and sharp-crested V-notch weir. Altitude of gage is 1,600 ft (from topographic map).

Average discharge--12 years (1941-53), 0.017 mgd (0.026 cfs).

Extremes--1940-53: Maximum daily discharge, 0.275 mgd (0.425 cfs) Mar. 11, 1942; minimum daily, 0.002 mgd (0.003 cfs) Jan. 2, 11-13, 1947, Mar. 3-12, 14-17, 1949.

Remarks--Records good. Maui County Water Works diverts entire flow for domestic supply, from tail bay at station.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.010	0.010	0.012	0.012	0.017	0.012	0.010	0.010	0.011	0.012	0.012	0.010
2	.010	.010	.012	.012	.014	.012	.009	.009	.011	.012	.012	*.010
3	.010	.010	.012	.012	.014	.012	.009	.009	.011	.012	.016	.010
4	.010	.010	.012	.015	.014	.012	.009	.009	.012	.012	.019	.010
5	.010	.010	.012	*.014	.012	.012	.009	.009	.012	.012	.012	.010
6	.010	.010	.012	.012	.012	.012	.009	.009	.012	.012	.012	.010
7	.010	.010	.012	.012	.012	.014	.009	.009	.012	.012	.012	.010
8	.010	.010	.012	.011	.012	.014	.009	.010	.012	.012	.012	.010
9	.010	.010	.012	.012	.012	.015	.009	.010	.012	.012	.012	.010
10	.010	.010	.012	.012	.012	.015	.009	.010	.012	.013	.012	.010
11	.010	.010	.012	.012	.012	.015	.009	.009	.012	.013	.012	.010
12	.010	.010	.012	.012	.011	.015	.009	.009	.012	.013	.012	.010
13	.010	.010	.012	.012	.011	.014	.009	.009	.012	.013	.011	.010
14	.010	.010	.012	.012	.012	.014	.009	.009	.012	.012	.011	.010
15	.013	.011	.012	.012	.012	.014	.009	.009	.012	.012	.011	.010
16	.012	.012	.012	.012	.012	.013	.009	.009	.012	.012	.012	.010
17	.012	.012	.012	.014	.012	.012	.009	.010	.012	.012	.012	.010
18	.012	.012	.012	.024	.012	.012	.009	.010	.012	.012	.012	.010
19	.012	.012	.012	.017	.012	.012	.009	.011	.012	.012	.012	.010
20	.011	.012	.012	.013	.012	.012	.009	.011	.012	.012	.012	.010
21	.011	.012	.012	.012	.012	.012	.009	.011	.012	.012	.012	.010
22	.010	.013	.012	.012	.012	.012	.009	.011	.012	.012	.011	.010
23	.010	.013	.012	.014	.012	.012	.009	.011	.012	.012	.011	.010
24	.010	.013	.012	.013	.012	.011	.009	.011	.012	.012	.011	.010
25	.010	.012	.012	.012	.012	.011	.009	.011	.012	.012	.011	.010
26	.010	.012	.012	.012	.012	.010	.009	.011	.012	.012	.011	.010
27	.010	.012	.011	.012	.012	.010	.009	.011	.012	.012	.011	.010
28	.010	.012	.011	.012	.012	.010	.009	.011	.012	.012	.010	.010
29	.010	.012	.011	.013	.012	.010	.009	-	.012	.012	.010	.010
30	.010	.012	.011	.017	.012	.010	.009	-----	.012	.012	.010	.010
31	.010	.012	-----	.018	-----	.010	.010	-----	.012	-----	.010	-----
Total	0.323	0.346	0.356	0.411	0.369	0.381	0.281	0.278	0.369	0.364	0.366	0.300
Mean:												
mgd	0.010	0.011	0.012	0.013	0.012	0.012	0.009	0.010	0.012	0.012	0.012	0.010
cfs	0.016	0.017	0.019	0.020	0.019	0.019	0.014	0.016	0.019	0.019	0.019	0.016
Ac-ft	1.0	1.1	1.1	1.3	1.1	1.2	0.9	0.9	1.1	1.1	1.1	0.9

Calendar year 1952: Max 0.024 Min 0.010 Mean(mgd) 0.012 Mean(cfs) 0.019 Ac-ft 14
 Fiscal year 1952-53: Max 0.024 Min 0.009 Mean(mgd) 0.011 Mean(cfs) 0.017 Ac-ft 13

* Discharge measurement made on this day.

Kaunakakai Stream at Kaunakakai

Location--Lat 21°06'10", long 157°00'50", on left bank 0.6 mile upstream from Molokai Ranch pipeline crossing, 1.3 miles northeast of Kaunakakai Post Office, and 1.7 miles upstream from mouth.

Drainage area--6.48 sq mi.

Records available--December 1949 to June 1953.

Gage--Water-stage recorder. Altitude of gage is 240 ft (from topographic map).

Extremes--1951-52: Maximum discharge during water year, 710 mgd (1,100 cfs) Jan. 19 (gage height, 5.82 ft), from rating curve extended above 130 mgd; no flow most of year.
 1952-53: Maximum discharge during water year, 4.6 mgd (7.1 cfs) Oct. 15 (gage height, 2.05 ft); no flow most of year.
 1949-53: Maximum discharge, 1,120 mgd (1,730 cfs), revised, Mar. 13, 1951 (gage height, 7.10 ft), from rating curve extended above 130 mgd; no flow most of time.
Revisions--Figures of maximum discharge for the period Dec. 16, 1949, to June 30, 1950, and fiscal year 1951 have been revised to 272 mgd (421 cfs) Jan. 23, 1950 (gage height, 4.36 ft) and 1,120 mgd (1,730 cfs) Mar. 13, 1951 (gage height, 7.10 ft), superseding those published in WSP 1219.

Remarks--Records poor for fiscal year 1952 and good for fiscal year 1953.

Revisions--Revised figures of discharge, in million gallons a day, for the fiscal years 1950-51, superseding those published in WSP 1219, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1950		1950-Con.		1951	
Jan. 11	72	Nov. 16	63	Mar. 13	125
23	44	25	75	14	41
Aug. 14	31.5	29	1.0	25	131
15	96	30	130	26	93
16	2.2	Dec. 29	19.5	27	76
Nov. 15	30	30	25.5	28	31.5

Month	Mgd-days	Maximum	Minimum	Mean (mgd)	Mean (cfs)	Runoff in acre-feet
January 1950.....	149.79	72	0	4.83	7.47	460
August.....	131.10	96	0	4.23	6.54	402
November.....	493.46	130	0	16.4	25.4	1,510
December.....	182.33	40	0	5.88	9.10	560
Calendar year 1950.....	-	130	0	2.80	4.33	3,140
March 1951.....	537.14	131	0	17.3	26.8	1,650
Fiscal year 1950-51.....	-	131	0	3.81	5.89	4,270

Revised peak discharge--1950-51: Aug. 15 (2 a.m.) 590 mgd (913 cfs), 5.45 ft; Nov. 17 (7:30 p.m.) 360 mgd (557 cfs), 4.72 ft; Nov. 30 (time unknown) 920 mgd (1,420 cfs), 6.46 ft; Mar. 13 (4:30 p.m.) 1,120 mgd (1,730 cfs), 7.10 ft; Mar. 25 (9 p.m.) 650 mgd (1,010 cfs), 5.63 ft.

Rating table, July 1, 1951, to June 30, 1953 (gage height, in feet, and discharge, in million gallons a day)

1.2	0	2.4	10.2
1.3	.33	2.7	18.5
1.4	.69	3.0	33
1.6	1.49	3.4	63
1.8	2.45	3.8	115
2.1	5.2		

Discharge, in million gallons a day, fiscal year July 1951 to June 1952

Oct. 30.....	27.5	Jan. 19.....	113
31.....	2.85	20.....	34
Dec. 12.....	6.0	21.....	1.64
13.....	.26	22.....	.64
31.....	2.5	Feb. 19.....	4.1
Jan. 1.....	.06	20.....	1.89

Note--Flow occurred only on days listed above.

Month	Mgd-days	Maximum	Minimum	Mean (mgd)	Mean (cfs)	Runoff in acre-feet
October 1951.....	30.35	27.5	0	0.979	1.51	93
December.....	8.76	6.0	0	.285	.438	27
January 1952.....	149.34	113	0	4.82	7.46	458
February.....	5.99	4.1	0	.207	.320	18
Calendar year 1951.....	-	131	0	1.71	2.65	1,920
Fiscal year 1951-52.....	-	113	0	.531	.822	596

Peak discharge (base, 500 mgd)--Jan. 19 (8 p.m.) 710 mgd (1,100 cfs), 5.82 ft.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Oct. 15..... 0.54

Note--Flow occurred only on day listed above.

Month	Mgd-days	Maximum	Minimum	Mean (mgd)	Mean (cfs)	Runoff in acre-feet
October 1952.....	0.54	0.54	0	0.017	0.026	1.7
Calendar year 1952.....	-	113	0	.426	.659	478
Fiscal year 1952-53.....	-	.54	0	.001	.002	1.7

Peak discharge (base, 500 mgd)--No peak above base.

Right Branch of East Fork Kawela Stream near Kamalo

Location.--Lat 21°06'50", long 156°54'30", on left bank at Molokai Ranch pipeline intake, 4.7 miles northwest of Kamalo and 7.6 miles northeast of Kaunakakai.

Drainage area.--0.2 sq mi.

Records available.--September 1946 to June 1953.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,624.86 ft above mean sea level (Territorial Survey benchmark).

Average discharge.--6 years (1947-53), 1.53 mgd (2.37 cfs).

Extremes.--Maximum discharge during year, 57 mgd (88 cfs) Oct. 15 (gage height, 3.83 ft), from rating curve extended as explained below; no flow for many days.
1946-53: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 2.5 mgd by test on model of station site; no flow for many days.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Molokai Ranch diverts low flow from stream above station.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

2.28	0	2.8	1.18
2.4	.03	2.9	1.84
2.5	.14	3.1	4.2
2.6	.36	3.3	12.5
2.7	.71	3.5	25.5

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.20	0	0.02	0	1.49	5.2	0	0	0.06	0	0.07	0.15
2	.10	0	0	0	1.24	3.85	0	0	.07	0	0	0
3	0	0	0	0	1.93	*.55	1.04	0	.26	0	.9	0
4	0	0	0	0	2.6	1.85	.96	0	1.02	.21	11.3	0
5	.90	0	.02	0	.80	5.1	.57	0	.72	.03	3.0	0
6	.20	.90	.11	0	.08	3.05	1.44	0	.10	0	3.6	0
7	.15	.94	.08	0	0	7.7	4.5	0	4.2	0	1.03	0
8	.15	.11	.17	0	0	2.8	.34	0	1.27	0	.73	.04
9	1.0	2.05	1.79	0	0	3.1	.01	0	.08	0	.91	2.9
10	.20	1.16	1.98	.17	.47	.83	.17	0	.49	1.85	.12	3.95
11	.10	.21	.05	1.60	6.0	.32	.09	0	4.8	1.72	0	6.7
12	0	.01	0	1.08	2.35	.03	.02	0	3.0	.16	1.71	3.95
13	0	0	0	.05	4.2	0	0	0	1.48	0	1.48	1.58
14	4.0	0	.87	0	2.95	0	0	1.06	.38	0	1.72	3.75
15	5.0	0	.05	14.3	2.4	0	0	.32	.11	0	1.84	2.55
16	1.1	0	0	.80	3.05	0	0	0	.02	0	1.25	1.70
17	.80	0	.04	.47	.30	1.53	0	0	1.62	0	.27	1.42
18	4.0	0	1.28	4.3	.55	4.1	0	2.45	1.58	0	.01	3.35
19	.80	.01	.03	1.20	4.2	.35	0	4.0	.61	.19	.36	2.0
20	.15	0	0	.19	.37	1.24	0	.61	.06	.02	2.5	.77
21	.10	0	0	.29	.03	.49	0	.48	0	0	*1.08	.16
22	.10	0	0	.49	0	.16	0	.63	0	0	.13	.22
23	0	0	0	2.55	0	.05	0	.07	0	0	2.7	.03
24	0	0	0	1.96	0	1.35	0	.12	0	0	.76	0
25	0	.05	0	2.3	0	.68	0	.10	0	0	2.25	0
26	0	3.65	0	3.3	0	.46	0	.18	0	0	1.14	.97
27	0	1.72	0	.21	0	.13	0	.74	.03	0	2.9	1.47
28	0	.12	0	.06	0	.14	0	.38	.14	0	2.45	.27
29	.10	0	0	4.1	.80	.52	0	-	.03	.08	1.79	.02
30	0	0	0	4.5	10.6	.25	0	-----	0	.78	.43	.03
31	0	.12	-----	2.7	-----	0	0	-----	0	-----	.71	-----
Total	19.15	11.05	6.49	46.62	46.41	45.63	9.14	11.14	22.13	5.04	57.74	37.98
Mean	mgd	0.618	0.356	0.216	1.50	1.55	1.47	0.295	0.398	0.714	0.168	1.86
cfs	0.956	0.551	0.334	2.32	2.40	2.27	0.456	0.616	1.10	0.260	2.88	1.96
Ac-ft	59	34	20	143	142	140	28	34	68	15	177	117

Calendar year 1952: Max 37 Min 0 Mean(mgd) 1.11 Mean(cfs) 1.72 Ac-ft 1,250
Fiscal year 1952-53: Max 14.3 Min 0 Mean(mgd) 0.873 Mean(cfs) 1.35 Ac-ft 977

Peak discharge (base, 100 mgd).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record July 1 to Aug. 6; discharge estimated on basis of records for stations on nearby streams.

Punaula Stream near Pukoo

Location.--Lat 21°05'40", long 156°48'40", on right bank 1.5 miles northwest of Pukoo and 5.5 miles northeast of Kamalo.

Drainage area.--0.4 sq mi.

Records available.--March 1947 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 1,200 ft (from topographic map).

Average discharge.--6 years, 0.799 mgd (1.24 cfs).

Extremes.--Maximum discharge during year, 242 mgd (374 cfs) Nov. 21 (gage height, 5.04 ft), from rating curve extended as explained below; minimum, 0.02 mgd (0.03 cfs) Jan. 22 to Feb. 13, Apr. 26, 27.
1947-53: Maximum discharge, 330 mgd (511 cfs) Apr. 2, 1948 (gage height, 6.35 ft), from rating curve extended above 2 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Mar. 13, 1947.

Remarks.--Records good.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.01	1.0	2.55
.5	.04	1.1	3.85
.6	.16	1.2	5.4
.7	.39	1.4	9.5
.8	.78	1.6	14.7
.9	1.48	1.9	24

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.50	0.24	0.46	0.08	0.97	0.84	0.08	0.02	0.10	0.06	0.14	0.20
2	.37	.22	.21	.07	2.8	1.42	.07	.02	2.35	.07	.79	.22
3	.41	.11	.82	.05	1.67	.42	.08	.02	2.45	.04	5.7	.16
4	.30	.09	.20	1.18	.45	.36	.16	.02	1.38	.70	5.3	.10
5	1.52	.09	.20	1.26	.33	.80	.18	.02	1.32	.83	.83	.09
6	.66	.08	.22	.14	.45	.71	.07	.02	.43	.12	.56	.07
7	.28	1.39	.28	.07	.74	3.85	.31	.02	.76	7.3	.30	.08
8	.37	.21	.12	.05	.24	*6.1	.07	.02	.44	.24	1.14	.08
9	4.6	2.65	.14	2.25	.20	1.53	.04	.02	.18	.11	.53	.14
10	.92	.83	.26	1.47	.57	.56	.03	.02	.51	.52	.87	.82
11	1.46	.81	.12	*1.94	.98	.28	.03	.02	2.15	.35	.24	3.3
12	.89	.22	.09	.84	.82	.20	.04	.02	.22	.12	.45	1.15
13	.26	*.18	.33	.24	1.75	.14	.04	.46	.14	.08	.36	.26
14	2.8	.10	3.6	.10	1.12	.11	.03	.24	.23	.06	.36	.57
15	9.5	.12	.43	1.98	1.42	.11	.03	.09	.09	.05	.46	.84
16	1.12	.26	.16	.33	1.62	.12	.03	.04	.08	.05	.28	.28
17	1.63	.11	.11	.95	.30	3.3	.03	.22	.87	.04	.28	.77
18	1.66	.24	.47	7.1	.24	4.4	.03	2.8	.87	.05	.12	2.75
19	.56	.65	.12	.62	5.4	.30	.04	4.9	.25	.14	.26	2.35
20	.39	.18	.07	.24	.48	.33	.05	.79	.10	.07	.28	.93
21	.26	.12	.05	.83	20	1.33	.04	.14	.15	.04	.33	.57
22	.22	.10	.04	.78	1.66	1.80	.03	.07	1.86	.04	*.14	1.14
23	.18	.08	.04	1.78	.45	.28	.02	.05	.25	.03	1.08	.75
24	.16	.08	.04	3.55	.28	.53	.02	.08	*.10	.04	.33	.28
25	.14	.07	.04	4.0	.20	.22	.02	.14	.09	.03	.50	.18
26	.44	1.59	.04	2.45	.18	.18	.02	.33	*.16	.02	.32	.40
27	.24	.34	.04	.42	.14	.16	.02	.62	.14	.03	1.09	.22
28	.16	.14	2.05	.66	.10	.16	.02	.37	.16	.08	.75	.14
29	.34	.09	1.05	4.8	.14	.18	.02	-	.26	.05	.26	.11
30	.30	.08	.23	3.45	3.7	.16	.02	-	.12	.16	.16	.09
31	.22	.61	-	2.2	-	.09	.02	-	.08	-	.62	-
Total	32.66	12.08	12.04	45.88	49.40	30.97	1.69	11.58	18.07	11.52	24.77	19.04
Mean	1.05	0.390	0.401	1.48	1.65	0.999	0.055	0.414	0.583	0.384	0.799	0.635
mgd	1.62	0.603	0.620	2.29	2.55	1.55	0.085	0.641	0.902	0.594	1.24	0.982
cfs	100	37	37	141	152	95	5.2	36	55	35	76	58
Ac-ft	100	37	37	141	152	95	5.2	36	55	35	76	58

Calendar year 1952: Max 25 Min 0.04 Mean(mgd) 0.902 Mean(cfs) 1.40 Ac-ft 1,010
Fiscal year 1952-53: Max 20 Min 0.02 Mean(mgd) 0.739 Mean(cfs) 1.14 Ac-ft 827

Peak discharge (base, 70 mgd).--Sept. 28 (10:30 p.m.) 73 mgd (113 cfs), 2.96 ft; Oct. 18 (11 a.m.) 82 mgd (127 cfs), 5.12 ft; Nov. 21 (8 p.m.) 242 mgd (374 cfs), 5.04 ft; Apr. 7 (3:30 a.m.) 95 mgd (147 cfs), 3.30 ft.

* Discharge measurement made on this day.

ISLAND OF MAUI

Oheo Stream below diversion dam, near Kipahulu

Location.--Lat 20°41'05", long 156°04'10", on left bank just downstream from old diversion dam, 2 miles northwest of Kipahulu and 2.5 miles upstream from mouth.

Drainage area.--5.8 sq mi.

Records available.--February 1927 to September 1929, December 1931 to June 1953. Published as "at elevation 1,550 ft, near Kipahulu" 1927-29.

Gage.--Water-stage recorder. Altitude of gage is 1,550 ft (from topographic map). Prior to Sept. 6, 1929, at site 100 ft upstream at different datum.

Average discharge.--18 years (1927-29, 1932-35, 1940-53), 36.9 mgd (57.1 cfs).

Extremes.--Maximum discharge during year, 3,200 mgd (4,950 cfs) Nov. 21, Feb. 28, from rating curve extended above 750 mgd by test on model of station site; maximum gage height, 9.70 ft Feb. 28; minimum discharge, 0.01 mgd (0.02 cfs) Feb. 4-6.
1927-29, 1931-53: Maximum discharge, 6,000 mgd (9,280 cfs) Mar. 4, 1939, estimated on basis of computation of peak flow over dam; no flow at times.

Remarks.--Records good. Small diversion below station for domestic supply.

Revisions (fiscal years).--WSP 1155: 1932-35(M), 1937-40(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.0	0	1.3	15.3
.1	.03	1.6	27.5
.2	.13	2.0	48.5
.3	.34	2.5	86
.4	.70	3.0	133
.5	1.20	4.0	255
.6	1.95	5.0	425
.8	4.1	6.0	710
1.0	7.5		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.2	6.8	17.2	0.12	12.0	122	0.46	0.04	107	0.82	9.0	4.3
2	*4.2	1.64	10.4	.41	8.5	133	.37	.03	14.9	.54	2.45	9.7
3	10.7	.54	16.7	.14	4.4	21	.34	.02	28	.39	1.21	2.6
4	12.6	.52	4.4	.50	.31	116	.46	.02	246	11.2	95	3.45
5	50	.40	18.1	1.24	15.6	144	.37	.01	44	32.5	1.62	.97
6	3.9	.37	40	.16	41	79	.34	.01	5.8	2.15	20.5	.62
7	1.04	19.7	35.5	.10	5.8	220	.31	.02	1.42	.70	17.6	3.4
8	7.2	4.1	4.2	.07	1.07	174	.22	.05	.99	.50	70	13.5
9	133	51	46	3.6	.87	71	.18	.04	307	.40	88	29
10	5.6	8.0	59	.52	65	29	.14	.02	322	.31	37	20.5
11	1.34	9.7	36.5	9.1	*460	4.8	.13	.03	68	.22	4.3	33
12	.78	1.47	25.5	45	.68	1.88	.11	.04	130	.16	3.8	43
13	.54	*6.9	105	1.50	125	1.27	.10	.12	255	.13	*11.4	26
14	2.55	.91	.69	.50	108	.92	.09	8.7	60	.11	10.5	27
15	72	.56	8.7	.33	25	.74	.09	.85	23	.09	24	46
16	8.8	1.55	3.8	4.4	158	.62	.09	217	8.0	.08	16.9	43
17	22	.31	5.7	4.1	74	1.10	.09	9.7	28.5	.08	2.75	32
18	127	.24	6.1	.60	23.5	31	.10	33	84	.37	.70	50
19	9.6	.34	1.00	.34	408	2.3	.61	2.2	7.9	.33	.92	7.9
20	1.84	.18	.66	.22	195	.87	.22	.63	2.3	.09	100.7	1.50
21	.87	.14	.50	.14	218	2.45	.63	.28	25.5	.08	10.1	.74
22	.66	.09	.40	.16	163	22	15.8	.18	32.5	.08	.63	.86
23	.50	.07	.31	28.5	17.2	6.2	.90	1.85	3.4	.07	7.8	*.88
24	.43	.50	.26	74	5.1	21.5	.43	174	1.20	.07	1.26	.69
25	.48	.07	*.18	10.9	1.97	2.2	.31	195	1.14	.07	29	.46
26	6.8	59	.13	2.4	1.34	1.68	.22	48	*15.4	.07	27.5	.72
27	28.5	33.5	.11	.38	1.55	1.43	.16	41	3.9	.06	224	.46
28	29	.78	.09	.24	15.3	1.82	.13	248	13.3	.09	166	.34
29	20	.40	.31	2.55	82	11.3	.11	-	41	.12	116	.42
30	18.2	.26	.25	30.5	398	2.75	.09	-----	7.7	3.45	11.4	.31
31	3.45	8.5	-----	18.3	-----	.58	.07	-----	2.1	-----	32	-----
Total	589.76	212.33	516.00	240.82	2,702.51	1,228.41	23.67	980.84	1,890.95	55.13	1,052.04	403.32
Mean:												
mgd	19.0	6.85	17.2	7.77	90.1	39.6	0.764	35.0	61.0	1.84	33.9	13.4
cfs	29.4	10.6	26.6	12.0	139	61.3	1.18	54.2	94.4	2.85	52.5	20.7
Ac-ft	1,810	652	1,580	739	8,290	3,770	73	3,010	5,800	169	3,230	1,240

Calendar year 1952: Max 751 Min 0.02 Mean(mgd) 40.1 Mean(cfs) 62.0 Ac-ft 45,060
Fiscal year 1952-53: Max 460 Min 0.01 Mean(mgd) 27.1 Mean(cfs) 41.9 Ac-ft 30,360

Peak discharge (base, 1,600 mgd).--Nov. 21 (12:30 a.m.) 3,200 mgd (4,950 cfs), 9.67 ft; Feb. 28 (7 p.m.) 3,200 mgd (4,950 cfs), 9.70 ft; Mar. 4 (5:30 p.m.) 2,600 mgd (4,020 cfs), 9.37 ft.
* Discharge measurement made on this day.

Right Branch Kahalawe Stream near Kipahulu

Location.--Lat 20°41'05", long 156°03'00", on left bank at old ditch intake, 2 miles north of Kipahulu.

Records available.--February 1927 to April 1937, April 1938 to June 1953.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,100 ft (from topographic map). Prior to Apr. 21, 1938, at same site at datum 8 ft lower.

Average discharge.--23 years (1927-34, 1935-36, 1938-53), 3.51 mgd (5.43 cfs).

Extremes.--Maximum discharge during year, 650 mgd (1,010 cfs) Nov. 20 (gage height, 4.24 ft), from rating curve extended as explained below; minimum, 0.37 mgd (0.57 cfs) Feb. 7, 10.

1927-37, 1938-53: Maximum discharge, 2,300 mgd (3,560 cfs) Apr. 29, 1937 (gage height, 15.74 ft, datum then in use), from rating curve extended above 52 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Dec. 18, 1929.

Remarks.--Records good.

Revisions (fiscal years).--WSP 1219: 1935(M), 1937(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.8	0.35	1.4	4.8
.9	.52	1.5	6.8
1.0	1.01	1.6	9.3
1.1	1.54	1.7	12.4
1.2	2.3	1.8	17.4
1.3	3.3	2.0	29.5

Discharge, in million gallons a day, fiscal year July 1952, to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.05	2.15	4.6	1.11	2.15	5.6	1.15	0.50	6.5	1.20	3.7	1.87
2	*2.85	2.35	2.45	1.74	3.2	7.0	1.10	.47	2.05	1.10	4.4	2.1
3	2.85	1.66	4.5	1.01	2.0	2.75	1.01	.50	3.75	1.01	3.75	1.66
4	3.3	1.60	1.87	2.2	1.73	4.5	1.10	*.45	15.8	2.3	10.0	1.74
5	9.4	1.47	1.91	3.4	1.60	4.2	1.01	.42	3.65	2.05	1.55	1.54
6	3.05	1.35	10.1	1.05	10.4	5.6	1.49	.42	1.54	1.10	4.1	1.47
7	2.3	4.2	7.4	.92	2.9	10.8	1.06	.40	1.30	.97	4.4	2.05
8	5.0	2.25	2.05	.89	1.66	7.5	.87	1.30	1.15	.87	6.2	2.65
9	17.1	9.9	3.45	4.1	1.54	3.75	.85	.57	4.5	.63	4.5	5.9
10	3.15	2.35	6.4	1.78	3.95	3.4	.79	.42	12.6	.79	7.1	2.6
11	2.45	3.3	2.9	3.5	*10.7	2.2	.75	.47	10.7	.75	1.66	5.8
12	2.05	1.95	2.5	8.9	4.2	1.95	.71	.86	25.5	.71	1.60	3.7
13	1.87	*1.62	8.3	1.54	4.5	1.73	.71	2.45	5.1	.68	1.73	3.2
14	5.1	1.54	5.5	3.55	6.6	1.66	.68	2.05	3.95	.65	1.66	2.55
15	10.6	1.55	2.2	3.8	3.8	1.54	.68	.86	2.95	.65	2.25	2.4
16	3.6	1.47	1.95	12.1	9.6	1.47	.65	3.75	1.81	.68	1.96	2.1
17	6.5	1.35	2.9	3.2	2.2	4.1	.68	1.10	2.2	.75	1.41	3.85
18	10.6	1.35	2.25	1.66	1.95	*8.1	.65	3.75	6.8	1.52	1.25	9.7
19	3.4	1.86	1.66	1.66	21.5	1.66	1.98	1.05	1.66	.75	1.75	4.1
20	2.4	1.35	1.47	1.30	2.9	1.73	.83	.83	1.47	.68	2.75	2.2
21	2.05	1.30	1.30	1.20	12.8	1.66	3.4	.79	4.1	.75	2.3	1.95
22	2.15	1.15	1.20	2.85	13.6	4.3	5.1	.62	3.2	.83	1.41	3.7
23	2.05	1.15	1.15	4.5	3.4	2.2	17.01	.89	1.47	.68	2.7	*3.45
24	1.87	1.15	1.10	4.8	2.3	2.7	.92	2.65	1.30	.58	2.0	2.2
25	1.80	1.15	1.05	2.6	1.95	1.73	.75	5.8	1.30	.55	4.3	1.95
26	4.0	6.2	1.01	1.91	1.80	2.1	.68	3.6	*2.25	.50	3.3	2.4
27	6.5	2.25	.97	1.41	1.80	1.76	.62	3.3	1.25	.55	7.5	1.80
28	5.8	1.35	1.67	1.20	2.6	1.47	.64	10.0	1.20	1.27	4.5	1.66
29	2.4	1.10	2.35	3.75	3.75	1.96	.58	-	2.55	1.72	4.7	2.3
30	2.55	1.39	1.20	7.4	22.5	1.41	.55	-----	1.55	1.45	2.7	2.0
31	1.80	5.5	-----	4.1	-----	1.25	.53	-----	1.20	-----	5.1	-----
Total	133.59	70.31	89.16	95.13	191.68	103.78	33.51	50.27	135.95	28.92	108.23	86.59
Mean:	4.31	2.27	2.97	3.07	6.39	3.35	1.08	1.80	4.39	0.964	3.49	2.89
mgd	6.67	3.51	4.60	4.75	9.89	5.18	1.67	2.79	6.79	1.49	5.40	4.47
cfs	410	216	274	292	598	318	103	154	417	89	332	266
Ac-ft												
Calendar year 1952:	Max	38.5	Min	0.83	Mean(mgd)	3.92	Mean(cfs)	6.07	Ac-ft	4,400		
Fiscal year 1952-53:	Max	29	Min	0.40	Mean(mgd)	3.09	Mean(cfs)	4.78	Ac-ft	3,460		

Peak discharge (base, 200 mgd).--Nov. 20 (3 p.m.) 650 mgd (1,010 cfs), 4.24 ft; Mar. 12 (8:30 p.m.) 420 mgd (650 cfs), 3.65 ft.

* Discharge measurement made on this day.

Makapipi ditch near Nahiku

Location.--Lat 20°48'20", long 156°06'25", on right bank at entrance to tunnel No. 1, 1.8 miles south of Nahiku and 4.8 miles southeast of Keanae.

Records available.--July 1948 to June 1953.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,350 ft (from topographic map).

Average discharge.--5 years, 2.96 mgd (4.58 cfs).

Extremes.--1948-53: Maximum daily discharge, 7.8 mgd (12.1 cfs) Nov. 21, 1951; minimum daily, 0.56 mgd (0.87 cfs) Feb. 11, 12, 14, 15, 1953.

Remarks.--Records good.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.0	3.2	2.05	1.87	6.5	4.7	2.05	0.75	1.87	1.99	1.01	3.55
2	*4.6	3.05	1.99	1.76	7.4	5.2	1.99	.75	1.99	1.87	1.01	3.55
3	4.3	3.0	2.05	1.88	7.4	4.7	1.93	*.72	2.05	1.81	1.84	3.45
4	4.0	2.85	2.05	3.45	7.4	4.8	1.87	.68	2.65	1.76	4.9	3.35
5	4.1	2.65	1.99	2.85	6.0	5.2	1.76	.64	3.4	1.71	5.0	3.05
6	4.0	2.55	2.85	2.45	5.2	6.0	1.76	.64	3.9	1.65	4.2	2.85
7	3.9	2.45	3.05	2.2	4.7	6.5	1.71	.64	3.9	1.60	4.7	2.65
8	3.9	2.3	3.05	2.05	4.2	6.9	1.65	.60	3.6	1.55	5.2	2.45
9	4.0	2.6	3.05	1.93	3.95	6.5	1.60	.60	4.0	1.50	4.9	2.6
10	4.1	2.6	3.05	1.76	4.1	6.5	1.50	.60	6.0	1.50	4.4	2.4
11	3.95	2.65	3.2	1.76	5.6	5.6	1.45	.56	6.0	1.50	4.0	2.35
12	3.7	2.65	3.4	1.87	*5.2	5.1	1.39	.56	5.1	1.39	*3.75	2.45
13	3.45	2.65	4.2	1.76	5.1	4.6	1.34	.60	4.9	1.34	3.55	2.55
14	3.95	2.6	3.95	1.71	5.1	4.2	1.29	.56	4.5	1.29	3.25	2.6
15	5.6	2.6	3.95	1.65	4.8	3.9	1.24	.56	4.3	1.29	3.05	2.6
16	4.8	2.45	3.8	1.60	5.6	3.7	1.20	.68	4.3	1.24	2.8	2.65
17	4.9	2.35	3.6	1.55	5.0	3.55	1.15	.60	4.3	1.24	2.6	2.8
18	6.0	2.3	3.55	2.2	4.6	3.6	1.15	.68	4.0	1.24	2.45	3.05
19	5.1	2.15	3.4	5.0	5.2	3.4	1.11	.88	3.9	1.20	2.3	3.35
20	4.5	2.05	3.25	4.4	5.6	3.35	1.11	.88	3.8	1.20	2.15	3.7
21	4.2	1.99	3.05	4.9	5.6	3.1	1.06	.79	3.6	1.20	2.15	3.7
22	3.95	1.93	2.85	5.2	4.9	2.9	1.01	.75	3.45	1.15	2.05	3.55
23	3.75	1.87	2.65	5.6	4.6	2.8	1.01	.79	3.25	1.11	1.99	3.4
24	3.6	1.76	2.55	6.5	4.3	2.7	.97	2.65	3.05	1.11	1.93	3.2
25	3.4	1.71	2.45	6.5	4.0	2.6	.97	1.71	2.8	1.11	1.93	2.9
26	3.35	1.99	2.3	6.5	3.8	2.55	.92	1.85	2.65	1.06	1.93	2.8
27	3.25	2.3	2.2	5.2	3.7	2.45	.88	1.60	2.55	1.06	2.35	2.6
28	3.2	2.2	2.1	4.9	3.45	2.35	.88	1.60	2.4	1.06	3.6	2.45
29	3.1	2.3	1.99	4.7	3.35	2.3	.83	-	2.3	1.06	3.45	2.35
30	3.0	2.2	1.93	6.0	4.4	2.2	.79	-----	2.15	1.06	3.55	2.2
31	2.9	2.1	-----	6.5	-----	2.1	.79	-----	2.05	-----	3.55	-----
Total	125.55	74.05	85.55	108.20	150.75	126.05	40.36	24.72	108.71	40.85	95.54	86.95
Mean	4.05	2.39	2.85	3.49	5.02	4.07	1.30	0.883	3.51	1.36	3.08	2.90
mgd	6.27	3.70	4.41	5.40	7.77	6.30	2.01	1.37	5.43	2.10	4.77	4.49
cfs	385	227	263	332	463	387	124	76	334	125	293	267
Ac-ft												
Calendar year 1952	Max 7.4			Min 1.34		Mean(mgd) 3.66		Mean(cfs) 5.66		Ac-ft 4,120		
Fiscal year 1952-53	Max 7.4			Min 0.56		Mean(mgd) 2.92		Mean(cfs) 4.52		Ac-ft 3,280		

* Discharge measurement made on this day.

