

Surface Water Supply of Hawaii

1953-54

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1349

*Prepared in cooperation with the
Territory of Hawaii*



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

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UNITED STATES DEPARTMENT OF THE INTERIOR

FRED A. SEATON, *Secretary*

GEOLOGICAL SURVEY

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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 116 gaging stations in the Territory of Hawaii during the year ending June 30, 1954. 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 582 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, 1954, 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 indentation. This downstream order and the system of indentation 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 1903-54 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. 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, 1903-54

Year	WSP	Year	WSP	Year	WSP	Year	WSP	Year	WSP
1903	*77	1919-20	516	1928-29	695	1937-38	865	1946-47	1095
1909-11†	318	1920-21	535	1929-30	710	1939-39	885	1947-48	1125
1912†	356	1921-22	555	1930-31	725	1939-40	905	1948-49	1155
1913†	373	1922-23	575	1931-32	740	1940-41	935	1949-50	1185
1913-15	430	1923-24	595	1932-33	755	1941-42	965	1950-51	1219
1915-16	445	1924-25	615	1933-34	770	1942-43	985	1951-52	1249
1916-17	465	1925-26	635	1934-35	795	1943-44	1015	1952-53	1289
1917-18	485	1926-27	655	1935-36	815	1944-45	1045	1953-54	1349
1918-19	515	1927-28	675	1936-37	835	1945-46	1065		

* 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 1953 to June 1954 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.	1924-54	McBryde Sugar Co.
Eleele ditch.....	.....do.....	1924-54	Do.
Hanalei ditch.....	Above Kalihiwai Reservoir, near Kilauea.	1923-54	Kilauea Sugar Plantation Co.
Hanamaulu ditch.....	Below intake, near Hanamaulu.....	1925-54	Lihue Plantation Co.
Hanapepe field ditch....	Below Hanapepe River intake, near Eleele.	1924-54	McBryde Sugar Co.
Hanapepe Stream.....	At tidewater, near Eleele.....	1924-54	Do.
Kamoloa ditch.....	Below Kauai Belt Road crossing, near Koloa.	1924-54	Do.
Kealia River.....	1 mile west of Kanaha Reservoir and 5½ miles northwest of Kealia.	1936-54	Lihue Plantation Co.
Koloa ditch.....	4½ miles north of Koloa and 6½ miles west of Lihue.	1927-54	Do.
Koula ditch.....	In Hanonui Valley, near Makaweli... ½ mile above cannery, near Kalaheo.	1949-54	Gay & Robinson.
Lawai Stream.....	.....do.....	1924-54	McBryde Sugar Co.
Lihue lower ditch.....	Below intake, near Lihue.....	1925-54	Lihue Plantation Co.
Olokele ditch.....	.....do.....	1928-54	Do.
Olokele ditch.....	At powerhouse, near Makaweli.....	1926-54	Gay & Robinson.
Wahiawa main stream.....	Above Alexander Reservoir, near Kalaheo.	1924-54	McBryde Sugar Co.
Wahiawa Stream, East Branch.....	.....do.....	1929-54	Do.
West Lawai ditch.....	Near camp 12, near Kalaheo.....	1924-54	Do.

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

Alewa Heights Spring....	Below reservoir 3.....	1932-54*	Board of Water Supply, City and County of Honolulu.
Booth Springs.....	In Pauoa Valley, at altitude 685 feet.	1929-54*	Do.
Helemano ditch.....	About 3 miles below Upper Helemano Reservoir.	1933-54	Waialua Agricultural Co.
Hering Springs.....	In Makiki Valley, at altitude 970 feet.	1925-54*	Board of Water Supply, City and County of Honolulu.
Kahuawai Springs.....	In Pauoa Valley, at altitude 618 feet.	1925-54*	Do.
Kalihi tunnels.....	At diversion, at altitude 650 feet.	1926-54*	Do.
Kamananui ditch.....	In Kawaihoa Gulch about 500 yards above third siphon from Government Road.	1934-54	Waialua Agricultural Co.
Kipapa Stream.....	At altitude 300 feet.....	1917-54	Waiahole Water Co.
Makiki Springs.....	In Makiki Valley, at altitude 350 feet.	1926-54*	Board of Water Supply, City and County of Honolulu.
Manoa tunnels.....	Upper Manoa Valley.....	1925-54*	Do.
Nuuanu tunnels.....	At Lower Luakaha.....	1926-54*	Do.
Nuuanu tunnel 3.....	At overflow, in upper Nuuanu Valley	1931-54*	Do.
Palolo tunnel.....	Upper Palolo Valley.....	1926-54*	Do.
Wahiawa Reservoir Outlet	About 1,200 feet below dam.....	1912-54*	Wahiawa Water Co.
Waiahole tunnel.....	At adit 8.....	1916-54	Waiahole Water Co.
Waialua Stream.....	At altitude 750 feet.....	1917-54	Do.
Waikakalua Stream.....	.....do.....	1917-54	Do.
Waimalu Stream.....	At altitude 535 feet, near Aiea....	1947-54	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.....	1935-54	Wailuku Sugar Co.
Honokohau tunnel.....	At outlet of tunnel, at Mahinahina weir.	1917-54	Pioneer Mill Co.
Iao-Waikapu ditch.....	At lower end of tunnels, near Wailuku.	1923-54	Wailuku Sugar Co.
Kahoma tunnel.....	2,000 feet upstream from outlet, above Lahaina.	1920-54	Pioneer Mill Co.
Kama ditch.....	Below intake, near Wailuku.....	1933-54	Wailuku Sugar Co.
Kanaha ditch.....	At intake in Kanaha Gulch, above Lahainaluna.	1921-54	Pioneer Mill Co.
Kauaula tunnel.....	At outlet, above Lahaina.....	1920-54	Do.
K-3 flume.....	Above Lahainaluna.....	1931-54	Do.
Lanuiupoko ditch.....	At outlet, above Lahaina.....	1921-54	Do.
Maniania ditch.....	Below intake, near Wailuku.....	1923-54	Wailuku Sugar Co.
North Waiehu Stream.....	Near end of Waiehu Camp road, near Wailuku.	1922-54	Do.
South Waikapu ditch.....	Above second lateral, near reservoir 1, near Waikapu.	1935-54	Do.
Spreckels ditch.....	Below intake, near Waihee.....	1931-54	Do.
Ukumehame ditch.....	At outlet in Ukumehame Gulch, near Olowalu.	1931-54	Pioneer Mill Co.
Waihee ditch.....	Below intake, near Waihee.....	1931-54	Wailuku Sugar Co.

ISLAND OF MAUI (EAST MAUI)

Stream	Location	Period	Operated by
Hanawi Stream.....	Below Government Road, near Nahiku.	1927-32 1947-54	East Maui Irrigation Co.

ISLAND OF HAWAII

Hionamoa Gulch.....	Below all development tunnels, near Pahala.	1926-54	Hawaiian Agricultural Co.
Honokaape ditch.....	At Kukuiahaele Village.....	1923-54	Hawaiian Irrigation Co.
Keaifwa Gulch.....	Below all development tunnels, near Pahala.	1926-54	Hawaiian Agricultural Co.
Kohala ditch.....	At Awini weir in Honokane, near Niulii.	1917-54†	Kohala Ditch Co.
Do.....	At Niulii weir, near Niulii.....	1917-54†	Do.
Lalakea ditch.....	At altitude 1,900 ft, near Waipio..	1905-54	Hawaiian Irrigation Co.
Lower Hamakua ditch.....	At main weir, near Kukuiahaele....	1921-54†	Do.
Moaula Gulch.....	Below all development tunnels, near Pahala.	1929-54	Hawaiian Agricultural Co.
Noguchi tunnel 19.....	5.3 miles from Pahala, at altitude 3,500 feet.	1928-54	Do.
Pololu Inlet 1.....	At Pololu, near Niulii.....	1929-54	Kohala Ditch Co.
Pololu Inlet 2.....	In Waikakalae Gulch at Pololu, near Niulii.	1929-54	Do.
Pololu Inlet 3.....	In Opaepilau Gulch, above Kohala ditch, near Niulii.	1937-54	Do.
Pololu Inlet 5.....	In Niulii Gulch, above Kohala ditch, near Niulii.	1937-54	Do.
Pololu Inlet 6.....	In Waikane Gulch, above Kohala ditch, near Niulii.	1937-54	Do.
Puwaiole Stream.....	Above Kohala ditch, near Halawa....	1937-54	Do.
Waiaupuka Stream.....	Above Kohala ditch, near Niulii....	1929-54	Do.
Waipuhi Stream.....	Above Kohala ditch, near Halawa....	1933-54	Do.
Waipunalau Stream.....	.....do.....	1929-54	Do.

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

GAGING-STATION RECORDS

ISLAND OF KAUAI

Kaiaikoi 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 1954.

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.--35 years (1919-54), 21.3 mgd (33.0 cfs).

Extremes.--Maximum discharge during year, 2,050 mgd (3,170 cfs) Feb. 22 (gage height, 8.96 ft), from rating curve extended above 300 mgd as explained below; minimum, 0.74 mgd (1.15 cfs) Sept. 21, 22.

1909-17, 1919-54: Maximum discharge, 6,900 mgd (10,700 cfs) Dec. 18, 1916 (gage height, 15.2 ft), from rating curve extended above 300 mgd on basis of slope-area determinations at gage heights 12.12 and 13.43 ft; minimum, that of Sept. 21, 22, 1953.

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

Revisions (fiscal years).--WSP 1185: 1914-17(M), 1920-38(M), 1940-43(M), 1947(M).

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 16

Aug. 17 to June 30

2.0	1.44	1.7	0.43	2.4	9.4	4.0	141
2.1	2.35	1.8	.90	2.7	18.5	4.5	241
2.5	5.2	1.9	1.60	3.0	31	5.0	355
2.5	9.6	2.0	2.5	3.3	50	5.5	500
		2.1	3.7	3.6	81		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.86	1.76	1.21	*4.7	9.4	3.85	11.0	9.0	164	88	14.1	27
2	*3.5	2.65	1.07	6.6	3.85	3.35	26.5	7.6	31	16.8	12.8	20.5
3	6.2	7.0	1.01	4.2	2.1	3.35	9.6	6.5	19.2	9.0	22	24
4	8.4	3.3	1.07	2.2	1.60	12.5	14.4	5.8	132	7.2	70	12.5
5	3.9	2.25	1.21	1.60	2.85	7.9	22	26	154	15.1	48	10.2
6	2.55	1.86	3.35	1.21	1.93	5.1	9.6	20	90	16.4	27	9.4
7	3.45	1.60	1.84	1.07	24	16.9	7.4	10	53	9.9	24.5	31
8	5.4	1.52	1.44	1.07	14.4	6.6	6.2	8.0	66	7.4	26	36.5
9	4.8	1.52	1.21	1.36	*15.1	9.4	5.7	7.0	82	6.4	23.5	30
10	3.05	1.68	1.14	1.14	77	5.9	5.1	6.4	51	5.9	16.8	27
11	4.6	1.60	1.44	1.01	15.0	5.3	6.4	7.0	29.5	5.3	11.2	13.8
12	4.9	2.05	1.52	.95	5.1	162	13.1	6.0	24	5.0	9.4	10.2
13	2.9	3.6	1.28	1.01	3.35	217	6.1	5.5	18.5	4.8	9.0	9.2
14	9.0	3.2	1.07	5.1	2.6	27	4.8	16	16.0	4.7	9.0	28
15	5.2	2.9	1.01	26.5	61	12.5	4.3	*14	13.4	4.5	8.7	17.8
16	3.2	2.15	.95	12.5	171	8.7	4.0	26	11.9	44	10.9	11.6
17	4.5	*1.64	.90	9.9	50	7.0	3.85	16.6	10.6	157	22	8.3
18	5.2	1.44	.84	4.5	15.0	35	79	7.0	10.2	25.5	14.7	8.7
19	3.2	1.28	.79	2.6	13.1	10.2	18.6	5.5	20.5	11.6	9.0	10.9
20	2.25	1.21	.79	1.93	8.7	7.6	8.1	9.0	11.2	8.5	8.7	7.6
21	1.86	1.21	.74	1.52	5.9	8.1	44	9.7	9.2	7.2	12.8	*9.9
22	1.68	1.14	.78	1.28	4.5	9.4	20	384	19.3	6.8	13.4	6.8
23	1.60	1.14	.79	1.14	3.7	8.5	11.2	106	21	7.0	55	5.9
24	1.60	1.14	.95	1.07	51	6.1	7.9	29.5	9.6	6.2	42	5.7
25	1.60	1.44	1.28	1.01	26	5.0	9.9	21	8.1	5.7	19.6	14.8
26	1.68	1.44	1.21	.95	9.2	25.5	9.0	15.0	7.2	5.3	37	8.3
27	4.1	2.7	1.14	.90	5.9	27	6.6	11.9	6.6	*4.9	55	28.5
28	2.8	3.35	1.07	.90	4.8	9.6	5.7	81	6.2	138	38.5	22
29	2.45	2.5	.95	.95	4.3	*11.0	5.7	-	6.1	152	24	30.5
30	2.9	1.84	1.72	2.75	4.7	10.9	30	5.9	22	151	18.5	18.5
31	2.15	1.44	5.2	5.2	-----	8.3	13	-----	5.5	-----	23	-----
Total	112.48	65.55	35.78	108.82	617.08	696.55	428.75	883.0	1,092.7	808.1	868.6	505.1
Mean:	3.63	2.11	1.19	3.51	20.6	22.5	13.8	31.5	35.2	26.9	28.0	16.8
mgd	5.62	3.26	1.84	5.43	31.9	34.8	21.4	48.7	54.5	41.6	43.3	26.0
cfs	345	201	110	334	1,890	2,140	1,320	2,710	3,350	2,480	2,670	1,550
Ac-ft												

Calendar year 1953. Max 295 Min 0.74 Mean(mgd) 12.7 Mean(cfs) 19.6 Ac-ft 14,250
 Fiscal year 1953-54. Max 394 Min 0.74 Mean(mgd) 17.0 Mean(cfs) 26.3 Ac-ft 19,100

Peak discharge (base, 850 mgd).--Dec. 12 (9:30 p.m.) 1,450 mgd (2,240 cfs), 7.87 ft; Jan. 18 (4 p.m.) 970 mgd (1,500 cfs), 6.81 ft; Feb. 22 (7:30 p.m.) 2,050 mgd (3,170 cfs), 8.96 ft; May 30 (8 a.m.) 890 mgd (1,380 cfs), 6.60 ft.

* Discharge measurement made on this day.
 Note.--No gage-height record Jan. 30 to Feb. 15; discharge estimated on basis of records for nearby streams.

Mohihi Stream at altitude 3,500 ft, near Waimea

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

Drainage area.--1.6 sq mi.

Records available.--June 1920 to October 1926, October 1936 to June 1954. 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.--23 years (1920-26, 1937-54), 5.05 mgd (7.81 cfs).