Hanawi Stream near Nahiku

Location.--Lat 20°48'35", long 156°06'50", on left bank 200 ft upstream from Koolau ditch intake and trail, 1.8 miles southwest of Nahiku, and 4.5 miles southeast of Keanae.

Drainage area.--0.8 sq mi.

Records available.--January 1914 to January 1916, November 1921 to June 1953.

Gage.--Water-stage recorder. Jan. 9, 1914, to Jan. 6, 1916, at site 50 ft downstream in same pool at datum 0.12 ft lower.

Average discharge.--31 years (1922-53), 13.5 mgd (20.9 cfs).

Extremes.--Maximum discharge during year, 1,460 mgd (2,260 cfs) Mar. 4 (gage height, 7.52 ft), from rating curve extended above 260 mgd as explained below; minimum, 1.34 mgd (2.07 cfs) Feb. 12.
1914-16, 1921-53: Maximum discharge, about 3,600 mgd (5,570 cfs) Jan. 18, 1916 (gage height, 11.6 ft, at present site), by test on model of station site; minimum, 1.1 mgd (1.7 cfs) Feb. 19, 20, 1944.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 1045: 1922-43(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.2	1.43	2.0	33
.3	1.98	2.5	54
.5	3.4	3.0	85
.7	5.3	3.5	125
1.0	9.0	4.0	176
1.5	18.6	4.5	250

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.8	5.7	3.35	1.82	22.5	24	3.2	1.5	8.4	2.35	1.98	3.8
2	5.8	3.65	2.8	1.82	58	33.5	3.0	1.5	3.65	2.3	1.92	3.15
3	5.2	3.3	3.75	4.6	*41	10.4	2.8	*1.5	2.8	2.25	48	2.85
4	5.8	3.15	3.1	8.6	9.4	58	2.7	1.54	172	2.15	184	2.7
5	8.4	3.1	2.55	3.1	6.4	80	2.6	1.54	37.5	2.15	10.8	2.5
6	5.4	*3.1	10.9	2.35	5.2	60	2.5	1.54	5.9	2.1	31.5	2.45
7	4.4	3.85	6.1	2.25	4.5	67	2.4	1.60	3.55	2.05	14.3	2.35
8	6.9	4.0	3.9	2.1	3.95	28.5	2.4	1.54	3.0	1.98	8.5	2.35
9	8.7	18.4	11.3	2.1	7.4	30.5	2.3	1.48	65	1.98	4.9	3.9
10	5.4	5.4	9.5	2.05	41	18.4	2.3	1.43	172	2.15	3.8	5.2
11	4.5	3.7	4.6	2.7	118	8.5	2.3	1.43	8.0	3.85	*3.25	6.3
12	3.95	3.25	3.8	4.4	31.5	7.3	2.2	1.43	4.8	2.45	3.0	8.2
13	3.65	3.0	31	2.45	35	6.8	2.2	1.82	5.3	2.1	2.8	4.2
14	36.5	2.85	8.5	2.1	40	6.5	2.1	2.05	9.6	2.05	2.55	4.3
15	52	3.15	4.3	1.98	32.5	6.4	*2.1	1.70	14.3	2.1	2.6	8.7
16	7.8	2.8	3.55	1.87	65	6.3	2.1	4.1	5.9	2.15	2.55	7.5
17	*22.5	2.6	7.7	1.92	10.0	7.2	2.05	2.65	3.7	3.55	2.35	4.0
18	25.5	2.5	5.7	16.1	7.8	36.5	2.05	6.8	10.1	6.1	2.25	7.3
19	6.7	2.45	3.3	45	68	7.4	1.98	13.1	3.95	3.0	2.5	6.4
20	5.3	2.45	2.85	13.0	10.0	6.4	1.92	3.8	3.0	2.45	4.8	4.1
21	4.4	2.35	2.7	24	8.7	6.0	1.87	12.2	2.7	2.25	3.6	3.5
22	4.6	2.3	2.5	13.7	9.0	6.3	1.9	3.5	2.55	2.1	2.5	3.4
23	3.9	2.3	2.35	33	8.4	6.6	1.9	2.8	2.45	2.05	2.55	3.15
24	3.8	2.15	2.25	34	6.7	7.2	1.8	50	2.3	1.92	2.45	2.85
25	3.8	2.5	2.15	12.9	6.2	6.0	1.7	8.4	2.85	1.87	3.25	2.6
26	5.3	15.4	2.1	48	6.3	6.2	1.7	4.3	7.7	1.82	5.0	2.95
27	6.9	10.0	2.05	8.1	6.7	5.0	1.6	4.8	3.7	1.82	12.0	2.7
28	4.4	3.4	1.98	5.4	11.8	4.5	1.6	8.5	3.5	2.35	16.7	2.45
29	3.8	2.85	1.92	9.2	21	4.2	1.5	-	2.85	2.15	10.2	2.55
30	3.65	2.7	1.87	36	64	5.7	1.5	-----	2.5	2.25	4.9	2.45
31	4.5	2.8	-----	49	-----	3.4	1.5	-----	2.35	-----	4.5	-----
Total	280.25	131.15	154.42	395.61	765.95	568.7	65.77	148.55	577.70	71.84	404.00	120.85
Mean												
mgd	9.04	4.23	5.15	12.8	25.5	18.3	2.12	5.31	18.6	2.39	13.0	4.03
cfs	14.0	6.54	7.97	19.8	39.5	28.3	3.28	8.22	28.8	3.70	20.1	6.24
Ac-ft	860	402	474	1,210	2,350	1,750	202	456	1,770	220	1,240	371

Calendar year 1952: Max 170 Min 1.82 Mean(mgd) 15.2 Mean(cfs) 23.5 Ac-ft 17,040
Fiscal year 1952-53: Max 184 Min 1.43 Mean(mgd) 10.1 Mean(cfs) 15.6 Ac-ft 11,300

Peak discharge (base, 850 mgd).--Feb. 24 (3 a.m.) 990 mgd (1,530 cfs), 6.05 ft; Mar. 4 (5 p.m.) 1,460 mgd (2,260 cfs), 7.52 ft; Mar. 10 (12:30 a.m.) 1,310 mgd (2,030 cfs), 7.12 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 21 to Jan. 15, Jan. 22 to Feb. 3; discharge estimated on basis of records for stations on nearby streams.

Kapaula Stream near Nahiku

Location.--Lat 20°48'50", long 156°07'05", on right bank 40 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 1.8 miles southwest of Nahiku, and 4 miles southeast of Keanae.

Records available.--November 1921 to June 1953.

Gage.--Water-stage recorder.

Average discharge.--31 years (1922-53), 10.6 mgd (16.4 cfs).

Extremes.--Maximum discharge during year, 751 mgd (1,160 cfs) Mar. 9 (gage height, 5.49 ft), from rating curve extended above 220 mgd by logarithmic plotting; minimum, 0.45 mgd (0.70 cfs) Apr. 27.
1921-53: Maximum discharge, 1,780 mgd (2,750 cfs) Apr. 6, 1938 (gage height, 8.40 ft), from rating curve extended above 220 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) Nov. 23-25, 1933, Oct. 2-5, 1938.

Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.38	1.2	11.6
.5	1.08	1.4	12.4
.6	2.2	1.7	26
.7	3.35	2.0	44
.8	4.8	2.5	83
1.0	8.6	3.0	140

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.6	5.2	2.15	0.87	19.2	18.0	1.86	0.59	11.4	1.01	0.80	2.8
2	3.8	2.55	1.98	.87	52	29	1.75	.59	4.0	.87	.79	2.2
3	3.1	2.1	2.6	5.1	*35	8.6	1.64	*.52	2.3	.80	47	1.64
4	3.45	1.86	2.55	10.7	6.9	42	1.53	.52	64	.73	124	1.42
5	8.0	1.64	2.1	2.8	3.65	63	1.42	.52	41	.66	8.7	1.19
6	4.1	*1.75	12.6	1.53	2.8	50	1.30	.59	7.0	.59	29.5	1.08
7	3.0	2.1	5.8	1.08	2.45	56	1.19	.66	3.0	.59	14.6	1.01
8	5.6	2.45	3.1	1.01	2.1	22.5	1.19	.59	2.3	.52	7.3	1.19
9	10.0	22.5	15.9	1.08	8.5	23.5	1.08	.59	51	.52	3.05	2.85
10	3.8	4.5	10.5	1.01	43	15.7	1.08	.59	97	1.03	2.1	5.1
11	2.9	2.65	4.0	1.81	86	5.6	1.08	.59	8.0	2.9	1.30	5.4
12	2.45	2.2	3.25	3.95	28.5	4.2	1.01	.59	3.85	1.30	1.53	9.3
13	2.1	1.86	30.5	1.64	32	3.5	1.01	1.03	3.75	.80	1.42	3.75
14	37.5	1.75	8.6	1.01	30.5	3.1	.94	1.68	8.9	.66	1.08	3.75
15	47	2.3	3.5	.87	25	2.9	.94	1.30	13.8	.73	1.30	8.6
16	5.6	1.75	2.65	.80	45	2.8	.94	6.0	6.3	.87	1.42	9.1
17	25	1.42	8.0	1.54	8.1	3.95	.87	2.7	3.25	2.75	1.08	3.45
18	27.5	1.30	*6.2	20.5	5.0	31.5	.87	8.8	8.3	5.4	1.01	7.7
19	4.2	1.30	3.0	52	37.5	5.4	.87	13.6	4.4	2.74	1.37	5.9
20	2.9	1.19	2.2	13.3	7.2	3.35	.80	4.6	2.55	1.30	3.9	2.8
21	2.45	1.19	1.75	26	6.5	2.9	.80	6.4	1.98	.87	3.2	2.1
22	2.7	1.08	1.42	14.9	5.8	3.0	.80	4.3	1.64	.80	1.86	*1.98
23	2.3	1.19	1.30	26.5	5.7	3.05	.87	2.95	1.42	.73	1.86	1.86
24	2.5	1.08	1.19	36	3.65	5.5	.80	40	1.19	.59	1.53	1.42
25	2.2	1.53	1.08	16.3	3.1	3.25	.73	8.7	*2.0	.59	2.5	1.30
26	4.0	16.4	1.08	38.5	3.3	4.0	.73	4.6	7.0	.52	4.3	1.75
27	5.2	11.3	1.01	7.8	5.0	2.8	.73	4.2	3.65	.45	12.8	1.64
28	3.35	2.95	.94	3.35	10.9	2.55	.66	8.5	2.8	1.04	15.6	1.42
29	2.65	2.1	.94	10.4	18.1	2.45	.66	-	1.98	.94	9.5	1.64
30	2.3	1.86	.87	33	55	2.2	.59	-----	1.42	1.08	4.3	1.64
31	3.0	1.75	-----	52	-----	1.98	.59	-----	1.08	-----	3.85	-----
Total	239.25	106.80	142.76	388.22	595.45	428.28	31.33	126.30	372.26	34.04	314.55	96.98
Mean:												
mgd	7.72	3.45	4.76	12.5	19.8	13.8	1.01	4.51	12.0	1.13	10.1	3.23
cfs	11.9	5.34	7.36	19.3	30.6	21.4	1.56	6.98	18.6	1.75	15.6	5.00
Ac-ft	734	328	438	1,130	1,830	1,310	96	388	1,140	104	965	298

Calendar year 1952: Max 108 Min 0.80 Mean(mgd) 12.0 Mean(cfs) 18.6 Ac-ft 13,480
Fiscal year 1952-53: Max 124 Min 0.45 Mean(mgd) 7.88 Mean(cfs) 12.2 Ac-ft 8,820

Peak discharge (base, 450 mgd).--Feb. 24 (2:30 a.m.) 534 mgd (826 cfs), 4.75 ft; Mar. 4 (6 p.m.) 594 mgd (919 cfs), 5.00 ft; Mar. 9 (12 p.m.) 751 mgd (1,160 cfs), 5.49 ft.
* Discharge measurement made on this day.

Koolau ditch at Nahiku weir, near Nahiku

Location.--Lat 20°48'55", long 156°07'15", on right bank between Kapaula and Waiohue Streams, 1.8 miles southwest of Nahiku and 3.8 miles southeast of Kanae.

Records available.--February 1919 to June 1953. Gage-height records collected in this vicinity since 1904 are contained in files of East Maui Irrigation Co.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft above mean sea level. Prior to Apr. 28, 1922, staff gage at same site and datum.

Average discharge.--34 years, 21.6 mgd (33.4 cfs).

Extremes.--1919-53: Maximum daily discharge, 58 mgd (90 cfs) Apr. 11, 1942; no flow at times.

Remarks.--Records good. Flow regulated by spillways and gates. Ditch diverts water from nearly all streams from the Makapipi west to the Alo. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	33.5	26.5	12.2	7.6	52	52	13.2	4.8	29	9.2	6.6	17.2
2	27	17.2	11.3	7.6	55	52	12.5	4.8	15.8	8.7	6.6	14.8
3	23.5	14.8	13.7	14.0	*55	42	11.9	*4.7	12.2	8.4	41	13.5
4	23.5	15.8	12.5	31	45	48	11.3	4.5	24.5	8.2	55	12.5
5	36.5	12.9	11.3	17.0	35.5	55	11.0	4.3	42	7.6	42	11.6
6	25.5	*12.5	39	11.9	28	55	10.7	4.3	27.5	7.4	52	11.0
7	20.5	13.8	25	10.1	23	55	10.1	4.5	20.5	7.1	50	10.4
8	26	14.2	17.8	9.2	19.5	55	9.8	4.5	17.2	6.9	40	10.4
9	39	39.5	35.5	8.9	28	52	9.5	4.3	33	6.6	25.5	14.5
10	25.5	22	35.5	8.4	40	52	9.2	4.3	50	7.6	19.9	17.8
11	21	16.5	20.5	10.4	55	40	8.9	4.3	35.5	13.0	*16.5	19.8
12	18.5	14.5	18.8	16.2	52	33.5	8.7	4.1	25.5	8.4	15.2	27.5
13	16.5	13.2	42	10.1	52	29	8.4	5.4	25	7.1	13.8	17.2
14	32	12.5	35.5	8.7	50	25.5	8.2	6.3	35.5	6.9	12.5	16.8
15	45	14.8	22	7.9	38	24	7.9	5.4	43	6.9	12.5	27.5
16	32.5	12.2	18.1	7.6	52	22.5	*7.6	14.7	30	7.4	11.9	27.5
17	48	11.3	25.5	8.2	40	26	7.4	8.4	22	11.4	11.0	17.2
18	46	10.7	*24	26.5	33.5	52	7.1	19.4	33	16.8	10.1	29
19	33.5	10.1	16.2	52	55	29	6.9	30	22	10.1	10.7	25
20	25.5	9.8	14.2	45	42	23.5	6.9	12.8	16.8	8.2	16.2	18.1
21	21.5	9.2	12.5	48	40	22	6.6	18.3	14.8	7.4	14.5	15.8
22	21	8.9	11.6	50	38	21.5	6.6	12.1	13.8	6.9	11.3	*15.2
23	17.8	8.7	10.7	52	33.5	20.5	6.6	10.4	12.5	6.6	11.0	14.2
24	17.8	8.7	10.1	55	27	24.5	6.4	38.5	11.6	6.4	10.1	12.9
25	16.2	9.5	9.5	48	24	19.9	6.1	25	12.3	6.4	12.4	11.9
26	23	35	9.2	52	23.5	21.5	5.9	16.2	23	6.1	16.3	12.5
27	25.5	30.5	8.7	38	24.5	17.8	5.7	16.4	14.8	8.1	27.5	11.6
28	19.2	15.2	8.4	25.5	35.5	16.5	5.7	25.5	15.5	7.6	35.5	11.0
29	16.8	12.5	7.9	31	45	15.5	5.4	-	11.9	6.9	33.5	11.0
30	15.8	11.6	7.9	55	55	14.5	5.4	-----	10.4	7.4	22	10.4
31	18.7	11.3	-----	55	-----	13.8	5.0	-----	9.5	-----	19.9	-----
Total	814.3	473.9	547.1	827.8	1,196.5	1,031.0	252.6	318.2	708.1	241.7	683.0	485.8
Mean:												
mgd	26.3	15.3	18.2	26.7	39.9	33.3	8.15	11.4	22.8	8.06	22.0	16.2
cfs	40.7	23.7	28.2	41.3	61.7	51.5	12.6	17.6	35.3	12.5	34.0	25.1
Ac-ft	2,500	1,450	1,680	2,540	3,670	3,160	775	977	2,170	742	2,100	1,490
Calendar year 1952: Max	55			Min	0	Mean(mgd)	27.4	Mean(cfs)	42.4	Ac-ft	30,800	
Fiscal year 1952-53: Max	55			Min	4.1	Mean(mgd)	20.8	Mean(cfs)	32.2	Ac-ft	23,250	

* Discharge measurement made on this day.

Waiohue Stream near Nahiku

Location.--Lat 20°49'05", long 156°07'40", on left bank 200 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 2.2 miles southwest of Nahiku, and 3.5 miles southeast of Kanae.

Drainage area.--1.5 sq mi.

Records available.--October 1921 to June 1953.

Gage.--Water-stage recorder.

Average discharge.--31 years (1922-53), 7.67 mgd (11.9 cfs).

Extremes.--Maximum discharge during year, 470 mgd (727 cfs) Mar. 4 (gage height, 4.99 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 1.51 mgd (2.34 cfs) Feb. 10-13.
1921-53: Maximum discharge, 760 mgd (1,180 cfs) Apr. 7, 1938 (gage height, 6.24 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 1.37 mgd (2.12 cfs) Feb. 21, 1944, June 2, 1945.

Remarks.--Records good except those above 50 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.12	1.2	11.1
.5	1.61	1.5	20
.7	3.05	2.0	45
.9	5.4	2.5	84

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	5.1	6.3	3.1	2.15	11.1	9.3	2.7	1.67	4.7	2.4	1.92	3.45	
2	5.0	3.55	2.5	2.1	26.5	12.9	2.65	1.67	2.7	2.3	1.96	2.9	
3	4.5	3.25	3.35	6.1	18.5	5.4	2.55	*1.61	2.3	2.25	27.5	2.8	
4	5.0	3.05	2.8	10.6	6.3	16.6	2.55	1.61	50	2.15	68	2.65	
5	7.3	2.95	2.5	2.95	4.8	24.5	2.5	1.61	14.3	2.15	5.0	2.55	
6	4.8	3.25	10.3	2.5	4.4	20.5	2.5	1.56	3.35	2.1	12.5	2.5	
7	4.2	3.8	4.1	2.3	4.0	24.5	2.4	1.61	2.8	2.05	10.8	2.4	
8	7.3	3.45	3.05	2.25	3.8	12.4	2.4	1.56	2.5	2.05	5.4	2.5	
9	7.7	10.6	6.9	2.25	7.2	14.0	2.3	1.56	31.5	2.05	3.55	3.9	
10	4.6	4.0	6.2	2.15	24	10.1	2.3	1.56	60	2.25	3.05	3.55	
11	4.1	3.35	3.55	3.0	36	5.3	2.25	1.51	4.1	3.65	*2.9	5.0	
12	3.8	*2.95	3.9	3.8	11.2	4.8	2.25	1.51	3.25	2.15	2.8	5.4	
13	3.45	2.9	12.7	2.25	13.2	4.4	2.15	1.86	3.45	2.05	2.7	3.45	
14	26	2.8	5.5	2.1	12.7	4.1	2.1	1.94	5.9	2.05	2.55	3.35	
15	21	3.55	3.7	2.05	15.1	3.9	2.1	1.67	9.1	2.05	2.8	4.9	
16	6.1	2.9	3.25	1.98	18.5	3.8	2.1	4.2	4.1	2.25	2.8	5.1	
17	12.8	2.65	5.1	1.98	5.4	*5.2	2.05	2.05	3.25	3.6	2.5	3.65	
18	12.5	2.55	4.3	10.2	4.9	13.3	2.05	5.0	5.6	3.6	2.4	6.8	
19	4.8	2.5	3.05	24.5	16.9	4.1	1.98	4.9	3.25	2.5	2.8	5.1	
20	4.2	2.5	2.9	6.9	6.3	3.7	1.98	2.4	2.9	2.15	3.7	3.55	
21	3.8	2.5	2.8	16.0	6.0	3.45	1.92	3.15	2.7	2.1	3.15	3.15	
22	4.5	2.4	2.7	7.5	5.0	3.55	1.92	2.3	2.55	2.05	2.55	3.15	
23	3.7	2.4	2.65	12.9	5.1	3.95	1.98	2.25	2.5	1.98	2.8	2.9	
24	4.1	2.3	*2.55	16.1	4.1	4.6	1.86	15.4	2.4	1.92	2.5	2.8	
25	3.9	2.9	2.4	7.9	3.8	3.45	1.80	3.85	2.65	1.92	3.55	2.7	
26	5.4	9.1	2.4	16.1	3.7	3.55	1.80	2.65	5.4	1.86	3.15	3.05	
27	5.7	5.4	2.4	4.8	4.2	3.15	1.80	3.2	3.35	1.80	10.1	2.8	
28	3.9	2.9	2.3	3.45	7.6	3.05	1.73	4.8	2.95	2.4	6.2	2.65	
29	3.7	2.55	2.25	7.9	9.6	2.95	1.73	-	2.7	2.05	5.7	2.9	
30	3.45	2.55	2.15	16.7	23	2.6	1.73	-----	2.5	2.1	3.7	2.8	
31	4.9	2.55	-----	22.5	-----	2.8	1.67	-----	2.4	-----	3.55	-----	
Total	201.30	110.60	117.35	225.96	322.9	240.10	65.80	80.66	251.15	67.98	214.58	104.40	
Mean:	mgd	6.49	3.57	3.91	7.29	10.8	7.75	2.12	2.88	8.10	2.27	6.92	3.48
	cfs	10.0	5.52	6.05	11.3	16.7	12.0	3.28	4.46	12.5	3.51	10.7	5.38
	Ac-ft	618	339	360	693	991	737	202	248	771	209	659	320
Calendar year 1952:	Max	58			Min	1.98	Mean(mgd)	7.06		Mean(cfs)	10.9	Ac-ft	7,930
Fiscal year 1952-53:	Max	68			Min	1.51	Mean(mgd)	5.49		Mean(cfs)	8.49	Ac-ft	6,150

Peak discharge (base, 300 mgd).--Mar. 4 (5 p.m.) 470 mgd (727 cfs), 4.99 ft; Mar. 9 (12 p.m.) 390 mgd (605 cfs), 4.62 ft.

* Discharge measurement made on this day.

West Kopiliula Stream near Keanae

Location.--Lat 20°49'10", long 156°08'15", on left bank 600 ft upstream from Koolau ditch crossing and highway bridge and 3 miles southeast of Keanae Post Office.

Drainage area.--3.9 sq mi.

Records available.--January 1914 to September 1917, October 1921 to June 1953.

Gage.--Water-stage recorder. Datum of gage is 1,292.30 ft above mean sea level. Prior to Dec. 9, 1935, at several sites within 200 ft of present site at various datums.

Average discharge.--31 years (1915-17, 1922-34, 1936-53), 18.0 mgd (27.9 cfs).

Extremes.--Maximum discharge during year, 1,480 mgd (2,290 cfs) Mar. 4 (gage height, 5.90 ft), from rating curve extended above 75 mgd by logarithmic plotting; minimum, 0.80 mgd (1.24 cfs) Feb. 11, 12.

1914-17, 1921-53: Maximum discharge, 5,050 mgd (7,810 cfs) Jan. 26, 1948 (gage height, about 9.5 ft), from rating curve extended above 75 mgd by logarithmic plotting; minimum, 0.6 mgd (0.9 cfs) Sept. 15-17, 1917.

Remarks.--Records good except those above 50 mgd, which are poor. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 755: 1931-32.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

-0.1	0.60	0.9	19.2
0.0	1.20	1.2	31
.1	2.1	1.6	57
.2	3.3	2.0	97
.4	6.7	2.5	165
.6	10.9	3.0	260

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.5	5.4	2.95	1.72	24.5	21.5	2.4	0.99	11.1	2.1	1.54	3.7
2	5.6	3.05	2.1	1.81	52	25.5	2.4	.99	4.6	1.90	1.61	2.75
3	4.6	2.75	3.55	5.4	30.5	12.3	2.3	.99	3.3	1.81	58	2.3
4	5.0	2.65	2.4	9.6	11.9	57	2.3	.92	151	1.81	175	2.2
5	9.9	2.55	2.0	2.45	7.9	66	2.2	*.92	31	1.72	15.5	2.1
6	4.8	2.9	11.6	1.81	5.6	45	2.1	.99	9.2	1.63	27	2.0
7	3.9	3.9	4.8	1.63	4.5	45	2.0	1.06	6.1	1.54	17.5	1.90
8	7.0	4.0	3.0	1.54	3.75	23.5	1.90	.92	4.7	1.54	10.5	2.1
9	10.2	17.2	17.2	1.72	15.4	29.5	1.90	.92	55	1.45	5.9	4.5
10	4.7	4.9	11.7	1.72	*65	19.7	1.90	.92	74	2.0	4.2	4.7
11	4.0	3.15	4.3	3.0	106	10.0	1.81	.86	9.5	4.8	3.45	6.1
12	3.45	*2.65	5.0	5.4	27	7.5	1.81	.80	6.2	2.4	*3.05	10.2
13	3.5	2.4	27	1.90	33.5	6.1	1.72	1.58	7.0	1.72	2.65	4.2
14	30.5	2.3	9.7	1.63	41	5.2	1.63	2.35	11.0	1.81	2.4	4.7
15	56	2.85	4.2	1.54	36.5	4.6	1.54	1.72	13.7	1.81	2.65	11.1
16	8.5	2.2	3.15	1.45	65	4.2	1.45	6.9	7.1	2.1	2.55	10.8
17	18.9	2.0	10.1	2.15	13.1	5.8	1.45	3.25	4.6	4.5	2.1	4.6
18	21.5	2.0	7.6	16.9	9.9	30	1.36	8.2	11.3	8.8	2.0	8.5
19	6.7	1.90	3.15	43	34	7.8	1.36	16.2	5.7	3.85	2.95	6.6
20	4.8	1.90	2.65	16.2	12.4	5.2	1.28	5.3	3.9	2.4	5.2	3.75
21	3.9	1.81	2.4	28	9.6	4.4	1.28	14.3	3.05	2.0	3.15	3.05
22	4.3	1.81	2.2	19.1	9.0	4.4	1.28	6.6	2.75	1.90	2.3	3.05
23	3.45	1.81	2.1	28.5	8.7	4.5	1.36	5.3	2.4	1.81	2.4	2.65
24	3.65	1.81	2.0	32	5.9	8.2	1.20	42	2.1	1.54	2.2	2.35
25	3.95	3.2	1.90	16.0	5.2	4.2	1.13	10.7	4.1	1.45	3.95	2.2
26	5.6	15.5	1.90	52	5.4	5.3	1.13	6.4	10.1	1.45	4.5	2.9
27	6.7	9.3	1.81	13.6	10.7	3.45	1.13	6.4	*4.6	1.36	9.8	2.3
28	3.75	2.55	1.72	7.5	24	3.15	1.06	9.0	3.6	2.0	11.8	2.1
29	3.3	2.1	1.72	11.7	24	3.05	1.06	-	2.65	1.90	10.4	2.4
30	3.3	2.2	1.63	31	45	2.75	1.06	-----	2.3	2.0	4.6	2.2
31	4.7	2.3	-----	47	-----	2.55	1.06	-----	2.2	-----	4.6	-----
Total	266.45	117.04	157.53	408.97	746.95	477.35	49.56	157.48	470.05	70.10	404.65	124.00
Mean	8.60	3.78	5.25	13.2	24.9	15.4	1.60	5.62	15.2	2.34	13.1	4.13
cfs	13.3	5.85	8.12	20.4	38.5	23.8	2.48	8.70	23.5	3.62	20.3	6.39
Ac-ft	618	359	483	1,260	2,290	1,460	152	483	1,440	215	1,240	381
Calendar year 1952: Max	158				Min 1.45	Mean(mgd)	13.1	Mean(cfs)	20.3	Ac-ft	14,660	
Fiscal year 1952-53: Max	175				Min 0.80	Mean(mgd)	9.45	Mean(cfs)	14.6	Ac-ft	10,580	

Peak discharge (base, 1,000 mgd).--Mar. 4 (5 p.m.) 1,480 mgd (2,290 cfs), 5.90 ft; Mar. 9 (11:30 p.m.) 1,070 mgd (1,680 cfs), 5.21 ft.

* Discharge measurement made on this day.

East Wailuaiki Stream near Keanae

Location.--Lat 20°49'05", long 156°08'25", on left bank 1,000 ft upstream from Koolau ditch crossing and trail and 3 miles southeast of Keanae Post Office.

Drainage area.--3.7 sq mi.

Records available.--December 1913 to October 1917, July 1922 to June 1953.

Gage.--Water-stage recorder. Dec. 21, 1913, to Oct. 23, 1917, at site 50 ft downstream.

Average discharge.--33 years (1915-17, 1922-53), 19.8 mgd (30.6 cfs).

Extremes.--Maximum discharge during year, 2,080 mgd (3,220 cfs) Mar. 4 (gage height, 8.18 ft), from rating curve extended as explained below; minimum, 1.20 mgd (1.85 cfs) Feb. 11, 192.

1913-17, 1922-53: Maximum discharge, 3,060 mgd (4,730 cfs) Apr. 6, 1938 (gage height, 9.26 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, 1.0 mgd (1.6 cfs) Oct. 22, 23, 1917, Aug. 1, 2, 1922.

Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.39	1.24	2.0	28.5
.5	1.73	2.5	52
.7	2.8	3.0	89
1.0	5.4	3.5	138
1.3	9.8	4.0	213
1.6	16.3	4.5	310

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.5	6.9	3.8	2.2	39.5	28.5	3.0	1.42	8.2	2.75	2.05	4.6
2	6.7	3.75	2.65	2.3	92	41	2.9	1.37	4.1	2.6	2.15	3.5
3	5.9	3.45	4.8	10.0	65	12.6	2.75	1.37	3.15	2.5	95	3.15
4	7.3	3.3	3.25	20	13.4	68	2.7	1.37	209	2.5	273	3.0
5	13.5	3.25	2.6	3.35	8.1	104	2.7	*1.32	58	2.35	19.2	2.8
6	5.9	3.65	19.0	2.4	6.0	77	2.6	1.42	10.2	2.3	47	2.7
7	5.1	5.5	6.5	2.15	5.1	91	2.5	1.55	6.2	2.15	25.5	2.65
8	10.5	6.1	4.3	2.1	4.5	35.5	2.45	1.37	5.4	2.1	13.2	2.95
9	14.7	35	28.5	2.15	21	44	2.35	1.42	62	2.0	6.6	6.5
10	5.9	5.9	13.6	2.2	*83	28.5	2.35	1.32	107	5.8	4.9	7.0
11	5.1	3.9	4.2	4.3	160	10.7	2.2	1.28	9.8	7.1	4.2	9.1
12	4.5	*3.35	4.4	8.2	45	8.0	2.2	1.24	7.1	2.65	*3.95	13.4
13	4.1	3.0	50	2.4	48	6.8	2.15	2.15	7.8	2.15	3.5	4.9
14	60	2.8	11.5	2.05	56	6.0	2.1	3.75	13.8	2.35	3.25	5.2
15	92	3.6	4.6	1.93	53	5.4	2.05	2.35	21	2.3	3.45	13.2
16	11.0	2.75	3.75	1.83	85	5.1	2.0	8.3	8.3	2.7	3.35	11.1
17	36	2.65	15.9	2.05	14.5	8.2	1.98	2.9	5.3	7.3	2.75	4.9
18	35	2.5	8.4	27	9.7	51	1.93	10.0	14.9	9.9	2.7	11.0
19	7.3	2.4	3.5	80	49	*7.9	1.98	13.7	6.0	5.6	4.3	8.2
20	5.8	2.5	3.0	25.5	12.2	5.3	1.88	3.3	4.5	2.65	7.6	4.7
21	4.9	2.4	2.75	54	9.2	4.7	1.83	34.5	3.9	2.7	4.2	3.9
22	5.5	2.35	2.65	29.5	8.4	4.8	1.78	7.9	3.65	2.3	2.95	4.1
23	4.3	2.35	2.5	48	8.4	5.3	1.83	6.0	3.35	2.15	3.15	3.45
24	4.7	2.3	*2.4	63	5.9	8.8	1.73	62	3.1	2.05	2.75	3.15
25	5.0	4.6	2.35	19.5	5.4	4.6	1.64	9.0	5.4	1.98	5.7	3.0
26	7.2	30.5	2.45	80	5.5	5.9	1.60	5.1	14.3	1.93	6.3	4.3
27	9.6	13.9	2.35	14.5	9.0	3.9	1.55	7.7	*5.3	1.88	13.3	3.15
28	4.9	3.15	2.2	6.6	30	3.6	1.50	10.0	4.1	4.1	15.9	2.9
29	4.2	2.65	2.35	19.0	31.5	3.5	1.50	-	3.3	2.5	11.5	3.35
30	4.2	2.7	2.1	57	75	3.25	1.46	-----	3.0	2.65	5.1	3.0
31	5.9	2.8	-----	86	-----	3.15	1.42	-----	2.75	-----	5.1	-----
Total	404.2	175.95	222.35	679.21	1,056.3	686.00	64.61	205.10	623.90	92.99	603.60	158.85
Mean	13.0	5.68	7.41	21.9	35.2	22.1	2.08	7.32	20.1	3.10	19.5	5.30
cfs	20.1	8.79	11.5	33.9	54.5	34.2	3.22	11.3	31.1	4.80	30.2	8.20
Ac-ft	1,240	540	682	2,080	3,240	2,110	198	629	1,910	285	1,850	487

Calendar year 1952: Max 236 Min 1.83 Mean(mgd) 18.7 Mean(cfs) 28.9 Ac-ft 20,960
Fiscal year 1952-53: Max 273 Min 1.24 Mean(mgd) 13.6 Mean(cfs) 21.0 Ac-ft 15,250

Peak discharge (base, 600 mgd).--Nov. 10 (11 p.m.) 680 mgd (1,050 cfs), 5.75 ft; Feb. 24 (3 a.m.) 800 mgd (1,240 cfs), 6.13 ft; Mar. 4 (6 p.m.) 2,080 mgd (3,220 cfs), 8.18 ft; Mar. 9 (11 p.m.) 1,080 mgd (1,670 cfs), 6.72 ft; May 4 (3:30 a.m.) 640 mgd (990 cfs), 5.74 ft.

* Discharge measurement made on this day.

West Walluaiki Stream near Keanae

Location.--Lat 20°49'20", long 156°08'35", on left bank 500 ft upstream from Koolau ditch crossing and trail bridge and 2.8 miles south of Keanae Post Office.

Drainage area.--3.6 sq mi.

Records available.--January 1914 to October 1917, November 1921 to June 1953.

Gage.--Water-stage recorder.

Average discharge.--31 years (1922-53), 24.1 mgd (37.3 cfs).

Extremes.--Maximum discharge during year, 2,730 mgd (4,220 cfs) Mar. 4 (gage height, 10.73 ft), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 0.82 mgd (1.27 cfs) Feb. 12.

1914-17, 1921-53: Maximum discharge, 4,500 mgd (6,960 cfs) Jan. 14, 1923 (gage height, about 13.5 ft, from floodmarks), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 0.3 mgd (0.5 cfs) July 26, 1922.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.74	2.0	40
.4	1.20	2.5	73
.5	1.74	3.0	121
.7	3.15	3.5	185
1.0	6.3	4.0	270
1.2	9.5	4.5	375
1.5	17.4		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*7.8	5.6	4.1	2.4	48	34	3.5	1.00	8.4	3.25	2.25	5.0
2	6.8	3.6	2.85	2.55	100	43	3.3	1.00	5.3	2.9	2.65	4.2
3	5.8	3.3	4.7	10.1	75	14.7	3.25	1.00	4.0	2.75	118	3.8
4	6.2	3.25	3.3	20	17.1	80	3.05	.95	330	2.7	370	3.5
5	11.3	3.0	2.7	4.1	11.0	122	3.05	.95	60	2.45	24.5	3.3
6	5.6	3.3	15.1	2.9	8.0	88	2.9	*1.10	11.7	2.4	55	3.2
7	4.8	4.7	6.6	2.6	6.8	94	2.75	1.36	7.5	2.3	30.5	3.1
8	9.3	5.4	4.7	2.3	5.8	41	2.7	1.05	5.8	2.2	16.0	3.5
9	12.9	31.5	28	2.4	27.5	44	2.55	1.05	32.5	2.1	8.6	6.7
10	6.3	6.5	14.0	2.4	86	40	2.45	.95	116	3.1	6.6	7.0
11	5.0	4.2	5.6	4.5	217	13.1	2.3	.90	10.1	7.4	5.6	9.0
12	4.5	3.65	5.4	7.9	*48	9.9	2.25	.86	8.0	3.5	*5.0	14
13	4.1	3.3	55	2.75	80	9.2	2.1	2.2	8.8	2.6	4.4	5.5
14	61	3.05	12.7	2.4	67	7.2	2.05	4.6	12.8	3.15	4.0	5.5
15	110	3.75	6.2	2.2	55	6.8	2.0	3.0	19.4	2.7	4.3	13
16	12.4	2.9	5.0	2.0	110	5.9	2.0	8.1	9.1	3.25	4.1	11
17	35	2.75	15.6	2.4	16.5	9.3	1.87	3.85	6.6	6.9	3.5	5.0
18	35	2.6	10.9	33	11.9	57	1.74	10.1	15.4	8.5	3.3	10
19	8.6	2.55	4.7	88	45	9.6	1.80	16.4	7.2	4.7	5.0	8.0
20	6.4	2.55	4.0	28.5	13.0	6.8	1.69	4.6	5.8	3.3	8.0	5.0
21	5.3	2.4	3.6	56	9.7	5.9	1.58	44	5.0	3.0	4.7	4.0
22	5.7	2.25	3.3	32	9.4	5.7	1.47	15.7	4.6	2.7	3.6	4.2
23	4.6	2.2	3.05	58	9.0	5.7	1.58	8.0	4.2	2.55	3.8	3.5
24	4.5	2.25	2.9	69	6.9	8.6	1.63	57	3.75	2.25	3.3	3.3
25	4.9	4.5	2.7	27.5	6.4	5.6	1.42	8.5	5.4	2.2	6.0	3.1
26	6.4	26.5	2.85	96	6.3	6.4	1.25	6.3	14.4	2.05	6.6	4.0
27	7.8	14.0	2.55	17.8	11.0	4.7	1.20	7.8	6.2	2.0	13	3.25
28	4.5	3.85	2.65	8.8	39	4.4	1.20	10.6	5.0	5.0	16	3.0
29	4.1	3.05	3.2	17.5	36	4.1	1.15	-	3.95	3.0	11	3.5
30	4.1	3.0	2.4	65	77	3.75	1.10	-----	*3.6	3.0	5.5	3.0
31	4.9	3.05	-----	91	-----	3.65	1.05	-----	3.25	-----	5.5	-----
Total	415.6	168.50	240.35	754.00	1,233.3	793.80	63.93	222.92	743.75	99.90	760.30	164.15
Mean	13.4	5.44	8.01	24.3	41.1	25.6	2.06	7.98	24.0	3.33	24.5	5.47
cfs	20.7	8.42	12.4	37.6	63.6	39.2	3.19	12.3	37.1	5.15	37.9	8.46
Ac-ft	1,280	517	738	2,310	3,780	2,440	196	684	2,280	307	2,330	504

Calendar year 1952: Max 307 Min 2.0 Mean(mgd) 20.6 Mean(cfs) 31.9 Ac-ft 23,180
Fiscal year 1952-53: Max 370 Min 0.86 Mean(mgd) 15.5 Mean(cfs) 24.0 Ac-ft 17,370

Peak discharge (base, 1,200 mgd).--Mar. 4 (5:30 p.m.), 2,730 mgd (4,220 cfs), 10.73 ft.

* Discharge measurement made on this day.

Note.--No gage-height record May 14 to June 26; discharge estimated on basis of recorded range in stage and records for stations on nearby streams.

West Wailuanui Stream near Keanae

Location.--Lat 20°49'40", long 156°08'55", on left bank 150 ft upstream from Koolau ditch crossing and intake and 2.2 miles south of Keanae Post Office.

Drainage area.--0.7 sq mi.

Records available.--December 1913 to May 1917, July 1922 to June 1953.

Gage.--Water-stage recorder and Columbus-type control. Dec. 19, 1913, to May 22, 1917, water-stage recorder at site 100 ft downstream at different datum.

Average discharge.--31 years (1922-53), 8.98 mgd (13.9 cfs).

Extremes.--Maximum discharge during year, 1,100 mgd (1,700 cfs) Mar. 4 (gage height, 6.68 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.40 mgd (0.62 cfs) Feb. 11-13.

1913-17, 1922-53: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 25, 1948 (gage height, 7.32 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) July 16-21, 1922.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water used for irrigation of sugarcane in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.32	1.6	13.5
.7	.52	1.8	22.5
.8	.81	2.0	35.5
.9	1.26	2.3	60
1.0	1.96	2.7	106
1.2	4.2	3.0	151
1.4	7.7		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*4.7	4.3	2.3	1.10	21	13.5	1.32	0.46	2.8	1.44	0.98	2.7
2	4.0	2.05	1.32	1.10	42	14.0	1.20	.46	1.97	1.38	1.10	2.15
3	3.4	1.80	2.45	9.3	34	6.4	1.20	.46	1.57	1.32	43	1.88
4	3.7	1.72	1.70	17.3	8.5	30.5	1.15	.44	101	1.26	129	1.72
5	7.2	1.57	1.26	2.55	5.9	48	1.10	.44	26	1.26	10.9	1.64
6	3.55	1.88	11.0	1.50	4.0	32.5	1.06	*.46	3.5	1.26	15.8	1.50
7	2.8	2.6	3.6	1.32	3.4	37	1.02	.56	2.1	1.20	14.2	1.44
8	6.7	2.9	2.1	1.20	2.9	16.4	.98	.46	2.0	1.20	7.6	1.57
9	8.5	14.3	10.0	1.20	5.6	20.5	.94	.48	22	1.15	3.9	3.75
10	3.9	3.1	6.2	1.15	27	15.4	.90	.46	38	1.59	3.05	3.7
11	3.05	2.15	2.4	2.15	77	6.4	.86	.42	3.5	3.1	2.5	4.6
12	2.6	1.80	3.75	4.2	16.4	4.8	.86	.40	2.8	1.20	2.25	5.7
13	2.25	1.57	18.1	1.26	19.5	3.9	.81	.98	2.4	1.15	1.88	2.95
14	27	*1.50	5.6	1.10	26	3.4	.77	1.41	4.5	1.15	*1.64	2.8
15	42	2.8	2.9	1.06	18.2	3.15	.73	.90	9.5	1.15	1.80	5.9
16	7.0	1.56	2.3	.98	49	2.7	.70	4.2	3.6	1.20	1.72	4.6
17	15.3	1.32	58	1.20	8.2	5.0	.70	1.16	2.9	2.9	1.44	3.05
18	13.2	1.20	4.1	13.3	6.9	17.4	.67	3.7	5.0	3.3	1.32	7.2
19	4.5	1.15	2.15	33	15.6	4.0	.67	3.5	3.1	1.50	2.45	5.1
20	3.4	1.15	1.80	10.7	5.9	3.05	.64	1.21	2.3	1.15	4.1	2.9
21	2.8	1.15	1.64	20	5.0	2.7	.61	5.0	2.1	1.10	2.35	2.4
22	3.55	1.06	1.50	11.7	4.6	2.6	.61	2.6	1.9	1.06	1.57	2.4
23	2.4	1.10	1.44	16.7	4.0	2.55	.64	2.3	1.7	1.02	1.72	2.05
24	2.65	1.10	1.58	23	3.3	4.5	.61	16.3	1.6	.98	1.50	1.80
25	2.7	2.0	1.26	10.1	2.8	2.3	.56	2.9	1.9	.94	2.8	1.64
26	4.4	11.4	1.32	28.5	2.8	2.8	.54	2.15	4.5	.90	3.2	2.5
27	5.1	6.7	1.20	6.5	3.65	1.96	.52	3.8	2.7	.96	7.0	1.72
28	2.6	1.72	*1.10	3.9	15.2	1.72	.52	4.4	2.3	2.35	5.5	1.50
29	2.25	1.44	1.32	10.5	11.4	1.64	.50	-	1.8	1.10	5.2	1.80
30	2.25	1.38	1.10	22	29	1.44	.50	-	1.5	1.32	2.8	1.64
31	3.4	1.57	-----	31	-----	1.38	.48	-----	1.44	-----	3.15	-----
Total	202.85	83.26	156.29	292.57	478.75	313.59	24.37	62.01	264.18	42.49	287.42	86.50
Mean:												
mgd	6.54	2.69	5.21	9.44	16.0	10.1	0.786	2.21	8.52	1.42	9.27	2.88
cfs	10.1	4.18	8.06	14.6	24.8	15.6	1.22	3.42	13.2	2.20	14.3	4.46
Ac-ft	623	256	480	698	1,470	962	75	190	811	130	862	265

Calendar year 1952: Max 97 Min 0.98 Mean(mgd) 8.42 Mean(cfs) 13.0 Ac-ft 9,460

Fiscal year 1952-53: Max 129 Min 0.40 Mean(mgd) 6.29 Mean(cfs) 9.73 Ac-ft 7,040

Peak discharge (base, 300 mgd).--Mar. 4 (5:30 p.m.) 1,100 mgd (1,700 cfs), 6.68 ft; Mar. 9 (11:30 p.m.) 455 mgd (704 cfs), 4.38 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Mar. 6-30; discharge estimated on basis of records for stations on nearby streams.

East Wailuanui Stream near Keanae

Location.--Lat 20°49'25", long 156°08'40", on left bank 125 ft upstream from Koolau ditch intake, 250 ft upstream from trail, and 2.5 miles south of Keanae.

Drainage area.--0.6 sq mi.

Records available.--January 1914 to October 1917, November 1921 to June 1953.

Gage.--Water-stage recorder. Jan. 1, 1914, to Oct. 23, 1917, at site 500 ft upstream at different datum.

Average discharge.--31 years (1922-53), 5.59 mgd (8.65 cfs).

Extremes.--Maximum discharge during year, 655 mgd (1,010 cfs) Mar. 9 (gage height, 5.11 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.37 mgd (0.57 cfs) Feb. 12.

1914-17, 1921-53: Maximum discharge, 1,050 mgd (1,620 cfs) Feb. 12, 1925 (gage height, 6.96 ft), from rating curve extended above 100 mgd; minimum, 0.1 mgd (0.2 cfs) Apr. 11, 1926.

Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.33	0.8	9.1
.4	.89	1.1	22
.5	2.05	1.5	45
.6	3.8	2.0	86

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.45	3.55	1.77	0.97	12.1	7.0	1.07	0.41	2.55	1.17	0.89	2.35
2	3.25	1.77	1.17	.89	29	10.9	1.07	.41	1.77	1.07	.89	1.91
3	2.55	1.63	2.1	8.9	27.5	3.8	.97	.41	1.39	.97	31.5	1.63
4	2.8	1.51	1.51	16.6	5.2	11.5	.89	.41	28	.97	59	1.51
5	6.3	1.39	1.17	2.35	3.05	21.5	.89	.41	11.3	.89	5.1	1.39
6	2.7	1.63	10.7	1.51	2.35	18.4	.89	.41	2.7	.81	11.3	1.27
7	2.35	2.3	3.1	1.17	2.2	26	.81	.45	1.77	.81	11.7	1.17
8	6.0	2.65	2.15	1.17	1.91	8.9	.73	.41	1.63	.73	5.7	1.39
9	7.4	14.6	9.9	1.07	3.25	16.3	.73	.41	38.5	.73	2.7	3.15
10	3.05	2.55	5.4	1.07	15.3	7.3	.73	.41	32.5	1.14	2.2	2.8
11	2.35	1.91	2.2	2.05	27.5	3.4	.67	.41	2.7	2.4	1.91	4.9
12	2.05	1.63	2.95	3.7	*9.1	2.55	.67	.37	2.2	1.07	1.77	4.5
13	1.77	1.59	15.5	1.17	9.2	2.35	.67	.81	1.98	.81	1.51	2.35
14	24.5	*1.27	4.8	1.07	7.5	2.05	.81	1.19	4.0	.81	1.39	2.55
15	21.5	2.05	2.35	.97	11.8	1.77	.55	.73	8.6	.81	1.51	5.1
16	5.1	1.39	1.77	.89	11.4	1.63	.55	3.45	3.05	1.07	1.39	3.8
17	14.9	1.17	5.1	1.07	3.4	3.7	.55	.96	2.2	3.05	1.17	2.55
18	15.3	1.07	2.85	12.2	4.2	12.0	.55	3.4	4.3	2.8	1.07	6.2
19	3.05	1.07	1.63	29	11.9	2.2	.55	2.9	2.55	1.51	2.05	4.3
20	2.35	.97	1.51	9.0	3.7	1.77	.49	.97	1.77	1.07	3.45	2.55
21	1.91	.97	1.27	20.5	3.0	1.63	.49	5.6	1.63	.97	2.05	2.05
22	2.35	.89	1.17	9.4	2.95	1.63	.45	1.60	1.51	.89	1.39	2.05
23	1.77	.97	1.07	17.0	2.85	1.74	.49	1.87	1.27	.81	1.51	1.77
24	1.91	.89	1.07	23	2.2	3.4	.49	18.3	1.17	.73	1.27	1.51
25	2.05	1.80	.97	6.0	1.91	1.63	.45	2.35	1.54	.73	2.7	1.39
26	3.2	11.6	.97	17.0	1.91	1.91	.45	1.77	4.1	.73	2.3	1.95
27	4.5	5.8	.97	3.55	2.05	1.39	.45	3.55	2.05	.67	6.5	1.51
28	2.2	1.63	*.89	2.35	3.3	1.27	.45	4.1	1.77	1.94	5.4	1.27
29	1.77	1.17	1.17	8.4	4.5	1.17	.41	-	1.51	1.07	4.5	1.51
30	1.77	1.27	.97	20.5	20.5	1.17	.41	-----	*1.27	1.17	2.55	1.27
31	2.75	1.27	-----	25	-----	1.07	.41	-----	1.17	-----	2.55	-----
Total	158.90	75.76	90.45	249.52	246.73	183.03	19.59	58.47	174.25	34.40	180.92	73.65
Mean:												
mgd	5.13	2.44	3.02	8.05	8.22	5.90	0.632	2.09	5.62	1.15	5.84	2.46
cfs	7.94	3.78	4.67	12.5	12.7	9.13	0.978	3.23	8.70	1.78	9.04	3.81
Ac-ft	488	232	278	766	757	562	60	179	535	106	555	226

Calendar year 1952: Max 51 Min 0.89 Mean(mgd) 5.60 Mean(cfs) 8.66 Ac-ft 6,300
 Fiscal year 1952-53: Max 59 Min 0.37 Mean(mgd) 4.23 Mean(cfs) 6.54 Ac-ft 4,740

Peak discharge (base, 300 mgd).--Mar. 4 (5 p.m.) 330 mgd (511 cfs), 3.73 ft; Mar. 9 (11 p.m.) 655 mgd (1,010 cfs), 5.11 ft.

* Discharge measurement made on this day.

Taro patch feeder ditch at Keanae

Location.--Lat 20°51'40", long 156°09'00", on left bank (corrected) 25 ft downstream from intake, 500 ft downstream from highway bridge over Palauhulu Stream at Keanae, 4.2 miles northwest of Nahiku, and 4.8 miles southeast of Kailua.

Records available.--September 1934 to June 1953.

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

Average discharge.--18 years (1935-53), 2.25 mgd (3.48 cfs).

Extremes.--1934-53: Maximum daily discharge, 7.9 mgd (12.2 cfs) June 30, 1941; minimum daily, 0.05 mgd (0.08 cfs) Mar. 5, 1939.

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

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.45	*2.2	1.75	1.85	3.15	2.95	2.2	2.2	1.80	1.71	1.75	1.61
2	2.4	1.99	1.71	1.85	3.75	3.05	2.15	2.2	1.75	1.71	1.75	1.61
3	2.35	1.95	1.71	1.88	3.55	2.7	2.05	2.2	1.71	1.71	3.1	1.61
4	2.3	1.85	1.71	2.9	3.0	3.1	1.99	2.2	2.9	1.71	5.0	1.61
5	2.5	1.75	1.80	2.45	2.95	3.55	1.99	2.2	1.97	1.71	2.5	1.57
6	2.35	1.75	2.7	1.95	2.95	3.45	1.99	2.2	1.75	1.71	3.05	1.71
7	2.25	1.75	2.55	1.80	2.8	3.6	1.99	2.15	1.99	1.71	2.75	1.75
8	2.35	1.71	1.99	1.80	2.75	3.05	1.95	2.15	1.80	1.71	2.5	1.80
9	2.7	2.6	5.0	1.80	2.9	3.1	1.95	2.1	2.15	1.71	1.95	1.80
10	2.4	2.15	2.7	1.80	3.25	3.15	1.95	2.1	3.55	1.71	1.75	1.80
11	2.3	1.99	2.25	1.85	3.65	2.9	1.95	2.1	2.5	1.71	1.61	1.75
12	2.25	1.99	2.2	2.05	2.4	2.8	1.95	2.1	2.25	1.66	1.66	1.99
13	2.2	1.99	3.3	1.80	2.6	2.75	1.95	2.15	2.1	1.66	1.71	1.75
14	2.85	1.95	2.6	1.75	2.5	2.75	1.95	2.15	2.2	1.61	1.66	1.85
15	3.55	1.95	2.55	1.75	2.55	2.7	1.95	2.1	2.5	1.61	1.61	1.90
16	2.45	1.95	2.25	1.75	3.4	2.7	1.95	2.2	2.25	1.61	1.61	1.85
17	2.8	1.75	2.45	1.75	2.75	*2.7	1.95	2.1	1.99	1.61	1.61	1.85
18	2.7	1.75	2.5	2.55	*2.7	3.25	1.95	2.45	2.25	1.66	1.61	1.99
19	2.3	1.75	2.2	3.55	3.05	2.7	1.90	2.35	1.95	1.61	1.66	1.95
20	2.25	1.75	2.05	a3.0	2.7	2.6	1.90	1.85	1.75	1.61	1.66	1.85
21	2.2	1.75	1.95	a3.2	2.75	2.6	1.85	2.4	1.71	1.57	1.61	1.85
22	2.2	1.75	1.90	a3.1	2.7	2.55	2.05	1.71	1.71	1.57	1.61	1.85
23	2.1	1.75	1.90	a5.2	2.65	2.5	2.2	1.71	1.71	1.66	1.66	1.85
24	2.1	1.71	1.90	a3.3	2.6	2.55	2.2	2.55	1.71	1.80	1.61	1.85
25	1.99	1.75	1.90	a2.9	2.5	2.5	2.2	1.95	1.71	1.80	1.61	1.85
26	2.2	2.45	1.95	a3.5	2.5	2.5	2.25	1.80	1.99	1.80	1.61	1.85
27	2.2	2.35	1.90	*a2.8	2.5	2.45	2.25	1.75	*1.71	1.80	1.71	1.85
28	2.05	1.85	1.90	2.6	2.7	2.4	2.25	2.25	1.71	*1.80	1.99	1.85
29	2.05	1.75	1.85	2.7	2.7	2.35	2.2	-	1.71	1.80	1.85	1.85
30	1.99	1.71	1.85	3.4	5.3	2.25	2.2	-----	1.71	1.80	1.66	1.85
31	1.99	1.75	-----	3.5	-----	2.25	2.2	-----	1.71	-----	1.66	-----
Total	72.57	59.09	64.57	76.08	86.25	86.45	63.46	59.37	62.20	50.85	61.08	54.10
Mean:	2.34	1.91	2.15	2.45	2.88	2.79	2.05	2.12	2.01	1.70	1.97	1.80
mgd	3.62	2.96	3.33	3.79	4.46	4.32	3.17	3.28	3.11	2.63	3.05	2.79
cfs	223	181	198	233	265	265	195	182	191	156	187	166
Ac-ft												
Calendar year 1952: Max	3.9			Min 1.30	Mean(mgd) 2.37		Mean(cfs) 3.67		Ac-ft 2,660			
Fiscal year 1952-53: Max	5.0			Min 1.57	Mean(mgd) 2.18		Mean(cfs) 3.37		Ac-ft 2,440			

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for East and West Wailuanui Streams.

Koolau ditch near Keanae

Location.--Lat 20°49'55", long 156°10'30", on right bank on west side of Keanae Valley, 2.8 miles southwest of Keanae Post Office and 5.1 miles southeast of Kailua.

Records available.--January 1910 to December 1912, November 1917 to June 1953. Gage-height records collected in this vicinity since 1904 are contained in files of East Maui Irrigation Co.

Gage.--Water-stage recorder. Jan. 1, 1910, to Dec. 31, 1912, staff gage at same site and datum.

Average discharge.--35 years (1918-53), 66.6 mgd (103 cfs).

Extremes.--1910-12, 1917-53: Maximum daily discharge, 172 mgd (266 cfs) Apr. 19, 1935; no flow at times.

Remarks.--Records good. Flow regulated by gates and spillways. Ditch diverts water at altitude 1,200 ft from nearly all streams from the Makapipi west to the Alo for power and irrigation in central Maui. No diversion above station except several spillways.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*94	81	43	23.5	131	134	34	15.0	90	28	22	51
2	84	47	51	23.5	130	130	32	15.0	50	26.5	20.5	43
3	69	40	49	43	128	123	30	14.8	37	25	119	36
4	71	38	38	102	129	119	30	14.4	63	25	128	34
5	117	36	30	51	98	120	28	*14.1	122	23.5	126	32
6	73	38	111	32	77	120	26.5	14.4	76	23.5	128	30
7	58	52	76	28	65	120	26.5	15.5	60	*22	134	28
8	79	54	47	26.5	54	128	25	14.6	49	20.5	121	30
9	124	120	124	26.5	89	132	25	14.4	70	20.5	78	48
10	75	69	116	26.5	121	130	25	13.7	118	27	58	67
11	60	47	56	39.5	122	114	23.5	13.2	100	61	49	62
12	51	40	55	67	130	91	23.5	13.0	76	28	45	90
13	47	36	132	28	128	77	23.5	20	66	23.5	40	54
14	89	36	107	25	128	69	22	28.5	113	25	36	56
15	*126	47	60	23.5	117	60	22	22	119	23.5	36	99
16	96	35	49	22	128	58	20.5	68	90	26.5	36	91
17	131	32	79	25.5	123	70	20.5	31.5	60	52	32	56
18	128	30	81	70	*95	129	19.2	65	99	74	28	108
19	91	28	47	136	130	84	19.2	105	66	38	39	88
20	69	28	40	130	115	60	19.2	40	49	28	70	54
21	58	26.5	36	118	103	56	19.2	69	45	25	47	45
22	62	25	32	133	97	56	18.0	60	40	23.5	34	47
23	51	25	30	135	92	54	19.2	50	36	22	34	40
24	54	25	28	134	69	85	18.0	104	34	20.5	30	36
25	51	38.5	28	129	65	51	18.0	79	43	19.2	48	34
26	78	115	28	132	65	61	16.8	54	90	19.2	60	40
27	90	94	26.5	116	79	47	16.8	60	54	19.2	77	34
28	56	40	25	77	133	43	16.8	86	45	39.5	37	30
29	49	34	26.5	88	135	40	16.8	-	36	25	39	34
30	47	32	23.5	132	128	38	15.5	-----	32	26.5	60	32
31	60	34	-----	128	-----	36	15.5	-----	30	-----	60	-----
Total	2,388	1,423.0	1,654.5	2,271.0	3,202	2,635	685.7	1,114.1	2,058	860.6	1,991.5	1,529
Mean:												
mgd	77.0	45.9	55.2	73.3	107	85.0	22.1	39.8	66.4	28.7	64.2	51.0
cfs	119	71.0	85.4	113	166	132	34.2	61.6	103	44.4	99.3	78.9
Ac-ft	7,330	4,370	5,080	6,970	9,830	8,090	2,100	3,420	6,320	2,640	6,110	4,690
Calendar year 1952: Max	136			Min	22	Mean(mgd)	80.1	Mean(cfs)	124	Ac-ft	89,980	
Fiscal year 1952-53: Max	136			Min	13.0	Mean(mgd)	59.8	Mean(cfs)	92.5	Ac-ft	66,950	

* Discharge measurement made on this day.

Kula diversion from Haipuaena Stream near Olinda

Location.--Lat 20°48'15", long 156°13'30", on left bank 3.7 miles east of Olinda and 5.2 miles south of Kailua.

Records available.--July 1945 to June 1953.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,300 ft (from topographic map).

Average discharge.--7 years (1946-53), 0.441 mgd (0.682 cfs).

Extremes.--1945-53: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; minimum daily, 0.01 mgd (0.02 cfs) Jan. 9 to Feb. 14, 1953.

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

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.44	0.70	0.47	0.02	1.08	0.98	0.05	0.01	0.78	0.08	0.19	0.32
2	.27	.55	.32	.02	1.04	1.25	.04	.01	.54	.06	.39	.46
3	.22	.26	.84	.02	1.12	.66	.04	.01	.25	.06	1.01	.42
4	.18	.18	.37	.45	1.03	1.08	.03	.01	.23	.11	.53	.27
5	.74	.16	.22	.46	.85	1.68	.03	.01	.47	.11	.75	.18
6	.38	.17	.64	.17	*.53	1.62	.02	.01	.66	.08	1.44	.12
7	.19	.61	.75	.09	.34	1.59	.02	.01	.44	.06	1.38	.09
8	.44	*.51	.34	.07	.25	1.35	.02	.01	.30	.05	1.50	.08
9	1.38	.93	.80	.06	.82	1.26	.01	.01	.85	.04	1.06	.10
10	.61	.67	.93	.09	.95	.91	.01	.01	1.11	.04	.66	.35
11	.30	.40	.46	.36	.06	.57	.01	.01	.69	.34	.35	.34
12	.21	.62	.30	.92	.82	.38	.01	.01	.39	.23	.25	.76
13	.17	.51	1.25	.35	1.67	.28	.01	.01	.56	.12	.19	.30
14	.69	.26	1.05	.22	1.07	.22	.01	.01	.75	.09	.21	.23
15	1.05	.55	.47	.22	.94	.18	.01	.03	.44	.08	.18	.70
16	.90	.54	.30	.12	.40	.14	.01	.25	.39	.06	.57	.77
17	1.34	.31	.48	.13	.55	.24	.01	.25	.22	.09	.68	.32
18	1.36	.38	.75	.61	.50	1.44	.01	.35	.80	.70	.27	.89
19	.69	.21	.30	1.08	1.32	.57	.01	.85	.58	.31	.21	.65
20	.38	.15	.19	.81	1.17	.28	.01	.30	.25	.18	.30	.26
21	.27	.12	.15	.87	.79	.19	.01	.22	.18	.30	.23	.37
22	.30	.09	*.11	.75	.44	.16	.01	.35	.15	.15	.15	.80
23	.31	.08	.09	1.22	.42	.15	.01	.25	*.16	.09	.10	.82
24	.19	.07	.08	1.25	.30	.29	.01	.16	.14	.06	.09	1.04
25	.18	.08	.06	.91	.23	.21	.01	.19	.12	.05	.10	.71
26	.60	.77	.05	1.11	.19	.15	.01	.26	.63	.04	.27	.32
27	.68	.78	.04	.72	.79	.11	.01	.37	.37	.03	.18	.22
28	.38	.28	.04	.58	1.43	.09	.01	.58	.18	.08	.71	.16
29	.38	.16	.03	.48	1.46	.09	.01	-	.12	.08	.38	.12
30	.25	.12	.03	1.02	1.40	.07	.01	-----	.09	.06	.25	.14
31	.22	.47	-----	1.39	-----	.06	.01	-----	.09	-----	.38	-----
Total	15.70	11.47	11.91	16.38	23.96	18.25	0.48	4.55	12.93	3.84	14.96	12.31
Mean:												
mgd	0.506	0.370	0.397	0.528	0.799	0.589	0.015	0.162	0.417	0.128	0.483	0.410
cfs	0.783	0.572	0.614	0.817	1.24	0.911	0.023	0.251	0.645	0.198	0.747	0.634
Ac-ft	48	35	37	50	74	56	1.5	14	40	12	46	38
Calendar year 1952: Max	1.72			Min	0.02	Mean(mgd)	0.535	Mean(cfs)	0.828	Ac-ft	601	
Fiscal year 1952-53: Max	1.68			Min	0.01	Mean(mgd)	0.402	Mean(cfs)	0.622	Ac-ft	452	

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 7 to Feb. 13; discharge estimated on basis of probable decrease in flow and records for stations on nearby streams.

Haipuaena diversion ditch at Kolea Gulch, near Keanae

Location.--Lat 20°50'50", long 156°11'40", on right bank 15 ft downstream from end of tunnel in Kolea Gulch, 3.1 miles southwest of Keanae, and 3.7 miles southeast of Kailua.

Records available.--March 1938 to June 1953.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,800 ft (from topographic map).

Average discharge.--15 years, 2.05 mgd (3.17 cfs).