Extremes.--Maximum discharge during year, 408 mgd (631 cfs) Feb. 22 (gage height, 5.01 ft), from rating curve extended above 21 mgd; minimum, 0.02 mgd (0.03 cfs) Sept. 22, 23, 1920-26, 1936-54; Maximum discharge, 1,250 mgd (1,930 cfs) Aug. 15, 1950 (gage height, 7.23 ft), from rating curve extended above 21 mgd; minimum, that of Sept. 22, 23, 1953.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.02	1.3	2.1
.7	.07	1.5	3.8
.8	.18	1.8	7.6
.9	.35	2.1	13.9
1.0	.61	2.5	27
1.1	.98	3.0	53

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.26	0.19	0.10	0.25	0.91	0.78	6.0	2.85	a28	3.25	4.6	5.2
2	*.29	.16	.07	*.74	.96	.74	8.9	2.4	a7.0	2.9	3.5	3.8
3	.37	.26	.05	.85	.58	.74	3.35	1.90	a4.5	1.65	7.1	4.4
4	.72	.39	.05	.52	.43	1.74	4.9	2.25	a12	1.32	15.9	2.85
5	.82	.31	.06	.35	.43	2.0	11.2	10.0	a26	3.65	14.4	2.3
6	.49	.24	.11	.27	.41	1.22	3.3	4.6	a20	5.2	8.4	2.15
7	.39	.16	.14	.22	1.83	1.65	2.15	2.6	a15	3.0	6.0	5.2
8	.39	.12	.13	.16	1.84	1.42	1.71	2.0	a17	1.84	5.7	6.0
9	.41	.10	.12	.15	*2.8	1.42	1.47	1.71	19.3	1.42	4.9	3.5
10	.43	.07	.15	.21	17.6	1.37	1.32	1.53	12.3	1.22	3.4	4.0
11	.45	.07	.82	.12	4.6	1.40	1.27	1.47	8.9	1.13	2.75	2.7
12	.73	.07	.46	.07	1.32	11.0	1.32	1.37	6.1	.98	2.4	2.0
13	.58	.09	.33	.10	.82	42	1.18	1.32	4.7	.93	2.15	1.71
14	1.09	.20	.24	.43	.61	6.8	1.08	7.5	3.9	.89	2.0	3.15
15	1.58	.31	.15	3.25	8.6	2.85	.98	4.1	3.2	.89	1.90	4.6
16	.82	.24	.10	3.35	34.5	1.71	.93	*3.6	2.75	3.55	1.84	3.5
17	.58	*.16	.06	1.85	20.5	1.37	.89	3.5	2.55	40	2.35	2.1
18	.68	.10	.05	1.13	4.2	17.6	23	2.0	2.4	7.7	2.85	1.78
19	.58	.06	.04	.71	3.7	3.45	7.8	1.59	3.6	3.2	2.0	2.45
20	.37	.06	.03	.52	2.25	2.4	2.7	1.42	2.55	2.1	1.71	1.84
21	.27	.06	.03	.39	1.47	2.85	36	1.27	2.1	1.71	1.65	*2.7
22	.22	.07	.03	.31	1.18	2.45	9.2	.42	2.25	1.47	1.59	1.71
23	.19	.06	.03	.24	.93	2.6	4.7	a24	3.15	1.42	4.9	1.37
24	.22	.07	.11	.24	5.8	1.65	2.95	a7.0	2.1	1.27	9.6	1.22
25	.19	.07	.35	.27	4.8	1.32	4.5	a5.1	1.71	1.18	6.2	1.55
26	.21	.07	.33	.26	2.05	9.5	3.15	a3.8	1.53	1.13	4.2	1.78
27	.26	.12	.26	.22	1.32	7.6	2.25	a3.0	1.42	1.03	*9.4	1.99
28	.31	.19	.18	.18	1.08	2.55	1.84	a14	1.32	.46	8.6	4.3
29	.31	.27	.12	.19	.93	1.90	2.25	-	1.22	.45	5.1	2.7
30	.27	.24	.13	.27	.85	1.71	12.0	-	1.18	8.4	19.3	2.4
31	.26	.16	-----	.37	-----	1.47	3.5	-	1.13	-----	6.9	-
Total	14.72	4.74	4.63	17.99	129.10	139.26	167.79	159.88	220.86	195.43	173.29	86.95
Mean:												
mgd	0.475	0.153	0.154	0.580	4.30	4.49	5.41	5.71	7.12	6.51	5.59	2.90
cfs	0.735	0.237	0.238	0.897	6.65	6.95	8.37	8.83	11.0	10.1	8.65	4.49
Ac-ft	45	15	14	55	396	427	515	491	678	600	532	267

Calendar year 1953: Max 78 Min 0.03 Mean(mgd) 2.50 Mean(cfs) 3.87 Ac-ft 2,800
 Fiscal year 1953-54: Max 46 Min 0.03 Mean(mgd) 3.63 Mean(cfs) 5.62 Ac-ft 4,070

Peak discharge (base, 200 mgd).--Jan. 18 (4 p.m.) 214 mgd (331 cfs), 4.27 ft; Jan. 21 (9 a.m.) 235 mgd (364 cfs), 4.37 ft; Feb. 22 (8 p.m.) 408 mgd (631 cfs), 5.01 ft; Apr. 28 (6 p.m.) 204 mgd (316 cfs), 4.18 ft.

* Discharge measurement made on this day.

† Doubtful or no gage-height record; discharge estimated on basis of records for Kawaikoi Stream near Waimea.

ISLAND OF KAUAI

9

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 1954.

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

Average discharge.--27 years (1927-54), 15.9 mgd (24.6 cfs).

Extremes.--1926-54: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.7	2.4	1.76	3.85	9.2	4.3	9.2	13.0	14.4	35	25	32.5
2	*3.3	2.2	1.65	7.9	4.9	3.8	17.2	11.5	19.7	28	18.8	28
3	6.3	6.6	1.57	5.6	2.95	3.65	9.4	9.9	22	16.3	25	31
4	7.8	4.0	1.57	3.4	2.2	11.3	8.8	9.6	20	14.2	25	20
5	5.0	3.05	1.65	2.4	3.05	9.8	20	32	14.2	20.5	22.5	16.3
6	3.4	2.5	3.2	1.96	2.4	5.8	9.6	24.5	12.8	28	25	15.1
7	3.25	2.3	2.6	1.65	18.6	15.5	7.4	14.4	18.0	18.8	24	24
8	5.3	2.05	2.05	1.57	15.1	7.9	6.3	12.6	22.5	14.9	24	34
9	5.3	1.96	1.86	1.76	*14.3	9.4	5.6	11.1	18.8	13.3	26.5	28
10	3.65	2.2	1.65	1.57	39.5	7.2	5.2	10.1	26.5	12.2	26.5	32.5
11	4.4	2.2	1.76	1.49	22.5	5.3	5.2	10.3	29.5	11.5	22.5	20
12	5.2	2.2	1.96	1.41	7.2	7.0	17.5	9.4	22	10.9	20	16.3
13	3.65	3.65	1.86	1.49	4.3	36	8.4	8.6	18.8	10.3	18.8	13.7
14	7.3	3.55	1.57	3.4	3.55	21	6.8	18.9	18.8	10.1	18.8	28
15	6.3	3.3	1.49	14.8	28.5	11.1	6.0	*18.0	28	9.8	17.5	24
16	4.2	2.7	1.41	14.8	46	7.9	5.5	21.5	25	12.3	18.8	18.8
17	4.5	*2.3	1.41	10.7	38.5	6.5	5.2	22.5	24	44	25.5	13.3
18	5.3	2.05	1.33	6.2	18.8	21.5	11.2	12.2	22.5	34	24	12.4
19	4.2	1.86	1.24	3.65	14.4	10.7	18.8	9.8	32	20	17.5	16.3
20	3.05	1.76	1.16	2.7	10.9	7.4	14.0	12.4	22.5	15.1	15.1	11.8
21	2.6	1.65	1.16	2.3	7.4	7.5	24.5	9.4	20	13.5	20	14.2
22	2.4	1.85	1.16	1.96	5.5	8.1	30	21.5	18.9	12.6	18.8	11.1
23	2.3	1.65	1.16	1.76	4.5	7.0	20	31	17.6	13.5	32.5	9.8
24	2.3	1.65	1.33	1.57	33.5	5.6	13.7	31	18.8	11.8	37	9.4
25	2.3	1.76	1.49	1.49	31.5	4.6	16.3	35.5	17.5	10.7	26.5	16.5
26	2.4	1.96	1.65	1.41	11.8	13.2	15.1	28	16.3	10.1	25	12.6
27	3.9	2.5	1.49	1.41	7.2	26	11.3	24	15.1	*9.7	37	18.8
28	3.55	3.65	1.41	1.33	5.6	10.3	9.8	24	14.4	25	37	26.5
29	3.05	3.05	1.33	1.33	4.9	10.4	9.4	-	13.7	40	32.5	26.5
30	3.4	2.5	1.53	2.3	5.0	9.8	34.5	-----	13.0	39	36	24
31	2.7	2.05	-----	3.9	-----	8.1	17.5	-----	12.4	-----	32.5	-----
Total Mean:	125.00	78.90	48.26	113.06	423.75	323.65	399.4	496.7	609.7	565.1	778.6	605.4
mgd	4.03	2.55	1.61	3.65	14.1	10.4	12.9	17.7	19.7	18.8	25.1	20.2
cfs	6.24	3.95	2.49	5.65	21.8	16.1	20.0	27.4	30.5	29.1	38.8	31.3
Ac-ft	384	242	148	347	1,300	993	1,230	1,520	1,870	1,730	2,390	1,860
Calendar year 1953: Max	65			Min 1.16		Mean(mgd)	9.40		Mean(cfs)	14.5	Ac-ft	10,530
Fiscal year 1953-54: Max	46			Min 1.16		Mean(mgd)	12.5		Mean(cfs)	19.3	Ac-ft	14,010

* Discharge measurement made on this day.

ISLAND OF KAUAI

Waimea River at altitude 890 ft, near Waimea

Location--Lat 22°04'45", long 159°39'15", on right bank in Waimea Canyon, 0.5 mile upstream from confluence with Koale 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 1954. Prior to July 1, 1952, published as Waiahulu Stream near Waimea.

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

Average discharge--26 years (1925-48, 1951-54), 29.3 mgd (45.3 cfs).

Extremes--Maximum discharge during year, 2,810 mgd (4,350 cfs) Feb. 22 (gage height, 8.11 ft), from rating curve extended above 320 mgd; minimum, 7.7 mgd (11.9 cfs) Dec. 2-5, Jan. 15, 16.

1916, 1917-18, 1925-54: 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 1953-54 (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	550
3.0	65	5.5	740

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.9	8.9	8.9	11.1	8.7	7.9	17.4	16.7	536	79	36	20
2	8.9	8.7	8.9	10.3	9.5	7.9	33.5	14.4	127	19.1	26	15.1
3	8.9	8.7	8.9	10.3	8.9	7.7	19.4	13.1	57	13.1	22	16.3
4	8.9	8.9	8.9	9.7	8.7	7.9	13.7	19.4	283	12.0	80	14.4
5	9.7	8.9	8.9	9.2	8.4	9.7	42	60	235	21.5	60	13.1
6	9.2	*8.9	8.7	8.9	8.4	9.2	18.7	28.5	214	26	36	*12.7
7	8.9	8.9	8.7	8.9	12.8	8.4	13.7	17.1	120	17.5	*22	25
8	8.9	8.9	8.7	8.7	10.9	9.5	12.0	13.7	140	14.8	19.1	34
9	8.9	8.9	8.7	8.7	10.9	*8.9	11.1	12.0	130	13.7	23	15.5
10	8.9	8.9	8.7	8.7	8.0	9.2	10.6	11.4	110	13.1	16.3	25
11	8.9	8.9	8.7	8.7	24.5	8.9	10.9	10.9	60	12.7	14.8	14.1
12	8.9	8.9	8.9	8.7	10.6	52	11.8	10.3	46	12.4	14.1	12.7
13	9.2	8.9	8.9	8.7	8.9	377	9.2	10.0	36	11.7	13.7	12.0
14	8.9	8.9	8.9	8.7	8.4	37	8.2	22.5	30	11.7	13.4	12.8
15	10.3	8.9	*8.9	9.9	44	18.5	7.9	20.5	26	11.7	13.4	19.5
16	9.7	8.9	8.7	23	229	12.7	*7.9	19.3	24	34	12.7	15.9
17	9.2	8.9	8.7	11.7	113	11.1	7.9	19.8	22	254	13.1	13.1
18	8.9	8.7	8.7	10.6	14.0	75	169	12.4	20	32	15.5	12.4
19	8.9	8.7	8.7	9.5	12.4	22	61	10.9	22	15.1	12.7	12.7
20	8.9	8.7	8.7	*8.9	10.6	15.5	18.3	10.0	19	13.1	12.0	12.4
21	8.7	8.7	8.9	8.7	9.5	14.4	138	9.7	17	12.0	11.7	12.7
22	8.7	8.7	8.9	8.7	8.4	15.1	48	528	16	12.0	11.4	12.4
23	8.7	8.7	8.9	8.4	8.2	14.1	24	225	26	12.0	34.5	11.7
24	9.7	8.7	8.9	8.4	29	12.4	16.7	38	14	11.4	43	11.7
25	8.7	8.7	8.9	9.2	17.8	10.9	20.5	27	14	11.1	22	11.7
26	8.7	8.7	9.2	8.2	10.9	54	16.7	21	13	10.9	24.5	12.7
27	8.9	8.9	9.2	8.2	9.2	69	15.1	18.7	13	10.9	48	14.3
28	8.9	8.9	9.2	8.2	8.7	21.5	14.8	318	13	344	36.5	27.5
29	8.9	8.9	9.2	8.2	8.2	16.3	18.1	-	12	506	21	15.4
30	8.9	8.9	9.7	8.2	7.9	15.5	49	-	12	70	166	18.0
31	8.9	8.9	-	8.2	-	14.1	20	-	12	-	28.5	-
Total Mean:	278.6	273.7	266.8	294.5	760.4	973.3	885.1	1,538.3	2,419	1,638.5	922.9	474.8
mgd	8.99	8.83	8.89	9.50	25.3	31.4	28.6	54.9	78.0	54.6	29.8	15.8
cfs	13.9	13.7	13.8	14.7	39.1	48.6	44.3	84.9	121	84.5	46.1	24.4
Ac-ft	855	840	819	904	2,330	2,990	2,720	4,720	7,420	5,030	2,830	1,460
Calendar year 1953:	Max 444	Min 7.7	Mean(mgd) 19.6	Mean(cfs) 30.3	Ac-ft 21,960							
Fiscal year 1953-54:	Max 536	Min 7.7	Mean(mgd) 29.4	Mean(cfs) 45.5	Ac-ft 32,920							

Peak discharge (base, 1,200 mgd)--Jan. 18 (3 p.m.) 1,240 mgd (1,920 cfs), 6.38 ft; Feb. 22 (5:30 p.m.) 2,810 mgd (4,350 cfs), 8.11 ft; Mar. 1 (11 a.m.) 1,450 mgd (2,240 cfs), 6.74 ft; Apr. 28 (5 p.m.) 1,450 mgd (2,240 cfs), 6.70 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Mar. 7-31, Apr. 30 to May 7; 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 1954.