Extremes.--1938-53: Maximum daily discharge, 11.4 mgd (17.6 cfs) Aug. 14, 1950; minimum daily, 0.19 mgd (0.29 cfs) Jan. 30, 31, 1947.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts water from Haipuaena Stream for East Maui Irrigation Co.'s hydroelectric plant about 1 mile downstream.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	2.65	1.83	1.07	5.0	3.45	1.42	0.43	2.3	1.42	1.60	2.05
2	2.05	2.05	1.62	1.13	5.8	3.9	1.36	.36	1.96	1.31	2.45	1.83
3	1.90	1.69	1.93	1.50	5.3	2.6	1.31	.36	1.69	1.19	5.7	1.69
4	1.97	*1.56	1.62	4.7	3.1	4.9	1.31	.36	5.1	1.25	8.8	1.62
5	3.0	1.49	1.49	2.05	2.55	6.6	1.25	.36	3.75	1.13	3.35	1.56
6	2.1	1.56	2.7	1.56	2.25	5.8	1.19	.43	2.25	1.07	*5.4	1.42
7	1.90	2.1	2.15	1.49	2.1	6.7	1.19	.59	2.25	.96	4.5	1.36
8	2.65	1.90	1.80	1.31	2.05	3.85	1.13	.49	a2.2	.90	3.4	1.49
9	4.2	4.4	3.6	1.31	3.0	4.2	1.07	.49	a2.4	.85	2.6	1.98
10	2.5	2.3	2.7	1.36	4.8	3.75	1.02	.36	a4.0	1.36	2.3	2.4
11	2.05	1.90	1.96	1.76	6.8	2.55	.96	.36	a2.4	2.5	2.1	2.4
12	1.83	1.90	1.96	2.3	3.95	2.3	.90	.43	a2.1	1.69	1.96	2.8
13	1.76	1.76	4.7	1.56	5.1	2.1	.90	1.30	a2.0	1.25	1.90	2.05
14	5.1	1.56	2.7	1.36	4.9	2.05	.85	1.80	a2.4	1.49	1.83	2.1
15	5.0	1.84	1.96	1.31	3.5	1.96	.85	1.47	a3.4	1.36	1.83	2.85
16	2.75	1.76	1.76	1.19	5.2	1.90	.80	2.4	a2.4	1.56	1.83	2.8
17	4.4	1.49	*2.65	1.31	2.7	2.3	.75	2.05	a2.1	2.15	1.90	2.2
18	4.0	1.49	2.4	2.6	2.4	5.1	.75	2.5	a3.0	2.6	1.62	3.15
19	2.25	1.42	1.76	5.2	3.6	2.3	.75	2.85	2.3	1.90	2.0	2.5
20	2.05	1.36	1.62	3.4	2.85	1.96	.70	1.76	1.96	1.69	2.55	1.83
21	1.90	1.36	1.56	4.1	2.4	1.90	.64	1.98	1.83	1.62	2.05	1.69
22	2.3	1.31	1.49	3.4	2.1	1.83	.64	2.2	1.76	1.49	1.69	1.90
23	1.96	1.25	1.42	4.8	2.1	1.83	.75	1.96	1.69	1.25	1.69	1.96
24	1.83	1.19	1.36	5.2	1.96	2.25	.90	2.15	1.62	1.13	1.56	2.05
25	1.90	1.57	1.31	3.1	1.90	1.83	.70	1.90	1.86	1.07	2.15	1.69
26	2.3	3.7	1.31	4.4	1.83	1.83	.59	1.76	2.8	1.02	2.4	1.69
27	2.4	2.95	1.25	2.55	2.25	1.69	*.54	2.55	2.05	.96	2.3	1.49
28	1.90	1.69	1.25	2.05	4.1	1.62	.54	2.7	1.83	2.3	2.6	1.42
29	1.76	1.56	1.25	2.75	3.75	1.56	.49	-	1.62	1.69	2.55	1.56
30	1.76	1.49	1.13	*5.6	6.3	1.49	.49	-----	1.56	1.62	2.1	1.56
31	1.96	1.76	-----	6.8	-----	1.42	.43	-----	1.56	-----	2.2	-----
Total	77.73	58.01	58.24	84.22	105.64	89.52	27.17	38.35	72.14	43.78	82.91	59.09
Mean												
mgd	2.51	1.87	1.94	2.72	3.52	2.89	0.876	1.37	2.33	1.46	2.67	1.97
cfs	3.88	2.89	3.00	4.21	5.45	4.47	1.36	2.12	3.61	2.26	4.13	3.05
Ac-ft	239	178	179	258	324	275	83	118	221	134	254	181

Calendar year 1952 : Max 6.8 Min 1.07 Mean(mgd) 2.61 Mean(cfs) 4.04 Ac-ft 2,940
 Fiscal year 1952-53 : Max 6.8 Min 0.36 Mean(mgd) 2.18 Mean(cfs) 3.37 Ac-ft 2,440

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for stations on nearby streams.

Haipuaena Stream near Huelo

Location.--Lat 20°51'05", long 156°11'30", on left bank 200 ft upstream from Spreckels ditch, 2.8 miles west of Keanae, 3.3 miles southeast of Kailua, and 4.7 miles south-east of Huelo.

Drainage area.--1.1 sq mi.

Records available.--October 1913 to June 1953. December 1910 to September 1913 at site 600 ft downstream; records not equivalent owing to inflow from Spreckels ditch.

Gage.--Water-stage recorder. Datum of gage is 1,512.22 ft above mean sea level (East Maui Irrigation Co. benchmark).

Average discharge.--37 years (1916-53), 9.86 mgd (15.3 cfs).

Extremes.--Maximum discharge during year, 500 mgd (774 cfs) Mar. 4 (gage height, 5.30 ft), from rating curve extended above 32 mgd by logarithmic plotting; minimum daily, 0.12 mgd (0.19 cfs) Feb. 11, 12.
1913-53: Maximum discharge, 6,100 mgd (9,440 cfs) Aug. 12, 1940 (gage height, 6.91 ft), from rating curve extended above 150 mgd; minimum, slightly less than 0.1 mgd (about 0.2 cfs) several days during January, February, May, and June 1945.

Remarks.--Records poor. Haipuaena diversion ditch diverts water above station (see preceding page). Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53, except periods of indefinite stage-discharge relation (gage height, in feet, and discharge, in million gallons a day)

1.3	0.04	2.0	5.3
1.4	.21	2.3	12.0
1.5	.58	2.6	23.5
1.6	1.03	3.0	46
1.8	2.6	3.5	94

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	7.2	2.25	e0.38	21	11.4	e0.41	e0.14	1.57	e0.31	e0.23	1.44
2	3.05	3.2	1.22	e.35	31.5	13.5	e.38	e.13	1.00	e.30	2.9	.99
3	2.4	1.73	2.4	1.40	25.5	4.7	e.35	e.13	.49	e.27	38	.71
4	2.3	1.50	1.43	35.5	7.6	23	e.33	e.13	59	e.27	91	.56
5	8.1	1.29	.98	3.55	4.4	38	e.31	e.13	11.4	e.25	8.2	.43
6	3.1	1.50	9.0	1.09	2.6	25.5	e.30	e.13	2.25	e.23	23	.31
7	1.97	*3.5	3.8	.78	*1.97	40	e.29	e.23	2.5	e.22	17.7	.29
8	6.5	2.85	1.95	.58	1.65	12.8	e.28	.19	2.1	e.21	9.8	.34
9	18.1	21	11.8	.58	7.1	15.7	e.26	*.17	5.2	e.20	4.0	1.63
10	5.1	5.1	7.2	.45	32	17.4	e.25	.13	20	e.33	2.25	2.9
11	2.95	2.6	2.55	1.81	56	4.1	e.24	.12	3.45	3.35	1.72	2.85
12	2.15	2.6	2.4	4.4	13.3	2.8	e.23	.12	1.95	.50	1.38	5.6
13	1.65	2.1	21	.91	21.5	2.15	e.22	.41	1.15	e.29	1.12	1.75
14	38	1.43	6.3	.50	21	1.73	e.21	.61	3.05	e.28	.95	1.71
15	40	2.75	2.7	.38	13.4	1.43	e.21	.46	6.2	e.26	.91	4.9
16	7.0	2.4	1.89	.27	30.5	1.22	e.20	2.85	3.0	e.35	.77	5.1
17	19.7	1.29	5.9	.30	4.9	2.25	e.19	.96	1.50	1.65	1.40	1.87
18	17.8	1.29	5.6	6.2	5.0	2.35	e.18	2.95	6.0	3.55	.45	7.1
19	5.0	e1.0	1.73	26.5	11.8	3.0	e.17	4.8	2.2	1.10	1.11	5.5
20	3.3	e.93	1.29	11.7	5.7	1.57	e.16	.79	1.22	e.32	3.45	2.45
21	2.5	e.93	1.03	16.5	4.1	1.22	e.16	1.71	.88	e.34	1.45	1.65
22	5.0	e.74	.88	10.6	2.7	1.22	*e.15	1.81	.74	e.30	.87	2.75
23	3.3	e.62	*.70	23.5	2.4	*.96	.21	1.04	.62	e.25	.75	2.95
24	2.7	e.58	.54	24	1.73	3.05	.21	1.61	.46	e.23	.45	4.1
25	2.6	1.56	.50	8.7	1.43	1.15	.19	.86	.72	e.21	1.67	2.2
26	5.2	13.8	e.49	17.5	1.36	1.22	e.18	.61	4.5	e.19	3.05	1.65
27	5.7	8.4	e.48	5.3	2.5	.78	e.17	2.5	1.76	e.19	2.6	1.12
28	2.85	1.57	e.45	2.6	12.9	.66	e.16	5.6	.88	2.45	4.4	.87
29	2.05	1.03	e.42	7.6	11.0	.58	e.15	-	.46	.53	3.5	*1.11
30	1.97	.98	e.39	26.5	31	e.50	e.15	.30	.56	1.79	.88	
31	2.9	1.78	-----	35	-----	e.45	e.14	-----	*e.31	-----	1.94	-----
Total	227.44	99.25	99.17	275.43	387.34	236.41	7.04	31.32	146.86	19.49	232.61	67.71
Mean	7.34	3.20	3.31	8.88	12.9	7.63	0.227	1.12	4.74	0.650	7.50	2.26
cfs	11.4	4.95	5.12	13.7	20.0	11.8	0.351	1.73	7.33	1.01	11.6	3.50
Ac-ft	698	305	304	845	1,190	726	22	96	451	60	714	208

Calendar year 1952: Max 69 Min 0.27 Mean(mgd) 6.72 Mean(cfs) 10.4 Ac-ft 7,550
Fiscal year 1952-53: Max 91 Min 0.12 Mean(mgd) 5.01 Mean(cfs) 7.75 Ac-ft 5,620

Peak discharge (base, 750 mgd).--No peak above base.

* Discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge estimated on basis of records for stations on near-by streams.

Spreckels ditch at Haipuaena weir, near Huelo

Location.--Lat 20°51'20", long 156°11'25", on left bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.5 miles west of Keanae, 3.5 miles south-east of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1953 in reports of Geological Survey. May 1919 to April 1922 in files of East Maui Irrigation Co.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,470.96 ft above mean sea level (East Maui Irrigation Co. benchmark). Apr. 29, 1922, to Feb. 19, 1930, at same site at different datum. Feb. 20, 1930, to Oct. 25, 1935, at site 100 ft upstream at different datum.

Average discharge.--30 years (1922-29, 1930-53), 13.1 mgd (20.3 cfs).

Extremes.--1922-53: Maximum daily discharge, 77 mgd (119 cfs) Nov. 5, 1946; no flow at times.

Remarks.--Records excellent. Flow regulated by gates and spillways. Spreckels ditch diverts water from all streams between the Nuaailua and the Kailua, above Koolau ditch east of the Puohokamoa and below Koolau ditch west of the Puohokamoa. About 4 mgd is diverted from Spreckels ditch to East Maui Irrigation Co.'s hydroelectric plant at Kolea Gulch. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 770: 1932-33.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.3	24	10.6	0.68	40	23.5	1.50	0.10	9.3	2.1	4.0	9.0
2	8.3	12.2	5.1	.78	35.5	26	1.20	.10	7.5	1.60	11.8	6.4
3	7.1	7.3	10.0	6.1	42	13.5	.98	.10	4.3	1.10	46	5.1
4	7.3	6.2	6.4	36	17.6	31	.86	.10	24	1.30	60	4.5
5	14.2	5.3	3.55	13.1	11.8	45	.80	.10	25	.80	22.5	3.7
6	8.0	7.0	26	5.3	9.3	39	.56	.11	11.6	.62	44	3.05
7	6.4	*14.2	14.0	3.9	*8.0	49	.56	.16	11.9	.40	39	2.6
8	12.5	12.1	8.2	2.25	6.8	22.5	.36	.18	10.2	.26	27	3.5
9	27	39	28	2.4	14.1	22	.26	.14	14.3	.16	15.4	8.5
10	11.2	16.1	21.5	2.85	25	22.5	.19	.11	27	2.45	10.9	13.6
11	8.0	9.6	9.8	10.3	42	12.5	.16	.10	13.1	14.6	8.5	13.6
12	6.8	9.3	9.5	17.2	19.3	12.2	.15	.10	9.8	4.5	7.1	18.9
13	5.9	7.3	38	4.2	36.5	10.1	.15	3.6	7.5	1.70	5.7	10.1
14	32	5.3	19.7	2.0	36.5	8.8	.15	5.5	16.1	3.35	4.9	10.8
15	34.5	10.7	10.9	1.70	23	7.5	.14	3.5	22.5	1.90	*5.1	21
16	12.1	7.7	7.5	1.10	38	6.8	.14	12.1	13.7	4.1	5.1	19.0
17	31.5	4.1	16.9	1.93	17.4	11.4	.14	7.0	8.8	9.8	6.4	11.6
18	35	5.9	16.6	15.8	11.9	41	.14	12.5	20.5	15.7	3.7	26.5
19	15.7	2.6	7.1	48	29	12.6	.15	16.5	10.9	7.2	7.5	21
20	11.2	2.25	5.3	29	18.6	8.0	.15	5.4	7.1	3.55	16.6	11.9
21	9.0	2.25	4.1	34	15.1	6.4	.14	6.7	5.3	3.55	8.8	9.0
22	16.9	1.60	3.2	26	11.7	6.6	.14	9.4	4.7	2.4	4.9	13.2
23	11.6	1.30	2.6	38.5	11.0	5.1	.15	7.6	4.1	1.40	5.3	12.4
24	10.2	1.30	2.1	41	8.5	14.4	.16	8.8	3.2	.86	3.55	13.9
25	10.2	6.3	1.90	23	6.8	5.7	.14	7.0	5.4	.62	9.2	8.4
26	18.5	30.5	1.90	35.5	6.6	6.6	.12	5.3	17.4	.43	13.1	8.1
27	19.6	22.5	1.40	16.8	10.7	3.9	.12	8.6	9.8	.36	13.2	4.9
28	11.7	6.8	2.95	10.6	26.5	3.2	.11	14.8	6.2	12.3	16.6	3.55
29	9.0	4.1	2.05	17.2	24.5	2.6	.10	-	3.55	4.5	16.9	5.3
30	8.8	4.1	.92	46	46	2.1	.10	-----	2.75	5.4	9.8	4.9
31	12.6	8.4	-----	54	-----	1.80	.10	-----	*2.75	-----	11.2	-----
Total	443.1	295.30	297.77	547.19	649.7	483.30	10.12	135.70	340.25	109.01	463.75	508.00
Mean	14.3	9.53	9.93	17.7	21.7	15.6	0.326	4.85	11.0	3.63	15.0	10.3
cfs	22.1	14.7	15.4	27.4	33.6	24.1	0.504	7.50	17.0	5.62	23.2	15.9
Ac-ft	1,360	906	914	1,680	1,990	1,480	31	416	1,040	335	1,420	945

Calendar year 1952: Max 54 Min 0.30 Mean(mgd) 13.1 Mean(cfs) 20.3 Ac-ft 14,740
 Fiscal year 1952-53: Max 60 Min 0.10 Mean(mgd) 11.2 Mean(cfs) 17.5 Ac-ft 12,520

* Discharge measurement made on this day.

ISLAND OF MAUI

Koolau ditch at Haipuaena, near Huelo

Location.--Lat 20°51'15", long 156°11'15", on right bank 1,000 ft upstream from intake at Puohokamoa Stream, 3.5 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Records available.--April 1932 to June 1953.

Gage.--Water-stage recorder and Parshall flume. Prior to Mar. 21, 1933, at datum 1.94 ft lower. Mar. 21, 1933, to Mar. 20, 1935, at datum 0.25 ft lower.

Average discharge.--21 years, 79.5 mgd (123 cfs).

Extremes.--1932-53: Maximum daily discharge, 193 mgd (299 cfs) Jan. 17, 1946; no flow Feb. 14-28, Mar. 7-18, 1933, Feb. 26 to Mar. 22, 1935.

Remarks.--Records excellent. Flow regulated by floodgates. Water used for domestic supply and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	106	96	47	26.5	176	162	37	15.6	96	31	25	52
2	89	52	34	26.5	176	169	35.5	15.6	53	29.5	29.5	44
3	76	44	52	50	176	132	34	14.5	39	28	161	39
4	78	41	41	136	155	154	32.5	14.5	89	28	190	35.5
5	150	39	34	57	106	183	32.5	14.5	152	26.5	147	34
6	82	41	138	35.5	80	183	31	14.5	79	25	163	31
7	*65	56	81	32.5	66	190	29.5	16.8	67	23.5	170	31
8	99	58	52	29.5	59	172	29.5	15.6	52	23.5	138	32.5
9	176	150	156	29.5	103	167	28	15.6	82	22	82	57
10	94	78	131	29.5	153	169	28	14.0	157	28	59	75
11	72	50	59	43	183	122	26.5	13.4	110	73	52	71
12	59	44	63	76	176	94	26.5	13.1	80	31	48	101
13	52	39	167	32.5	176	80	25	23	68	25	42	55
14	122	37	116	28	162	72	*23.5	33	120	26.5	37	55
15	164	51	63	26.5	134	67	23.5	25	139	25	39	106
16	115	38	52	25	169	59	23.5	86	95	31	37	101
17	168	34	99	29.5	134	79	22	34	63	58	32.5	55
18	182	32.5	87	98	96	169	20.5	83	110	80	31	124
19	94	32.5	50	190	169	86	20.5	121	67	41	41	99
20	76	31	42	165	125	67	20.5	44	52	31	74	55
21	63	31	39	147	107	59	19.4	77	46	28	48	48
22	73	28	35.5	161	100	80	19.4	68	42	26.5	34	50
23	55	28	34	176	94	57	19.4	55	39	25	35.5	44
24	58	28	32.5	176	72	90	20.5	117	35.5	23.5	32.5	44
25	54	42	31	151	67	55	18.1	82	44	22	51	37
26	82	143	31	169	67	63	18.1	55	100	22	66	46
27	99	114	29.5	128	81	50	16.8	78	55	20.5	86	37
28	59	44	29.5	80	160	46	16.8	102	46	47	107	34
29	52	35.5	29.5	103	162	44	16.8	-	39	28	105	37
30	50	35.5	26.5	176	183	41	16.8	-----	34	29.5	63	35.5
31	63	37	-----	190	-----	39	15.6	-----	32.5	-----	63	-----
Total	2,807	1,608.0	1,882.0	2,823.0	3,867	3,180	747.2	1,260.7	2,283.0	958.5	2,289.0	1,665.5
Mean:												
mgd	90.5	51.9	62.7	91.1	129	103	24.1	45.0	73.6	32.0	73.8	55.5
cfs	140	80.3	97.0	141	200	159	37.3	69.6	114	49.5	114	85.9
Ac-ft	8,610	4,930	5,780	8,660	11,870	9,780	2,290	3,870	7,010	2,940	7,020	5,110
Calendar year 1952:	Max	190	Min	25	Mean(mgd)	96.5	Mean(cfs)	149	Ac-ft	108,300		
Fiscal year 1952-53:	Max	190	Min	13.1	Mean(mgd)	69.5	Mean(cfs)	108	Ac-ft	77,850		

* Discharge measurement made on this day.

Puhokamoa Stream near Huelo

Location.--Lat 20°51'20", long 156°11'25", on right bank 650 ft upstream from Spreckels ditch inflow and trail crossing, 3.2 miles southeast of Kailua, and 4.4 miles south-east of Huelo.

Drainage area.--2.6 sq mi.

Records available.--June 1913 to June 1953. December 1910 to May 1913 at site 700 ft downstream; records not equivalent due to inflow of Spreckels ditch.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,322.04 ft above mean sea level (East Maui Irrigation Co. benchmark). Prior to May 31, 1934, water-stage recorder at site 130 ft downstream at different datum.

Average discharge.--36 years (1917-53), 21.0 mgd (32.5 cfs).

Extremes.--Maximum discharge during year, 790 mgd (1,220 cfs) Mar. 4 (gage height, 5.42 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum daily, 0.58 mgd (0.90 cfs) Feb. 2, 5, 12.

1913-53: Maximum discharge, 1,600 mgd (2,480 cfs) Aug. 12, 1940 (gage height, 7.81 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum, 0.1 mgd (0.2 cfs) Nov. 17, 1929.

Remarks.--Records good except those for period of indefinite stage-discharge relation and those above 400 mgd, which are fair. Kula pipeline diverts small amount of water above station, at altitude 4,300 ft, for domestic supply.

Rating table, fiscal year 1952-53, except periods of indefinite stage-discharge relation (gage height, in feet, and discharge, in million gallons a day)

0.5	0.52	1.2	15.5
.6	1.20	1.5	36
.7	2.15	2.0	86
.8	3.45	2.5	165
.9	5.8	3.0	252
1.0	8.8		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.0	18.1	7.4	2.15	60	30.5	2.85	e0.64	5.2	2.35	3.2	5.2
2	10.9	9.8	4.4	2.15	83	39	2.7	e.59	4.0	2.15	7.3	4.0
3	9.1	6.4	7.7	4.7	71	15.0	2.5	e.64	2.6	1.95	93	3.3
4	8.4	5.5	5.2	102	22.5	61	2.5	e.64	113	2.15	209	3.0
5	27	5.0	3.45	12.7	14.8	98	2.35	e.58	29.5	1.85	23	2.7
6	11.3	5.2	25	5.2	10.3	73	2.25	e.64	8.9	1.75	66	2.5
7	*7.8	*10.9	11.4	4.0	*8.4	112	2.35	e1.2	11.8	1.65	47	2.35
8	18.8	9.0	6.5	5.3	7.2	37	2.15	e.97	10.6	1.65	24	2.7
9	48	56	35.5	3.45	15.4	50	1.95	*e1.05	10.3	1.56	12.2	6.7
10	16.3	14.2	21	3.15	73	40	1.95	e.85	51	2.55	8.4	9.9
11	10.9	7.8	8.3	6.6	143	14.4	1.85	e.64	10.6	10.3	6.6	9.6
12	8.4	7.6	7.5	13.7	38.5	11.2	1.75	e.58	7.4	3.25	5.8	18.0
13	7.2	6.4	62	4.4	59	9.4	1.75	2.2	5.3	2.15	4.7	6.4
14	91	5.0	18.9	3.0	53	7.8	*1.65	3.65	10.4	2.15	4.0	6.6
15	96	7.8	9.4	2.7	39	6.6	1.65	2.7	19.5	2.05	*4.0	15.3
16	23	6.6	7.2	2.5	74	6.4	1.56	9.7	9.8	2.85	3.8	15.4
17	55	4.2	18.1	2.7	16.0	10.4	1.47	4.8	5.8	6.6	3.8	7.0
18	45	3.8	16.8	18.8	12.1	62	1.47	10.2	18.4	10.9	3.0	21
19	14.3	3.45	6.4	67	32.5	11.3	1.47	15.5	8.1	4.4	5.0	15.7
20	10.9	3.15	5.0	31	16.0	7.2	1.38	4.1	5.0	2.6	12.0	7.6
21	8.8	3.15	4.2	43	13.4	6.4	1.29	9.2	3.8	2.7	6.1	5.2
22	14.7	2.85	5.8	31.5	10.1	6.0	1.20	7.0	3.45	2.35	3.45	7.3
23	10.2	2.7	*3.3	67	9.4	*5.2	1.38	4.4	3.15	1.95	3.6	6.7
24	8.8	2.7	3.15	67	7.2	11.3	1.65	4.2	2.7	1.65	2.85	8.6
25	8.4	4.5	3.0	26.5	6.4	5.8	1.20	3.45	2.95	1.65	6.0	6.7
26	15.8	38	3.0	50	5.8	5.8	1.05	2.7	11.6	1.47	10.6	5.2
27	15.2	27.5	2.7	16.5	7.8	4.4	.97	8.6	6.4	1.47	8.9	3.8
28	9.1	6.1	2.5	10.3	30	3.8	.90	15.7	3.8	9.0	13.8	3.0
29	7.2	4.0	2.5	16.8	28.5	3.45	.83	2.6	3.15	3.15	10.9	*3.45
30	6.6	3.8	2.35	77	85	3.15	.83	-----	2.6	3.15	6.6	3.8
31	9.1	5.5	-----	93	-----	3.0	.70	-----	*2.35	-----	6.6	-----
Total	647.2	296.70	317.65	795.80	1,052.3	760.50	51.55	117.11	392.50	95.40	625.20	218.70
Mean:												
mgd	20.9	9.57	10.6	25.7	35.1	24.5	1.66	4.18	12.7	3.18	20.2	7.29
cfs	32.3	14.8	16.4	39.8	54.5	37.9	2.57	6.47	19.6	4.92	31.3	11.3
Ac-ft	1,990	911	975	2,440	3,230	2,330	158	359	1,200	293	1,920	671
Calendar year 1952:	Max 158	Min 2.15	Mean(mgd)	20.4	Mean(cfs)	31.6	Ac-ft	22,920				
Fiscal year 1952-53:	Max 209	Min 0.58	Mean(mgd)	14.7	Mean(cfs)	22.7	Ac-ft	16,480				

Peak discharge (base, 750 mgd).--Mar. 4 (5 p.m.) 790 mgd (1,220 cfs), 5.42 ft.

* Discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge computed on basis of 1 discharge measurement, partial record, and records for stations on nearby streams.

Manuel Luis ditch at Puohokamoa Gulch, near Huelo

Location.--Lat 20°51'50", long 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.1 miles west of Keanae, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Records available.--December 1917 to June 1953.

Gage.--Water-stage recorder and sharp-crested weir.

Average discharge.--34 years (1918-24, 1925-53), 5.77 mgd (8.93 cfs).

Extremes.--1917-53: Maximum daily discharge, 68 mgd (105 cfs) for one or more days in 1938, 1941-42, 1947-48, and 1950; no flow at times.

Remarks.--Records good. Ditch is extension of Center ditch and picks up water at altitude of 500 ft from streams between the Kolea and the Waiakamoi. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9	4.7	1.80	*0.45	18.4	7.3	0.62	0.22	1.31	0.45	0.28	0.85
2	2.15	1.53	.85	.45	28.5	6.3	.58	.20	1.00	.39	.28	.74
3	1.89	1.08	1.30	1.85	30	3.45	.56	.17	.58	.39	26	.62
4	1.70	1.00	.93	25	7.3	19.0	.56	.17	14.3	.34	51	.56
5	5.3	.85	.68	2.4	3.65	28.5	.56	.17	3.8	.28	4.7	.56
6	2.1	1.00	14.4	.85	2.55	22	.51	.17	.85	.28	7.8	.51
7	1.46	1.44	3.05	.68	1.89	38.5	.56	.25	4.9	.28	10.1	.45
8	8.9	1.24	1.61	.56	1.53	9.9	.45	.25	2.85	.28	4.3	.51
9	12.7	15.6	6.0	.62	2.25	11.8	.39	.28	4.5	.25	2.35	1.25
10	3.0	2.3	4.3	.56	13.6	10.0	.39	.20	22.5	.34	1.70	1.41
11	2.1	1.23	1.70	1.00	36.5	3.2	.39	.20	3.0	1.05	1.38	1.99
12	1.61	1.08	2.75	2.75	5.3	2.55	.39	.17	1.99	.45	1.23	2.4
13	1.38	.93	16.7	.68	10.2	2.1	.39	.41	1.81	.28	1.00	1.15
14	24.5	1.00	4.6	.56	11.6	1.70	.34	.45	1.98	.28	.85	1.15
15	24.5	2.65	2.35	.45	7.3	1.46	.28	.39	3.75	.25	.93	1.90
16	5.4	1.44	1.80	.39	19.2	1.31	.28	2.75	1.89	.39	.74	1.69
17	11.2	.85	3.05	.45	3.1	2.6	.28	.68	1.38	.56	.68	1.37
18	12.1	.79	3.2	8.6	2.15	15.8	.28	2.4	2.25	.85	.62	4.8
19	3.55	.74	1.23	32	9.4	1.99	.28	3.8	1.31	.51	.68	3.1
20	2.35	.68	1.00	8.9	6.8	1.31	.28	1.00	1.00	.34	1.26	1.61
21	1.80	.68	.85	21	6.5	1.23	.28	.85	.85	.28	.79	1.23
22	3.45	.56	.85	7.6	4.5	1.31	.28	1.30	.79	.28	.56	1.15
23	1.80	.58	.74	17.4	3.1	1.08	.28	1.37	.68	.28	.79	1.00
24	2.3	.56	.68	16.3	2.25	2.15	.34	2.95	.62	.25	.56	.85
25	1.38	.82	.68	5.6	1.89	1.08	.25	1.70	.56	.22	.62	.79
26	3.65	7.9	.68	11.5	1.61	1.08	.29	1.08	1.19	.22	.93	.74
27	3.25	*5.9	.62	3.1	1.89	.85	.22	1.27	.85	.20	3.05	.68
28	1.99	1.00	.56	2.1	4.1	.79	.22	3.6	.74	.61	3.2	.62
29	1.31	.74	.56	9.0	3.95	.79	.22	-	.51	.39	2.4	.62
30	1.15	.74	.51	27	29	.68	.22	-----	.45	.34	1.23	.56
31	1.74	1.68	-----	33.5	-----	.68	.22	-----	.45	-----	1.23	-----
Total	152.61	63.27	79.83	243.10	276.21	204.49	11.17	28.45	84.34	11.31	133.24	36.84
Mean:												
mgd	4.92	2.04	2.66	7.84	9.27	6.60	0.360	1.02	2.72	0.377	4.30	1.23
cfs	7.81	3.16	4.12	12.1	14.3	10.2	0.557	1.58	4.21	0.583	6.85	1.90
Ac-ft	468	194	245	746	854	628	34	87	259	55	409	113
Calendar year 1952: Max	38.5			Min	0.39	Mean(mgd)	5.36	Mean(cfs)	8.29	Ac-ft	6,010	
Fiscal year 1952-53: Max	51			Min	0.17	Mean(mgd)	3.64	Mean(cfs)	5.63	Ac-ft	4,070	

* Discharge measurement made on this day.

Waiakamoi Stream above Wailoa ditch, near Huelo

Location.--Lat 20°51'45", long 156°11'55", on left bank 500 ft upstream from intake of Wailoa ditch, 0.2 mile upstream from Spreckels ditch trail, 2.5 miles southeast of Kailua, and 3.8 miles southeast of Huelo.

Drainage area.--4.4 sq mi.

Records available.--January 1922 to June 1953.

Gage.--Water-stage recorder. Datum of gage is 1,293.59 ft above mean sea level.

Average discharge.--31 years, 16.2 mgd (25.1 cfs).

Extremes.--Maximum discharge during year, 1,750 mgd (2,710 cfs) Mar. 4 (gage height, 7.26 ft), from rating curve extended as explained below; minimum, 0.15 mgd (0.23 cfs) Feb. 12.

1922-53: Maximum discharge, 7,040 mgd (10,900 cfs) Jan. 26, 1948 (gage height, 12.76 ft), from rating curve extended above 370 mgd on basis of area-mean-depth study; minimum, that of Feb. 12, 1953.

Remarks.--Records good. Haleakala Ranch and Kula pipelines divert small quantities of water above station. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 615: 1922-24. WSP 740: 1922-31(M). WSP 1155: 1948(M).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.14	1.5	6.3
.6	.27	1.7	11.2
.7	.45	2.0	22.5
.8	.70	2.5	52
.9	1.00	3.0	102
1.1	1.70	3.5	175
1.3	3.2	4.0	274

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.6	8.4	5.4	0.96	48	31	1.43	0.21	4.9	1.43	1.16	4.5
2	6.5	6.0	3.7	.88	59	33.5	1.32	.19	5.0	1.85	4.5	4.0
3	5.6	4.1	5.1	1.42	47	11.2	1.22	.21	2.75	1.09	48	3.2
4	5.5	3.45	4.3	58	17.3	55	1.09	.21	216	1.03	224	2.7
5	18.3	2.95	3.1	8.1	*13.1	105	1.06	.19	30.5	.92	18.6	1.70
6	7.6	3.6	14.2	3.3	7.0	66	.96	.21	6.5	.80	50	1.40
7	5.2	7.8	8.6	2.95	5.8	98	1.00	.41	9.9	.70	31	1.25
8	10.7	5.6	4.9	1.80	5.1	30.5	.89	.35	8.0	.62	21.5	1.29
9	39	38.5	22.5	1.80	12.7	36	.72	.35	13.6	.54	10.7	2.6
10	10.8	10.7	16.4	1.54	89	41	.64	.29	42	.79	6.3	6.6
11	6.3	5.1	6.1	3.8	154	10.1	.59	.21	8.0	6.0	5.2	6.3
12	5.1	4.9	5.2	10.4	31.5	7.4	.54	.18	6.0	3.1	4.5	12.6
13	4.3	4.1	4.2	4.0	61	6.0	.52	.54	4.7	2.05	4.1	5.1
14	69	3.7	14.0	2.7	69	5.2	.50	1.18	7.0	1.95	3.6	4.7
15	101	4.9	5.8	1.70	23	4.7	.45	1.88	11.5	2.0	3.3	11.0
16	11.8	5.3	*4.4	1.40	91	4.0	.43	3.9	7.8	2.05	2.75	12.8
17	41	3.6	11.9	1.32	11.4	6.5	.41	3.85	4.7	2.0	3.95	5.9
18	35	3.3	14.8	10.0	7.0	52	.39	5.9	15.1	7.6	2.95	14.6
19	9.9	2.85	5.1	44	26	6.8	.39	11.9	7.6	4.3	3.5	11.7
20	6.8	2.4	4.1	19.7	14.0	4.7	.39	3.8	4.4	2.65	8.1	6.0
21	5.6	1.85	3.6	27.5	12.1	4.1	.35	7.0	3.7	3.05	4.9	4.7
22	9.1	1.50	2.95	19.4	7.0	4.0	.32	5.2	3.45	2.35	3.3	5.6
23	6.8	1.36	2.0	52	6.3	3.7	.37	3.7	3.05	1.16	3.2	5.5
24	5.6	1.29	1.85	44	5.1	6.9	.45	2.8	*2.75	.86	2.45	7.9
25	5.1	2.0	1.75	16.8	4.5	4.3	.37	2.5	2.45	.84	3.15	6.2
26	11.6	26	1.70	35.5	4.4	4.1	.30	2.3	9.8	.59	7.4	4.5
27	10.0	19.8	1.46	11.8	5.8	4.0	.27	4.0	6.2	.56	6.2	3.85
28	5.7	4.5	1.29	6.3	39.5	3.6	.25	11.1	4.0	3.5	10.1	3.2
29	24.7	3.35	1.25	12.0	34	2.7	.23	-	2.95	2.4	8.1	3.2
30	4.3	2.35	1.09	62	86	1.80	.23	-	2.35	1.76	5.4	2.65
31	5.1	3.55	-----	71	-----	1.62	.22	-----	1.62	-----	5.2	-----
Total	481.6	198.80	220.54	538.05	996.6	657.42	18.30	74.56	458.07	60.54	517.11	167.24
Mean:	15.5	6.41	7.35	17.4	33.2	21.2	0.590	2.66	14.8	2.02	16.7	5.57
cfs	24.0	9.92	11.4	26.9	51.4	32.6	0.913	4.12	22.9	3.13	25.8	8.62
Ac-ft	1,480	610	677	1,650	3,060	2,020	56	229	1,410	186	1,590	513

Calendar year 1952: Max 166 Min 0.86 Mean(mgd) 16.2 Mean(cfs) 25.1 Ac-ft 16,180

Fiscal year 1952-53: Max 224 Min 0.18 Mean(mgd) 12.0 Mean(cfs) 18.6 Ac-ft 13,480

Peak discharge (base, 900 mgd).--Mar. 4 (6 p.m.) 1,750 mgd (2,710 cfs), 7.26 ft.