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

Average discharge.--14 years (1920-32, 1952-54), 13.2 mgd (20.4 cfs).

Extremes.--Maximum discharge during year, 1,800 mgd (2,790 cfs) Feb. 28 (gage height, 5.01 ft), from rating curve extended above 120 mgd; minimum, 1.01 mgd (1.56 cfs) Sept. 20-22, Oct. 12
 1920-32, 1952-54: Maximum discharge, 4,500 mgd (6,960 cfs) Jan. 16, 1921 (gage height, 8.44 ft), from rating curve extended above 120 mgd; minimum, 0.7 mgd (1.1 cfs) Mar. 18-20, 1925, June 14, 15, 1931.

Remarks.--Records fair.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.82	1.3	16.4
.8	1.45	1.4	23.5
.9	2.3	1.7	51
1.0	3.5	2.0	96
1.1	5.2	2.3	152
1.2	8.7	2.6	238

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.54	1.88	1.26	1.23	3.85	2.2	19.6	5.2	11.0	3.4	4.4	9.2
2	1.96	7.1	1.20	3.2	2.3	2.8	27.5	4.5	20	3.0	3.65	5.8
3	2.05	4.3	1.14	2.15	1.70	3.4	5.5	*3.4	6.8	2.3	3.85	17.0
4	2.9	2.4	1.20	1.39	1.79	27	23	8.5	66	2.05	15.0	5.0
5	2.15	*1.96	1.39	1.26	1.96	5.9	30.5	17.6	64	25	9.4	6.8
6	1.79	1.54	1.54	1.14	1.70	4.3	5.6	4.7	66	9.0	*5.8	5.6
7	1.70	1.39	1.39	1.07	4.3	*17.7	4.5	3.5	46	3.25	5.0	39
8	1.70	1.45	1.32	1.14	3.4	5.8	3.85	2.9	31	2.55	4.7	29.5
9	1.79	1.54	1.70	1.07	3.5	12.4	3.4	2.65	29	2.15	4.5	6.4
10	1.70	1.70	11.1	1.07	41	4.4	2.9	2.4	22.5	1.96	3.4	9.2
11	2.05	1.45	3.6	1.07	7.8	5.4	2.65	2.4	17.1	1.79	2.8	5.2
12	2.8	1.39	2.15	1.01	2.55	4.4	2.55	2.3	7.2	1.70	2.4	4.2
13	2.4	1.96	1.62	1.14	1.88	64	2.3	2.8	*5.2	1.62	2.3	3.65
14	5.3	2.45	1.39	2.15	1.62	8.4	2.2	39	4.5	1.62	2.2	*12.3
15	3.5	1.79	1.20	8.5	13.8	4.0	2.15	6.0	3.85	1.54	2.15	16.5
16	2.3	1.45	1.14	5.2	173	3.0	2.05	6.2	3.4	17.50	2.15	6.9
17	2.05	1.26	1.07	3.25	59	2.65	1.96	4.4	3.15	80	2.15	4.5
18	1.88	1.20	1.07	2.9	18.5	78	25.5	3.25	3.1	8.5	2.05	9.6
19	1.70	1.14	1.07	*2.65	20	5.6	9.0	2.8	3.0	3.65	1.95	11.2
20	1.54	1.20	1.01	2.2	6.6	14.8	3.25	2.65	2.65	2.8	1.88	7.1
21	1.45	1.14	1.01	1.70	3.85	9.1	66	2.55	2.4	1.88	6.2	6.2
22	1.70	1.14	1.01	1.39	2.8	4.5	17.1	166	3.0	2.4	1.96	4.2
23	2.05	1.07	1.07	1.26	2.3	3.65	5.2	76	3.0	3.4	20	3.5
24	1.88	1.48	1.32	1.20	4.7	3.25	3.65	7.7	2.4	2.65	43	4.3
25	1.70	1.88	1.39	1.14	5.6	2.9	13.9	6.4	2.2	2.3	12.1	21
26	1.62	1.62	1.70	1.07	3.4	42	4.5	19.5	2.15	2.05	5.9	5.0
27	1.79	2.2	1.54	1.07	2.4	13.8	3.4	6.7	2.05	1.88	21	16.5
28	1.79	2.55	1.39	1.07	2.15	4.4	2.9	226	2.05	166	16.1	11.0
29	2.2	1.96	1.26	1.20	2.4	3.4	17.4	--	1.96	110	5.3	6.7
30	2.3	1.62	1.26	1.68	2.4	3.15	36.5	---	1.88	7.6	46	6.1
31	1.88	1.45	-----	2.4	-----	2.65	5.0	-----	1.88	-----	9.3	-----
Total	65.16	58.66	51.51	60.20	402.05	368.95	362.51	640.00	539.57	476.06	265.28	301.15
Mean:												
mgd	2.10	1.89	1.72	1.94	13.4	11.9	11.7	22.9	17.4	15.9	8.56	10.0
cfs	3.25	2.92	2.66	3.00	20.7	18.4	18.1	35.4	26.9	24.6	13.2	15.5
Ac-ft	200	180	158	185	1,230	1,130	1,110	1,960	1,660	1,460	814	924
Calendar year 1953:	Max	178	Min	1.01	Mean(mgd)	6.09	Mean(cfs)	9.42	Ac-ft	6,810		
Fiscal Year 1953-54:	Max	226	Min	1.01	Mean(mgd)	9.84	Mean(cfs)	15.2	Ac-ft	11,010		

Peak discharge (base, 840 mgd)--Feb. 22 (9 p.m.) 1,240 mgd (1,920 cfs), 4.28 ft; Feb. 28 (8 p.m.) 1,800 mgd (2,790 cfs), 5.01 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 1954.

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.--35 years (1918-24, 1925-54), 35.4 mgd (54.8 cfs).

Extremes.--1907-54: Maximum daily discharge, 67 mgd (104 cfs) Jan. 6, Mar. 3, 6, 7, 17, 18, 24-26, 29-31, 1921; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	24	22	26.5	32	26	34.5	39	30	43	41	51
2	24	28	22	25	30	25	39	44	26	46	43	51
3	28	41	21	32	25	30	36.5	41	28	34.5	51	51
4	28	30	21	24	23	42	36.5	39	26	32	51	48
5	28	26	22	22	24	46	36.5	41	26	39	51	44
6	25	24.5	22	22	24	39	46	41	26	41	51	46
7	24	23	23	21	32.5	44	44	41	26	41	51	48
8	24	23	22	21	36.5	41	36.5	44	34	39	51	51
9	24	24	22	21	34.5	48	34.5	36.5	40	34.5	48	51
10	25	25	26.5	21	46	39	32	34.5	44	32	46	51
11	25	24	36.5	21	48	34.5	30	32	46	30	41	48
12	28	23	26	21	32	36.5	32	32	50	28	39	41
13	28	25.5	24	21	26	48	28	30	46	28	39	36.5
14	31.5	30.5	23	22	24	44	26	38.5	46	28	36.5	41
15	36.5	25	22	29	34	39	25	47	46	28	36.5	51
16	28	24	22	46	51	30	25	51	48	31	36.5	51
17	26	23	21	32	48	28	25	51	46	41	34.5	41
18	26	22	21	30	51	40	31	41	44	44	39	36.5
19	25	22	21	28	51	34.5	44	36.5	46	48	34.5	51
20	24	22	21	*27.5	51	36.5	46	32	41	39	32	41
21	24	22	21	24	39	34.5	35.5	32	39	34.5	32	50
22	23	22	21	23	30	36.5	24	28.5	43	34.5	32	40
23	25	22	21	22	28	36.5	25	37.5	48	36.5	39.5	34
24	25	22	21	22	40	34.5	24	34.5	39	32	51	32
25	24	24	22	21	51	30	40	28	34.5	30	51	40
26	24	24	23	21	36.5	32	46	26	34.5	30	51	50
27	24	23	23	21	30	36.5	41	28	32	28	51	50
28	25	26	23	21	26	36.5	36.5	44	32	36.5	51	50
29	25	25	22	21	25	36.5	34.5	-	32	41	51	46
30	28	24	24	22	28	36.5	39	-----	30	41	51	50
31	26	23	-----	25	-----	34.5	39	-----	30	-----	51	-----
Total	804.0	766.5	682.0	756.0	1,057.0	1,135.5	1,072.5	1,048.5	1,157.0	1,071.0	1,364.0	1,372.0
Mean:												
Mgd	25.9	24.7	22.7	24.4	35.2	36.6	34.6	37.4	37.3	35.7	44.0	45.7
cfs	40.1	38.2	35.1	37.8	54.5	58.8	53.5	57.9	57.7	55.2	68.1	70.7
Ac-ft	2,470	2,350	2,090	2,320	3,240	3,480	3,290	3,220	3,550	3,290	4,190	4,210
Calendar year 1953.	Max	51		Min	15.5	Mean(mgd)	30.0	Mean(cfs)	46.4	Ac-ft	33,640	
Fiscal year 1953-54:	Max	51		Min	21	Mean(mgd)	33.7	Mean(cfs)	52.1	Ac-ft	37,700	

* Discharge measurement made on this day.

Note.--No gage-height record Feb. 26 to Mar. 15, June 21-30; discharge estimated on basis of records for stations on nearby streams.

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 1954.

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.--28 years (1925-47, 1948-54), 48.5 mgd (75.0 cfs).

Extremes.--Maximum discharge during year, 6,800 mgd (10,500 cfs) Feb. 28 (gage height, 15.95 ft), from rating curve extended as explained below; no flow at times.
1921-54: 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 and those for periods of fragmentary or no gage-height record, 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Mar. 18, 19, Apr. 8-15, 20-28, Apr. 30 to May 10, June 7-30)

6.9	0	8.2	85
7.0	.3	8.6	178
7.1	1.2	9.0	330
7.2	3.1	9.5	595
7.3	5.9	10.0	940
7.4	9.8	10.5	1,290
7.6	20.5	11.0	1,850
7.9	46	11.5	2,080

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1		0	0	0.1	0	0	33	20	2,000	40	85	30	
2		1.9	0	0	0	0	87	7.7	355	20	53	24	
3		3.9	0	0	0	0	27.5	.7	89	2.6	36	30	
4		0	0	0	0	0	27.5	11.7	260	3.7	162	15	
5		0	0	0	0	0	6.6	99	85	700	30	119	5.0
6		0	0	0	0	.3	17.6	36	330	80	70	*.4	
7		0	0	0	2.3	19.8	3.1	12.6	250	10	42	30.5	
8		0	0	0	.6	.8	.8	.7	250	3.7	35	31.5	
9		0	0	0	.6	*8.3	.5	0	230	2.7	38	10.1	
10		0	5.8	0	10.1	1.0	.4	0	140	2.7	18.7	21	
11		0	3.5	0	35.5	.2	.4	0	120	2.7	10	3.0	
12		0	0	0	.4	51	.5	0	60	2.7	4.0	0	
13		0	0	0	0	623	0	0	37	2.5	2.0	0	
14		0	0	0	0	46	0	63	32	1.6	1.0	13.4	
15		0	0	1.0	29.5	17.5	0	33	16	1.2	0	41	
16		0	0	21	50.4	10.7	0	19.9	5.0	2.8	0	16.0	
17		0	0	.2	319	8.3	0	17.1	3.5	540	0	.4	
18		0	0	0	23.5	217	193	2.9	2.9	44	0	0	
19		0	0	0	35	31.5	71	.6	2.7	14.6	0	17.0	
20		0	0	0	9.3	23.5	1.8	.4	3.5	2.2	0	.8	
21		0	0	0	.4	30	379	0	4.2	.8	0	1.2	
22		0	0	0	0	14.0	98	878	3.3	0	0	.4	
23		0	0	0	0	7.8	46	735	5.0	0	0	0	
24		0	0	0	14.2	5.6	31	98	2.5	0	11.0	0	
25		0	0	0	9.1	4.5	34.5	78	1.0	0	35	29	
26		0	0	0	.6	115	10.9	93	0	0	10	5.8	
27		0	0	0	0	99	.4	70	0	0	43	8.0	
28		0	0	0	0	22	0	1,080	0	795	77	55	
29		0	0	0	0	5.1	5.5	-	0	1,090	38	2.0	
30		0	0	0	0	2.1	13.4	-----	0	210	200	9.5	
31		0	-----	-----	-----	1.0	30.5	-----	0	-----	80	-----	
Total	0	5.8	9.3	22.3	1,085.0	1,397.1	1,323.1	3,323.3	4,903.6	2,905.5	1,278.7	400.0	
Mean:	0	0.19	0.31	0.72	36.2	45.1	42.7	119	158	96.8	41.2	13.3	
mgd	0	0.29	0.48	1.11	56.0	69.8	66.1	184	244	150	63.7	20.6	
cfs	0	18	29	68	3,330	4,290	4,060	10,200	15,050	8,920	3,920	1,230	
Ac-ft	0												

Calendar year 1953. Max 1,040 Min 0 Mean(mgd) 18.4 Mean(cfs) 28.5 Ac-ft 20,650

Fiscal year 1953-54: Max 2,000 Min 0 Mean(mgd) 45.6 Mean(cfs) 70.6 Ac-ft 51,120

Peak discharge (base, 5,000 mgd).--Feb. 22 (9 p.m.) 5,720 mgd (8,850 cfs), 15.10 ft; Feb. 28 (9 p.m.) 6,800 mgd (10,500 cfs), 15.95 ft.

* Discharge measurement made on this day.

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

Note.--No gage-height record Mar. 5-17, Mar. 20 to Apr. 7, May 11 to June 6; discharge estimated on basis of records for stations on nearby streams.

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 1954.

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 present site at different datum.

Average discharge.--10 years (1944-54), 75.2 mgd (116 cfs).

Extremes.--Maximum discharge during year, 6,900 mgd (10,700 cfs) Feb. 28 (gage height, 9.94 ft), from rating curve extended above 3,000 mgd; minimum daily, 0.44 mgd (0.68 cfs) Aug. 6-9.

1943-54: 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 16.7 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 tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Nov. 10					Nov. 11 to June 30				
2.7	0	3.2	18.1	2.6	0.11	3.1	13.0	5.0	535
2.8	1.25	3.4	38	2.7	.70	3.3	28.5	6.0	1,200
2.9	3.05	3.7	81	2.8	2.0	3.5	51	7.0	2,150
3.0	6.4	4.0	145	2.9	4.4	4.0	145		
3.1	11.4			3.0	8.0	4.5	298		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.25	1.25	1.62	2.55	2.35	1.20	32.5	25	1,690	38.5	65	34
2	1.35	.98	1.78	3.0	3.05	1.00	113	15.0	415	19.8	39	23.5
3	1.62	6.4	1.62	2.35	1.78	1.35	39.5	7.8	171	2.6	27	33
4	1.78	1.47	1.62	2.15	1.35	18.2	14.4	5.1	176	3.7	101	24
5	2.15	.57	1.78	1.78	1.35	16.9	*136	106	721	33.5	81	*15.0
6	1.78	.44	1.95	1.62	1.47	3.05	32	60	358	81	58	19.1
7	1.47	.44	2.15	1.62	2.9	16.6	11.0	23.5	262	24	27	48
8	1.47	.44	2.15	1.47	7.8	6.2	5.8	11.5	262	11.5	19.8	88
9	1.47	.44	2.35	1.35	2.8	4.5	4.8	7.3	262	7.8	23.5	19.2
10	1.47	.83	2.15	1.62	90	8.4	5.5	5.8	145	6.6	13.7	15.3
11	1.62	.98	11.1	1.78	70	2.4	3.4	5.5	122	6.2	9.5	13.0
12	1.78	.83	1.52	1.62	3.4	3.05	2.4	4.8	58	5.5	7.3	8.0
13	2.15	1.10	.70	1.78	.90	6.4	2.6	4.8	39	4.8	6.6	3.8
14	1.95	1.62	.57	2.15	.91	58	2.4	58	34	4.8	8.6	4.7
15	3.6	1.62	.77	2.8	2.6	15.0	1.35	*58	23.5	4.8	5.5	27.5
16	2.35	1.10	.70	*25.5	487	7.6	1.20	28.5	15.0	5.5	5.5	26.5
17	1.47	1.10	.70	3.7	337	4.2	1.35	25	10.5	48.5	5.1	5.8
18	1.35	1.10	.83	1.35	23	*220	153	10.5	7.6	86	5.8	3.3
19	1.35	1.10	.83	1.35	25.5	46	112	6.9	6.6	17.3	5.5	12.7
20	1.35	1.35	.96	1.25	19.6	22.5	10.1	5.1	8.0	7.3	4.2	6.2
21	*1.25	1.47	1.10	1.25	5.8	39	372	2.8	10.5	5.5	3.8	4.4
22	1.25	1.62	1.10	1.10	4.2	19.1	145	682	7.3	12.9	3.55	4.2
23	1.25	1.78	1.25	1.25	1.80	14.4	58	799	15.6	9.6	28	2.8
24	1.47	1.78	1.35	1.25	*3.5	11.0	27	100	6.6	8.0	122	2.8
25	1.35	1.62	1.47	1.10	14.3	8.5	31	58	4.4	7.6	57	12.2
26	1.47	2.15	1.78	1.25	6.6	105	25	81	3.8	6.9	11.7	16.8
27	1.35	2.15	1.78	1.25	4.4	162	7.3	65	3.05	8.6	49	3.05
28	1.47	*2.15	2.15	1.25	3.8	34	7.3	*952	3.6	*637	60	38.5
29	1.62	2.55	2.85	1.10	3.8	15	3.4	-	3.05	1,240	39	6.0
30	1.62	2.15	2.35	1.10	2.1	11.0	159	-----	3.3	181	208	9.1
31	1.78	1.78	-----	1.47	-----	8.5	39	-----	2.4	-----	83	-----
Total	50.66	46.32	54.83	76.16	1,134.76	1,525.65	1,554.30	3,213.74	8,849.80	2,970.9	1,200.85	531.15
Mean:	1.63	1.49	1.83	2.48	37.8	49.2	50.1	115	156	99.0	38.7	17.7
cfs	2.52	2.31	2.83	3.81	58.5	76.1	77.5	178	241	153	59.9	27.4
Ac-ft	155	142	168	234	3,480	4,680	4,770	9,860	14,880	9,120	3,690	1,630
Calendar year 1953. Max	1,140	Min	0.44	Mean(mgd)	21.4	Mean(cfs)	33.1	Ac-ft	23,950			
Fiscal year 1953-54: Max	1,690	Min	0.44	Mean(mgd)	47.1	Mean(cfs)	72.9	Ac-ft	52,810			

Peak discharge (base, 5,600 mgd).--Feb. 22 (10 p.m.) 5,900 mgd (9,130 cfs), 9.39 ft; Feb. 28 (10 p.m.) 6,900 mgd (10,700 cfs), 9.94 ft.

* 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 1954.

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.--15 years (1912-17, 1944-54), 57.4 mgd (88.8 cfs).

Extremes.--Maximum discharge during year, 3,780 mgd (5,850 cfs) Feb. 28 (gage height, 7.73 ft), from rating curve extended above 1,200 mgd as explained below; minimum, 4.5 mgd (7.0 cfs) July 25, 26, 28, 29, Aug. 1, 2.

1943-54: 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 fragmentary or no gage-height record, which are poor. Olokele ditch diverts all low water from Olokele Stream 9 miles above station for irrigation near Makaweli.

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 28				Mar. 1 to June 30			
0.6	3.9	2.5	223	0.4	10	2.0	195
	16.8		360		18.5		325
1.5	54	3.5	535		31	3.0	480
2.0	121	4.0	750	1.0	47	3.5	680
				1.3	79	4.0	920
				1.7	138		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.0	5.0	6.6	10.2	10.6	6.8	f79	23	*727	13	39	57
2	13.3	28.5	6.6	8.1	7.7	12.7	113	20.5	194	12	28	17.6
3	10.0	12.3	6.3	8.8	6.8	8.8	36	15.0	99	11	22.5	38.5
4	18.0	6.6	6.6	7.7	6.8	*67	21.5	13.6	95	10	30.5	17.1
5	10.6	5.6	6.6	7.1	6.6	32	*47	81	177	82	24	*29.5
6	8.2	5.4	7.1	6.8	6.3	13.5	17.3	26.5	96	40	19.7	24
7	8.0	5.8	6.8	6.6	21.5	63	13.6	18.4	80	17.6	17.1	117
8	8.0	15.4	6.8	6.6	7.1	26	11.6	14.6	71	13.1	16.2	105
9	8.2	15.2	6.8	6.6	6.3	44	10.9	12.8	58	12.3	15.7	26
10	8.0	6.6	f40	6.6	53	14.1	10.2	11.6	48	12.0	14.4	29
11	11.7	5.6	12.1	6.6	24	26.5	9.8	10.9	45	12	13.1	17.6
12	9.2	5.6	6.6	6.3	8.2	11.6	9.5	10.6	28	11	12.3	13.9
13	8.2	f60	5.6	6.1	6.6	106	8.8	25	22.5	11	12.0	12.7
14	20	8.5	5.4	8.6	6.0	18.0	8.6	76	20.5	11	11.8	50
15	12.0	5.8	5.4	f20	17.5	10.9	8.2	29.5	18.5	11	11.6	84
16	9.5	5.6	5.4	*15.7	326	9.2	8.0	*31.5	16.2	45	11.6	28
17	8.5	5.6	5.4	8.0	210	8.8	7.7	24	15.7	261	11.2	17.1
18	8.2	5.6	5.6	8.2	60	*212	35	14.6	15.3	28.5	11.2	19.7
19	8.2	5.6	5.6	18.1	34	31	28.5	12.8	14.4	14.4	10.8	29.5
20	7.4	5.8	5.6	8.2	15	43	10.9	11.2	13.9	12.3	10.4	21.5
21	*6.6	6.0	5.6	6.8	11	40	77	10.9	13.1	11	10.4	15.3
22	14.2	6.0	5.6	6.3	9.2	23.5	36	150	13.5	15.7	10.8	11.6
23	6.4	6.0	5.6	6.6	8.8	20.5	19.4	200	13.5	36	56	10.8
24	5.2	13.1	6.0	6.3	*8.2	14.1	13.6	20	13.1	16.7	109	29.5
25	5.0	8.1	9.3	6.0	9.2	12.3	32	15	12.3	13.1	44	90
26	5.2	8.6	7.4	6.0	8.5	101	20.5	80	12	11.2	22.5	18.7
27	5.2	7.5	6.6	5.8	7.1	86	14.1	35	12	*10.8	44	48
28	5.0	*7.1	6.6	5.8	6.6	22.5	11.6	600	12	423	34	41
29	17.3	7.1	8.3	6.1	9.5	11.9	11.2	—	11	48	18.9	16.2
30	6.1	6.8	8.7	9.8	7.7	13.2	112	—	11	79	126	14.8
31	5.0	6.6	-----	8.3	-----	12.0	28	-----	11	-----	32	-----
Total	284.4	301.0	232.6	254.7	924.8	1,103.9	870.4	1,594.0	1,987.5	1,302.7	850.5	1,050.6
Mean:												
mgd	9.17	9.71	7.75	8.22	30.8	35.6	28.1	56.9	64.1	43.4	27.4	35.0
cfs	14.2	15.0	12.0	12.7	47.7	55.1	43.5	88.0	99.2	67.1	42.4	54.2
Ac-ft	873	924	714	782	2,840	3,390	2,670	4,890	6,100	4,000	2,610	3,220
Calendar year 1953. Max		326	Min	5.0	Mean(mgd)	18.2	Mean(cfs)	28.2	Ac-ft	20,360		
Fiscal year 1953-54. Max		727	Min	5.0	Mean(mgd)	29.5	Mean(cfs)	45.6	Ac-ft	33,010		

Peak discharge (base, 1,300 mgd).--Dec. 18 (6 a.m.) 1,360 mgd (2,100 cfs), 5.06 ft; Feb. 28

(10 p.m.) 3,780 mgd (5,850 cfs), 7.73 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. 17-24, Feb. 22-28, Mar. 26 to Apr. 4, Apr. 11-16, 21, 26, 27; discharge estimated on basis of records for nearby streams.

Hanapepe River below Manuahi Stream, 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 1954. 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.--30 years (1917-20, 1927-54), 54.9 mgd (84.9 cfs).

Extremes.--Maximum discharge during year, 2,440 mgd (3,780 cfs) Feb. 28 (gage height, 6.62 ft); minimum, 3.3 mgd (5.1 cfs) May 21, 1910-21, 1926-54: 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 May 21, 1954.

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

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 28				Apr. 29 to June 30			
0.4	5.4	1.7	99	0.4	3.4	1.4	57
.5	7.8	2.0	145	.5	5.3	1.7	90
.6	10.8	2.5	242	.6	7.6	2.0	132
.8	18.8	3.0	360	.8	14.5	2.5	228
1.1	37	3.5	520	1.1	32	3.0	355
1.4	64	4.0	710				

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.1	6.1	6.8	10.3	11.3	6.4	137	*9.3	529	5.9	11.6	*51
2	13.6	39	7.1	6.8	7.6	9.7	104	8.7	*141	5.6	7.4	8.6
3	7.8	19.4	7.1	6.1	6.4	8.4	20.5	7.8	104	5.6	6.2	30.5
4	24	6.8	7.3	6.1	*6.8	51	12.7	7.6	105	5.6	11.5	10.2
5	6.2	6.4	6.8	5.9	6.8	25	12.4	20.5	61	34	6.2	29.5
6	6.4	6.6	7.1	5.9	6.4	11.9	26.5	9.6	16.3	14.0	6.1	15.5
7	7.1	7.6	6.6	5.9	23.5	55	35	8.1	11.5	7.3	4.9	113
8	6.8	22.5	6.8	5.9	6.4	55	27	7.6	9.9	6.4	5.3	107
9	6.4	28.5	7.3	5.6	6.1	77	7.6	7.3	12.5	5.9	5.3	27.5
10	6.1	7.6	28.5	6.1	65	22	7.1	7.1	19.7	5.6	4.5	21.5
11	11.0	7.1	7.1	6.1	11.0	43	22	6.8	16.8	6.1	4.4	10.8
12	7.8	6.6	5.9	6.1	6.1	15.7	30.5	8.8	9.3	5.6	4.2	7.4
13	6.6	68	5.6	6.4	5.9	46	30	12.2	6.1	5.4	3.95	9.0
14	12.5	6.3	5.9	6.8	6.1	12.6	29.5	22.5	7.6	5.4	3.95	74
15	6.1	6.7	5.9	15.2	17.3	9.0	12.8	10.0	7.3	5.4	3.95	145
16	6.7	6.1	*5.9	9.3	379	7.8	6.6	23	7.1	*16.2	3.8	47
17	6.8	6.1	7.4	6.6	228	7.8	8.8	14.0	6.6	136	15.0	28.5
18	6.8	6.1	6.1	7.1	52	*225	16.5	7.3	6.4	15.6	22.5	25
19	6.8	6.1	5.9	15.0	33.5	28.5	11.2	6.8	6.4	6.1	22	19.3
20	6.6	6.4	5.9	7.1	13.4	26	6.8	6.8	6.4	5.4	9.0	33
21	6.8	6.1	5.9	6.8	9.5	45	37	6.8	6.1	5.4	3.4	11.2
22	10.0	6.6	5.9	6.4	7.6	57	11.8	161	6.4	65	4.3	6.7
23	7.1	7.5	6.1	7.3	6.8	46	6.1	180	5.9	75	21.5	5.8
24	7.1	19.0	7.3	6.4	6.6	11.2	8.4	13.3	5.6	10.8	41	37.5
25	6.6	7.6	9.9	6.1	7.3	9.3	16.5	9.3	5.6	7.8	11.6	116
26	6.8	6.6	7.1	6.1	6.6	72	9.6	50	5.6	6.8	13.6	16.1
27	6.8	9.3	6.4	6.1	6.4	34	7.6	25	5.6	6.6	33	59
28	6.4	7.1	6.6	6.1	6.4	14.4	7.1	579	5.6	294	20.5	38.5
29	26	7.3	7.6	7.5	14.1	11.2	7.6	-	5.6	309	9.6	15.1
30	7.1	6.8	12.4	10.8	8.1	9.9	65	-----	5.6	36	75	9.2
31	6.1	6.8	-----	10.9	-----	9.0	11.2	-----	5.6	-----	27	-----
Total	272.0	368.7	228.2	230.4	977.6	1,059.8	752.4	1,234.2	1,175.1	1,119.5	422.25	1,126.4
Mean:	8.77	11.9	7.61	7.43	32.6	34.2	24.3	44.1	37.9	37.3	13.6	37.5
cfs	13.6	18.4	11.8	11.5	50.4	52.9	37.6	68.2	58.6	57.7	21.0	58.0
Ac-ft	835	1,130	700	707	3,000	3,250	2,310	3,790	3,610	3,440	1,300	3,460
Calendar year 1953.	Max 379	Min 5.6	Mean(mgd) 17.3	Mean(cfs) 26.8	Ac-ft 19,400							
Fiscal year 1953-54.	Max 579	Min 3.4	Mean(mgd) 24.6	Mean(cfs) 38.1	Ac-ft 27,530							

Peak discharge (base, 2,300 mgd).--Feb. 28 (10:30 p.m.) 2,440 mgd (3,780 cfs), 6.62 ft.

* Discharge measurement made on this day.

South Fork Wailua River near Lihue

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

Drainage area.--22.4 sq mi.

Records available.--December 1911 to June 1954.

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.--32 years (1921-24, 1925-54), 65.1 mgd (101 cfs).

Extremes.--Maximum discharge during year, 7,700 mgd (11,900 cfs) Feb. 28 (gage height, 7.92 ft); minimum, 1.09 mgd (1.69 cfs) Sept. 21,

1911-54: 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, that of Sept. 21, 1953.