* Discharge measurement made on this day.

Alo Stream near Huelo

Location.--Lat 20°51'50", long 156°11'45", on right bank just upstream from Spreckels ditch inflow, trail crossing, and Walloa ditch intake, 2.5 miles southeast of Kailua and 3.8 miles southeast of Huelo.

Drainage area.--0.2 sq mi.

Records available.--December 1910 to June 1953.

Gage.--Water-stage recorder. Datum of gage is 1,248.38 ft above mean sea level. Prior to June 18, 1914, staff gage at site 300 ft downstream at different datum.

Average discharge.--42 years (1911-53), 4.83 mgd (7.47 cfs).

Extremes.--Maximum discharge during year, 160 mgd (248 cfs) July 15 (gage height, 2.79 ft); minimum, 0.24 mgd (0.37 cfs) Feb. 4.
1910-53: Maximum discharge, 1,600 mgd (2,480 cfs) Nov. 18, 1930 (gage height, 6.90 ft), from rating curve extended above 180 mgd; minimum, 0.2 mgd (0.3 cfs) Nov. 22, 23, 1932.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.17	1.3	9.7
.5	.39	1.5	18.5
.7	1.07	1.8	38
.9	2.3	2.1	65
1.1	4.6		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.0	7.2	2.6	0.61	12	7.7	0.70	0.28	2.2	0.77	0.81	1.48
2	3.0	2.05	1.12	.58	20	8.2	.70	*.28	1.48	.70	.77	1.27
3	2.7	1.58	2.0	5.4	22	3.35	.64	.26	1.12	.70	37	1.07
4	2.95	1.43	1.50	21	6.5	13.0	.64	.26	12.4	.70	56	1.07
5	7.8	1.27	1.03	2.05	3.2	15.9	.61	.26	5.3	.64	4.5	.96
6	2.95	2.0	19.2	1.07	2.25	17.7	.58	.28	1.94	.61	9.6	.89
7	2.15	2.15	3.3	.92	1.87	24.5	.64	.45	10.1	.54	14.2	.85
8	7.4	2.15	2.75	.85	1.48	7.1	.54	.41	3.7	.54	5.5	.92
9	12.0	16.2	8.4	.95	2.55	12.3	.51	.37	8.9	.51	2.8	3.35
10	3.55	2.45	4.5	.81	13.2	6.0	.48	.32	14.7	1.12	2.15	2.55
11	2.5	1.82	2.1	2.1	19.8	3.0	.48	.30	3.25	2.4	1.72	4.8
12	2.0	1.43	4.9	3.25	6.6	2.3	.48	.28	1.94	.70	1.43	5.65
13	1.65	1.17	12.0	1.1	8.5	1.94	.45	1.37	1.66	.58	1.27	2.35
14	30	1.24	4.2	.86	5.1	1.58	.42	1.17	3.3	.54	1.12	2.65
15	25.5	3.85	2.6	.80	8.5	1.38	.42	.95	8.9	.58	1.27	5.0
16	5.4	1.41	*1.94	.73	8.1	1.22	.42	4.9	2.9	.97	1.12	3.35
17	9.1	1.03	3.75	.80	2.8	3.85	.42	1.03	2.1	2.05	.96	3.05
18	10.0	.96	2.3	10	2.05	10.2	.39	5.3	4.2	2.15	.85	10.0
19	5.1	.88	1.32	25	9.9	1.82	.39	7.1	1.87	1.21	1.50	5.0
20	2.3	.81	1.12	9.5	6.0	1.38	.39	1.42	1.48	.81	2.95	2.5
21	1.87	.81	1.03	17	5.0	1.17	.37	6.4	1.27	.74	1.51	1.87
22	4.9	.74	.92	7.0	4.3	*1.53	.37	3.65	1.17	.70	.92	1.58
23	2.1	.70	.88	12	3.1	1.30	.42	2.05	1.03	.61	1.42	1.32
24	3.75	.70	.85	13	2.0	2.95	.37	1.98	*.96	.61	.92	1.22
25	2.25	1.29	.81	5.0	1.53	1.17	.35	2.35	.92	.58	1.78	1.07
26	6.5	12.7	.85	9.5	1.43	1.51	.32	1.48	2.2	.51	1.94	1.22
27	4.5	5.0	.74	3.0	1.88	.96	.32	3.5	3.0	.51	6.9	1.03
28	2.95	1.32	.70	2.1	3.6	.88	.32	6.5	1.57	2.15	4.1	.96
29	1.98	1.03	.67	8.0	4.4	.88	.32	-	.96	.90	4.3	1.14
30	1.98	1.30	.64	23	24.5	.81	.30	-----	.85	1.39	2.0	1.10
31	3.7	2.35	-----	24	-----	.77	.30	-----	.81	-----	2.65	-----
Total	176.53	81.02	90.72	211.98	214.14	158.35	14.06	54.90	106.18	27.52	175.96	69.26
Mean												
mgd	5.69	2.61	3.02	6.84	7.14	5.11	0.454	1.96	3.49	0.917	5.68	2.31
cfs	8.80	4.04	4.87	10.6	11.0	7.91	0.702	3.03	5.40	1.42	8.79	3.57
Ac-ft	542	249	278	651	657	486	43	168	332	84	540	213

Calendar year 1952: Max 32 Min 0.58 Mean(mgd) 4.92 Mean(cfs) 7.61 Ac-ft 5,530
Fiscal year 1952-53: Max 56 Min 0.26 Mean(mgd) 3.79 Mean(cfs) 5.86 Ac-ft 4,240

Peak discharge (base, 250 mgd).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 13 to Nov. 5; discharge estimated on basis of records for stations on nearby streams.

Kaaiea Stream near Huelo

Location.--Lat 20°52'05", long 156°12'15", on left bank 700 ft upstream from Hamakua ditch trail crossing, 2 miles southeast of Kailua, 3.2 miles southeast of Huelo, and 3.5 miles west of Keanae.

Drainage area.--0.5 sq mi.

Records available.--December 1921 to June 1953.

Gage.--Water-stage recorder and concrete weir. Prior to Aug. 1, 1934, water-stage recorder at site 40 ft downstream at different datum.

Average discharge.--31 years (1922-53), 4.59 mgd (7.10 cfs).

Extremes.--Maximum discharge during year, 143 mgd (221 cfs) July 15 (gage height, 2.66 ft); minimum, 0.27 mgd (0.42 cfs) Feb. 1-6, 11.

1921-53: Maximum discharge, 2,300 mgd (3,560 cfs) Nov. 18, 1930 (gage height, 7.93 ft, site and datum then in use), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.22 mgd (0.34 cfs) June 1, 1945.

Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	0.8	9.0
.3	.65	1.0	16.5
.4	1.34	1.3	31.5
.5	2.45	1.7	56
.6	4.1		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.55	6.3	2.45	0.54	12.0	8.1	0.68	0.27	2.05	0.68	0.94	1.53
2	2.6	1.95	1.34	.54	21.5	9.6	.63	.27	1.53	.63	1.01	1.25
3	2.05	1.43	1.86	1.33	23	3.55	.63	.27	1.17	.58	32	1.09
4	2.25	1.25	1.53	25.5	5.2	15.1	.58	.27	11.8	.63	50	1.01
5	7.7	1.17	1.17	2.4	2.75	18.5	.58	.27	5.7	.54	4.4	.87
6	2.6	1.50	16.5	1.25	1.95	18.0	.54	.27	1.95	.50	11.3	.80
7	1.84	1.95	3.75	1.09	1.63	26.5	.63	.46	8.7	.50	13.6	.74
8	6.8	1.94	2.05	.87	1.34	7.6	.54	.36	4.6	.46	5.5	.87
9	12.4	16.3	8.9	.94	27.15	11.1	.50	.39	4.2	.46	2.45	5.1
10	3.5	2.6	5.0	.80	12.1	7.5	.50	.30	15.9	.69	1.73	2.75
11	2.2	*1.73	2.05	1.61	22.5	3.1	.46	*.27	3.65	2.55	1.43	4.0
12	1.73	1.53	3.3	3.7	7.3	2.2	.46	.30	1.95	.74	1.17	4.0
13	1.53	1.25	13.1	1.09	*10.3	1.84	.46	1.17	1.53	.54	1.09	2.05
14	28.5	1.17	4.7	.87	6.6	1.53	.42	1.18	3.2	.50	.94	2.45
15	23	3.3	2.3	.80	7.1	1.43	.42	1.10	8.7	.58	1.01	5.0
16	5.0	1.51	1.84	.74	9.8	1.25	.42	4.2	2.95	.87	.94	3.55
17	9.2	1.09	3.3	.80	3.1	3.65	.42	1.25	1.95	1.94	.80	2.45
18	9.7	1.01	2.9	9.6	2.05	11.6	.39	4.0	4.5	2.45	.74	9.6
19	2.6	.87	1.43	25	9.9	1.95	.39	9.8	1.95	1.25	1.20	5.2
20	1.84	.87	1.17	8.7	4.6	1.43	.36	1.84	1.53	.80	3.05	2.3
21	1.53	.87	1.09	14.2	4.3	1.25	.36	7.1	1.17	.74	1.53	1.63
22	3.75	.74	1.01	6.6	3.1	1.43	.36	3.75	1.09	.68	.94	1.43
23	1.80	.74	.87	12.2	3.0	1.09	.39	2.3	1.01	.58	1.17	1.17
24	2.4	.74	.80	13.0	1.95	3.05	.39	1.63	.87	.54	.87	1.09
25	1.85	1.08	.80	4.9	1.63	1.25	.36	1.90	.80	.50	1.80	.94
26	5.7	11.3	.87	10.0	1.53	1.43	.33	1.43	1.92	.50	2.1	1.09
27	3.6	7.8	.74	2.75	1.73	1.01	.33	3.55	2.9	.46	5.5	1.01
28	2.45	1.63	.68	1.95	3.8	.87	.33	6.9	1.63	2.15	4.1	.80
29	1.63	1.17	.68	7.1	4.6	.80	.30	-	1.01	.87	4.2	.94
30	1.53	1.30	.58	19.2	24.5	*.74	.30	-----	.87	1.43	1.84	1.09
31	3.4	2.15	-----	27	-----	.74	.30	-----	.80	-----	2.3	-----
Total	160.23	80.24	88.76	207.07	217.01	167.19	13.76	56.80	103.58	26.34	161.65	65.80
Mean:	5.17	2.59	2.96	6.68	7.23	5.39	0.444	2.03	3.34	0.878	5.21	2.19
mgd	8.00	4.01	4.58	10.3	11.2	8.54	0.687	3.14	5.17	1.36	8.06	3.39
Ac-ft	492	246	272	635	666	513	42	174	318	81	496	202

Calendar year 1952: Max 28.5 Min 0.54 Mean(mgd) 4.97 Mean(cfs) 7.69 Ac-ft 5,580
 Fiscal year 1952-53: Max 50 Min 0.27 Mean(mgd) 3.69 Mean(cfs) 5.71 Ac-ft 4,140

Peak discharge (base, 250 mgd).--No peak above base.

* Discharge measurement made on this day.

Oopuola Stream near Huelo

Location.--Lat 20°52'15", long 156°12'30", on left bank between Kaaiea and Nailiilihaele Streams, 100 ft upstream from Wailoa ditch intake, 300 ft upstream from ditch trail, 1.8 miles southeast of Kailua, 3 miles southeast of Huelo, and 3.8 miles west of Keanae.

Drainage area.--0.2 sq mi.

Records available.--August 1930 to June 1953. December 1910 to June 1915 at site half a mile downstream; records not equivalent.

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

Average discharge.--22 years (1931-53), 1.74 mgd (2.69 cfs).

Extremes.--Maximum discharge during year, 191 mgd (296 cfs) Mar. 7 (gage height, 4.03 ft), from rating curve extended as explained below; minimum, 0.10 mgd (0.16 cfs). Feb. 3-5, 1930-53: Maximum discharge, 340 mgd (526 cfs) Jan. 22, 1946 (gage height, 5.54 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.04 mgd (0.06 cfs) Oct. 29, 30, 1943, June 1, 1945.

Remarks.--Records good except those for period of no gage-height record and those above 18 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.6	0.05	2.1	3.75
1.7	.23	2.3	8.2
1.8	.65	2.5	14.7
1.9	1.32	2.8	30
2.0	2.35		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.25	3.35	1.29	0.23	4.6	2.9	0.23	0.12	0.70	*0.23	0.28	0.55
2	.87	.75	.55	.21	10.0	3.35	.23	.12	.50	.21	.28	.45
3	.81	.60	.69	1.50	9.4	1.25	.23	.12	.32	.19	16.0	.36
4	.87	.50	.70	7.5	2.5	3.75	.21	.10	3.35	.21	28	.36
5	3.65	.45	.61	1.02	1.10	5.7	.21	.10	1.83	.19	1.68	.32
6	1.10	.95	9.5	.50	.81	6.7	.19	.12	.55	.18	2.9	.28
7	.75	.93	1.44	.36	.85	9.5	.25	.19	9.2	.18	5.0	.25
8	2.7	.70	.81	.32	a.57	2.75	.21	.16	1.97	.18	1.93	.23
9	5.3	6.9	3.3	.40	a.75	3.25	.19	.18	3.85	.18	.87	1.21
10	1.39	1.00	1.80	.32	a5.7	2.3	.19	.14	6.2	.30	.65	1.08
11	.87	*.71	.81	.72	a9.0	.94	.18	.12	1.66	1.13	.50	1.63
12	.70	.55	2.1	1.59	a2.5	.75	.18	.12	.75	.25	.40	1.35
13	.55	.50	6.3	.36	a3.0	.60	.18	.59	.55	.19	.36	.87
14	12.3	.50	1.85	.28	1.70	.50	.18	.52	1.40	.18	.32	1.00
15	11.2	2.05	.94	.28	3.0	.45	.18	.45	3.65	.20	.50	1.88
16	1.86	.68	.81	.25	2.6	.40	.16	1.89	1.10	.60	.36	1.32
17	3.3	.45	1.01	.28	1.02	1.51	.16	.44	.75	.88	.28	1.15
18	4.1	.36	.93	3.8	.75	3.55	.16	1.75	1.80	.91	.25	4.5
19	1.10	.32	.50	10.7	3.95	.70	.16	6.0	.70	.45	.42	2.55
20	.75	.32	.40	3.2	4.1	.50	.16	.78	.50	.25	1.29	.87
21	.60	.32	.36	6.5	2.5	.40	.14	2.65	.40	.25	.60	.65
22	2.4	.28	.32	2.05	1.52	.55	.14	1.68	.40	.21	.32	.55
23	.81	.28	.32	3.35	1.18	.45	.18	1.07	.32	.19	.66	.45
24	1.31	.32	.28	4.4	.75	.81	.16	.65	.28	.18	.36	.40
25	.81	.72	.28	1.82	.60	.50	.14	.92	.28	.18	.50	.36
26	3.25	5.2	.32	2.6	.50	.55	.14	.60	.66	.18	.78	.36
27	1.64	2.5	.28	.94	.85	.36	.14	.58	1.06	.18	2.95	.32
28	1.09	.60	.25	.70	1.52	.28	.14	1.85	.60	.85	2.95	.32
29	.75	.45	.23	3.15	1.58	.28	.14	-	.32	.32	2.3	.36
30	.65	.66	.23	9.5	11.1	*.25	.14	-----	.28	.50	.75	.56
31	1.24	1.38	-----	10	-----	.23	.12	-----	.23	-----	.75	-----
Total	69.97	35.28	39.21	78.83	89.60	56.01	5.42	24.01	46.16	10.13	75.19	25.89
Means												
mgd	2.26	1.14	1.31	2.54	2.99	1.81	0.175	0.858	1.49	0.338	2.43	0.863
cfs	3.50	1.76	2.03	3.93	4.63	2.80	0.271	1.33	2.31	0.523	3.76	1.34
Ac-ft	215	108	120	242	275	172	17	74	142	31	231	79

Calendar year 1952 : Max 14.9 Min 0.21 Mean(mgd) 1.95 Mean(cfs) 3.02 Ac-ft 2,190
Fiscal year 1952-53 : Max 28 Min 0.0 Mean(mgd) 1.52 Mean(cfs) 2.35 Ac-ft 1,710

Peak discharge (base, 130 mgd).--Mar. 7 (8 p.m.) 191 mgd (296 cfs), 4.03 ft.

* Discharge measurement made on this day.

No gage-height record; discharge estimated on basis of recorded range in stage and records for stations on nearby streams.

Nailililihaele Stream near Huelo

Location.--Lat 20°52'30", long 156°13'05", on left bank 200 ft upstream from Wailoa ditch intake, 700 ft upstream from New Hamakua ditch trail, 1.5 miles south of Kailua, and 2.5 miles southeast of Huelo.

Drainage area.--2.8 sq mi.

Records available.--December 1910 to December 1911, October 1913 to June 1918, August 1919 to June 1953. July to December 1912, at site 700 ft downstream; records not equivalent due to diversion.

Gage.--Water-stage recorder and masonry control. Dec. 9, 1910, to Dec. 31, 1911, staff gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 20, 1922, at present site at datum 0.50 ft higher.

Average discharge.--32 years (1920-24, 1925-53), 24.3 mgd (37.6 cfs).

Extremes.--Maximum discharge during year, 1,470 mgd (2,270 cfs) Mar. 7 (gage height, 6.10 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 150 mgd (2.32 cfs) Feb. 11, 12.
1910-18, 1919-53: Maximum discharge, 8,100 mgd (12,500 cfs) Apr. 27, 1950 (gage height, 10.36 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.

Remarks.--Records good except those for period of no gage-height record and those above 130 mgd, which are fair. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 755: 1932. WSP 795: 1934.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.8	1.50	2.7	39.5
1.9	2.9	3.0	73
2.0	5.0	3.5	159
2.2	10.8	4.0	290
2.4	19.0	4.5	470

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19.5	27	10.5	4.2	73	39	5.3	2.05	11.9	*4.6	5.4	8.6
2	15.5	12.3	7.2	3.95	120	56	5.0	1.92	9.4	4.4	6.1	7.7
3	13.5	a10.2	9.7	6.3	120	20	4.8	1.92	6.9	4.2	179	6.9
4	13.2	a9.9	8.0	174	28	76	4.6	1.92	96	4.2	328	6.4
5	44	a9.6	6.9	13.5	18.1	126	4.4	1.92	29.5	5.75	24	5.8
6	15.0	a10.8	63	7.2	14.2	106	4.2	1.92	10.5	3.55	81	5.3
7	11.9	13.5	14.8	5.8	11.9	175	4.6	2.6	83	3.3	65	5.0
8	35.5	12.3	11.0	5.0	10.5	45	4.2	2.05	25.5	3.1	30	5.5
9	66	93	53	5.3	15.6	69	3.75	2.2	16.3	3.1	15.9	11.6
10	18.9	16.0	21.5	4.8	98	46	3.55	1.92	72	4.2	12.3	13.9
11	13.8	a10.8	11.2	7.5	169	19.5	3.55	*1.70	15.0	12.0	10.5	14.6
12	11.8	9.2	16.5	16.0	46	15.5	3.3	1.64	10.5	4.6	9.6	22.5
13	9.9	8.3	79	8.6	74	13.1	3.3	3.5	9.6	3.55	8.6	10.8
14	163	7.7	21	5.3	49	11.6	3.1	5.0	14.6	3.55	7.7	11.6
15	150	15.4	12.3	4.8	52	10.5	3.1	4.8	34.5	3.3	7.7	23.5
16	27	9.2	10.2	4.4	66	9.6	2.9	12.5	14.4	5.3	7.2	19.0
17	61	7.2	22	4.8	18.6	19.6	2.9	6.1	10.5	9.0	6.1	13.6
18	58	6.6	15.8	48	14.5	76	2.9	12.5	25.5	13.1	5.5	40
19	16.4	6.1	9.2	114	54	12.7	2.75	41	11.9	7.2	8.0	22.5
20	13.5	5.8	8.3	37.5	22.5	9.9	2.75	8.6	9.2	4.8	16.6	12.3
21	11.2	5.5	7.4	67	19.2	8.9	2.6	12.9	8.3	5.0	9.6	10.2
22	20	5.0	6.9	36	13.8	8.9	2.6	13.3	7.4	4.2	6.6	9.2
23	11.9	4.8	6.4	77	14.2	8.0	2.75	9.0	6.9	3.75	7.5	8.6
24	12.0	4.8	5.8	85	11.2	15.5	2.75	6.1	6.1	3.55	5.8	7.7
25	11.1	6.8	5.5	32	9.9	8.9	2.5	6.9	5.8	3.3	9.3	7.2
26	30	65	5.8	56	9.2	9.2	2.35	5.8	9.5	3.1	13.7	7.7
27	16.4	40	5.0	16.8	10.5	7.4	2.35	11.8	12.8	3.1	23	6.9
28	11.8	8.6	4.8	12.7	26	6.9	2.2	31.5	8.8	11.8	20.5	6.1
29	10.5	6.9	4.6	36	27.5	6.6	2.2	-	6.1	5.8	18.5	6.9
30	10.2	7.3	*4.2	124	145	*5.8	2.2	-----	5.5	6.4	10.2	7.3
31	17.4	9.6	-----	161	-----	5.5	2.05	-----	5.0	-----	10.5	-----
Total	939.7	465.2	467.5	4182.45	1,363.5	1,047.6	101.50	215.08	598.9	154.80	969.4	344.9
Mean:												
mgd	30.3	15.0	15.6	38.1	45.4	33.8	3.27	7.68	19.3	5.16	31.3	11.5
cfs	46.9	23.2	24.1	58.9	70.2	52.3	5.06	11.9	29.9	7.98	48.4	17.8
Ac-ft	2,880	1,430	1,430	3,630	4,180	3,210	311	660	1,840	475	2,970	1,060

Calendar year 1952 : Max 178 Min 3.95 Mean(mgd) 28.6 Mean(cfs) 44.3 Ac-ft 32,140
Fiscal year 1952-53 : Max 328 Min 1.64 Mean(mgd) 21.5 Mean(cfs) 33.3 Ac-ft 24,080

Peak discharge (base, 1,250 mgd). -Mar. 7 (9 p.m.) 1,470 mgd (2,270 cfs), 6.10 ft.

* Discharge measurement made on this day.

No gage-height record; discharge estimated on basis of probable decrease in flow and records for stations on nearby streams.

Kailua Stream near Huelo

Location.--Lat 20°52'35", long 156°13'25", on left bank just upstream from Wailoa ditch intake, 1.2 miles southwest of Kailua and 2.5 miles south of Huelo.

Drainage area.--3.0 sq mi.

Records available.--December 1910 to December 1911, June 1913 to June 1918, July 1919 to June 1953. July 1912 to May 1913 at site 1 mile downstream; records not equivalent.

Gage.--Water-stage recorder. Datum of gage is 1,252.99 ft above mean sea level. Prior to Dec. 31, 1911, staff gage at site 400 ft downstream at different datum. June 17 to Sept. 30, 1913, staff gage at present site and datum.

Average discharge.--34 years (1919-53), 18.9 mgd (29.2 cfs).

Extremes.--Maximum discharge during year, 1,460 mgd (2,260 cfs) Mar. 4 (gage height, 6.90 ft), from rating curve extended above 650 mgd by logarithmic plotting; minimum, 0.79 mgd (1.22 cfs) Feb. 11-13.

1910-11, 1913-18, 1919-53: Maximum discharge, 4,920 mgd (7,610 cfs) Dec. 17, 1946 (gage height, 9.27 ft), from rating curve extended above 650 mgd by logarithmic plotting; minimum, 0.07 mgd (0.11 cfs) June 27, 1921.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.6	0.40	2.7	29
1.7	1.00	3.0	48
1.8	2.05	3.5	97
1.9	3.4	4.0	163
2.1	7.4	4.5	253
2.4	16.4	5.0	370

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.9	11.2	3.6	2.05	55	37.5	3.0	0.93	9.4	2.05	2.05	4.2
2	8.2	5.9	3.0	2.05	66	45	2.85	.93	6.8	1.94	2.3	3.6
3	7.2	4.7	3.6	2.2	62	14.9	2.7	.93	1.83	67	3.2	
4	7.0	4.1	3.25	89	17.5	66	2.55	.86	156	1.83	255	2.9
5	24.5	*3.75	2.85	13.3	12.2	132	2.55	.86	31.5	1.72	23.5	2.5
6	9.4	4.1	16.3	4.7	6.7	94	2.3	.86	8.0	1.61	71	2.3
7	6.7	6.3	7.2	3.4	6.7	128	2.45	1.20	50	1.50	35.5	2.1
8	15.5	5.9	4.3	3.0	5.6	37.5	2.2	.93	18.2	1.50	23	2.3
9	43	48	31.5	2.85	10.3	54	2.05	1.00	9.7	1.40	11.2	5.5
10	12.5	11.7	18.4	2.55	94	44	1.94	.86	46	1.83	7.0	7.0
11	8.2	5.9	6.3	3.1	221	14.0	1.83	.79	8.4	4.5	5.8	7.2
12	6.7	4.8	5.3	7.3	44	10.3	1.83	.79	6.5	2.45	4.7	12
13	5.6		51	3.75	79	8.7	1.72	1.00	4.8	1.83	4.2	5.5
14	97	3.75	15.7	2.85	76	7.2	1.72	1.72	6.1	1.61	3.8	5.8
15	122	5.2	7.0	2.45	43	*6.5	1.61	1.94	12.2	1.72	3.7	12
16	16.2	4.5	5.2	2.3	94	5.9	1.50	3.25	8.1	1.83	3.4	10
17	48	3.4	11.9	2.45	16.7	7.9	1.50	2.85	5.0	2.7	3.1	7.0
18	45	3.1	15.4	13.1	10.9	56	1.40	4.7	15.8	6.4	2.9	20
19	12.4	3.0	5.6	53	35	10.8	1.40	18.4	8.3	3.6	4.0	12
20	9.0	2.7	4.7	23.5	13.4	7.0	1.30	4.8	5.0	2.45	8.5	6.5
21	7.2	2.7	3.95	28.5	10.6	5.6	1.30	3.65	3.95	2.45	5.5	5.0
22	9.4	2.45	3.6	21.5	7.9	5.6	1.30	5.2	3.75	2.05	3.7	4.5
23	7.0	2.3	3.25	61	7.9	4.8	1.30	3.75	3.25	1.83	4.0	4.1
24	6.1	2.3	3.1	54	6.3	9.0	1.30	2.3	3.0	1.61	3.3	3.8
25	5.6	2.55	3.0	21.5	5.6	5.2	1.20	2.45	2.7	1.50	4.8	3.6
26	13.3	29	3.0	47	5.0	5.0	1.10	2.05	4.3	1.40	8.0	3.8
27	8.5	25.5	2.7	13.3	5.6	4.3	1.10	4.4	5.4	1.30	12	3.4
28	5.9	4.8	2.45	8.4	34.5	3.95	*1.00	14.1	3.95	4.9	11	3.0
29	5.0	3.4	2.3	16.1	36	3.6	1.00	-	2.85	3.0	10	3.4
30	4.8	3.1	2.3	74	108	3.25	1.00	-----	2.45	2.45	5.0	3.6
31	6.8	3.4	-----	94	-----	3.1	.93	-----	2.3	-----	5.2	-----
Total	594.6	227.80	251.75	678.20	1,198.4	840.60	52.93	87.50	457.20	68.79	613.95	171.8
Mean:												
mgd	19.2	7.35	8.39	21.9	39.9	27.1	1.71	3.12	14.7	2.29	19.8	5.73
cfs	29.7	11.4	13.0	33.9	6.7	41.9	2.65	4.83	22.7	3.54	3.06	8.87
Ac-ft	1,820	699	773	2,080	3,680	2,580	162	269	1,400	211	1,880	527

Calendar year 1952: Max 221 Min 2.05 Mean(mgd) 19.4 Mean(cfs) 30.0 Ac-ft 21,780
Fiscal year 1952-53: Max 255 Min 0.79 Mean(mgd) 14.4 Mean(cfs) 22.3 Ac-ft 16,080

Peak discharge (base, 1,300 mgd).--Mar. 4 (4:30 p.m.) 1,460 mgd (2,260 cfs), 6.90 ft.

* Discharge measurement made on this day.

Note.--No gage-height record May 13 to June 30; discharge estimated on basis of recorded range in stage and records for Naliililahe Stream.

Hoolawanui Stream near Huelo

Location.--Lat 20°53'15", long 156°14'55", on right bank 250 ft upstream from intake of Wailoa ditch, 2 miles west of Kailua, and 2 miles southwest of Huelo.

Records available.--December 1910 to June 1953.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,219.42 ft above mean sea level (East Maui Irrigation Co. benchmark). Prior to June 20, 1914, staff gage at site 180 ft downstream at different datum. June 20, 1914, to Oct. 24, 1933, water-stage recorder at site 80 ft downstream at datum 4.43 ft lower.

Average discharge.--41 years (1911-15, 1916-53), 7.81 mgd (12.1 cfs).

Extremes.--Maximum discharge during year, 2,000 mgd (3,090 cfs) Mar. 7 (gage height, 5.03 ft), from rating curve extended above 100 mgd by logarithmic plotting; minimum, 0.59 mgd (0.91 cfs) Feb. 11-13.
1910-53: Maximum discharge, 3,240 mgd (5,010 cfs) Apr. 27, 1950 (gage height, 5.94 ft), from rating curve extended above 100 mgd by logarithmic plotting; minimum, 0.15 mgd (0.23 cfs) Oct. 25, 1917.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 7					Mar. 8 to June 30			
0.3	0.53	0.8	10.2		0.3	0.59	0.9	14.2
.4	1.23	1.0	18.6		.4	1.39	1.2	31
.5	2.45	1.2	30.5		.5	2.7	1.6	67
.6	4.2	1.6	67		.6	4.5	2.0	131
.7	7.0	2.0	131		.7	7.5		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.6	6.2	2.05	1.45	18.6	11	2.3	0.77	2.55	1.60	1.10	2.4
2	6.4	3.4	1.80	1.45	29	13	2.2	.77	1.45	1.49	1.10	2.1
3	5.8	3.05	1.80	1.45	29	8.5	2.05	.77	1.07	1.39	27	1.97
4	5.4	2.9	1.80	27	*17	12	2.2	.71	13.4	1.39	74	1.84
5	11.4	*2.75	1.67	3.85	13	25	2.05	.71	5.0	1.39	*7.8	1.72
6	5.8	2.75	9.0	2.05	10	27	1.80	.71	1.93	1.29	16.4	1.60
7	4.7	2.9	2.9	1.80	9.0	45	2.05	.91	35	1.29	12.1	1.60
8	7.1	2.9	2.2	1.67	8.0	20	1.67	.71	7.8	1.19	8.1	1.72
9	12.6	15.0	8.2	1.67	8.5	17	1.56	.77	5.9	1.19	5.5	2.15
10	6.0	4.0	5.3	1.56	14	15	1.56	.65	10.8	1.49	4.8	2.4
11	5.2	3.05	2.75	1.80	25	11	1.45	.65	3.9	1.97	4.1	2.35
12	4.4	2.75	2.7	2.45	15	9.0	1.45	.59	3.2	1.29	3.9	4.0
13	4.0	2.6	12.4	1.56	17	8.0	1.34	.71	3.7	1.19	3.5	2.25
14	40	2.45	4.9	1.45	13	7.0	1.23	.84	3.2	1.10	3.2	2.55
15	45	3.75	3.2	1.45	16	6.0	1.23	.84	5.4	1.10	3.2	4.7
16	10.6	2.6	2.75	1.23	20	5.0	1.23	1.15	3.5	1.29	2.85	4.1
17	14.1	2.2	3.6	1.45	12	6.5	1.23	.84	2.8	1.72	2.7	3.05
18	14.6	2.2	4.2	5.1	10	13.1	1.15	1.36	4.2	1.84	2.55	7.1
19	8.2	2.05	2.6	14.4	13	5.4	1.15	4.3	3.1	1.29	2.85	4.5
20	6.6	1.93	2.45	6.7	9.0	4.7	1.07	1.07	2.7	1.19	3.9	3.0
21	5.4	1.93	2.2	9.0	8.0	4.2	*1.07	.84	2.55	1.10	2.85	2.55
22	6.8	1.80	2.2	6.4	7.0	4.2	.99	.99	2.55	1.02	2.25	2.4
23	4.7	1.67	2.05	14.9	6.5	3.8	1.15	.91	2.25	.94	2.55	2.25
24	4.4	1.67	1.93	12.8	5.5	5.0	.99	.71	2.1	.94	2.1	2.1
25	4.2	1.93	1.80	7.4	5.0	3.6	.91	.77	1.97	.94	2.35	1.97
26	7.0	7.9	1.93	14.0	4.5	3.6	.84	.71	2.55	.86	3.25	2.1
27	4.2	7.9	1.67	6.0	4.5	3.05	.84	1.01	3.05	1.56	4.1	1.84
28	3.6	2.45	1.67	5.2	5.5	2.9	*.77	4.7	2.25	1.92	4.8	1.84
29	3.6	2.05	1.56	7.2	7.0	2.75	.84		1.84	1.10	4.6	1.97
30	3.2	1.93	1.45	26	30	2.6	.84		1.72	1.10	2.7	1.72
31	5.2	2.2	-----	32.5	-----	2.45	-----	-----				
Total	277.8	104.86	96.73	222.94	389.6	307.35	41.98	30.47	203.03	38.47	224.75	77.84
Mean:	8.96	3.38	3.22	7.19	13.0	9.91	1.35	1.09	6.55	1.28	7.25	2.59
cfs	13.9	5.23	4.98	11.1	20.1	15.3	2.09	1.69	10.1	1.98	11.2	4.01
Ac-ft	853	322	297	684	1,200	943	129	94	623	118	690	239

Calendar year 1952: Max 45 Min 1.23 Mean(mgd) 7.47 Mean(cfs) 11.6 Ac-ft 8,400
Fiscal year 1952-53: Max 95 Min 0.59 Mean(mgd) 5.52 Mean(cfs) 8.54 Ac-ft 6,190

Peak discharge (base, 300 mgd).--Mar. 7 (8 p.m.) 2,000 mgd (3,090 cfs), 5.03 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 4 to Dec. 15, Mar. 17-19; discharge estimated on basis of records for stations on nearby streams.