Remarks.--Records good. 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 tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Sept. 17				Sept. 18 to June 30			
0.4	0.89	1.0	5.2	0.5	0.88	1.5	16.4
.5	1.31	1.2	8.4	.6	1.30	2.0	47
.6	1.82	1.4	13.3	.7	1.87	3.0	211
.7	2.45	1.7	25.5	.8	2.6	4.0	615
.8	3.2	2.0	47	1.0	4.7	5.0	1,400

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.77	1.67	1.46	8.6	1.70	2.8	*322	2.6	1,370	3.85	35.5	86
2	2.2	2.45	1.46	3.0	1.53	2.45	134	2.3	313	3.75	19.3	27
3	2.75	5.0	1.41	1.94	1.41	2.1	40	2.15	159	3.4	11.2	36.5
4	6.0	3.0	1.31	1.64	1.36	*2.65	19.7	2.1	170	3.3	5.0	21.5
5	2.55	2.25	1.31	1.47	1.36	11.5	4.8	2.1	190	5.1	4.5	16.8
6	2.15	2.05	1.36	1.36	1.36	38.5	23	2.15	96	14.2	3.85	38.5
7	2.0	2.05	1.31	1.30	14.3	51	20.5	2.1	74	13.8	3.75	62
8	1.95	11.2	1.31	1.30	2.75	23	17.2	1.94	53	6.0	3.75	81
9	1.88	38.5	1.41	1.28	1.81	33.5	15.7	1.94	59	4.7	3.85	19.9
10	1.88	7.5	8.4	1.30	2.1	6.7	12.8	1.88	69	4.1	3.5	17.7
11	1.88	3.2	4.3	1.30	2.45	3.55	*9.9	1.81	60	3.85	3.4	28.5
12	1.82	2.7	1.88	1.26	1.94	3.6	9.7	1.87	43	3.6	3.15	32.5
13	1.82	*2.2	1.41	1.26	1.58	1.74	3.9	2.1	34	3.4	*3.05	23
14	1.95	5.0	1.27	1.36	1.53	31.5	2.6	3.15	30.5	3.3	2.85	92
15	2.0	2.4	1.27	1.70	1.84	5.5	2.4	2.95	31	3.25	2.95	116
16	2.05	1.88	1.23	1.64	60	3.25	2.25	8.2	27.5	3.5	2.95	51
17	2.0	1.62	1.18	1.58	197	2.95	2.25	15.3	13.0	34.5	2.95	32.5
18	1.88	1.56	*1.13	1.53	6.9	79	2.9	3.15	7.8	17.8	2.95	35
19	1.88	1.62	1.17	1.58	7.7	5.6	7.1	2.45	6.0	4.5	2.8	27.5
20	1.77	1.62	1.22	1.58	3.55	4.3	2.6	2.25	5.6	3.5	2.8	86
21	1.77	1.82	1.22	1.47	2.6	4.1	14.3	2.15	5.0	3.4	2.8	43
22	1.88	1.86	1.17	1.41	2.95	2.85	6.5	254	5.0	4.4	3.15	6.6
23	1.90	1.67	1.22	*1.61	4.3	3.05	3.25	410	4.8	10.8	3.6	4.6
24	1.77	2.15	1.36	1.53	2.15	2.85	2.7	8.7	4.7	4.5	4.2	5.2
25	1.67	2.45	1.36	1.36	1.94	2.7	2.95	5.9	4.5	3.6	4.1	85
26	1.88	2.05	1.30	1.30	1.87	34.5	2.8	78	4.3	3.4	3.4	26.5
27	1.88	1.95	1.30	1.26	1.81	39	2.55	40	4.2	4.2	20	62
28	1.72	1.88	1.41	1.26	1.94	16.1	2.4	1060	4.1	242	16.6	70
29	2.3	1.88	1.41	1.36	8.2	15.1	2.3	-	4.5	289	5.5	10.9
30	2.85	1.67	1.64	1.64	15.7	15.7	9.1	-----	4.1	56	75	13.4
31	1.95	1.56	-----	1.76	-----	15.7	3.1	-----	3.75	-----	41	-----
Total	65.75	140.23	50.19	51.92	355.43	639.10	707.25	1,923.24	2,860.35	764.70	303.40	1,265.1
Mean:	2.12	4.52	1.67	1.67	11.8	20.6	22.8	66.7	92.3	25.5	9.79	42.2
cfs	3.28	6.99	2.58	2.58	18.3	31.9	35.3	106	143	39.5	15.1	65.3
Ac-ft	202	430	154	159	1,090	1,960	2,170	5,900	8,780	2,350	931	3,880

Calendar year 1953. Max 369 Min 1.13 Mean(mgd) 16.0 Mean(cfs) 24.8 Ac-ft 17,930

Fiscal year 1953-54: Max 1,370 Min 1.13 Mean(mgd) 25.0 Mean(cfs) 38.7 Ac-ft 28,010

Peak discharge (base, 2,900 mgd).--Feb. 22 (11:30 p.m.) 5,170 mgd (8,000 cfs), 7.07 ft; Feb. 28

(11 p.m.) 7,700 mgd (11,900 cfs), 7.92 ft.

* Discharge measurement made on this day.

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 north-west of Lihue.

Records available.--July 1932 to June 1954 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.--22 years (1932-54), 12.2 mgd (18.9 cfs).

Extremes.--1932-54: Maximum daily discharge, 38 mgd (59 cfs) Dec. 21, 1933, Apr. 24, 1934; no flow at times.

Remarks.--Records excellent except those for days of no gage-height record, which are fair. 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.5	12.5	11.6	16.1	13.6	12.1	5.9	11.6	12.0	14.9	13.4	12.4
2	16.4	18.2	11.0	14.8	10.8	15.2	.48	10.5	10.3	11.3	13.1	11.9
3	14.6	15.8	10.5	13.1	10.5	15.0	22	7.5	11.3	10.5	13.2	12.2
4	16.4	15.3	11.6	11.6	12.8	17.9	5.7	11.6	11.6	10.2	13.7	11.9
5	14.0	14.2	11.8	11.0	11.0	16.7	13.2	12.2	11.4	19.5	13.4	12.5
6	13.3	14.3	10.7	10.7	10.2	16.4	13.4	10.2	10.7	15.2	12.8	12.2
7	13.0	16.4	10.5	11.5	15.5	17.5	13.1	9.9	10.2	13.2	12.5	12.8
8	13.0	19.9	11.7	10.7	12.8	18.4	11.9	9.9	10.9	11.9	13.1	12.8
9	11.9	18.0	12.2	10.5	13.7	18.3	11.6	9.6	12.1	11.0	12.2	11.9
10	11.6	15.3	17.1	11.6	18.0	15.3	11.3	9.6	13.1	10.5	11.6	11.9
11	14.0	14.3	12.8	10.5	13.1	15.6	11.0	9.9	12.2	10.2	11.0	11.9
12	12.8	13.4	11.6	9.9	11.3	15.9	10.7	15.6	10.5	10.2	11.0	11.6
13	12.7	16.6	10.7	11.3	10.7	20.5	10.5	18.5	10.2	10.5	10.7	11.9
14	16.0	16.4	10.5	13.0	12.3	15.6	10.5	15.8	9.9	9.9	10.7	12.8
15	15.4	14.0	10.5	15.2	16.1	14.0	10.2	14.9	9.6	9.6	10.7	11.5
16	15.3	12.5	10.3	11.9	21.5	13.4	10.2	16.2	10.2	13.6	10.5	10.1
17	13.4	12.2	10.5	12.8	19.9	13.4	10.2	14.2	11.3	17.2	12.5	9.5
18	13.4	12.8	10.5	12.6	16.9	17.0	14.3	12.5	11.0	14.3	11.0	8.8
19	12.8	12.0	10.2	15.8	17.4	13.4	12.2	11.6	11.0	13.1	10.5	8.5
20	12.2	12.8	11.9	11.3	15.7	14.6	10.8	12.8	11.0	11.9	11.3	8.8
21	11.9	12.7	10.5	10.6	14.0	13.1	14.0	12.8	10.7	11.3	11.1	9.3
22	14.3	11.9	10.7	12.4	12.5	15.9	14.0	14.8	11.0	13.0	13.1	9.6
23	12.5	13.6	10.2	12.8	11.3	15.9	12.2	11.0	10.5	12.8	14.9	11.6
24	13.4	16.4	13.7	10.7	14.0	13.4	11.6	11.4	10.5	12.2	13.0	11.3
25	a12	13.4	14.9	10.2	14.2	12.5	12.6	14.9	10.5	11.6	12.5	11.0
26	a13	12.5	13.1	10.2	12.2	17.5	11.0	14.6	10.2	11.3	17.6	10.2
27	a12	14.0	11.0	9.9	11.9	14.0	10.7	14.3	10.2	12.5	22	10.7
28	a12	13.8	12.8	10.4	11.9	12.5	10.5	20.5	11.1	14.1	22	9.9
29	a18	12.8	14.0	12.9	15.1	11.9	12.4	-	10.7	11.3	21	10.5
30	13.4	11.6	15.3	13.7	13.5	11.6	13.0	-----	10.2	12.2	24.5	11.3
31	12.8	11.3	-----	14.2	-----	11.0	10.7	-----	9.9	-----	15.0	-----
Total	420.0	440.9	354.4	373.9	414.4	465.5	329.6	358.9	336.0	370.8	425.6	333.3
Mean:												
mgd	13.5	14.2	11.8	12.1	13.8	15.0	10.6	12.8	10.8	12.4	13.7	11.1
cfs	20.9	22.0	18.3	18.7	21.4	23.2	16.4	19.8	16.7	19.2	21.2	17.2
Ac-ft	1,290	1,350	1,090	1,150	1,270	1,430	1,010	1,100	1,030	1,140	1,310	1,020
Calendar year 1953:	Max	21.5	Min	9.9	Mean(mgd)	13.1	Mean(cfs)	20.3	Ac-ft	14,710		
Fiscal year 1953-54:	Max	24.5	Min	0.22	Mean(mgd)	12.7	Mean(cfs)	19.6	Ac-ft	14,190		

a No gage-height record; discharge estimated on basis of ditchman's notes and recorded range in stage.

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 1954.

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

Average discharge.--17 years (1937-54), 7.64 mgd (11.8 cfs).

Extremes.--1936-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21.5	21.5	20.5	27.5	23	23	0.87	9.0	0.23	28	0.15	0.15
2	28	31	19.8	26	19.0	28	.23	8.4	.23	21.5	.15	.15
3	24.5	28	18.3	21.5	18.3	28	.23	10.3	.15	19.8	.23	.15
4	29.5	26	19.8	19.8	21.5	31	.15	8.2	.15	19.8	.23	.15
5	24.5	23	21.5	18.3	19.8	29.5	0	9.4	.15	28	22.5	.15
6	23	23	18.3	18.0	18.0	29.5	0	7.9	.15	26	29.5	.15
7	23	28	18.3	18.0	29.5	31	0	7.5	.15	25.5	29.5	.15
8	23	35.5	19.8	18.0	24.5	11.3	.08	7.3	.08	21.5	29.5	.08
9	21.5	33	21.5	17.1	24.5	.40	.08	7.3	.08	21.5	28	.08
10	19.8	28	29	18.0	33	.40	.08	7.3	.08	19.8	28	.08
11	26	26	20.5	17.4	26	.31	.08	7.5	0	19.8	24.5	.08
12	21.5	26	18.3	16.8	21.5	.31	.15	10.6	0	18.3	24.5	.08
13	21.5	17.6	17.7	19.8	19.8	.31	6.5	21.5	0	19.8	23	.08
14	29.5	.15	17.1	21.5	21.5	.31	9.6	23.5	0	18.3	23	.08
15	27	.08	16.8	27.5	29.5	13.0	9.4	20	0	18.3	23	.08
16	26	.08	17.1	21.5	40	28	9.4	28	0	27	23	.08
17	23	15.2	17.1	21.5	40	24.5	9.1	16.0	.08	39.5	26	0
18	24.5	21.5	16.8	21.5	34.5	11.2	21.5	9.4	18.2	33	23	0
19	23	21.5	16.8	29.5	16.1	.23	13.0	8.2	13.5	29.5	21.5	0
20	21.5	23	18.3	19.8	.31	.23	9.6	8.2	.50	26	23	0
21	21.5	22	17.1	18.3	.23	.23	11.4	9.1	.23	24.5	*23	0
22	26	21.5	17.7	19.8	.23	.23	0	25	16.2	28	28	0
23	21.5	24.5	17.1	23	17.0	.23	0	26	23	28	33	0
24	23	29.5	19.8	18.3	29.5	.31	0	.08	21.5	26	34.5	0
25	19.8	23	26	18.0	28	.31	8.3	.15	21.5	24.5	31	0
26	21.5	21.5	19.8	18.0	23	.31	9.4	.24	21.5	23	31	0
27	21.5	24.5	18.3	*17.7	23	.31	9.1	.08	21.5	24.5	33	0
28	23	23	21.5	18.3	23	.31	8.9	.82	21.5	13.8	33	0
29	33	21.5	21.5	21.5	26	.40	12.3	-	21.5	.23	31	0
30	23	19.8	26.5	23	28	.40	15.9	-----	19.8	-----	8.4	0
31	21.5	19.8	-----	24.5	-----	.40	8.9	-----	19.8	-----	.23	-----
Total	737.1	678.71	588.6	638.4	678.27	293.94	174.25	296.97	241.76	672.66	688.39	1.77
Mean	23.8	21.9	19.6	20.6	22.6	9.48	5.82	10.6	7.80	22.4	22.2	0.059
cfs	36.8	33.9	30.3	31.9	35.0	14.7	8.70	16.4	12.1	34.7	34.3	0.91
Ac-ft	2,260	2,080	1,810	1,960	2,080	902	535	911	742	2,060	2,110	5.4
Calendar year 1953. Max	40			Min	0	Mean(mgd)	15.6	Mean(cfs)	24.1	Ac-ft	17,430	
Fiscal year 1953-54: Max	40			Min	0	Mean(mgd)	15.6	Mean(cfs)	24.1	Ac-ft	17,460	

* Discharge measurement made on this day.

North Fork Waialua River at altitude 650 ft, near Lihue

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

Drainage area--6.6 sq mi.

Records available--September 1914 to June 1954.

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

Average discharge--33 years (1921-54), 47.4 mgd (73.3 cfs).

Extremes--Maximum discharge during year, 2,540 mgd (3,930 cfs) Jan. 1 (gage height, 9.72 ft), from rating curve extended above 240 mgd by test on model of station site; minimum, 0.22 mgd (0.34 cfs) Oct. 27.

1914-54: 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, that of Oct. 27, 1953.

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

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 20 to Nov. 14)

July 1 to Feb. 12					Feb. 13 to June 30				
0.6	0.21	1.7	15.5	0.9	0.23	2.5	64		
.7	.40	2.0	29.5	1.0	.66	3.0	116		
.8	.69	2.3	49	1.2	2.5	3.5	197		
.9	1.11	2.6	73	1.4	6.0	4.0	297		
1.0	1.76	3.0	116	1.7	14.5	4.5	415		
1.2	3.8	3.5	197	2.0	29.5				
1.4	7.0	4.0	297						

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.34	0.57	0.69	5.1	0.92	1.17	213	a0.57	272	6.7	32	74
2	7.6	8.0	.69	2.6	.44	4.3	76	a.57	*97	.81	28.5	52
3	1.57	4.5	.69	.83	.40	1.48	33	a.57	85	.73	28.5	62
4	11.8	1.26	.69	.49	.46	22	34	a.57	103	.73	38.5	48
5	1.58	.66	1.00	.43	.46	13.3	15.4	a.57	118	3.8	11.1	69
6	.69	.75	.72	.40	.43	12.8	9.7	a.57	82	4.7	1.40	54
7	.69	7.5	.69	.40	20	26	8.9	a.57	64	1.26	1.03	69
8	.66	31	.69	.40	.69	53	8.4	a.57	56	.73	1.79	88
9	.66	20.5	.80	.46	.46	70	8.0	a.57	43	.66	1.61	52
10	.63	2.05	.25	.49	15.4	43	7.5	*.57	52	.62	1.03	52
11	2.1	1.28	.65	.52	1.26	54	7.2	a.57	64	.62	*.73	46
12	.69	.72	.40	.52	.57	84	7.0	a.95	49	.62	.66	41
13	.60	*29.5	.34	.58	.46	184	3.5	*9.8	42	.62	.66	42
14	6.4	38	.32	.68	.46	52	a1.16	5.5	37.5	.62	.66	72
15	1.72	28.5	.32	9.0	9.6	23.5	a1.0	1.58	33.5	.62	.66	120
16	2.7	26	.32	.68	102	3.0	a.85	8.1	30.5	30.5	.66	60
17	.66	9.5	.34	.46	.75	2.65	a.75	.88	27	100	1.06	80
18	.63	1.11	*.32	.57	14.9	55	30	.73	9.4	23	.73	64
19	.66	1.01	.28	3.4	38	31	a1.1	.73	12.2	2.25	.66	56
20	.63	.96	.50	.37	43	31	a.90	.73	23	.81	.83	63
21	.60	.99	.32	.28	33.5	28.5	68	.81	23.5	.66	.73	46
22	4.0	1.11	.34	.37	30	*42	12.5	213	8.9	4.7	1.40	39
23	.66	1.62	.34	.62	11.6	41	8.4	79	1.10	3.7	22.5	36
24	.67	7.1	.43	.28	3.5	28.5	7.5	25.5	1.03	1.33	45	58
25	.90	.92	1.87	.25	1.90	26.5	4.4	53	1.03	1.18	13.1	100
26	.63	.80	.72	.25	1.55	48	a1.1	141	.96	.88	15.3	42
27	.60	1.63	.49	*.25	1.41	30	a.90	44	.88	.88	37	71
28	.63	.92	1.56	.25	1.41	25.5	a.80	359	1.32	186	23.5	48
29	18.9	.80	1.05	.48	1.94	24	a.70	-	1.15	120	12.4	41
30	.76	.72	17.7	.81	1.41	23.5	3.8	-----	.88	46	99	36
31	.63	.69	-----	23.5	-----	23.5	a.69	-----	.81	-----	77	-----
Total	72.99	230.87	60.07	40.57	413.13	1,108.20	575.95	950.56	1,341.66	545.73	499.20	1,781
Mean:												
mgd	2.35	7.45	2.00	1.31	13.8	35.7	18.6	33.9	43.3	18.2	16.1	59.4
cfs	3.84	11.5	3.09	2.03	24.4	55.2	28.8	52.5	67.0	28.2	24.9	91.9
Ac-ft	224	709	184	125	1,270	3,400	1,770	2,920	4,120	1,670	1,530	5,470
Calendar year 1953:	Max	250	Min	0.25	Mean(mgd)	13.9	Mean(cfs)	21.5	Ac-ft	15,610		
Fiscal year 1953-54:	Max	359	Min	0.25	Mean(mgd)	20.9	Mean(cfs)	32.3	Ac-ft	23,390		

Peak discharge (base, 1,200 mgd)--Jan. 1 (5 a.m.) 2,540 mgd (3,930 cfs), 9.72 ft; Feb. 22 (8 p.m.) 1,650 mgd (2,550 cfs), 8.00 ft; Feb. 26 (1 a.m.) 1,220 mgd (1,890 cfs), 6.95 ft; Feb. 28 (7:30 p.m.) 1,650 mgd (2,550 cfs), 7.96 ft.

* Discharge measurement made on this day.

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

Kanaha 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 1954.

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.--1910-54: Maximum daily discharge, 25.6 mgd (39.6 cfs) Aug. 8, 1918; no flow at times.

Remarks.--Records poor. Ditch diverts water from North Fork Waialua River, since July 4, 1940, for domestic use only. Flow regulated by headgate.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.43	0.55	0.67	1.52	0.94	0.67	0.21	0.55	0.43	0.75	0.67	2.15
2	1.09	.55	.80	1.40	.55	.80	0	.43	.21	.55	.67	3.3
3	.67	.89	.80	1.40	.43	.67	0	.43	.21	.55	.67	3.3
4	1.40	1.09	.80	.80	.55	.80	.39	.43	.21	.55	.55	3.05
5	.76	.94	.94	.80	*.43	.80	.43	.43	.21	.80	.55	3.3
6	.31	.94	.80	.67	.31	.80	.31	.21	.21	.67	.43	3.05
7	.21	1.09	.80	.67	1.09	.80	.21	.05	.21	.85	.43	3.3
8	.21	1.40	.94	.67	.94	.94	.21	0	.21	.80	.43	3.5
9	.12	1.24	1.09	.67	.94	.94	.12	.05	1.45	.80	.31	1.82
10	.12	1.09	1.98	.67	.84	.94	.12	.31	2.4	.67	.43	.94
11	.62	.94	1.58	.67	.67	.67	.12	.50	2.4	.67	.31	.67
12	.05	.80	1.09	.67	.55	.80	e.12	.43	2.4	.67	.43	.31
13	.42	1.24	.94	.67	.43	.80	e.45	1.09	2.2	.67	.43	.31
14	1.98	1.40	.80	.80	.43	.80	.67	1.09	2.2	.75	.43	.21
15	.96	1.40	.80	1.09	.80	.67	.67	.94	2.2	.80	.43	.21
16	.80	1.40	.80	.80	1.09	.67	.67	1.40	1.98	1.26	.31	.21
17	.80	1.09	.80	.67	1.09	.67	.67	1.02	1.98	2.4	.31	.21
18	.67	.80	.80	.67	.94	.80	2.55	.80	1.40	1.98	.31	.21
19	.43	.80	.80	1.24	.94	.80	1.58	.67	1.09	1.40	.47	.31
20	.43	.80	.80	.67	.94	.80	.80	.67	1.40	1.09	.55	.31
21	.43	.80	.80	.55	.80	.80	4.5	.67	1.40	.94	.55	.31
22	.67	.80	.80	.55	.80	.80	4.5	.86	1.09	1.40	.43	.31
23	.67	.67	.55	.67	.80	.80	4.0	.31	.80	1.58	.55	.21
24	.67	.80	.67	.55	.80	.80	3.75	.52	.80	1.40	.43	.21
25	.67	.55	1.24	.43	.80	.80	2.4	.80	.80	1.24	.31	.21
26	.67	.67	.80	.43	.80	.80	.94	.80	.80	1.09	.31	.21
27	.67	.80	.67	.43	.80	.80	.80	.80	.80	.94	.31	.21
28	.67	.80	.94	.47	.80	.80	.67	1.09	.80	2.15	.31	.21
29	.67	.80	.94	.55	.80	.80	.67	-	.80	1.79	.21	.21
30	.55	.67	1.09	.80	.67	.80	1.62	-----	.67	.80	.21	.21
31	.55	.67	-----	.80	-----	.67	.55	-----	.67	-----	.21	-----
Total	19.40	28.48	27.33	23.45	22.77	24.58	34.80	17.33	34.43	32.01	12.95	32.97
Mean:												
mgd	0.626	0.919	0.911	0.756	0.759	0.793	1.12	0.619	1.11	1.07	0.416	1.10
cfs	0.969	1.42	1.41	1.17	1.17	1.23	1.73	0.958	1.72	1.66	0.647	1.70
Ac-ft	60	87	84	72	70	75	107	53	106	98	40	101

Calendar year 1953. Max 4.0 Min 0 Mean(mgd) 0.781 Mean(cfs) 1.21 Ac-ft 874
Fiscal year 1953-54: Max 4.5 Min 0 Mean(mgd) 0.851 Mean(cfs) 1.32 Ac-ft 955

* Discharge measurement made on this day.
e Stage-discharge relation indefinite; discharge estimated on basis of ditchman's notes and partial record.

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 1954.

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 75 ft upstream at same datum.

Average discharge--34 years (1920-54), 29.9 mgd (46.3 cfs).

Extremes--Maximum discharge during year, 1,270 mgd (1,960 cfs) Feb. 22 (gage height, 7.45 ft), from rating curve extended above 270 mgd by test on model of station site; minimum, 6.1 mgd (9.4 cfs) Oct. 12, 13, 26-28, 1912-54: 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Nov. 7			Nov. 7 to June 30			
0.9	5.5		0.9	5.6	2.0	54
1.0	7.4		1.0	8.0	2.5	94
1.2	12.4		1.2	14.0	3.0	151
1.4	19.3		1.4	21.5	3.5	215
1.6	28.5		1.6	31	4.0	292
			1.8	42	4.5	386

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.5	7.9	7.9	8.6	9.0	a10.2	111	9.7	317	16.7	19.3	43
2	12.3	18.7	7.6	24.5	7.0	10.0	31.5	9.4	95	12.4	17.0	28
3	10.8	16.0	7.4	10.3	6.4	10.7	20	9.4	78	11.4	17.3	30
4	13.3	12.4	7.4	7.9	7.2	21.5	18.4	8.8	87	11.1	24	23.5
5	10.0	10.5	7.6	7.0	*7.0	18.2	17.3	8.8	112	32.5	21.5	25
6	9.0	9.7	7.6	6.6	6.6	16.7	14.7	8.8	61	36.5	18.1	21.5
7	9.0	12.7	7.4	6.4	50	20.5	14.0	8.6	44	21	17.0	27.5
8	9.0	19.4	9.2	6.8	13.0	20.5	13.4	8.6	39	15.1	16.6	31.5
9	8.8	19.4	9.0	6.4	10.2	23.5	12.7	8.0	41	13.4	16.9	24
10	8.1	11.9	11.4	6.4	25.5	15.8	12.4	8.0	39	12.4	17.0	21.5
11	10.0	11.0	9.5	6.4	14.0	18.1	12.1	*8.0	38.5	12.1	*13.8	20.5
12	9.2	11.0	7.9	6.3	10.2	37	11.8	8.3	31	11.4	12.7	18.9
13	8.3	16.2	7.2	6.3	8.8	143	11.4	13.4	27	11.1	12.4	19.7
14	13.1	11.9	6.8	6.6	9.1	34.5	10.8	10.0	24.5	11.1	12.1	35
15	10.2	10.2	6.8	10.7	19.8	23.5	10.5	13.0	22.5	10.8	11.8	47
16	11.3	9.2	6.8	8.6	75	19.7	10.2	27.5	21	23.5	11.8	27.5
17	9.5	8.8	6.6	7.2	87	17.3	10.2	15.6	19.3	81	12.7	32
18	9.2	8.6	6.4	7.0	30	26	23	10.2	18.5	30.5	12.1	28.5
19	9.7	8.6	6.4	13.5	24	17.3	13.4	9.1	17.7	18.1	11.4	26
20	8.6	8.8	6.4	7.6	18.9	16.2	10.8	9.4	16.6	15.5	11.1	26
21	8.1	8.6	*6.4	6.6	15.1	15.1	38.5	9.7	16.6	14.4	11.8	21.5
22	9.0	8.3	6.6	6.6	13.4	*17.0	15.8	171	18.3	22	13.4	19.3
23	8.6	10.8	6.4	8.1	a12.4	21.5	13.0	92	15.5	20	26	18.9
24	8.6	13.6	6.8	6.8	a17.7	14.7	11.8	27	14.0	18.5	30.5	26
25	7.9	10.2	9.0	6.4	a15.8	13.4	13.4	22.5	13.4	16.6	17.7	41
26	8.3	9.0	7.9	6.3	a14.0	14.7	11.4	58	13.0	14.4	23	21.5
27	8.1	10.8	7.2	6.3	a12.4	13.4	10.8	38.5	12.7	14.4	41	31.5
28	8.1	9.5	7.4	6.3	a10.8	12.1	10.2	267	12.4	52	36	25
29	13.4	9.0	7.0	7.0	a14.0	11.8	10.2	-	12.4	50	28	21.5
30	9.0	8.3	11.4	8.6	a12.4	11.4	10.5	-----	11.8	24.5	56	21
31	*8.1	8.1	-----	8.6	-----	-----	10.8	10.0	-----	11.4	-----	-----
Total	295.1	349.0	229.4	248.7	554.7	675.6	545.2	898.3	1,301.1	654.4	626.0	803.8
Mean:												
mgd	9.52	11.3	7.65	8.02	16.5	21.8	17.6	32.1	42.0	21.8	20.2	26.8
cfs	14.7	17.5	11.8	12.4	28.6	33.7	27.2	49.7	65.0	33.7	31.3	41.5
Ac-ft	906	1,070	704	763	1,700	2,070	1,670	2,760	3,990	2,010	1,920	2,470

Calendar year 1954: Max 166 Min 6.3 Mean(mgd) 16.4 Mean(cfs) 25.4 Ac-ft 18,320
 Fiscal year 1953-54: Max 317 Min 6.3 Mean(mgd) 19.7 Mean(cfs) 30.5 Ac-ft 22,030

Peak discharge (base, 1,000 mgd)--Feb. 22 (9 p.m.) 1,270 mgd (1,960 cfs), 7.45 ft; Feb. 28 (10 p.m.) 1,270 mgd (1,960 cfs), 7.42 ft.

* Discharge measurement made on this day.

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

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 1954 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.--17 years (1937-54), 11.5 mgd (17.8 cfs).

Extremes.--1936-54: Maximum daily discharge, 41 mgd (63 cfs) June 4, 1937; no flow at times in 1940, 1950-51, 1953.