Hoolawaliilili Stream near Huelo

Location.--Lat 20°53'15", long 156°14'35", on right bank just upstream from Walloa ditch intake, 2 miles west of Kailua and 2 miles southwest of Huelo.

Records available.--April 1911 to June 1953.

Gage.--Water-stage recorder and concrete control. Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--41 years (1911-15, 1916-53), 4.74 mgd (7.33 cfs).

Extremes.--Maximum discharge during year, 375 mgd (580 cfs) Mar. 7 (gage height, 4.77 ft), from rating curve extended above 90 mgd by broad-crested weir formula; minimum, 0.86 mgd (1.33 cfs) Feb. 10-12, 13, 14.
1911-53: Maximum discharge, 787 mgd (1,220 cfs) Feb. 7, 1939 (gage height, 5.42 ft), from rating curve extended above 220 mgd by broad-crested weir formula; minimum, 0.2 mgd (0.3 cfs) June 8, 1926.

Remarks.--Records good. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 755: 1931-32.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.3	0.80	1.6	6.7
1.4	1.50	2.1	19.4
1.5	2.7	2.4	34.5
1.6	4.2	2.7	54

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.4	4.7	2.15	1.50	10.6	6.9	1.71	0.98	1.94	1.50	1.12	2.3
2	4.6	3.0	1.93	1.60	16.5	7.4	1.71	.98	1.50	1.50	1.12	2.15
3	4.2	2.55	1.82	1.60	15.3	4.8	1.80	.98	1.34	1.42	15.3	2.05
4	3.9	2.4	1.82	7.7	*8.2	7.0	1.71	.98	2.95	1.42	3.9	1.93
5	7.1	*2.3	1.94	2.85	5.8	13.8	1.60	.98	2.75	1.34	6.1	1.82
6	4.0	2.3	9.7	1.93	4.8	14.5	1.50	.98	1.71	1.34	7.1	1.82
7	3.55	2.3	3.25	1.71	4.2	22	1.60	1.12	21	1.34	7.8	1.82
8	4.5	2.15	2.55	1.71	3.7	9.2	1.50	.98	6.0	1.26	5.8	1.82
9	8.3	7.7	4.7	1.71	3.95	8.2	1.42	.98	4.1	1.26	4.2	2.05
10	4.4	3.0	3.55	1.60	6.2	7.0	1.42	.98	7.3	1.42	3.7	2.05
11	3.7	2.55	2.7	1.82	17.2	5.2	1.42	.86	3.25	1.50	3.25	2.05
12	3.4	2.4	2.9	2.05	7.2	4.4	1.34	.86	2.7	1.26	3.0	2.55
13	3.1	2.15	7.8	1.71	8.1	3.9	1.34	.92	2.55	1.26	2.85	2.05
14	18.1	2.15	3.7	1.60	6.1	3.55	1.34	.92	2.85	1.19	2.55	2.3
15	24.5	3.05	3.1	1.60	7.9	3.1	1.34	.98	4.1	1.19	2.7	3.1
16	6.3	2.3	2.85	1.50	8.9	3.0	1.34	1.19	3.0	1.26	2.4	2.95
17	7.3	2.05	3.0	1.60	5.0	3.7	1.34	.98	2.55	1.50	2.15	2.55
18	8.5	1.93	2.85	4.4	4.4	5.4	1.26	1.26	3.5	1.50	2.05	5.4
19	5.2	1.82	2.4	10.6	7.8	3.1	1.26	3.45	2.55	1.34	2.3	3.7
20	4.4	1.82	2.3	5.0	5.2	2.85	1.26	1.42	2.15	1.26	2.55	2.85
21	3.9	1.82	2.15	7.2	4.8	2.55	1.26	1.26	2.05	1.26	2.3	2.55
22	4.8	1.71	2.05	4.6	3.7	2.55	1.26	1.26	2.05	1.19	1.93	2.4
23	3.55	1.71	1.93	6.6	3.7	2.4	1.34	1.19	1.93	1.12	2.15	2.3
24	3.4	1.60	1.82	7.0	3.1	2.7	1.26	1.12	1.82	1.12	1.93	2.15
25	3.0	1.82	1.82	4.8	3.0	2.3	1.12	1.19	1.71	1.12	2.05	2.05
26	4.8	4.8	1.82	6.9	2.85	2.3	1.12	1.12	2.05	1.05	2.15	2.05
27	3.4	5.0	1.71	4.2	2.7	2.05	1.12	1.12	2.15	1.05	3.1	1.93
28	3.0	2.3	1.71	3.7	3.1	1.93	*1.05	2.5	1.93	1.34	4.2	1.82
29	2.85	1.93	1.60	5.7	3.7	1.82	1.05	-	1.71	1.12	3.95	1.93
30	2.55	1.93	1.50	16.1	17.3	1.82	1.05	-----	1.71	1.19	2.55	1.82
31	3.3	2.15	-----	15.4	-----	1.71	1.05	-----	1.60	-----	2.4	-----
Total	173.00	81.39	85.12	137.99	206.20	163.13	41.69	33.42	100.50	38.62	146.25	70.31
Mean:	5.58	2.63	2.84	4.45	6.87	5.26	1.34	1.19	3.24	1.29	4.72	2.34
mgd	8.65	4.07	4.39	6.89	10.6	8.14	2.07	1.84	5.01	2.00	7.50	3.62
cfs	551	250	261	423	633	501	128	103	308	119	449	216
Ac-ft												

Calendar year 1952: Max 24.5 Min 1.50 Mean(mgd) 4.46 Mean(cfs) 6.90 Ac-ft 5,010
Fiscal year 1952-53: Max 39 Min 0.86 Mean(mgd) 3.50 Mean(cfs) 5.42 Ac-ft 3,920

Peak discharge (base, 150 mgd).--Mar. 7 (8:30 p.m.) 375 mgd (580 cfs), 4.77 ft.

* Discharge measurement made on this day.

Honopou Stream near Huelo

Location.--Lat 20°53'20", long 156°15'05", on left bank just upstream from Wailoa ditch intake, 2.2 miles southwest of Huelo and 2.2 miles west of Kailua.

Drainage area.--1.0 sq mi.

Records available.--December 1910 to June 1953.

Gage.--Water-stage recorder and concrete dam and weir control. Altitude of gage is 1,250 ft (from topographic map). Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--40 years (1911-14, 1916-53), 3.07 mgd (4.75 cfs).

Extremes.--Maximum discharge during year, 710 mgd (1,100 cfs) Mar. 7 (gage height, 4.10 ft), from rating curve extended as explained below; minimum, 0.25 mgd (0.39 cfs) Feb. 27.
1910-53: Maximum discharge, 3,690 mgd (5,710 cfs) Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by model studies of the station site; minimum, 0.01 mgd (0.02 cfs) for several days in 1933, 1934.

Remarks.--Records good. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 1219: 1913-50(M). WSP 1249: 1948-50(P).

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.03	1.1	8.6
.5	.48	1.4	15.7
.6	1.26	1.7	25
.8	3.55	2.0	37

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.0	2.9	1.00	0.68	8.0	4.6	1.00	0.36	0.98	0.68	0.36	0.76
2	3.55	1.56	.84	.76	12.3	5.2	.92	.36	.48	.60	.36	.76
3	3.3	1.46	.84	.76	12.7	3.4	.84	.36	.36	*.60	14.2	.68
4	3.05	1.36	.84	6.6	7.8	5.1	1.00	.36	1.82	.60	31	.68
5	5.3	*1.26	.92	1.65	5.3	10.9	.92	.30	1.46	.60	4.0	.60
6	2.9	1.26	5.5	*1.00	4.6	11.6	*.84	.36	.68	.60	4.7	.60
7	2.4	1.36	1.36	.92	3.85	19.1	.92	.48	24	.60	5.0	.60
8	3.35	1.26	1.00	.84	3.3	8.2	.84	.42	4.7	.54	3.55	.60
9	5.1	5.9	3.1	.92	3.55	7.3	.76	.42	2.2	.54	2.7	.76
10	2.7	1.56	1.66	.84	5.7	6.3	.68	.36	5.8	.68	2.3	.84
11	2.4	1.46	1.16	1.00	15.2	4.7	.60	.36	1.66	.84	2.05	.76
12	2.3	1.26	1.24	1.26	8.0	4.0	.68	.30	1.46	.54	1.76	1.16
13	2.05	1.16	4.6	.84	6.9	3.55	.60	*.36	1.26	.48	1.66	.84
14	17.3	1.16	1.86	.76	5.2	3.05	.60	.36	1.46	.48	1.56	1.00
15	19.2	1.79	1.36	.76	6.8	2.8	.60	.42	2.55	.48	1.46	1.66
16	5.3	1.26	1.26	.68	7.9	2.4	.60	.60	1.46	.54	1.36	1.36
17	6.0	1.08	1.46	.76	4.4	2.9	.60	.42	1.16	.84	1.26	1.16
18	6.0	1.00	1.46	2.6	4.0	4.2	.60	.60	1.92	.22	1.16	3.35
19	4.0	.92	1.16	6.2	6.2	2.2	.60	2.6	1.26	.54	1.26	1.86
20	3.4	.92	1.08	2.3	3.55	1.96	.54	.60	1.08	.48	*1.56	1.08
21	3.2	.84	1.00	3.75	3.2	1.76	*.48	.36	1.00	.48	1.08	1.00
22	3.65	.76	1.00	2.2	2.8	1.76	.48	.42	.92	.42	.92	.92
23	2.7	.76	1.00	3.95	2.7	1.56	.54	.42	.84	.36	1.08	.92
24	2.4	.76	.92	4.2	2.3	1.86	.54	.30	.84	.36	.84	.92
25	2.3	.92	.92	2.9	2.05	1.46	.48	.30	.84	.36	.92	.84
26	3.4	3.7	1.00	3.8	1.86	1.46	.42	.30	1.08	.36	1.08	.92
27	2.05	2.85	.84	2.4	1.86	1.26	.42	.30	1.31	.30	1.94	.84
28	1.86	1.08	.84	2.3	2.4	1.16	.42	1.57	1.00	.76	2.2	.84
29	1.76	.92	.76	3.9	2.9	1.16	.42	-	.84	.42	2.15	.92
30	1.66	.84	.76	12.0	12.2	1.00	.42	-----	.76	.42	1.00	.84
31	2.15	1.00	-----	11.1	-----	1.00	.36	-----	.68	-----	.84	-----
Total	130.73	46.32	42.74	84.83	167.52	128.90	19.72	14.37	67.86	16.42	97.31	30.07
Mean:												
mgd	4.22	1.49	1.42	2.74	5.58	4.16	0.636	0.513	2.19	0.547	3.14	1.00
cfs	6.53	2.31	2.20	4.24	8.63	6.44	0.984	0.794	3.39	0.846	4.86	1.55
Ac-ft	401	142	131	260	514	396	61	44	208	50	299	92

Calendar year 1952: Max 19.2 Min 0.68 Mean(mgd) 3.08 Mean(cfs) 4.77 Ac-ft 3,460
Fiscal year 1952-53: Max 31 Min 0.30 Mean(mgd) 2.32 Mean(cfs) 3.59 Ac-ft 2,600

Peak discharge (base, 130 mgd)--Mar. 7 (9 p.m.) 710 mgd (1,100 cfs), 4.10 ft.

* Discharge measurement made on this day.

Wailoa ditch at Honopou, near Huelo

Location.--Lat 20°53'20", long 156°15'05", on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mile west of Lupi, 2.2 miles southwest of Huelo, and 2.2 miles west of Kailua.

Records available.--November 1922 to June 1953.

Gage.--Water-stage recorder.

Average discharge.--30 years (1923-53), 113 mgd (175 cfs).

Extremes.--1922-53: Maximum daily discharge, 186 mgd (288 cfs) June 25, 30, 1941; no flow Jan. 24-27, 1923.

Remarks.--Records excellent. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from the Alo west to the Halehaku at altitude of about 1,200 ft. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	168	168	105	47	172	156	63	25	140	53	47	97
2	160	116	72	47	172	172	59	25	101	50	65	82
3	*148	93	104	63	172	168	56	25	69	47	172	72
4	142	86	82	151	172	168	56	23.5	96	47	180	69
5	172	79	66	126	164	172	53	23.5	172	44	172	63
6	156	86	161	76	152	172	*51	23.5	132	41	176	59
7	128	124	148	66	136	164	53	29	118	41	176	56
8	148	121	101	56	116	172	47	25	132	38	172	59
9	172	161	172	59	144	172	47	26	115	38	156	84
10	164	148	168	53	172	172	44	23.5	172	46	128	134
11	144	108	124	90	172	172	44	22	160	123	104	113
12	120	97	107	135	172	164	41	21	132	59	93	152
13	108	86	172	69	172	148	41	*40	112	44	82	112
14	145	79	164	56	172	136	41	55	164	47	76	116
15	172	108	132	50	172	124	38	50	168	44	79	164
16	168	93	108	47	172	112	38	118	148	56	72	152
17	172	72	134	53	172	124	36.5	71	108	89	69	116
18	172	68	148	109	164	172	35	107	148	140	63	172
19	164	63	101	172	172	140	35	168	124	79	77	164
20	152	59	86	172	172	120	33.5	87	93	56	148	124
21	132	59	76	168	168	108	32	92	82	53	101	101
22	156	53	69	172	164	108	32	120	76	47	69	104
23	128	53	66	172	160	97	33.5	100	89	44	72	97
24	124	53	63	172	136	148	33.5	129	66	41	63	101
25	116	77	59	172	120	101	30.5	113	72	38	86	82
26	168	168	59	172	116	108	29	82	144	36.5	122	86
27	160	160	53	168	140	86	27.5	88	111	35	129	72
28	128	93	53	148	172	79	27.5	148	86	96	156	66
29	108	72	53	156	172	76	27.5	-	66	56	160	72
30	101	72	50	172	176	69	26	-----	59	59	116	69
31	121	90	-----	172	-----	66	26	-----	56	-----	116	-----
Total	4,517	2,965	3,056	3,541	4,808	4,146	1,237.0	1,860.0	3,491	1,687.5	3,497	3,010
Mean:	146	95.6	102	114	160	134	39.9	66.4	113	56.2	113	100
mgd	226	148	156	176	248	207	61.7	103	175	87.0	175	155
cfs	13,860	9,100	9,380	10,870	14,760	12,720	3,800	5,710	10,710	5,180	10,730	9,240
Ac-ft												
Calendar year 1952: Max	176			Min 47		Mean(mgd)	131		Mean(cfs)	203		Ac-ft 147,000
Fiscal year 1952-53: Max	180			Min 21		Mean(mgd)	104		Mean(cfs)	161		Ac-ft 116,100

* Discharge measurement made on this day.

New Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'30", long 156°15'10", on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, 2.1 miles southwest of Huelo, and 2.3 miles west of Kailua.

Records available.--January 1918 to June 1953.

Gage.--Water-stage recorder. Prior to May 15, 1921, at site 300 ft upstream at different datum.

Average discharge.--35 years, 27.0 mgd (41.8 cfs).

Extremes.--1918-53: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; no flow at times.

Remarks.--Records good. Ditch diverts water from streams between the Waiakamoi and the Halehaku above Center and Lowrie ditches. Flow regulated by gates and spillways. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	52	65	1.72	0.66	96	56	0.88	0.13	12.1	0.58	0.32	1.76
2	15.1	8.2	1.15	.66	96	58	.77	.13	10.6	.55	.28	1.55
3	3.7	2.55	1.09	.62	98	68	.77	.10	27	.55	77	1.34
4	3.45	2.25	1.62	.62	96	63	.93	.10	27	.55	98	1.27
5	84	2.1	1.48	30	59	81	.82	.10	85	.51	*82	1.20
6	18.7	2.1	76	1.01	16.0	52	.66	.17	10.8	.43	90	1.09
7	3.35	3.75	30	.71	6.8	9.4	.77	.19	23.5	.39	92	.98
8	15	2.9	2.6	.62	2.9	51	.66	.13	35.5	.36	86	.88
9	94	74	77	.62	23.5	55	.62	.10	18.4	.32	24.5	5.5
10	43	31.5	74	.62	81	72	1.85	.10	80	.36	4.6	18.8
11	4.5	2.1	5.4	.71	98	6.2	.51	.10	32	8.8	2.45	5.1
12	3.15	1.83	3.5	.26	96	20	.43	.10	10.4	.62	1.90	45
13	2.7	1.76	.90	.77	96	5.7	.39	.08	4.6	.43	1.76	1.34
14	48	1.76	.66	.62	94	3.15	.36	.28	25.5	.32	1.48	1.46
15	98	17.0	4.1	.55	74	2.55	.32	.28	60	.32	1.55	42
16	49	3.45	2.1	.51	96	2.15	.28	18.6	28	.68	1.41	*48
17	94	1.69	15.9	.47	77	10.2	.28	2.35	6.4	1.11	1.20	2.25
18	94	1.36	41	34	23.5	80	.28	11.7	50	14.3	1.09	81
19	44	1.20	1.69	94	94	33	.28	76	11.9	.90	1.15	57
20	7.4	1.09	1.41	88	*66	4.4	.26	4.4	5.2	.51	*10.9	3.85
21	3.9	1.04	1.20	*69	57	1.90	.24	19.0	2.7	g.47	1.69	1.90
22	27	.93	1.20	88	28	1.99	.24	10.6	3.05	g.43	1.15	1.69
23	7.3	.82	1.15	92	14.6	1.83	.28	2.5	1.09	g.43	1.61	1.55
24	9.6	.77	1.04	94	4.4	20	.26	11.6	.88	g.36	.98	1.41
25	3.25	.82	.98	84	2.8	2.35	.24	2.25	.77	g.32	.90	1.27
26	42	64	.98	92	2.55	1.76	.21	1.24	16.7	g.32	15.4	1.20
27	36.5	59	.88	66	2.9	1.27	.19	9.0	7.0	g.28	19.3	1.20
28	5.2	1.98	.66	10.1	70	1.20	.19	37.5	2.35	g2.28	45	1.09
29	2.7	1.09	.68	19.1	86	1.15	.19	-	1.88	g.43	43	1.09
30	2.45	.98	.66	96	98	1.09	.17	-----	.66	g.55	4.4	1.09
31	9.3	2.3	-----	98	-----	.98	.15	-----	.62	-----	1.99	-----
Total	926.25	361.32	507.17	1,151.35	1,755.75	768.27	14.48	208.83	573.15	38.44	714.01	334.86
Mean:	29.9	11.7	16.9	37.1	58.5	24.8	0.467	7.46	18.5	1.28	23.0	11.2
cfs	46.3	18.1	26.1	57.4	90.5	38.4	0.723	11.5	28.6	1.98	35.6	17.3
Ac-ft	2,840	1,110	1,560	3,530	5,390	2,360	44	641	1,760	118	2,190	1,030
Calendar year 1952.	Max 98	Min 0.15	Mean(mgd)	32.0	Mean(cfs)	49.5	Ac-ft	35,970				
Fiscal year 1952-53:	Max 98	Min 0.08	Mean(mgd)	20.1	Mean(cfs)	31.1	Ac-ft	22,570				

* Discharge measurement made on this day.

g Computed from twice-daily staff-gage readings.

Old Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'30", long 156°15'05", on right bank 400 ft downstream from Honopou Stream and Wailoa ditch trail crossing in Honopou Gulch, 2.0 miles southwest of Huelo, 2.3 miles west of Kailua, and 5.0 miles east of Haiku.

Records available.--January 1918 to June 1922, November 1936 to June 1953.

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

Average discharge.--20 years (1918-22, 1937-53), 2.47 mgd (3.82 cfs).

Extremes.--1918-22, 1936-53: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow at times.

Remarks.--Records good. Wailoa and New Hamakua ditches divert most of flow above this station. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.57	1.76	0.03	0.02	15.2	2.5	0.02	0.02	0.08	0.02	0	0.04
2	.17	.12	.02	.02	7.6	.17	.02	.02	.04	.02	.01	.03
3	.13	.07	.02	.02	2.8	1.61	.02	.02	.03	.02	12.0	.03
4	.08	.06	.02	8.1	2.2	2.85	.05	.02	5.2	.02	25.5	.02
5	7.2	.06	.02	1.85	.40	2.1	.02	.02	6.9	.02	*6.1	.02
6	1.92	.07	10.0	.05	.16	.16	.03	.02	.10	.02	15.9	.02
7	.10	.07	.26	.04	.10	.09	.04	.02	3.85	.02	11.8	.02
8	.73	.06	.06	.03	.08	.04	.03	.02	6.0	.02	5.7	.02
9	9.1	12.1	5.0	.03	.63	.04	.03	.02	1.26	.02	.12	.03
10	1.38	1.83	4.2	.03	7.8	.04	.03	.02	10.3	.02	.06	.03
11	.12	.08	.07	.04	16.5	.03	.02	.02	.15	.02	.04	.04
12	.08	.06	.07	.09	2.45	.03	.03	.02	.07	.02	.03	.91
13	.07	.05	12.7	.05	2.8	.02	.03	.02	.06	.02	.01	.06
14	9.4	.05	4.7	.03	1.32	.02	.02	.01	.06	.02	.01	.05
15	14.5	.09	.07	.03	2.6	.02	.02	.01	3.7	.02	.02	.14
16	1.34	.10	.04	.02	4.2	.02	.03	.02	.61	.02	.02	*.78
17	9.8	.06	.09	.03	.57	.02	.03	.03	.07	.02	.02	.08
18	10.8	.04	2.35	4.4	.15	9.1	.03	.04	2.55	.02	.01	3.65
19	.83	.03	.05	15.7	15.1	.84	.03	6.7	.12	.02	.03	1.29
20	.15	.02	.03	8.5	3.4	.07	.02	.10	.05	.02	.05	.08
21	.10	.02	.03	6.9	3.7	.05	.02	.04	.04	.02	.03	.04
22	.12	.02	.02	7.5	.16	.05	.02	.04	.03	.02	.02	.03
23	.10	.02	.02	13.4	.15	.04	.02	.03	.03	.01	.03	.03
24	.10	.02	.02	14.5	.08	.06	.02	.02	.03	.01	.02	.03
25	.07	.03	.02	6.6	.07	.05	.02	.02	.03	.01	.03	.02
26	.72	4.4	.02	12.6	.06	.05	.02	.02	.04	.01	.02	.02
27	.19	5.1	.02	1.37	.06	.03	.02	.02	.04	.01	.21	.02
28	.08	.06	.02	.12	.22	.03	.02	1.51	.03	.02	2.45	.02
29	.07	.03	.02	2.25	2.85	.03	.02	-	.03	.01	.20	.02
30	.06	.02	.02	21.5	25.5	.02	.02	-	.03	.01	.08	.02
31	.07	.03	-----	16.3	-----	.02	.02	-----	.02	-----	.05	-----
Total	70.15	26.53	40.01	144.12	118.91	20.20	0.79	8.87	41.35	0.53	80.55	7.59
Mean:	2.26	0.856	1.33	4.65	3.96	0.652	0.025	0.317	1.33	0.018	2.60	0.253
mgd	3.50	1.32	2.06	7.19	6.13	1.01	0.039	0.490	2.06	0.028	4.02	0.391
cfs	215	81	123	442	365	62	2.4	27	127	1.6	247	23
Ac-ft												
Calendar year 1952: Max	25.5	Min	0.02	Mean(mgd)	2.24	Mean(cfs)	3.47	Ac-ft	2,520			
Fiscal year 1952-53: Max	25.5	Min	0	Mean(mgd)	1.53	Mean(cfs)	2.37	Ac-ft	1,720			

* Discharge measurement made on this day.

Lowrie ditch at Honopou Gulch, near Huelo

Location.--Lat 20°54'55", long 156°15'05", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.5 miles northwest of Kailua.

Records available.--January 1910 to March 1927, February 1930 to June 1953. Published as "at Opana weir" 1910-27.

Gage.--Water-stage recorder and concrete control. Datum of gage is 598.0 ft above mean sea level. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 miles downstream at different datum.

Average discharge.--39 years (1910-26, 1930-53), 29.0 mgd (44.9 cfs).

Extremes.--1910-27, 1930-53: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Records good. Lowrie ditch diverts water from all streams between the Kailua and the Halehaku. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	45	47	11.1	66.7	52	52	7.8	2.9	27.5	4.6	2.15	14.7
2	38.5	25.5	9.5	6.5	57	12.2	7.6	2.9	8.8	4.4	2.75	13.5
3	*38.5	16.5	8.6	6.7	57	32	8.4	2.9	4.8	5.6	38	10.4
4	34.5	14.9	8.2	39.5	55	50	11.6	2.75	14.2	5.2	55	7.4
5	51	14.0	7.6	31	52	10.5	8.6	2.75	42	10.6	47	6.7
6	36.5	12.9	42	13.4	52	2.9	7.4	2.75	11.4	5.2	47	6.3
7	34.5	14.2	34.5	24	32.5	3.6	9.7	3.05	19.9	*4.6	47	6.1
8	38.5	12.4	22.5	13.0	21.5	2.5	7.3	2.9	37.5	4.3	45	6.1
9	55	48	45	7.4	21.5	24.5	6.9	2.75	16.6	4.3	35	6.8
10	49	46	47	7.1	47	55	6.7	*2.7	47	5.0	25	18.9
11	43	35	25	7.8	57	47	6.3	2.9	15.6	7.6	16.6	8.0
12	36.5	21	17.8	14.7	55	40	6.7	2.75	13.5	5.2	10.2	28.5
13	23.5	12.3	49	10.6	55	45	8.2	2.9	11.6	4.1	11.8	8.0
14	33	12.8	42	6.9	55	27.5	7.3	3.6	10	3.6	10.6	9.4
15	55	19.0	28.5	6.5	40	20	5.6	3.4	32	2.5	10.6	20
16	49	16.9	24	6.1	*45	17.8	5.6	6.3	19.0	3.75	9.7	22.5
17	55	11.1	17.9	6.5	45	20	5.4	5.9	9.3	3.75	8.4	13.0
18	55	10.2	41	23.5	42	52	5.2	8.9	22.5	5.4	7.1	42
19	47	*9.7	20	55	52	42	4.8	46	11.3	5.6	8.4	45
20	34.5	9.3	12.5	52	45	34.5	4.4	21	7.8	4.3	*12.5	12.5
21	41	8.8	9.5	*45	55	15.2	4.1	6.6	7.4	3.9	8.6	9.5
22	45	8.4	8.4	52	52	15.4	3.9	8.0	7.3	3.4	7.1	9.7
23	31	8.4	8.4	52	52	14.0	4.4	5.6	7.1	2.75	8.4	14.0
24	23.5	7.8	8.4	52	37.5	19.0	4.3	10.0	10.8	2.65	7.3	13.2
25	17.6	7.4	8.4	47	26	13.7	3.75	4.6	8.8	2.4	8.4	12.3
26	36.5	41	8.4	52	21.5	15.4	3.6	4.4	11.6	2.75	12.5	11.8
27	35.5	49	7.6	35	20	12.3	3.6	3.75	6.7	2.5	12.0	8.2
28	19.9	20	7.4	27.5	42	11.3	3.4	25.5	5.2	3.9	34.5	6.7
29	21	19.0	7.4	37.5	52	10.2	3.25	-	5.6	3.25	30.5	8.4
30	14.0	8.0	7.1	55	57	8.6	3.05	-----	14.9	3.4	16.6	7.1
31	16.0	12.5	-----	55	-----	*8.2	3.05	-----	9.8	-----	9.9	-----
Total	1,153.5	599.0	594.7	853.9	1,363.5	734.1	181.90	198.45	477.5	130.50	605.60	406.7
Mean:												
mgd	37.2	19.3	19.8	27.5	45.4	23.7	5.87	7.09	15.4	4.35	19.5	13.6
cfs	57.6	29.9	30.6	42.5	70.2	36.7	9.08	11.0	23.8	6.73	30.2	21.0
Ac-ft	3,540	1,840	1,820	2,620	4,180	2,250	558	609	1,470	400	1,860	1,250
Calendar year 1952:	Max 57	Min 1.36	Mean(mgd) 29.2	Mean(cfs) 45.2	Ac-ft 32,780							
Fiscal year 1952-53:	Max 57	Min 2.15	Mean(mgd) 20.0	Mean(cfs) 30.9	Ac-ft 22,400							

* Discharge measurement made on this day.

Note.--Discharge computed on basis of 2 or more staff-gage readings or twice-daily gage heights recorded by East Maui Irrigation Co.'s long-distance recorder and records for nearby streams Sept. 8 to Oct. 1, Mar. 11-19.

Haiku ditch at Honopou Gulch, near Kailua

Location--Lat 20°55'05", long 156°14'55", on right bank of ditch and west side of Honopou Gulch, 160 ft below new Government Road, 2.5 miles northwest of Kailua, and 5 miles east of Haiku.

Records available--January 1910 to December 1928, February 1930 to June 1953. Published as "at Peahi weir" January 1910 to October 1914, as "at Manawai Gulch" October 1914 to December 1928, and as "at Kapalalaea Gulch" February 1930 to January 1940.

Gage--Water-stage recorder and concrete control. Datum of gage is 421.54 ft above mean sea level. Jan. 1, 1910, to Oct. 6, 1914, water-stage recorder at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, water-stage recorder at site 2.9 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, water-stage recorder at site 0.9 mile downstream at different datum.

Average discharge--41 years (1910-28, 1930-53), 21.4 mgd (33.1 cfs).

Extremes--1910-28, 1930-53: Maximum daily discharge, 135 mgd (209 cfs) Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

Remarks--Records good. Haiku ditch diverts water from all streams between Kailua Stream and Maliko Gulch. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.3	19.7	0.85	0.48	54	0.69	1.00	0.24	1.03	0.75	0.10	0.48
2	2.8	2.25	.70	.48	54	.20	.98	.22	.62	.54	.07	.40
3	2.6	1.78	.65	.48	57	3.7	.90	.22	.48	.34	36.5	.34
4	2.35	1.57	.58	31.5	50	19.3	2.2	.13	10.1	.30	.67	.30
5	44	1.43	.62	13.5	15.9	1.87	1.25	.03	.22	.34	.31	.28
6	3.75	1.38	44	.65	9.4	1.00	.90	.04	1.05	.30	*58	.26
7	3.3	1.43	9.3	.58	5.2	1.00	1.50	.04	7.3	.28	.67	.28
8	5.1	1.15	1.05	.54	4.1	.95	.95	.04	19.0	.28	33	.28
9	63	44	33	.51	3.6	.95	.85	.04	2.05	.26	1.64	.34
10	16.3	16.5	26.5	.48	19.5	3.5	.75	.03	36.5	.48	.99	.44
11	3.0	1.94	1.28	.58	70	4.2	.70	.03	4.3	.34	.65	.37
12	2.55	1.50	1.05	.65	57	7.6	.75	.03	1.54	.26	.58	6.3
13	2.1	1.29	.45	.44	63	4.7	.70	.03	.62	.24	.54	.40
14	22	1.29	24.5	.48	60	3.5	.65	.04	.30	.22	.48	.44
15	*63	1.43	1.33	.62	11.7	3.1	.54	.03	15.9	.22	.51	.51
16	10.9	1.38	2.1	.51	63	2.6	.40	.05	4.7	.28	.48	.69
17	60	1.05	1.00	.58	*18.1	2.85	.40	.18	1.50	.26	.37	.48
18	63	1.02	10.5	13.1	4.5	43	.37	.69	5.9	.26	.34	13.8
19	8.8	.95	1.00	63	49	6.7	.34	13.2	1.69	.22	.40	7.1
20	3.8	.90	.80	*49	12.5	4.6	.31	1.08	1.15	.20	.40	.75
21	3.1	.85	.75	26	38.5	2.6	.30	.48	1.05	.20	.37	.54
22	3.9	.80	.70	47	11.9	2.7	.28	.52	1.05	.20	.30	.51
23	2.6	.75	.65	58	6.1	2.35	.37	.50	.95	.20	.44	.48
24	2.6	.62	.62	67	3.8	2.3	.30	.40	.95	.20	.28	.44
25	2.0	.75	.62	35	3.3	1.71	.30	.37	.95	.20	.37	.40
26	7.6	32.5	.58	49	2.9	1.64	.34	.51	1.15	.20	.30	.37
27	3.0	34	.54	4.0	2.7	1.50	.30	.37	1.00	.14	.57	.37
28	1.85	1.00	.51	2.6	27.5	1.43	.30	7.1	.90	.06	17.5	.34
29	1.86	.80	.51	5.6	31.5	1.43	.28	-	.75	.07	.95	.34
30	1.57	.70	.51	60	62	1.10	.26	-----	.80	.08	.62	.30
31	2.0	1.07	-----	70	-----	1.00	.26	-----	.80	-----	.48	-----
Total	419.73	177.76	211.80	602.36	871.7	135.77	19.70	26.64	148.08	7.90	322.23	38.33
Mean	13.5	5.73	7.06	19.4	29.1	4.38	0.635	0.951	4.78	0.263	10.4	1.28
cfs	20.9	8.87	10.9	30.0	45.0	6.78	0.982	1.47	7.40	0.407	16.1	1.98
Ac-ft	1,280	546	650	1,850	2,680	417	60	82	454	24	989	118

Calendar year 1952: Max 70 Min 0.16 Mean(mgd) 13.1 Mean(cfs) 20.3 Ac-ft 14,760
 Fiscal year 1952-53: Max 70 Min 0.03 Mean(mgd) 8.17 Mean(cfs) 12.6 Ac-ft 9,160

* Discharge measurement made on this day.