Remarks.--Records fair. 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21	10.5	14.3	8.1	11.6	13.2	2.05	6.6	0.72	10.2	0.84	7.9
2	21	13.2	17.8	1.48	10.6	14.3	1.97	13.8	.66	8.4	.90	6.9
3	13.6	13.8	18.5	1.83	9.4	15.4	1.97	18.8	.60	8.4	7.3	5.8
4	4.5	14.3	15.4	2.6	9.4	16.5	5.6	18.8	.66	8.4	13.2	5.7
5	4.6	14.3	14.3	7.5	9.4	11.8	5.2	13.5	.54	8.9	13.8	5.9
6	11.2	14.3	13.2	15.4	8.9	8.4	2.6	7.9	.54	11.6	11.6	5.8
7	13.8	13.2	12.1	17.6	*11.8	12.1	2.55	8.4	.54	15.4	8.9	5.9
8	18.8	12.6	*10.7	16.5	9.4	16.5	2.45	15.1	.54	13.8	7.4	5.8
9	20	13.2	11.0	15.4	11.6	13.8	7.4	21	.54	8.9	6.4	9.4
10	18.8	13.2	12.6	14.3	14.3	10.4	10.4	23.5	.54	8.9	2.8	13.6
11	12.6	13.2	15.4	13.2	15.4	*8.4	*7.0	23.5	.60	8.9	3.6	11.0
12	8.4	15.4	14.3	14.3	15.4	8.9	6.3	21	.60	12.1	6.9	7.9
13	9.9	18.8	13.2	12.1	14.3	8.9	11.0	*13.1	.60	16.5	8.4	7.9
14	12.6	20	11.6	8.9	11.5	8.9	11.0	8.9	.66	16.5	8.4	7.9
15	12.6	15.4	9.9	9.9	11.6	10.4	9.9	13.7	.66	12.1	6.9	7.4
16	12.6	13.2	8.9	15.4	11.0	11.0	8.4	16.5	.60	7.9	6.4	7.4
17	12.6	13.2	8.4	10.4	8.9	8.9	8.4	15.4	8.4	6.9	6.4	7.4
18	12.6	10.4	8.4	8.9	8.9	5.2	8.4	15.4	15.4	5.4	10.4	7.4
19	12.6	8.9	7.9	15.4	10.4	1.02	7.9	11.8	14.3	6.9	13.2	7.4
20	12.6	11.8	7.9	13.2	12.6	1.69	12.2	8.9	13.8	10.4	12.6	6.9
21	12.1	12.1	7.9	9.4	12.1	2.2	6.7	8.4	13.2	15.4	12.6	6.9
22	*12.1	12.1	8.4	*7.9	12.1	3.1	1.41	12.6	13.8	21	11.0	10.4
23	17.6	12.1	8.4	7.9	12.6	2.3	1.55	5.8	14.3	*25	9.4	13.8
24	15.4	12.1	8.4	8.4	12.6	1.27	2.05	.78	14.3	13.6	9.4	10.4
25	12.1	12.1	9.4	7.9	11.0	1.27	2.1	.78	14.3	9.4	9.4	6.4
26	12.1	18.8	10.4	8.5	8.9	1.27	2.1	.84	14.3	12.1	9.4	5.8
27	11.6	26.5	9.9	8.4	8.9	1.20	4.7	.90	14.3	16.5	8.9	5.7
28	11.6	25	9.9	7.9	8.9	1.34	8.4	.90	13.8	14.9	8.9	5.6
29	12.1	15.4	9.9	7.9	9.4	1.97	6.6	-	14.3	3.25	8.4	5.6
30	12.6	13.2	10.4	9.9	*9.4	1.97	4.7	-----	14.3	.78	8.4	5.6
31	12.6	12.6	-----	10.4	-----	2.05	4.9	-----	13.8	-----	7.9	-----
Total	408.3	444.7	336.8	315.91	332.3	225.45	117.90	326.26	216.20	338.43	260.04	227.5
Mean:	13.2	14.3	11.2	10.2	11.1	7.27	5.74	11.7	6.97	11.3	8.39	7.58
cfs	20.4	22.1	17.3	15.8	17.2	11.2	8.88	18.1	10.8	17.5	13.0	11.7
Ac-ft	1,250	1,360	1,030	969	1,020	692	546	1,000	663	1,040	798	698

Calendar year 1953: Max 26.5 Min 0 Mean(mgd) 9.45 Mean(cfs) 14.6 Ac-ft 10,570
 Fiscal year 1953-54: Max 26.5 Min 0.48 Mean(mgd) 9.89 Mean(cfs) 15.3 Ac-ft 11,070

* Discharge measurement made on this day.

North Fork Waialua 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 1954.

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

Extremes.--Maximum discharge during year, 2,710 mgd (4,190 cfs) Feb. 28 (gage height, 7.42 ft), from rating curve extended above 930 mgd by logarithmic plotting; minimum, 1.37 mgd (2.12 cfs) Oct. 28.

1952-54: Maximum discharge, that of Feb. 28, 1954; minimum, that of Oct. 28, 1953.

Remarks.--Records good except those for periods of fragmentary or no gage-height record, which are fair. Waialua ditch diverts water between this station and station at altitude 650 ft.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.9	0.79	2.5	91
1.0	1.62	3.0	171
1.1	2.9	3.5	285
1.2	4.6	4.0	430
1.4	9.7	4.5	620
1.6	17.0	5.0	860
1.8	27	6.0	1,470
2.0	40		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.6	2.4	2.5	2.0	1.75	8.4	*305	3.25	1,000	6.0	69	130
2	4.9	3.1	2.5	2.4	1.62	2.25	129	2.65	371	6.2	62	71
3	4.8	2.9	2.4	2.15	1.54	1.88	70	2.5	242	7.5	62	89
4	4.5	2.65	2.25	1.75	1.54	16.1	54	2.5	234	8.0	63	70
5	4.3	2.9	2.4	1.62	1.54	16.7	49	2.5	1296	38.5	25.5	93
6	4.1	2.65	2.25	1.62	1.62	21	37	2.5	162	38	10.2	74
7	4.1	*2.5	2.15	1.62	32	26.5	34	2.5	127	18.6	6.5	98
8	3.8	9.9	*2.15	1.62	2.0	35.5	31	2.5	112	6.2	10.9	128
9	3.8	17.4	2.15	1.54	1.62	97	20	2.4	103	4.9	24.5	76
10	3.8	5.1	5.0	1.62	2.0	57	5.0	2.5	102	4.9	26	63
11	3.95	8.4	3.1	1.62	2.0	49	*3.65	2.5	119	8.0	20.5	60
12	3.8	10.7	1.68	1.54	1.54	42	14.2	2.5	98	7.5	13.6	*53
13	3.6	6.8	1.62	1.54	1.45	388	3.45	2.65	56	5.1	4.9	71
14	3.8	10.1	1.54	1.62	1.45	96	2.4	2.9	24.5	4.9	4.5	123
15	3.6	28.5	1.62	1.75	1.62	49	2.15	3.1	97	4.6	4.6	187
16	3.8	14.6	1.62	1.75	58	10.4	2.25	3.6	92	5.2	4.9	100
17	3.25	13.0	1.54	1.54	210	13.8	2.25	3.6	32.5	199	6.1	118
18	2.9	3.1	1.54	1.54	47	74	52	3.1	10.9	88	11.8	104
19	2.9	5.3	1.62	1.54	53	49	31	2.9	32.5	21	6.2	91
20	2.65	6.9	2.0	1.54	56	47	9.0	2.9	48	5.3	6.9	95
21	2.65	2.75	1.68	1.45	42	46	98	2.9	46	7.7	7.2	62
22	2.9	2.5	1.54	*1.54	32.5	53	34	315	10.6	16.2	6.9	42
23	2.75	2.5	1.62	1.62	6.8	64	24	*1217	7.7	*9.8	28	28.5
24	2.5	2.9	1.75	1.54	2.5	43	23.5	60	a7.4	7.7	76	66
25	2.4	3.25	1.68	1.54	2.25	40	25	73	a7.2	7.6	46	153
26	3.1	2.65	1.62	1.45	2.15	75	13.8	170	a6.6	9.7	43	75
27	2.65	2.9	1.62	1.54	2.15	54	3.95	93	a6.2	8.9	91	104
28	2.4	2.9	1.62	1.45	2.65	46	3.4	739	6.2	245	79	86
29	2.5	2.75	1.62	1.54	3.8	37	3.4	-----	6.7	245	54	64
30	2.4	2.65	2.55	1.62	*5.9	36	3.95	-----	6.4	91	164	58
31	2.25	2.5	-----	1.75	-----	34	3.4	-----	6.2	-----	122	-----
Total	104.45	189.15	61.53	50.96	581.99	1,628.53	1,092.75	1,725.45	3,476.6	1,136.0	1,160.7	2,632.5
Mean:												
mgd	3.37	6.10	2.05	1.64	19.4	52.5	35.2	61.6	112	37.9	37.4	87.8
cfs	5.21	9.44	3.17	2.54	30.0	81.2	54.5	95.3	173	58.6	57.9	136
Ac-ft	321	580	189	156	1,790	5,000	3,350	5,300	10,670	3,490	3,560	8,080
Calendar year 1953:	Max	501	Min	1.45	Mean(mgd)	26.8	Mean(cfs)	41.5	Ac-ft	30,070		
Fiscal year 1953-54:	Max	1,000	Min	1.45	Mean(mgd)	37.9	Mean(cfs)	58.6	Ac-ft	42,490		

Peak discharge (base, 1,100 mgd).--Jan. 1 (5:30 a.m.) 2,210 mgd (3,420 cfs), 6.92 ft; Feb. 22 (8:30 p.m.) 2,400 mgd (3,710 cfs), 7.14 ft; Feb. 28 (8:30 p.m.) 2,710 mgd (4,190 cfs), 7.42 ft.

* Discharge measurement made on this day.

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

f Discharge computed from partly estimated gage heights.

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 1954 in reports of Geological Survey. July 1925 to November 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder and Parshall flume. July 1925 to November 1936 water-stage recorder at site 150 ft downstream at different datum.

Average discharge.--17 years (1937-54), 3.94 mgd (6.10 cfs).

Extremes.--1936-54: 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, Sept. 17-21, 1953.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.8	5.4	5.2	5.3	6.0	5.5	10.0	3.65	12.7	8.6	0.34	0.53
2	9.2	12.3	5.0	8.1	4.6	6.0	9.8	3.5	3.8	5.2	0.22	.42
3	8.1	9.8	4.9	.06	4.3	6.6	6.0	3.45	1.40	4.2	3.0	.36
4	9.3	9.8	4.9	.03	5.8	12.1	6.0	3.45	.88	4.0	7.4	.31
5	7.4	7.8	5.2	1.92	5.0	11.4	5.5	3.45	.80	7.7	8.3	.25
6	6.4	7.4	5.0	3.8	5.8	9.8	4.6	3.5	.57	9.2	7.8	.20
7	6.9	10.6	4.6	4.2	9.8	10.4	4.4	3.45	.39	8.3	6.7	.22
8	7.4	11.4	7.2	5.0	8.5	12.0	4.2	3.45	.34	6.4	6.4	4.6
9	5.8	10.9	5.8	3.95	6.4	10.9	4.2	3.55	.28	5.5	6.9	9.3
10	5.4	7.8	8.8	5.2	12.6	6.9	3.95	3.45	.22	4.7	6.9	9.8
11	9.0	7.8	6.2	4.5	6.9	9.4	3.95	3.45	.22	4.6	5.7	8.2
12	6.4	7.8	5.7	3.95	5.2	7.5	4.2	3.7	.20	4.3	5.0	5.8
13	5.7	7.8	4.7	5.1	4.6	14.2	3.9	7.7	.17	4.3	5.0	5.8
14	10.4	7.6	4.6	5.6	5.4	10.4	3.7	6.3	.17	4.3	4.7	6.4
15	10.4	6.0	2.15	9.9	11.0	6.9	3.65	8.4	.14	4.1	4.6	6.4
16	10.4	5.4	.08	6.2	14.2	5.6	3.6	13.6	.18	6.4	5.4	6.0
17	8.5	5.1	.02	5.8	12.6	5.0	3.65	7.0	.12	12.0	9.5	6.4
18	8.2	5.7	.02	5.5	11.4	7.8	6.9	4.6	.12	10.4	6.0	6.0
19	7.4	5.4	.02	9.0	10.9	5.0	4.7	4.2	2.35	6.4	5.4	6.0
20	5.8	6.4	.02	5.2	7.5	4.6	3.9	5.0	3.95	5.4	6.5	6.4
21	5.4	5.4	.02	4.6	6.0	4.6	10.0	5.4	4.8	5.0	7.3	6.0
22	7.3	5.7	.03	5.4	5.3	5.0	6.0	11.5	6.1	8.8	8.8	5.7
23	6.0	6.7	.03	6.2	5.0	2.7	4.9	10.4	4.8	9.0	10.9	6.0
24	6.0	9.6	.03	4.5	11.3	.36	4.2	7.8	3.95	7.4	10.9	11.0
25	4.6	6.4	.03	4.2	9.3	.14	5.4	4.7	3.9	6.4	8.8	13.2
26	6.4	6.4	.03	4.2	5.8	.14	4.2	2.8	3.7	5.2	9.8	8.3
27	5.6	7.8	.03	4.2	5.1	.14	3.95	1.44	3.7	5.8	11.4	12.0
28	6.2	7.4	.03	4.3	6.0	.10	3.7	7.9	3.8	9.9	10.9	8.8
29	10.4	6.4	.03	6.8	9.5	.08	3.65	-	3.9	11.4	9.8	6.9
30	5.9	5.4	2.45	7.0	7.4	.08	3.9	-----	3.8	3.75	11.4	5.8
31	5.7	5.0	-----	7.4	-----	2.2	3.65	-----	3.65	-----	4.1	-----
Total	223.4	230.4	82.80	157.11	229.0	183.54	154.35	150.58	74.90	198.65	215.88	173.09
Mean:	7.21	7.43	2.76	5.07	7.63	5.92	4.98	5.38	2.42	6.62	6.96	5.77
mgd	11.2	11.5	4.27	7.94	11.8	9.16	7.71	8.32	3.74	10.2	10.8	8.93
cfs	686	707	254	482	703	563	474	462	230	610	662	531
Calendar year 1953: Max	14.2	Min	0.02	Mean(mgd)	5.43	Mean(cfs)	8.40	Ac-ft	6,090			
Fiscal year 1953-54: Max	14.2	Min	0.02	Mean(mgd)	5.68	Mean(cfs)	8.79	Ac-ft	6,360			

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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 1954.

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

Average discharge--17 years (1937-54), 3.09 mgd (4.78 cfs).

Extremes--1936-54: Maximum daily discharge, 48 mgd (74 cfs) Feb. 7, 1949; no flow at times.