ISLAND OF MAUI

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Kahakuloa Stream near Honokohau

Location.--Lat 20°58'50", long 156°33'25", on right bank just downstream from Kapuna Stream, 1.3 miles south of Kahakuloa, 2 miles west of Puu Makawana, and 4.3 miles southeast of Honokohau.

Drainage area.--3.4 sq mi.

Records available.--January 1913 to December 1914 (fragmentary), July 1939 to August 1943, September 1947 to June 1953.

Gage.--Water-stage recorder and concrete control. Jan. 22, 1913, to Dec. 16, 1914, water-stage recorder at site 1 mile upstream at diff: datum.

Average discharge.--8 years (1940-43, 1948-53), 11.8 mgd (18.3 cfs).

Extremes.--Maximum discharge during year, 338 mgd (523 cfs) July 15 (gage height, 5.65 ft), from rating curve extended above 30 mgd on basis of slope-area determination at gage height 8.35 ft; minimum, 3.2 mgd (5.0 cfs) Apr. 7-9, 25-27, 1939-43, 1947-53; Maximum discharge, 1,990 mgd (3,030 cfs) Dec. 14, 1942 (gage height, 7.02 ft, control then in use), from rating curve extended above 55 mgd by test on model of station site; minimum, 2.5 mgd (3.9 cfs) Oct. 31, 1949.

Remarks.--Records good except those above 30 mgd, which are fair.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

2.8	2.55	3.7	32.5
2.9	4.0	4.0	53
3.1	8.2	4.5	108
3.4	17.9		

Discharge, in million gallons a day, fiscal year July 1952, to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.8	33	6.4	3.5	24.5	9.5	10.7	3.65	6.4	3.5	4.4	4.4
2	5.5	9.9	7.1	3.65	34	8.2	6.8	3.65	23	3.35	4.0	4.0
3	4.9	6.4	7.9	*3.65	36	7.5	4.9	3.85	8.7	3.35	64	3.8
4	4.5	5.5	6.6	3.5	23	15.4	9.9	3.65	31	3.65	101	4.2
5	31	5.5	5.5	19.5	13.0	16.5	*11.7	3.65	12.0	3.8	13.2	3.65
6	12.1	5.3	14.2	5.3	8.7	14.1	5.5	3.5	6.2	3.5	7.9	3.5
7	6.8	10.8	6.9	4.5	7.5	38.5	7.4	3.65	20	3.35	26.5	3.5
8	*17.3	5.5	4.9	4.2	6.6	11.8	5.3	5.3	17.2	3.2	14.7	3.5
9	64	37	5.7	4.9	7.7	26	4.7	4.0	8.7	3.35	7.5	3.5
10	15.8	13.9	5.1	8.3	7.9	14.9	4.5	3.65	9.7	14.3	5.5	6.3
11	15.4	6.8	4.5	11.8	19.0	7.7	4.5	3.5	5.9	16.9	4.9	5.3
12	11.2	5.9	4.2	9.5	13.4	6.4	6.8	*3.65	6.8	4.9	4.5	6.8
13	6.8	5.3	13.1	4.9	9.2	5.7	6.8	4.7	9.3	4.0	4.4	4.0
14	31.5	4.9	13.7	4.4	9.0	5.5	4.5	5.4	7.8	4.9	4.4	4.4
15	65	17.7	5.3	4.4	8.6	5.7	4.4	4.2	17.8	3.8	4.0	4.9
16	21	10.3	4.7	4.0	24.5	5.3	4.4	3.65	6.8	8.2	6.0	4.2
17	25.5	6.6	4.9	4.0	7.5	25	4.2	3.8	5.3	5.5	6.1	5.0
18	22	6.9	4.5	4.8	6.4	43	4.2	8.3	9.6	5.9	4.2	35
19	11.6	5.5	4.0	33	*15.5	8.4	4.0	31	5.5	5.5	*4.5	14.5
20	8.4	4.7	4.0	20	7.0	6.6	4.0	6.0	4.5	4.4	8.3	5.9
21	7.0	4.7	3.8	27	9.9	5.9	4.0	10.6	4.4	4.4	7.0	4.5
22	11.5	4.5	3.65	13.8	7.0	5.7	4.0	24.5	4.0	5.1	4.4	10.9
23	9.7	4.9	3.65	17.1	5.9	5.5	4.2	10.5	4.0	3.8	5.7	7.2
24	9.3	4.5	3.65	23	5.5	9.9	4.0	5.3	3.8	3.65	4.9	4.9
25	6.8	5.8	4.2	20	5.3	5.9	3.8	4.4	3.65	3.35	4.4	4.4
26	12.7	21	3.8	24	5.5	5.9	3.8	4.2	4.9	3.2	4.4	4.2
27	15.8	12.5	3.65	9.0	5.7	5.3	3.8	4.2	4.0	3.2	4.0	3.65
28	11.3	5.3	4.5	6.8	5.5	4.9	3.8	5.5	3.65	8.4	4.2	3.5
29	6.8	4.7	4.7	17.5	6.4	5.7	3.65	-	3.65	4.0	5.3	3.65
30	5.7	4.5	3.65	51	25	5.1	3.65	-----	3.5	4.4	4.4	4.2
31	12.8	12.2	-----	28.5	-----	4.7	3.65	-----	3.5	-----	4.5	-----
Total	496.5	292.0	172.45	475.70	370.7	346.2	161.55	181.75	264.85	152.65	353.2	181.45
Mean	16.0	9.42	5.75	15.3	12.4	11.2	5.21	6.49	8.54	5.09	11.4	6.05
mgd	24.8	14.6	8.90	23.7	19.2	17.3	8.06	10.0	13.2	7.88	17.6	9.36
Ac-ft	1,520	896	529	1,460	1,140	1,060	496	558	813	468	1,080	557

Calendar year 1952: Max 105 Min 3.5 Mean(mgd) 10.6 Mean(cfs) 16.4 Ac-ft 11,860
 Fiscal year 1952-53: Max 101 Min 3.2 Mean(mgd) 9.45 Mean(cfs) 14.6 Ac-ft 10,580

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

* Discharge measurement made on this day.

Honokohau Stream near Honokohau

Location.--Lat 20°57'45", long 156°35'20", on right bank 1,000 ft upstream from intake of Honokohau ditch and 5 miles southeast of Honokohau.

Drainage area.--4.2 sq mi.

Records available.--March 1913 to September 1920, May 1922 to June 1953.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 950 ft (by barometer).

Average discharge.--35 years (1916-20, 1922-53), 25.2 mgd (39.0 cfs).

Extremes.--Maximum discharge during year, 760 mgd (1,180 cfs) Mar. 4 (gage height, 5.48 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 8.7 mgd (13.5 cfs) Apr. 25-27.

1913-20, 1922-53: Maximum discharge, 2,420 mgd (3,740 cfs) Dec. 14, 1942 (gage height, 8.40 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 5.4 mgd (8.4 cfs) May 1, 1945, Jan. 5, 1946.

Remarks.--Records good except those for periods of fragmentary gage-height record, which are poor.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.9	7.3	3.0	78
2.2	17.1	3.5	147
2.6	42	4.0	250

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.8	45	23	12.0	33.5	26	14.4	11.6	13.3	10.7	11.0	21
2	15.3	17.6	24	12.9	43	31	12.9	11.6	f20	10.1	9.5	13.8
3	14.0	14.8	21	12.0	54	16.5	12.6	11.6	13.4	10.1	87	11.6
4	12.9	16.6	16.4	68	26.5	55	13.4	11.6	52	12.6	173	10.7
5	75	15.4	20.5	21.5	16.6	53	13.6	11.3	27	10.1	17.0	10.1
6	18.2	17.4	34	12.9	14.4	46	12.6	11.3	12.9	*9.5	30	9.8
7	14.0	32.5	16.5	12.0	13.2	136	*18.1	14.1	f18	9.3	54	10.1
8	59	15.9	14.0	11.6	12.9	39	13.2	13.9	14.7	9.3	58	10.7
9	111	96	24	12.6	13.6	67	12.9	12.0	11.6	9.3	16.9	21.5
10	22	23	21.5	27	56	26.5	12.9	11.3	14.2	17.0	11.3	20.5
11	18.4	16.7	22	29.5	66	15.2	12.9	11.0	11.3	21	10.7	27.5
12	16.4	15.9	17.6	21	28.5	14.0	15.2	11.0	10.7	10.1	11.8	29
13	13.6	14.8	49	12.3	29	13.6	20	16.8	29	9.5	12.7	12.0
14	74	14.4	34	11.6	24.5	13.2	13.2	18.6	f20	9.8	14.9	15.9
15	116	46	15.5	14.5	80	13.2	12.9	14.0	f55	9.5	25.5	15.9
16	39	21.5	14.4	11.6	52	13.6	12.6	12.8	f15	17.8	30	12.0
17	78	17.3	14.8	13.6	19.0	66	12.6	12.3	f13	16.9	14.7	51
18	82	16.3	17.5	36.5	15.0	82	12.6	26.5	29.5	17.4	11.0	97
19	21	15.5	13.2	42	48	15.9	12.3	f65	12.3	13.2	16.5	35.5
20	16.3	14.8	12.9	22	14.4	22	12.3	12.6	11.3	12.1	26	16.1
21	15.2	*15.4	12.6	36	*13.6	14.9	12.3	12.5	10.7	11.4	*17.7	11.0
22	18.0	14.0	12.6	29	12.9	14.4	12.3	f32	10.4	10.1	10.7	19.7
23	16.9	23	12.3	53	13.6	13.6	12.3	14.4	10.4	9.3	25.5	20
24	19.2	15.5	12.6	68	12.6	24	12.0	11.6	10.1	9.0	11.6	11.3
25	16.4	27	13.2	28	12.9	14.8	12.0	11.0	10.1	8.7	14.2	11.3
26	27	78	13.4	42	14.0	17.0	12.0	12.9	f13	8.7	12.5	12.5
27	24.5	45	12.6	14.8	15.9	14.1	12.0	39	f11	9.4	27	10.7
28	24	14.8	12.3	13.8	19.6	14.0	11.6	35	11.0	24	16.8	9.8
29	17.6	14.0	12.0	66	18.3	14.4	11.6	-	10.7	10.7	17.4	11.8
30	15.2	14.4	12.0	83	105	13.2	11.6	-----	10.7	16.8	10.7	11.8
31	31	26.5	-----	78	-----	12.9	11.6	-----	10.7	-----	14.9	-----
Total	1,059.9	775.0	551.4	928.7	898.5	932.0	404.5	489.3	530.0	363.4	818.5	581.6
Mean	34.2	25.0	18.4	30.0	30.0	30.1	13.0	17.5	17.1	12.1	26.4	19.4
mgd	52.9	36.7	28.5	46.4	46.4	46.6	20.1	27.1	26.5	18.7	40.8	30.0
cfs	3,250	2,390	1,690	2,850	2,760	2,860	1,240	1,500	1,630	1,120	2,510	1,780
Ac-ft												

Calendar year 1952: Max 136 Min 9.2 Mean(mgd) 25.5 Mean(cfs) 39.5 Ac-ft 28,590
 Fiscal year 1952-53: Max 173 Min 8.7 Mean(mgd) 22.8 Mean(cfs) 35.3 Ac-ft 25,570

Peak discharge (base, 700 mgd).--Mar. 4 (9 a.m.) 760 mgd (1,180 cfs), 5.48 ft.

* Discharge measurement made on this day.

f Fragmentary gage-height record; discharge estimated on basis of partial record and records for stations on nearby streams.

Olowalu ditch near Olowalu

Location.--Lat 20°49'30", long 156°36'50", on left bank 40 ft upstream from intake of pipeline to hydroelectric plant, 1.2 miles northeast of Olowalu, and 5.5 miles south-east of Lahaina.

Records available.--August 1911 to June 1953.

Gage.--Water-stage recorder and Parshall flume. Prior to June 30, 1916, staff gage in tailrace of powerhouse 1,000 ft downstream at different datum. July 28, 1916, to June 8, 1919, staff gage and June 9, 1919, to June 21, 1932, water-stage recorder, at site 300 ft upstream at different datum. July 1, 1932, to Oct. 7, 1933, records obtained by combining flows of three stations about 1,000 ft downstream.

Average discharge.--35 years (1917-20, 1921-53), 4.93 mgd (7.63 cfs).

Extremes.--1911-53: Maximum daily discharge, 13.7 mgd (21.2 cfs) Apr. 17, 1935; no flow at times.

Remarks.--Ditch diverts water from Olowalu Stream at altitude of about 450 ft. Water used for power and irrigation. Regulated by headgates.

Cooperation.--Records of daily discharges furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.0	5.4	4.1	3.4	8.0	6.0	4.4	2.85	2.85	2.4	2.3	2.45
2	7.6	4.5	3.95	4.1	8.8	7.2	4.3	2.9	3.6	2.35	2.2	2.4
3	6.7	4.3	3.85	2.85	8.9	5.6	4.3	2.9	3.25	2.35	2.8	2.2
4	5.9	4.2	3.7	4.2	8.8	7.2	4.6	2.85	5.5	2.35	8.1	2.15
5	8.2	4.1	3.7	4.1	8.8	9.6	4.6	2.8	6.8	2.35	4.5	2.1
6	8.1	4.0	4.3	3.4	7.6	9.3	4.4	2.8	4.2	2.3	4.6	2.0
7	7.0	5.0	3.9	3.1	6.2	10.4	7.2	2.8	3.2	2.25	6.2	2.0
8	8.3	4.1	3.5	2.85	5.4	9.5	5.1	2.8	3.1	2.25	5.6	2.05
9	9.3	7.8	3.9	2.75	6.0	9.4	5.0	3.0	3.1	2.35	5.0	2.15
10	8.8	8.0	3.55	2.95	5.4	9.1	4.6	2.8	3.1	2.35	3.75	2.5
11	8.6	6.2	3.4	4.2	9.4	8.8	4.2	2.7	2.9	2.4	3.25	2.45
12	7.8	5.2	3.3	3.8	8.9	8.5	4.1	2.7	3.3	2.25	3.1	3.8
13	6.6	4.6	5.5	3.2	8.6	8.2	4.1	2.85	4.9	2.2	2.9	2.5
14	7.2	4.3	4.6	2.95	6.4	7.4	3.9	2.8	4.5	2.25	2.75	2.55
15	9.6	5.0	3.9	3.65	3.85	6.9	3.75	2.6	5.6	2.15	2.95	4.6
16	8.8	4.8	3.55	3.4	6.0	6.4	3.7	2.65	4.9	2.35	3.3	4.4
17	9.0	4.2	3.5	7.3	8.7	6.4	3.6	2.65	3.65	2.4	3.1	2.75
18	9.2	4.0	3.5	5.4	8.3	9.3	3.6	3.7	4.0	2.45	2.75	7.7
19	8.8	3.9	3.15	4.5	8.0	8.7	3.5	5.4	3.3	2.3	2.85	7.6
20	8.6	3.75	3.0	5.3	6.6	8.4	3.45	3.15	3.05	2.35	3.6	5.6
21	8.4	3.6	2.9	5.9	5.9	7.8	3.4	3.0	2.8	2.4	3.15	4.2
22	7.3	3.45	2.8	8.7	5.4	7.0	3.35	2.75	2.7	2.4	2.7	3.8
23	6.5	3.4	2.8	13.6	5.1	6.3	3.3	2.7	2.7	2.25	2.65	3.55
24	6.1	3.25	2.8	12.6	4.7	7.0	3.25	2.6	2.65	2.1	2.45	2.95
25	5.8	3.7	2.85	11.4	4.5	5.9	3.2	2.55	2.6	2.05	2.45	2.7
26	5.8	7.1	2.75	12.7	4.3	5.6	3.15	2.55	2.65	2.1	2.3	2.7
27	5.3	7.2	2.6	7.8	4.6	5.3	3.1	2.95	2.6	2.15	2.35	2.55
28	5.6	4.9	2.55	5.2	4.5	5.0	3.05	5.9	2.5	3.15	2.55	2.85
29	5.0	4.2	2.55	6.1	3.8	4.9	3.0	-	2.45	2.3	2.3	2.45
30	4.8	4.0	2.55	9.6	6.3	4.7	2.95	-----	2.45	2.35	2.2	2.45
31	4.6	4.2	-----	9.1	-----	4.5	2.9	-----	2.45	-----	2.2	-----
Total	227.3	146.35	103.00	180.10	197.75	226.3	120.55	82.70	107.35	69.65	103.90	95.95
Mean:	7.33	4.72	3.43	5.81	6.59	7.30	3.89	2.95	3.46	2.32	3.35	3.20
cfs	11.3	7.30	5.31	8.99	10.2	11.3	6.02	4.56	5.35	3.59	5.18	4.95
Ac-ft	698	449	516	553	607	694	370	254	529	214	319	294
Calendar year 1952:	Max 13.6			Min 2.55		Mean(mgd) 5.55		Mean(cfs) 6.59		Ac-ft 6,250		
Fiscal year 1952-53:	Max 13.6			Min 2.0		Mean(mgd) 4.55		Mean(cfs) 7.04		Ac-ft 5,100		

Waiakea Stream at middle flume house, near Mountain View

Location.--Lat 19°38'25", long 155°10'35", on left bank at middle flume house, 800 ft upstream from Olaa Sugar Co.'s main flume and 7.5 miles northwest of Mountain View.

Records available.--September 1930 to June 1953.

Gage.--Water-stage recorder and combined Parshall flume and concrete weir. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--22 years (1931-53), 7.30 mgd (11.3 cfs).

Extremes.--Maximum discharge during year, 142 mgd (220 cfs) Mar. 9 (gage height, 4.27 ft), from rating curve extended as explained below; minimum, 0.12 mgd (0.19 cfs) Feb. 3-8, 1930-53: Maximum discharge, 166 mgd (257 cfs) Mar. 14, 1942 (gage height, 4.43 ft), from rating curve extended above 40 mgd on basis of weir formulas; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Large part of flow comes from three tunnels. Water is used for fluming sugarcane.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.0	0	1.5	9.7
.1	.15	2.0	15.1
.2	.43	2.5	23.5
.3	.80	3.0	39
.5	1.76	3.5	65
1.0	5.2		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.2	6.0	3.6	3.5	7.7	12.9	3.8	0.15	5.0	7.2	2.05	9.7
2	8.7	5.7	3.75	3.4	9.8	13.4	3.5	.14	*4.6	6.7	1.95	9.7
3	8.2	5.2	4.1	3.1	11.3	12.9	3.3	.12	4.9	6.4	2.05	9.7
4	7.7	4.9	3.9	2.95	9.7	13.1	3.0	.12	6.3	6.0	4.8	8.7
5	7.2	4.6	4.1	2.8	9.2	14.5	2.8	.12	6.7	6.6	*3.95	8.2
6	6.7	4.6	5.4	2.6	8.7	14.0	2.5	.12	6.7	6.0	4.9	7.7
7	6.4	5.3	5.4	2.55	8.2	17.0	*2.2	.12	10.7	5.7	8.3	7.2
8	9.9	5.6	5.3	2.55	7.2	17.0	2.1	.63	10.6	5.2	8.7	7.7
9	12	6.7	6.2	2.15	7.2	17.0	1.93	1.82	24.5	4.9	9.2	7.7
10	8.7	6.0	6.7	1.99	9.8	17.0	1.76	.43	34	4.6	8.2	6.7
11	7.7	5.8	6.7	1.93	17.8	16.3	1.61	.21	25	4.5	7.2	6.0
12	6.4	5.2	7.7	2.1	16.3	15.1	1.45	.15	23.5	4.5	6.4	6.0
13	6.0	4.6	7.7	1.82	18.6	14.0	1.30	.23	31.5	4.1	5.8	6.0
14	6.0	4.4	8.2	1.71	18.6	12.9	1.20	.72	45	3.95	5.5	6.0
15	*9.7	4.1	7.7	1.56	17.6	11.8	1.12	1.20	46	4.1	5.2	6.7
16	6.4	3.9	7.2	1.45	19.1	10.7	1.02	2.85	37	3.65	4.9	7.2
17	11.2	3.65	7.2	1.45	17.6	9.7	.94	1.50	34	3.75	4.6	6.7
18	17.6	3.5	7.2	1.55	17.0	10.5	.84	1.20	30.5	4.0	4.3	6.7
19	13.4	3.3	6.7	8.3	18.1	10	.76	1.55	25	3.6	4.2	6.4
20	12.9	3.1	6.4	12.7	17.7	9.6	.69	2.45	20.5	3.45	4.1	6.0
21	12.4	2.95	6.0	14.3	17.0	8.8	.62	2.1	17.6	3.45	3.95	5.9
22	11.8	2.85	5.8	12.4	15.7	8.0	.58	1.76	15.7	3.6	3.6	5.8
23	11.2	2.65	5.4	11.8	15.1	7.6	.47	2.7	14.0	3.25	3.4	5.6
24	10.7	2.55	5.1	11.2	13.4	7.0	.43	9.2	12.9	3.05	3.25	5.3
25	9.7	2.55	4.8	10.7	12.4	6.6	.40	7.1	11.8	2.8	3.5	5.1
26	9.2	3.25	4.6	10.7	11.8	6.0	.37	6.0	10.7	2.6	3.9	4.8
27	8.2	3.65	4.4	10.2	13.4	5.6	.32	5.9	9.7	2.4	6.9	*4.6
28	7.7	3.45	4.2	9.7	12.9	5.2	.26	5.3	9.2	2.3	10.2	4.2
29	7.2	3.25	3.95	9.2	12.9	4.9	.23	-	8.7	2.15	10.7	4.0
30	6.7	3.45	3.75	9.2	12.4	4.5	.21	-----	8.2	2.05	9.7	3.8
31	6.7	3.6	-----	8.2	-----	4.2	.18	-----	7.7	-----	10.7	-----
Total	283.5	130.35	169.15	179.36	404.2	337.8	41.89	55.89	558.2	126.35	176.08	193.8
Mean:												
mgd	9.15	4.20	5.64	5.79	13.5	10.9	1.35	2.00	18.0	4.21	5.68	6.46
cfs	14.2	6.50	8.73	8.96	20.9	16.3	2.09	3.09	27.9	6.51	8.79	10.0
Ac-ft	870	400	519	550	1,240	1,040	129	172	1,710	388	540	595

Calendar year 1952: Max 44 Min 1.55 Mean(mgd) 9.72 Mean(cfs) 15.0 Ac-ft 10,920

Fiscal year 1952-53: Max 46 Min 0.12 Mean(mgd) 7.28 Mean(cfs) 11.3 Ac-ft 8,150

Peak discharge (base, 50 mgd).--Mar. 7 (5:30 p.m.) 50 mgd (77 cfs), 3.26 ft; Mar. 9 (11 p.m.) 142 mgd (220 cfs), 4.27 ft; Mar. 14 (1:30 p.m.) 91 mgd (141 cfs), 3.81 ft.

* Discharge measurement made on this day.

Note.--No gage-height record July 8-15, Dec. 18 to Jan. 7; discharge estimated on basis of 2 discharge measurements and records for Wailuku River near Hilo.

Wailuku River above Hilo Boarding School ditch intake, near Hilo

Location.--Lat 19°42'55", long 155°09'10", on left bank 1,000 ft upstream from intake of Hilo Boarding School ditch, 0.8 mile west of reservoir 1, and 4 miles west of Hilo.

Drainage area.--125 sq mi.

Records available.--July 1928 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--22 years (1929-40, 1941-47, 1948-53), 176 mgd (272 cfs).

Extremes.--Maximum discharge recorded during year, 6,700 mgd (10,400 cfs) Nov. 11 (gage height, 15.93 ft); minimum daily, 1.5 mgd (2.3 cfs) Feb. 4-6.
1928-53: Maximum discharge, 41,000 mgd (63,400 cfs) Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 3,400 mgd by logarithmic plotting; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Hilo Water Works diverts about 1 mgd above station for domestic supply, and water passing station is used for power by Hilo Electric Light Co.

Revisions (fiscal years).--WSP 865: 1929-36(M). WSP 965: 1941.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.3	1.3	4.0	137
1.4	2.3	5.0	245
1.6	5.2	7.0	570
1.8	9.4	9.0	1,140
2.1	18.0	11.0	2,020
2.5	34.5	13.0	3,510
3.0	60		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	89	37	42	26	37	262	14.4	1.9	120	60	15.6	155
2	63	28	44	17.4	66	273	14.1	1.8	100	52	17.1	102
3	49	24.5	66	14.1	117	279	13.5	1.6	216	44	17.1	110
4	44	24	57	13.8	60	233	12.9	1.5	240	49	61	79
5	39	24.5	54	15.6	63	706	11.2	1.5	360	56	*56	60
6	34.5	23.5	98	12.3	63	585	*10.7	1.5	155	164	52	49
7	30	66	108	9.9	46	582	10.2	3.0	126	178	166	44
8	153	72	72	9.9	39	567	9.4	15	130	72	161	39
9	168	103	135	8.7	37	354	8.7	60	1,100	57	175	34.5
10	72	71	137	7.9	373	324	7.6	10	1,500	49	110	46
11	52	63	90	8.1	2,400	197	7.2	4.0	1,100	49	72	39
12	42	49	76	24.5	458	155	6.4	3.0	1,000	46	54	44
13	34.5	37	79	15.3	486	119	4.9	5.0	1,300	42	46	57
14	39	32	103	10.7	408	90	5.0	30	2,500	39	46	44
15	226	29	72	9.2	273	72	4.6	50	2,700	42	39	72
16	54	28.5	60	7.9	1,120	60	3.9	150	700	34.5	34.5	108
17	314	24.5	49	22	360	52	3.45	50	408	32	29	60
18	2,040	24.5	52	27	339	82	3.35	40	287	46	26	54
19	347	21.5	39	518	370	66	4.9	50	259	34.5	24.5	52
20	197	18.7	32	1,110	321	44	4.4	60	175	32	37	44
21	128	17.7	28	783	291	39	4.3	60	175	37	34.5	37
22	94	17.4	24.5	559	155	34.5	4.0	60	137	34.5	25.5	46
23	79	17.7	22.5	301	137	34.5	3.8	80	110	26	21	42
24	60	18.4	19.4	175	119	32	3.6	500	82	24	18.4	34.5
25	49	17.4	18.0	120	86	29	3.5	300	94	21	22	32
26	44	29.5	17.4	110	* 119	28.5	3.0	150	90	21	162	29
27	54	79	22	90	321	25.5	2.7	140	66	17.7	312	*24.5
28	44	57	17.4	60	577	22	2.5	130	52	16.8	731	23
29	42	39	17.4	*42	440	19.8	2.4	-	68	18.4	390	22
30	39	44	22.5	60	233	18.4	2.2	-	90	17.4	228	25
31	42	42	-	54	-	16.5	2.0	-	69	-	337	-
Total	4,762.0	1,180.3	1,674.1	4,242.3	9,912	5,401.7	194.60	1,959.8	15,509	1,411.8	3,520.2	1,607.5
Mean												
mgd	154	38.1	55.8	137	330	174	6.28	70.0	500	47.1	114	53.6
cfs	238	58.9	86.3	212	511	269	9.72	108	774	72.9	176	82.9
Ac-ft	14,610	3,620	5,140	15,020	30,420	16,580	597	6,010	47,600	4,330	10,800	4,930

Calendar year 1952: Max 4,720 Min 7.9 Mean(mgd) 205 Mean(cfs) 317 Ac-ft 230,600
Fiscal year 1952-53: Max 2,700 Min 1.5 Mean(mgd) 141 Mean(cfs) 218 Ac-ft 157,700

Peak discharge (base, 5,600 mgd).--Nov. 11 (6 a.m.) 6,700 mgd (10,400 cfs), 15.93 ft; Mar 14 (time and discharge unknown).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 25-30, Jan. 20 to Mar. 2, Mar. 4, 5, 8-16; discharge estimated on basis of 1 discharge measurement, weather records, and records for stations on nearby streams.

Waillikahi Stream near Waimanu

Location.--Lat 20°07'40", long 155°39'55", on right bank 30 ft upstream from Waimanu trail bridge, 1.7 miles upstream from confluence with Waimanu Stream, 1.9 miles southeast of head of Awini ditch, and 2.2 miles southwest of Waimanu.

Drainage area.--0.4 sq mi.

Records available.--March 1939 to June 1953. Prior to July 1941, published as Waimanu-Ilili Stream near Waimanu.

Gage.--Water-stage recorder. Altitude of gage is 2,740 ft (by barometer).

Average discharge.--14 years, 6.39 mgd (9.89 cfs).

Extremes.--Maximum discharge during year, 186 mgd (288 cfs) Nov. 11 (gage height, 3.55 ft), from rating curve extended as explained below; minimum, 0.28 mgd (0.43 cfs) Jan. 30 to Feb. 5.

1939-53: Maximum discharge, 544 mgd (842 cfs) Dec. 20, 1946 (gage height, 5.17 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Mar. 17, 18, 1944.

Remarks.--Records fair except those above 25 mgd, which are poor.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.28	1.4	11.5
.5	.70	1.8	23.5
.6	1.30	2.2	42
.8	3.05	2.6	69
1.0	5.1		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.1	8.3	5.5	0.65	3.5	2.65	0.97	0.28	0.97	2.7	3.05	2.05
2	5.5	2.3	3.3	.65	23	4.7	.91	.28	.97	2.3	2.35	1.77
3	3.75	1.77	2.75	.70	33.5	6.4	.85	.28	1.16	8.5	11.9	2.15
4	7.7	8.7	4.5	.65	7.4	9.8	.80	.28	2.65	3.85	62	1.53
5	10.1	5.1	6.3	.60	*3.05	9.6	.75	.35	2.4	1.77	12.3	1.53
6	7.0	10.0	6.6	.55	2.7	21	.70	.43	*1.45	1.30	23.5	1.30
7	6.6	16.7	3.55	.55	1.77	11.6	.70	2.35	.97	1.09	33	1.45
8	37	10.8	2.2	.51	1.45	23	.65	6.4	.80	.91	*9.5	1.95
9	9.8	20.5	17.3	.64	1.16	13.4	.60	5.8	.80	.80	3.4	4.2
10	6.0	5.2	5.0	3.55	10.2	6.5	.60	2.35	4.7	1.21	2.2	13.4
11	7.6	9.5	2.2	4.8	39	4.9	*.55	1.16	1.69	19.9	1.77	3.2
12	3.8	4.4	2.9	2.8	12.4	2.3	*.55	.80	1.09	4.8	1.86	3.9
13	3.2	2.4	8.3	1.95	4.3	1.69	.55	6.7	2.35	2.3	2.75	4.4
14	34.5	1.95	5.5	.80	4.1	1.45	.51	3.55	37.5	1.86	3.15	2.15
15	11.4	11.9	2.15	.70	3.6	1.30	.47	2.15	4.8	4.3	2.6	4.9
16	15.7	3.5	1.95	.60	9.1	1.45	.47	9.8	7.9	2.05	2.95	3.65
17	55	3.25	3.2	.55	11.5	3.3	.47	3.6	2.3	4.3	4.2	3.55
18	25.5	3.3	2.6	7.6	2.15	17.6	.47	2.7	3.55	5.2	5.0	19.9
19	5.5	5.9	1.53	49	1.77	9.5	.43	6.0	6.2	7.8	15.3	8.4
20	7.1	7.6	1.30	25	3.6	2.45	.43	1.95	2.4	8.8	11.1	4.2
21	6.9	8.5	1.16	36.5	1.86	3.95	.39	1.53	2.2	7.9	8.9	3.65
22	10.2	3.4	1.09	14.5	1.37	1.86	.39	1.09	1.77	2.5	2.75	5.1
23	4.3	2.2	1.03	4.9	1.16	1.45	.39	.91	3.85	1.61	3.5	*2.4
24	2.85	2.85	.97	2.3	3.4	2.15	.35	.97	1.86	1.30	4.7	2.2
25	2.3	22.5	.91	1.85	1.95	10.5	.35	1.53	4.7	2.8	11.1	2.3
26	3.0	22.5	.85	20.5	10.4	12.2	.35	1.23	2.95	2.75	11.1	2.3
27	5.0	19.1	.91	2.6	4.6	3.05	.35	1.61	1.45	3.3	3.3	2.85
28	2.3	4.6	.91	1.77	21	1.77	.35	1.09	3.1	7.2	2.95	3.5
29	2.2	4.1	.80	1.95	7.2	1.37	.31	-	2.7	5.1	5.3	7.3
30	5.9	6.4	.75	23.5	3.6	1.16	.28	-----	2.4	4.3	3.4	17.0
31	30.5	7.8	-----	5.4	-----	1.09	.28	-----	2.3	-----	3.95	-----
Total	344.30	247.02	97.81	218.62	235.79	195.14	16.22	66.72	159.29	122.65	274.83	138.18
Mean	11.1	7.97	3.26	7.05	7.86	6.29	0.523	2.38	5.14	4.09	8.87	4.61
mgd	17.2	12.3	5.04	10.9	12.2	9.73	0.809	3.68	7.95	6.33	13.7	7.13
cfs	1,060	758	300	671	724	599	50	205	489	376	843	424
Ac-ft												
Calendar year 1952: Max	55			Min	0.51		7.62		Mean(cfs)	11.8	Ac-ft	8,560
Fiscal year 1952-53: Max	62			Min	0.28		5.80		Mean(cfs)	8.97	Ac-ft	6,500

Peak discharge (base, 150 mgd).--Nov. 11 (6 p.m.) 186 mgd (288 cfs), 3.55 ft.

* Discharge measurement made on this day.

Paopao Stream near Waimanu

Location.--Lat 20°09'05", long 155°40'05", on left bank 150 ft upstream from Waimanu trail, 0.6 mile east of intake to Awini ditch, 1.4 miles upstream from mouth, and 1.9 miles west of Waimanu.

Drainage area.--0.6 sq mi.

Records available.--February 1939 to October 1952 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 1,910 ft (by barometer).

Average discharge.--13 years, 2.17 mgd (3.36 cfs).

Extremes.--1952: Maximum discharge during period July to October, 56 mgd (87 cfs) July 14 (gage height, 2.32 ft), from rating curve extended as explained below; minimum, 0.12 mgd (0.19 cfs) Sept. 30, Oct. 1, 2, 3, 4.

1939-52: Maximum discharge, 462 mgd (715 cfs) Dec. 20, 1946 (gage height, 5.55 ft), from rating curve extended above 8 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) July 27, 28, 1945.

Remarks.--Records good.

Discharge, in million gallons a day, July to October 1952

Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.
1	1.68	3.5	0.68	0.20	11	3.75	2.0	0.51	-	21	1.68	2.05	0.34	-
2	1.37	.78	.68	.20	12	1.52	1.27	.47	-	22	4.2	.89	.31	-
3	.98	.63	.55	.20	13	1.10	.78	2.75	-	23	1.37	.59	.28	-
4	2.05	2.3	.55	.20	14	13.0	.68	2.85	-	24	.98	.63	.28	-
5	3.6	1.32	1.42	.20	15	6.8	4.0	.59	-	25	.83	5.8	.25	-
6	2.55	3.45	1.94	.20	16	4.7	1.07	.47	-	26	.83	5.8	.25	-
7	1.58	5.6	.89	.20	17	17.7	.87	.47	-	27	1.56	5.9	.25	-
8	13.6	4.6	.51	-	18	11.5	1.04	.43	-	28	.73	1.52	.22	-
9	6.1	6.4	1.68	-	19	2.35	.93	.40	-	29	.78	.88	.20	-
10	2.7	1.75	1.13	-	20	2.25	2.2	.37	-	30	1.26	1.23	.20	-
										31	5.0	2.1	-	-
Total.....											120.10	73.56	22.12	-
Mean, in million gallons a day.....											3.87	2.37	0.737	-
Mean, in cubic feet per second.....											5.99	3.67	1.14	-
Runoff in acre-feet.....											369	226	68	-

Awini ditch at East Honokaneiki Gulch, near Niuli

Location.--Lat 20°09'55", long 155°43'10", at flume across East Honokaneiki Gulch, 4.5 miles southeast of Niuli.

Records available.--October 1927 to June 1949, July 1950 to June 1953.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--23 years (1928-38, 1939-49, 1950-53), 12.0 mgd (18.6 cfs).

Extremes.--1927-49, 1950-53: Maximum daily discharge, 33 mgd (51 cfs) Jan. 8, 1935, Aug. 10, 1938; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21.5	22	18	3.35	15	12	4.6	1.40	4.8	7.0	8.2	11.3
2	19.8	14.5	16	3.25	18	15	4.6	1.36	5.6	8.5	6.5	8.3
3	16.6	12.0	13	3.25	27	17	4.3	1.32	5.4	17	27	7.8
4	22.5	18.7	12.6	2.85	19	19	4.3	1.32	6.4	16	24	6.9
5	23.5	15.7	19.0	2.7	13	24	4.0	1.40	11.3	9.0	16	6.4
6	22.5	17.8	19.2	2.55	9.0	22	4.0	1.61	7.4	6.0	18	5.6
7	18.4	25.5	18.0	2.5	8.5	25	4.0	4.7	5.2	5.0	15	5.4
8	26.5	24.5	11.3	2.4	7.5	22	3.7	15.3	4.1	4.5	11	8.4
9	24.5	25.5	16.2	2.35	8.0	17	3.7	14.9	3.5	4.3	9.0	7.2
10	21.5	22.5	21	2.8	23	15	3.7	7.9	13	13	8.0	23.5
11	22.5	21.5	12.6	4.9	23	13	3.6	5.4	10	28	*7.8	15.7
12	17.5	19.6	10.0	11.6	17	11	4.0	4.5	5.0	18	7.8	13.8
13	14.5	13.8	13.4	5.5	19	9.0	5.0	12.1	4.3	11	8.3	15.2
14	20.5	11.3	20.5	3.75	17	8.2	*3.6	12.0	*27	9.0	10.6	9.4
15	23	19.1	11.3	3.0	17	8.0	2.75	8.3	26.5	11	12.0	19.5
16	17.6	17.2	9.4	2.65	23	8.2	2.65	11.5	16.6	9.0	10.6	18.9
17	26.5	15.6	11.3	2.5	17	9.2	2.55	9.7	9.4	8.0	17.1	12.5
18	25.5	16.4	12.0	5.7	9.0	23	2.4	7.6	10.2	13	17.2	25.5
19	19.8	15.5	8.3	26.5	9.5	20	2.3	14.0	20.5	15	23.5	23.5
20	22.5	22.5	6.9	25.5	9.0	11	2.25	7.4	15.3	20	25.5	19.0
21	21.5	23.5	6.0	25.5	8.0	11	2.15	6.0	13.8	21	24.5	13.2
22	23.5	18	5.5	24.5	7.0	8.5	2.1	4.7	10.6	11	16.8	16.8
23	19.0	12	5.1	20.5	9.5	7.8	2.06	4.0	17.0	8.5	13.8	11.3
24	16.0	11	5.0	14.5	9.5	9.0	1.94	3.6	11.6	7.2	19.8	8.3
25	13.8	24	4.6	11.3	7.5	21	1.85	6.0	19.0	7.2	17.4	*8.3
26	*12.8	26	4.4	22	19	25	1.70	5.0	18.8	7.5	23.5	8.3
27	17.1	24	4.3	16.7	17	14	1.65	4.5	11.3	6.5	16.0	8.3
28	12.6	19	3.95	11.3	23	8.5	1.61	5.0	10	17	15.2	8.3
29	11.3	16	3.75	5.4	19	6.0	1.57	-	12	16	20.5	15.7
30	17.0	18	3.55	21	9.5	5.5	1.53	-----	8.0	8.5	17.5	22.5
31	24	23	-----	*21	-----	4.6	1.44	-----	7.5	-----	18.2	-----
Total Mean: mgd cfs Ac-ft	615.8 19.9 30.8 1,890	585.7 18.9 29.2 1,800	326.15 10.9 16.9 1,000	313.30 10.1 15.6 961	437.5 14.6 22.6 1,340	429.5 13.9 21.5 1,320	91.59 2.95 4.56 281	182.51 6.52 10.1 560	351.1 11.3 17.5 1,080	342.7 11.4 17.6 1,050	486.3 15.7 24.3 1,490	382.8 12.8 19.8 1,170

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 22 to Sept. 3, Nov. 1 to Jan. 14, Mar. 9-14, Mar. 28 to May 11; discharge estimated on basis of recorded range in stage, 3 discharge measurements, and records for stations on nearby streams.

East Honokaneiki intake to Awini ditch at East Honokaneiki Gulch, near Niulii

Location.--Lat 20°09'55", long 155°43'15", on intake tunnel delivering water from East Honokaneiki Gulch to Awini ditch, on west side of gulch, 4.5 miles southeast of Niulii.

Records available.--October 1927 to June 1938, July 1939 to June 1949, July 1951 to June 1953.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--20 years (1928-36, 1937-38, 1939-40, 1941-49, 1951-53), 1.15 mgd (1.78 cfs).

Extremes.--1927-38, 1939-49, 1951-53: Maximum daily discharge, 8.0 mgd (12.4 cfs) Dec. 29, 1937, Mar. 20, Apr. 7, 1938, Jan. 12, 1946; no flow at times.

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

Revisions (fiscal years).--WSP 725: 1928-30.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.78	2.5	1.0	0.05	1.0	0.90	0.17	0.02	0.17	0.35	0.60	0.80
2	1.38	.64	.60	.04	2.0	1.3	.17	.02	.19	.44	.41	.60
3	1.24	.44	.38	.05	6.0	1.8	.15	.02	.14	1.60	3.25	.56
4	2.6	2.2	.38	.04	2.5	2.0	.15	.02	.24	1.45	3.05	.47
5	2.9	1.25	1.09	.03	.80	2.4	.13	.01	1.06	.50	1.44	.44
6	1.59	2.35	1.14	.03	.50	2.2	.13	.01	.41	.32	1.67	.41
7	.88	4.3	.90	.03	.45	3.8	.15	.24	.21	.24	1.57	.38
8	5.3	3.45	.35	.03	.35	2.8	.11	1.08	.12	.21	1.17	.38
9	3.4	4.5	1.68	.03	.42	1.9	.11	2.25	.10	.19	.84	.38
10	1.57	1.60	2.05	.03	4.0	1.3	.11	1.05	1.2	.98	.72	3.15
11	2.05	1.98	.47	.08	4.0	.90	.10	.35	.80	5.5	*.68	1.10
12	.92	1.17	.32	.35	1.8	.60	.13	.21	.17	1.74	.76	.76
13	.68	.56	.60	.14	2.5	.48	.20	.93	.13	.72	.72	.83
14	3.1	.44	1.84	.07	1.8	.46	*.08	1.08	3.1	.50	.76	.53
15	3.3	2.1	.38	.04	1.8	.44	.05	.76	2.4	.75	.72	1.97
16	2.05	.85	.26	.03	4.0	.46	.05	.93	1.74	.50	.64	1.88
17	4.5	.69	.38	.02	1.8	.49	.04	1.07	1.01	.41	.92	.89
18	3.55	.64	.35	.49	.50	2.8	.04	.67	1.07	1.02	1.00	5.6
19	2.2	1.28	.21	6.4	.60	1.5	.03	1.92	2.3	1.49	3.6	3.65
20	1.88	1.84	.17	6.0	.50	.70	.03	.74	.88	2.55	5.2	1.26
21	1.39	2.2	.12	5.6	.38	.70	.03	.53	.68	2.75	4.3	.80
22	2.1	.80	.10	5.0	.32	.47	.03	.32	.50	.76	1.34	.68
23	.88	.37	.10	3.0	.60	.38	.03	.21	.90	.47	1.00	.50
24	.64	.35	.10	.92	.60	.48	.03	.12	.56	.35	1.52	.41
25	.50	4.0	.08	.56	.37	2.2	.03	.32	1.76	.38	1.88	*.36
26	.44	5.0	.08	3.15	2.5	2.5	.02	.21	1.11	.47	4.8	.35
27	.41	4.0	.08	1.05	1.8	1.5	.02	.19	.50	.32	1.21	.38
28	.35	1.0	.07	.56	4.0	.45	.02	.17	.52	1.54	1.00	.32
29	.32	.60	.05	.50	2.5	.25	.02	-	.72	1.40	2.4	2.75
30	1.10	.80	.05	3.2	.60	.22	.02	-----	.41	.64	1.30	5.9
31	4.1	2.2	-----	3.2	-----	.17	.02	-----	.38	-----	1.16	-----
Total	59.10	56.08	15.38	40.72	50.99	38.55	2.38	15.45	25.48	30.54	51.63	38.49
Mean	1.91	1.81	0.513	1.31	1.70	1.24	0.077	0.552	0.822	1.02	1.67	1.28
cfs	2.96	2.80	0.794	2.03	2.63	1.92	0.119	0.854	1.27	1.58	2.58	1.98
Ac-ft	181	172	47	125	156	118	7.3	47	78	94	1.58	118
Calendar year 1952: Max	6.4											
Fiscal year 1952-53: Max	6.4											
Min	0.02											
Mean(mgd)	1.69											
Mean(cfs)	2.61											
Ac-ft	1,890											

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 22 to Sept. 3, Oct. 20-23, Oct. 31 to Jan. 14, Mar. 9-13; discharge estimated on basis of 1 discharge measurement, recorded range in stage, and records for stations on nearby streams.

Kohala ditch at Pololu, near Mui11

Location.--Lat 20°10'20", long 155°44'15", on right bank of open section of ditch in Pololu Valley just downstream from boundary between land of Honokane and land of Pololu, 2.8 miles upstream from mouth of Pololu Stream and 4 miles south of Mui11.

Records available.--August 1927 to June 1953.

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

Average discharge.--24 years (1928-38, 1939-53), 26.5 mgd (41.0 cfs).

Extremes.--1927-53: Maximum daily discharge, 63 mgd (98 cfs) May 1, July 17, 1952; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 ft from Honokane and all streams west. Water is used for irrigation in vicinity of Kohala.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	41	51	59	18.1	33.5	35	18.9	15.8	18.9	23	27	25
2	41	36	35	17.4	38	40	18.9	16.6	19.7	27	21.5	23
3	36	29.5	31.5	18.1	57	43	18.1	15.8	19.7	26	35	21
4	43	34	29.5	17.4	43	45	18.1	15.8	20.5	37	57	20
5	46	36	38.5	17.4	33.5	55	17.4	15.8	28	26	49	19
6	41	33.5	38.5	17.4	27	54	17.4	15.8	23	21.5	54	18
7	36	49	36	17.4	26	58	17.4	16.6	19.7	19.7	51	18
8	54	49	38.5	17.4	23	51	16.6	30	18.1	18.9	46	18
9	49	54	36	16.6	26.5	45	18.6	43	17.4	18.1	31.5	18.9
10	41	43	46	17.4	50	42	16.6	29.5	31.5	20.5	25	41
11	41	41	33.5	18.1	50	38.5	15.8	20.5	27	49	22.5	31.5
12	34	41	27	26	36	31.5	17.7	18.9	20.5	38.5	21.5	31.5
13	31.5	33.5	31.5	20.5	38.5	26	*21.5	27	18.1	27	*21.5	31.5
14	43	31.5	41	18.9	36	24	20.5	33.5	*44	23	23	24
15	51	33.5	27	17.4	36	23	19.7	25	51	27	25	40
16	41	41	25	17.4	49	24	19.7	25.5	41	25	23	44
17	63	31.5	27	17	36	27	18.9	27	29.5	23	29.5	28.5
18	54	36	29.5	19	39.5	49	18.9	23	27	36	29.5	49
19	43	29.5	25	43	31.5	43	18.9	38.5	41	29	41	46
20	41	45	22.5	50	29.5	31.5	18.1	26	35	41	54	33.5
21	*41	46	20.5	48	25	31.5	18.1	23	31.5	43	51	26
22	41	38	19.7	47	21.5	25	18.1	20.5	26	31.5	36	31.5
23	36	29	19.7	40	31.5	23	17.4	18.9	31.5	26	28	25
24	34	27	19.7	32	31.5	25.5	17.4	18.1	27	22.5	39	20.5
25	29.5	50	18.9	29	23	46	17.4	20.5	33.5	22.5	32	20.5
26	29.5	55	18.9	45	45	51	17.4	19.7	36	27	48	*20.5
27	51.5	50	18.9	35	42	36	16.6	18.9	27	21.5	29	21.5
28	29.5	40	18.1	29.5	51	25	16.6	18.9	24	28.5	27	21.5
29	29.5	35	18.1	27	45	22.5	16.6	-	29.5	39.5	41	34.5
30	31.5	38	18.1	42	30	31.5	16.6	-----	24	26	33	54
31	49	47	-----	41	-----	18.9	16.6	-----	25	-----	35	-----
Total	1,252.5	1,233.5	847.1	837.4	1,075.0	1,111.4	554.5	638.1	885.6	844.2	1,086.5	856.9
Mean:	40.4	39.8	28.2	27.0	35.8	35.9	17.9	22.8	27.9	28.1	35.0	28.6
mgd	62.5	61.6	43.6	41.8	55.4	55.5	27.7	35.3	43.2	43.5	54.2	44.3
cfs	3,840	3,790	2,600	2,570	3,300	3,410	1,700	1,960	2,660	2,590	3,330	2,630
Ac-ft												
Calendar year 1952	Max 63	Min 16.6	Mean(mgd) 36.1	Mean(cfs) 55.9	Ac-ft 40,540							
Fiscal year 1952-53	Max 63	Min 15.8	Mean(mgd) 30.7	Mean(cfs) 47.5	Ac-ft 34,380							

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 20 to Sept. 2, Oct. 17-27, Nov. 29 to Dec. 10, May 23 to June 8; discharge estimated on basis of recorded range in stage and records for stations on nearby streams.

Kehena ditch near Kohala

Location.--Lat 20°07'25", long 155°45'05", on right bank at old Honokane weir, near head of West Branch of Honokanenui Gulch, 8.5 miles southeast of Kohala.

Records available.--December 1917 to November 1919, April 1928 to June 1953.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,850 ft (from topographic map). Prior to Apr. 26, 1928, water-stage recorder at same site at different datum.

Average discharge.--25 years (1928-53), 7.61 mgd (11.8 cfs).

Extremes.--1917-19, 1928-53: Maximum daily discharge, 54 mgd (84 cfs) Mar. 23, 1919; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Kahua Ranch diverts small quantity of water from ditch 2 miles upstream from station for domestic use. Water used for irrigation in vicinity of Hawi.

Revisions (fiscal years).--WSP 740: 1930.

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.0	18.3	9.3	0.67	8.3	20.5	0.53	0	0.67	1.13	5.3	3.95
2	8.7	4.5	7.5	.67	12.3	32.5	.53	0	.53	1.85	2.25	2.5
3	8.0	2.5	3.95	.67	29	21	.40	0	.29	3.5	6.4	2.05
4	17.8	4.0	3.7	.82	10.7	21.5	.29	0	2.9	5.9	35	1.65
5	19.0	5.9	8.9	.67	5.0	30.5	.19	0	*4.7	2.25	20	1.50
6	8.9	5.6	6.4	.67	*2.8	29	.10	0	2.05	1.30	30	.82
7	4.7	23	8.1	.67	2.05	32.5	.67	0	1.13	.53	22	.98
8	26	21	3.7	.67	1.50	26.5	.53	2.2	.67	.29	15	3.15
9	16.8	30	15.5	.67	4.0	15.7	.29	5.8	.40	.10	*8.0	6.4
10	5.8	11.1	17.9	.82	23	15.1	.10	3.15	10.6	.10	3.7	23
11	4.7	11.1	5.3	1.50	30	9.0	.10	1.50	3.7	18.7	2.5	11.7
12	3.15	11.3	3.4	6.1	17.5	4.5	.10	.67	1.65	7.7	2.0	15.0
13	2.5	4.5	3.7	2.5	19.6	3.5	.10	1.13	.98	2.7	1.8	12.6
14	15.9	2.9	8.0	1.50	13.9	2.7	.10	4.4	19.2	1.50	2.6	6.4
15	22	3.35	3.95	1.13	8.9	2.3	.10	2.9	32.5	2.5	4.7	24.5
16	8.2	5.3	4.8	.82	25.5	2.1	.10	1.85	15.1	2.25	3.7	19.2
17	37.5	2.7	8.3	.82	7.7	2.4	.05	1.65	3.95	3.9	7.0	12.4
18	30.5	3.4	7.7	.98	3.7	3.0	0	1.50	4.3	8.9	7.0	27.5
19	9.2	2.9	3.4	18.2	3.4	25	0	4.5	14.9	4.9	14	17.7
20	6.4	6.1	2.25	25	3.4	20	0	2.5	6.4	8.2	27	6.7
21	5.2	13.0	1.65	22.5	2.5	4.0	0	1.50	5.0	12.9	23	4.7
22	8.7	8.4	1.50	21	1.85	4.0	0	1.13	2.5	5.0	13	6.4
23	5.0	3.7	1.30	15.6	6.4	2.7	0	.82	2.5	3.15	8.5	4.2
24	3.15	3.15	1.13	5.8	7.9	2.1	0	.40	1.85	1.50	12.8	*2.7
25	2.5	23	.98	3.4	5.4	2.9	0	.40	3.4	1.13	14.2	2.25
26	2.05	35	.82	20.5	22	23	0	.40	4.7	1.13	22.5	2.5
27	2.25	30.5	.98	7.4	19.0	30	0	.67	2.25	.67	7.7	3.95
28	2.05	13.6	.82	3.4	30	13	0	.67	1.65	12.4	6.2	5.0
29	1.65	5.8	.82	2.7	21	2.8	0	-	1.65	11.2	17.0	19.2
30	6.2	7.7	.67	18.4	7.4	1.2	0	-----	1.13	5.3	8.6	31.5
31	18.8	13.7	-----	15.3	-----	.90	0	-----	.82	-----	7.4	-----
Total	319.30	337.00	146.42	201.55	355.70	405.90	4.28	39.74	154.07	132.58	362.85	281.90
Mean	10.3	10.9	4.88	6.50	11.9	13.1	0.138	1.42	4.97	4.42	11.7	9.40
mgd	15.9	16.9	7.55	10.1	18.4	20.3	0.214	2.20	7.69	6.84	18.1	14.5
cfs	980	1,050	449	619	1,090	1,250	13	122	473	407	1,110	865
Ac-ft												
Calendar year 1952: Max	37.5			Min	0.67	Mean(mgd)	10.6	Mean(cfs)	16.4	Ac-ft	11,960	
Fiscal year 1952-53: Max	37.5			Min	0	Mean(mgd)	7.51	Mean(cfs)	11.6	Ac-ft	8,410	

* Discharge measurement made on this day.

Note.--No gage-height record July 1, Dec. 11 to Jan. 1, May 5-22; discharge estimated on basis of 1 discharge measurement, recorded range in stage, and records for stations on nearby streams.

Waikoloa Stream near Kamuela

Location.--Lat 20°03'15", long 155°39'55", on left bank 350 ft downstream from Parker Ranch boundary and 2.1 miles north of Kamuela.

Drainage area.--1.0 sq mi.

Records available.--May 1947 to June 1953.

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

Average discharge.--6 years, 4.76 mgd (7.36 cfs).

Extremes.--Maximum discharge during year, 57 mgd (88 cfs) Nov. 27 (gage height, 2.85 ft), from rating curve extended as explained below; minimum, 1.14 mgd (1.76 cfs) Feb. 4, 5, 6, 7, 1947-53: Maximum discharge, 545 mgd (843 cfs) Jan. 11, 1949 (gage height, 5.47 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 1.04 mgd (1.61 cfs) Nov. 6-10, 1950, Feb. 12, 1951.

Remarks.--Records good.

Revisions (fiscal years).--WSP 1155: 1948(M).

Rating tables, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Jan. 14

Jan. 15 to June 30

1.3	1.17	1.7	6.3	1.2	0.89	1.7	6.4
1.4	1.96	1.9	10.5	1.3	1.52	2.0	13.2
1.5	3.1	2.2	20	1.4	2.4	2.3	24
1.6	4.6	2.5	34	1.5	3.4		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	7.2	6.3	1.54	4.6	2.85	1.62	1.20	1.52	2.65	2.8	2.5
2	3.4	2.85	3.95	1.54	6.5	4.5	1.54	1.20	1.70	2.4	2.3	2.2
3	3.0	2.25	2.7	1.54	19.2	6.8	1.54	1.20	2.05	4.7	7.9	2.05
4	7.8	8.9	2.7	1.46	6.6	7.0	1.54	1.20	*5.6	3.65	23	1.96
5	9.6	4.8	3.95	1.46	3.2	8.4	1.54	1.20	3.6	2.2	9.8	1.96
6	8.2	6.7	4.7	1.46	2.5	7.4	1.46	1.14	2.2	1.87	14.2	1.87
7	6.6	12.7	3.85	1.46	2.3	12.4	1.46	1.60	1.87	1.70	*13.3	2.15
8	20	8.7	2.35	1.38	1.96	10.8	1.46	2.55	1.70	1.61	6.8	2.4
9	8.5	13.4	10.4	1.38	2.8	5.3	1.38	4.0	1.61	1.61	3.2	3.65
10	7.5	5.4	5.1	1.46	9.9	4.1	1.38	2.6	4.8	1.61	2.5	9.1
11	8.6	6.4	2.5	2.05	14.6	3.2	1.38	1.78	2.4	8.0	2.2	3.6
12	4.6	4.7	2.25	2.65	4.0	2.15	1.38	1.52	1.96	4.1	2.45	3.3
13	5.55	2.7	3.55	1.78	2.95	1.86	1.38	3.15	2.45	2.6	2.8	4.4
14	16.8	2.35	5.1	1.54	2.5	1.78	1.38	2.7	16.9	2.3	2.8	2.7
15	13.6	4.2	2.5	1.46	2.25	1.78	*1.39	2.15	20	3.5	2.6	3.8
16	*9.4	3.4	3.3	1.38	8.4	1.86	1.39	2.85	7.4	2.3	2.4	3.65
17	26.5	4.8	4.1	1.38	2.7	2.55	1.39	2.6	2.7	4.5	2.7	4.7
18	17.2	4.7	2.7	1.46	2.05	11.1	1.39	2.1	2.6	4.4	3.4	13.9
19	6.3	2.25	2.05	13.9	1.96	5.5	1.39	3.8	4.4	4.6	6.4	9.1
20	8.8	7.1	1.86	18.0	1.86	2.5	1.39	2.6	2.7	4.9	9.4	5.5
21	7.6	9.2	1.78	18.8	1.78	2.25	1.39	2.15	2.4	4.0	6.6	4.5
22	8.5	4.8	1.78	8.9	1.78	1.86	1.33	1.78	2.2	2.6	2.8	5.7
23	5.8	3.25	1.70	5.0	1.78	1.78	1.33	1.61	2.15	2.2	3.3	3.4
24	3.1	2.6	1.70	2.5	1.78	2.95	1.33	1.70	1.96	1.96	4.1	2.7
25	2.6	11.5	1.70	*2.15	1.86	8.3	1.33	2.05	2.15	2.95	7.2	2.6
26	2.65	14.0	1.62	7.7	4.4	7.0	1.26	1.78	2.15	3.65	8.5	2.5
27	4.5	11.4	1.62	3.0	14.0	2.95	1.26	1.70	1.87	2.2	3.0	*3.4
28	2.7	5.9	1.62	2.15	8.5	2.05	1.20	1.61	1.78	4.5	2.7	3.9
29	2.25	3.55	1.54	1.96	3.7	1.86	1.20	-	1.70	6.6	4.3	8.4
30	3.45	5.0	1.54	10.5	2.25	1.78	1.20	-----	1.96	3.1	3.1	13.4
31	14.2	8.0	-----	7.5	-----	1.70	1.20	-----	2.3	-----	3.4	-----
Total	251.80	193.70	92.51	130.44	144.66	138.31	42.81	57.52	112.78	98.96	171.95	134.99
Mean	8.12	6.25	3.08	4.21	4.82	4.46	1.38	2.05	3.64	3.30	5.55	4.50
mgd	12.6	9.67	4.77	6.51	7.46	6.90	2.14	3.17	5.63	5.11	8.59	6.96
cfs	773	594	284	400	444	424	131	177	346	304	528	414
Ac-ft												

Calendar year 1952: Max 27.5 Min 1.38 Mean(mgd) 5.56 Mean(cfs) 8.60 Ac-ft 6,230
 Fiscal year 1952-53: Max 26.5 Min 1.14 Mean(mgd) 4.30 Mean(cfs) 6.65 Ac-ft 4,920

Peak discharge (base, 100 mgd).--No peak above base.

* Discharge measurement made on this day.

Waikoloa Stream at Marine Dam, near Kamuela

Location.--Lat 20°02'45", long 155°39'55", on right bank 160 ft upstream from Marine Dam and 1.5 miles north of Kamuela.

Drainage area.--1.3 sq mi.

Records available.--May 1947 to June 1953.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,450 ft (from topographic map).

Average discharge.--6 years, 5.86 mgd (9.07 cfs).

Extremes.--Maximum discharge during year, 81 mgd (125 cfs) Nov. 27 (gage height, 3.12 ft), from rating curve extended as explained below; minimum, 0.69 mgd (1.07 cfs) Feb. 3. 1947-53: Maximum discharge, 615 mgd (952 cfs) Jan. 11, 1949 (gage height, 5.53 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, that of Feb. 3, 1953.

Remarks.--Records good. Diversions above station for domestic use.

Rating table, fiscal year 1952-53 (gage height, in feet, and discharge, in million gallons a day)

1.4	0.48	2.0	8.7
1.5	1.00	2.2	15.3
1.6	1.78	2.5	30.5
1.7	2.9	2.8	52
1.8	4.4		

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.3	10.6	7.4	1.08	5.5	2.7	1.39	0.74	1.16	1.97	2.8	2.45
2	4.4	3.35	4.8	1.08	8.6	4.6	1.31	.74	1.31	2.0	2.0	2.0
3	3.95	2.45	2.8	1.08	32	8.1	1.16	.74	1.62	4.8	10.0	1.70
4	11.0	9.8	2.8	1.08	9.0	8.5	1.16	.74	*9.2	4.1	37.5	1.62
5	14.8	5.9	4.2	1.08	4.1	12.1	1.16	.74	4.4	1.89	15.6	1.55
6	12.1	8.6	5.3	1.08	3.05	10.1	1.16	.74	2.0	1.47	23	1.47
7	8.9	19.2	4.5	1.08	2.6	19.1	1.16	1.13	1.47	1.23	*21	1.62
8	34	12.3	2.45	1.08	2.1	14.8	1.08	2.2	1.23	1.08	11.8	2.1
9	13.3	21	13.3	1.08	2.85	6.8	1.02	4.5	1.23	1.16	4.0	3.05
10	11.0	6.6	6.1	1.16	13.5	4.6	.95	2.7	6.7	1.23	2.8	13.7
11	12.4	7.6	2.45	1.51	22.5	3.55	.95	1.47	2.35	10.4	2.35	4.3
12	6.0	6.1	2.0	2.6	4.9	2.25	.95	1.16	1.70	4.9	2.35	3.5
13	4.2	3.2	3.25	1.47	3.35	1.78	.95	2.95	1.99	2.45	2.8	5.0
14	24.5	2.55	5.6	1.31	2.7	1.62	.90	2.4	26	1.89	2.9	2.45
15	21.5	4.7	2.35	1.23	2.35	1.55	.90	1.78	32.5	3.4	2.55	3.4
16	13.5	4.2	2.85	1.16	11.5	1.70	.90	2.65	10.9	2.1	2.35	4.1
17	46	5.5	4.1	1.08	3.25	2.3	.90	2.4	2.9	4.8	2.55	5.9
18	28.5	5.9	2.45	1.16	2.25	14.2	.90	1.67	2.35	5.2	3.6	20
19	8.3	3.5	1.70	17.6	2.1	6.6	.84	3.8	4.9	5.4	6.5	14.5
20	11.8	8.5	1.55	29	2.0	2.7	.84	2.55	2.7	6.0	16.1	6.6
21	10.0	12.4	1.47	28.5	1.78	2.35	.84	1.89	2.25	4.9	10.1	4.6
22	11.6	5.9	1.39	13.7	1.62	1.78	.84	1.47	1.78	2.55	3.5	6.7
23	5.9	3.7	1.31	6.4	1.62	1.55	.79	1.23	1.70	1.89	3.2	3.45
24	3.8	2.7	1.31	2.7	1.62	2.5	.79	1.23	1.47	1.55	5.2	2.35
25	2.9	14.7	1.23	*2.15	1.62	10.6	.79	1.62	1.62	2.5	8.1	2.1
26	2.9	21	1.23	9.8	4.7	9.1	.79	1.31	1.62	3.95	15.3	2.0
27	5.2	16.3	1.23	3.6	19.6	3.15	.79	1.31	1.39	2.0	3.35	*2.7
28	2.9	7.4	1.23	2.25	11.9	2.9	.79	1.23	1.31	4.7	2.7	3.4
29	2.55	3.95	1.16	2.0	4.1	1.70	.74	-	1.23	9.6	5.1	10.2
30	3.85	5.2	1.16	14.0	2.35	1.55	.74	-----	1.39	3.05	3.35	21
31	21.5	9.9	-----	10.2	-----	1.47	.74	-----	1.70	-----	3.8	-----
Total	369.35	254.70	94.67	164.30	191.11	167.40	29.22	49.09	136.07	104.16	238.25	157.51
Mean:												
mgd	11.9	8.22	3.16	5.30	6.37	5.40	0.943	1.75	4.39	3.47	7.69	5.25
cfs	18.4	12.7	4.89	8.20	9.86	8.36	1.46	2.71	6.79	5.37	11.9	8.12
Ac-ft	1,130	782	291	504	586	514	90	151	418	320	731	483

Calendar year 1952: Max 46 Min 1.08 Mean(mgd) 7.57 Mean(cfs) 11.7 Ac-ft 8,500
 Fiscal year 1952-53: Max 46 Min 0.74 Mean(mgd) 5.36 Mean(cfs) 8.29 Ac-ft 6,000

Peak discharge (base, 100 mgd).--No peak above base.

* Discharge measurement made on this day.

Miscellaneous discharge measurements

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

Miscellaneous discharge measurements on Hawaii during fiscal year July 1952 to June 1953

Date	Stream	Tributary to --	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Nov. 5	Lahomene.....	Pacific Ocean...	At altitude 3,250 ft, near Waimanu.	2.65	1.71
5	Kakaauki.....	do.....	At altitude 2,930 ft, near Waimanu.	1.59	1.03
Jan. 14	Honokane.....	do.....	Above Awini ditch dropoff, near Pololu.	22.1	14.3
June 26	do.....	do.....	do.....	20.1	13.0

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