Remarks--Records good except those for periods of no gage-height record, which are fair. Water that passes station flows into Kaupaku Stream and thence into Anahola River 2 miles below the Anahola River station.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	0	0.06	0	a3.7	0.06	34.5	0.12	3.0	15.8
2	.01	.13	0	.02	.02	0	a2.2	.06	17.1	.06	2.5	8.3
3	0	0	0	0	.02	0	a.30	.02	11.0	.06	2.15	9.1
4	.02	.02	0	0	.02	0	a.10	.02	14.9	.02	7.3	5.9
5	0	0	0	0	0	0	.06	.06	11.8	.06	.76	6.4
6	0	0	0	0	.02	0	.06	.06	8.0	.02	.06	5.0
7	0	.01	0	0	.01	0	.06	.06	5.4	.02	.06	3.2
8	0	.12	0	.02	0	0	.06	.06	4.8	.02	.06	.12
9	0	.09	0	.02	0	0	.06	.06	9.0	.02	.06	.12
10	0	0	.01	.02	0	0	.06	.06	11.1	.02	.02	.12
11	0	0	0	.02	0	0	.06	.06	6.5	.02	0	.12
12	0	.01	0	.06	0	0	.12	.06	4.5	.02	.02	.12
13	0	.06	0	.02	0	0	.06	.02	2.35	.02	.02	.12
14	0	.02	0	.02	0	0	.06	0	1.85	.02	.02	.12
15	0	0	0	.06	0	0	.12	.02	.52	.02	.06	4.9
16	.01	0	0	.02	0	0	.12	.06	.18	.06	.06	5.4
17	0	0	0	.02	0	0	.12	.02	.18	.06	.06	8.4
18	0	0	0	.06	0	2.7	.06	0	.18	.02	.02	5.9
19	0	0	0	.02	0	2.8	.02	0	.18	0	.02	5.4
20	0	.02	0	0	0	2.5	.02	0	.18	0	.06	8.1
21	0	.01	0	0	0	2.8	.02	0	.12	.02	.06	2.55
22	.02	.02	0	0	0	4.6	.02	.04	.18	0	.06	.12
23	0	.06	0	0	0	*7.6	.06	5.2	.12	.02	.12	.12
24	0	.06	0	0	0	3.05	.06	5.0	.12	0	.06	.12
25	0	0	0	.02	0	2.5	.12	7.0	.12	0	.02	.12
26	.02	0	0	.02	0	4.2	.06	a15	.18	0	.06	.12
27	.02	.01	0	.06	0	6.2	.06	13.1	.18	0	12.9	.12
28	.02	0	0	.06	0	2.5	.06	32.5	.12	.02	22	.12
29	.04	0	0	.06	0	2.15	.06	-	.12	10.6	16.5	.12
30	0	0	0	.06	0	4.8	.06	-----	.12	4.3	30	.12
31	0	0	-----	.06	-----	5.2	.06	-----	.12	-----	14.4	-----
Total	0.16	0.64	0.02	0.72	0.15	51.60	8.06	78.60	145.72	15.62	112.49	96.27
Mean:												
mgd	0.005	0.021	0.001	0.023	0.005	1.66	0.260	2.81	4.70	0.521	3.63	3.21
cfs	0.008	0.032	0.002	0.036	0.008	2.57	0.402	4.35	7.27	0.806	5.62	4.97
Ac-ft	0.5	2.0	0.1	2.2	0.5	158	25	241	447	48	345	295
Calendar year 1953. Max	38			Min	0	Mean(mgd)	1.49	Mean(cfs)	2.31	Ac-ft	1,660	
Fiscal year 1953-54: Max	34.5			Min	0	Mean(mgd)	1.40	Mean(cfs)	2.17	Ac-ft	1,560	

* Discharge measurement made on this day.

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

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 1954. May 1915 to December 1921 at site 0.3 mile upstream; records not equivalent owing to diversion.

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

Average discharge.--31 years (1921-25, 1927-54), 3.26 mgd (5.04 cfs).

Extremes.--1921-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.42	1.42	1.50	2.8	2.3	1.92	0.06	1.18	0.82	13.0	0.02	0.01
2	3.75	9.4	1.50	6.0	1.11	1.91	.06	1.11	.12	3.1	.02	.01
3	3.45	4.1	1.54	1.65	.90	1.73	.04	1.04	.06	2.1	.02	.01
4	5.4	4.9	1.26	.97	1.85	11.4	1.78	1.04	.06	1.82	.04	.01
5	2.25	2.2	1.54	*.77	1.18	5.6	2.55	1.11	.06	12.3	3.65	.01
6	1.91	2.0	1.54	.77	3.1	3.2	2.2	1.04	.04	12.7	3.35	.01
7	2.55	4.9	1.11	.77	13.2	5.0	2.0	.97	.04	5.3	3.1	2.55
8	2.35	10.2	2.6	.77	4.8	6.3	1.82	.90	.04	3.1	4.1	8.1
9	2.1	8.2	1.73	.71	1.91	6.5	1.73	.90	.04	2.55	10.6	5.7
10	1.64	2.8	3.0	.77	10.3	3.1	1.64	.90	.04	2.2	6.4	5.7
11	1.82	3.0	1.69	.77	2.95	5.7	1.73	.97	.04	2.1	3.25	4.2
12	1.64	4.4	1.42	.71	1.73	8.3	2.2	1.49	1.47	1.82	2.65	3.45
13	1.42	9.2	1.26	.94	1.42	18.0	1.50	9.9	1.91	1.82	2.55	3.6
14	3.25	5.4	1.18	1.18	1.50	6.2	1.42	1.50	1.58	1.73	2.2	9.9
15	2.65	3.35	1.26	3.35	12.1	3.8	1.34	8.6	2.9	1.58	2.0	13.4
16	4.7	2.25	1.11	1.82	29	3.0	1.34	18.8	2.8	10.0	2.0	1.58
17	2.95	2.0	1.11	1.34	10.4	2.65	1.26	4.4	2.55	29	4.6	2.65
18	2.9	2.0	1.04	1.95	5.4	3.65	5.7	2.2	3.3	10.6	2.55	1.76
19	2.35	2.2	1.04	7.0	4.6	.04	2.2	1.61	4.2	4.0	2.35	1.64
20	1.73	3.5	1.11	1.34	3.35	.04	1.42	2.2	2.35	3.1	3.95	2.65
21	1.64	2.4	1.04	.97	2.55	.04	6.3	1.73	2.35	2.65	4.0	2.85
22	2.35	2.25	1.18	.90	2.2	.04	2.0	17.2	4.9	3.1	4.2	4.0
23	1.73	3.15	1.04	1.11	1.91	.06	1.58	4.0	3.3	5.8	17.2	4.3
24	1.64	5.7	1.04	.90	5.9	.04	1.42	.04	2.2	4.6	10.6	8.6
25	1.42	2.35	1.66	.83	5.2	.04	2.6	.08	1.91	3.9	4.9	19.3
26	1.73	1.91	1.34	.83	2.25	.04	1.58	.05	1.82	2.55	21	4.9
27	2.0	4.1	.90	.71	1.82	.04	1.34	.06	1.82	2.35	5.8	7.5
28	1.42	2.55	.83	.90	2.1	.04	1.26	1.85	1.73	13.3	.04	6.5
29	4.5	1.82	.83	1.49	5.5	.04	1.18	-	1.82	4.2	.01	4.4
30	1.82	1.50	1.98	2.7	2.8	.04	1.64	-	1.73	.04	.04	3.9
31	1.50	1.42	-----	1.82	-----	.04	1.26	-----	1.64	-----	.02	-----
Total	73.98	116.57	40.78	49.54	145.33	98.50	56.15	86.87	49.64	166.41	127.21	133.19
Mean:												
mgd	2.39	3.76	1.36	1.60	4.84	3.18	1.81	3.10	1.60	5.55	4.10	4.44
cfs	3.70	5.82	2.10	2.48	7.49	4.92	2.80	4.80	2.48	8.59	6.34	6.87
Ac-ft	227	358	125	152	446	302	172	267	152	511	390	409
Calendar year 1953.	Max 29			Min 0.04		Mean(mgd) 2.98		Mean(cfs) 4.61		Ac-ft 3,340		
Fiscal year 1953-54.	Max 29			Min 0.01		Mean(mgd) 3.13		Mean(cfs) 4.84		Ac-ft 3,510		

* 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 1954.

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 an eighth of a mile upstream at different datum.

Average discharge.--35 years (1919-54), 13.1 mgd (20.3 cfs).

Extremes.--Maximum discharge during year, 2,800 mgd (4,330 cfs) Feb. 26 (gage height, 7.03 ft), from rating curve extended above 230 mgd; minimum, 1.28 mgd (1.98 cfs) Oct. 27.

1910, 1912-54: Maximum discharge, 7,940 mgd (12,300 cfs) Apr. 1, 1948 (gage height, 11.06 ft), from rating curve extended above 230 mgd; minimum, that of Oct. 27, 1953.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.86	1.6	14.8
.7	1.46	1.8	25.5
.8	2.1	2.0	34
.9	2.8	2.3	62
1.0	3.55	2.6	99
1.2	5.3	3.0	170
1.4	7.8	3.5	295

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.45	1.84	1.87	3.85	2.05	2.55	32.5	2.65	257	19.2	7.8	31
2	2.95	4.5	1.84	2.15	1.77	2.25	7.6	2.55	46	6.5	6.9	20.5
3	3.35	3.7	1.78	2.1	1.52	2.25	5.8	2.45	30	5.7	6.3	16.3
4	4.0	3.4	1.78	1.65	1.91	5.6	4.9	2.45	24	5.3	9.1	13.5
5	2.7	2.5	1.91	*1.49	1.78	4.4	4.3	2.65	21	16.9	6.9	11.5
6	2.6	2.3	1.91	1.46	2.3	3.6	3.95	2.5	14.3	18.8	6.1	9.9
7	2.65	3.1	1.78	1.52	30.5	3.9	3.8	2.4	10.7	11.7	5.6	9.9
8	2.8	4.7	2.1	1.52	5.0	4.1	3.55	2.3	8.9	7.3	7.8	8.9
9	2.6	5.3	1.97	1.40	2.95	4.4	3.4	2.25	11.8	6.3	24	8.4
10	2.4	2.8	2.4	1.52	5.8	3.1	3.15	2.15	14.2	5.7	17.9	8.0
11	2.4	2.4	2.2	1.46	4.1	3.5	3.15	2.4	8.6	5.4	8.2	7.5
12	2.25	2.45	1.91	1.40	*2.5	12.5	3.6	2.3	7.8	5.1	7.3	7.0
13	2.25	4.5	1.72	1.52	2.1	2.2	3.0	3.65	7.2	5.1	6.6	6.8
14	2.6	4.7	1.72	1.59	2.05	6.4	2.85	2.7	6.9	4.8	6.2	8.4
15	2.65	3.0	1.72	1.84	4.9	4.2	2.8	4.8	7.0	4.6	6.1	16.0
16	3.3	2.3	1.65	2.4	*31	3.55	2.7	20	6.6	6.7	5.6	8.4
17	2.65	2.05	1.52	1.72	14.3	3.25	2.65	7.3	6.4	23	5.8	11.1
18	2.4	1.97	1.46	1.72	5.7	6.2	6.4	3.6	7.0	9.8	5.6	8.4
19	2.3	2.1	1.40	4.2	4.7	4.8	4.7	*2.95	8.4	6.0	5.0	8.0
20	1.97	3.0	1.40	2.05	3.6	4.8	2.95	2.85	6.0	5.0	5.5	9.2
21	1.91	2.3	1.40	1.59	3.1	4.7	7.8	2.7	5.7	4.9	6.3	8.0
22	2.05	2.25	1.52	1.52	2.7	4.4	4.3	39.5	15.1	6.5	5.7	7.3
23	*1.93	2.1	1.46	1.59	2.5	*8.2	3.3	18.3	8.3	15.7	13.7	6.9
24	*1.84	3.75	1.46	1.46	3.1	4.8	3.0	6.9	6.2	9.7	8.9	9.2
25	1.84	2.65	1.52	1.34	3.8	4.0	3.9	9.7	5.7	7.5	7.0	25
26	1.97	2.05	1.40	1.40	2.7	4.1	3.45	132	5.3	6.1	13.5	9.9
27	2.1	*2.45	1.34	1.40	2.45	8.9	2.85	33.5	5.3	5.5	12.9	9.9
28	1.97	2.4	1.40	1.52	2.45	4.2	2.7	252	5.4	10.7	10.7	10.3
29	2.3	2.1	1.34	1.91	3.6	3.7	2.7	-	5.0	*28.5	9.2	7.8
30	2.25	1.91	5.4	2.65	3.0	4.2	4.0	-----	4.6	11.5	8.9	7.3
31	1.91	1.78	-----	1.97	-----	4.3	3.0	-----	4.4	-----	24.5	-----
Total	75.34	88.35	54.28	56.91	159.93	162.85	148.75	571.80	580.8	285.3	341.7	332.3
Mean:												
mgd	2.43	2.85	1.81	1.84	5.33	5.25	4.80	20.4	18.7	9.51	11.0	11.1
cfs	3.76	4.41	2.80	2.85	8.25	8.12	7.43	31.6	28.9	14.7	17.0	17.2
Ac-ft	231	271	167	175	491	500	456	1,750	1,780	875	1,050	1,020

Calendar year 1953. Max 215 Min 1.34 Mean(mgd) 8.19 Mean(cfs) 12.7 Ac-ft 9,160
 Fiscal year 1953-54. Max 257 Min 1.34 Mean(mgd) 7.83 Mean(cfs) 12.1 Ac-ft 8,770

Peak discharge (base, 900 mgd).--Feb. 26 (12:30 a.m.) 2,800 mgd (4,330 cfs), 7.03 ft; Feb. 28 (8 p.m.) 1,300 mgd (2,010 cfs), 5.45 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 wastewater, 1.3 miles southwest of mouth of Anahola River, and 2.5 miles northwest of Kealia.

Records available.--December 1936 to June 1954 in reports of Geological Survey. July 1925 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.--17 years (1937-54), 2.49 mgd (3.85 cfs).

Extremes.--1936-54: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times.

Remarks.--Records good except those for days of no gage-height record, which are fair. Ditch diverts water from Anahola River for irrigation of sugarcane. Flow regulated by spillways and gates.

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.35	1.69	1.92	4.1	1.92	2.8	0	3.1	0	6.2	0.03	0
2	2.45	2.3	1.92	2.45	1.80	2.6	0	3.0	0	5.8	.03	0
3	2.6	2.85	1.69	2.3	1.58	2.55	0	2.9	0	5.6	.01	0
4	3.05	2.65	1.63	1.92	1.69	3.6	0	2.85	0	5.4	.01	0
5	2.6	2.35	1.69	1.69	1.74	3.75	0	2.85	0	5.7	4.9	0
6	2.4	2.1	1.80	1.64	2.05	3.45	0	2.85	0	6.2	5.8	0
7	2.4	2.4	1.69	1.74	7.2	3.45	0	2.65	0	6.2	5.5	0
8	2.35	2.8	1.75	1.69	4.7	3.6	2.6	2.55	0	5.8	5.6	2.75
9	2.35	3.4	1.98	1.58	3.2	3.75	3.6	2.45	0	5.7	7.0	6.2
10	2.35	2.65	1.98	1.69	4.0	3.25	3.8	2.4	0	5.5	3.25	6.2
11	2.3	2.35	2.1	1.69	4.0	3.3	3.75	2.3	0	5.4	.01	6.2
12	2.15	2.35	1.86	*1.47	2.7	3.7	3.95	2.2	0	5.1	0	6.1
13	2.1	3.3	1.69	1.47	2.3	6.0	3.45	2.65	0	5.1	0	5.9
14	2.1	4.3	1.69	1.64	2.2	5.1	3.25	2.6	0	5.1	0	6.2
15	2.05	3.65	1.63	1.80	3.7	4.3	3.2	2.9	0	4.8	0	3.6
16	2.15	2.65	1.63	2.35	5.8	3.85	3.2	4.4	2.3	4.8	0	.03
17	2.25	2.4	1.47	1.86	5.9	3.6	3.05	4.6	6.1	5.3	0	.03
18	2.4	2.3	1.41	1.74	4.8	5.4	4.2	3.45	6.0	5.6	0	.01
19	2.3	2.3	1.36	3.25	4.4	7.0	4.7	3.0	6.4	6.6	0	.01
20	2.15	2.9	1.56	2.3	3.75	6.6	3.45	2.9	6.1	5.1	0	.01
21	1.98	2.45	1.36	1.80	3.35	3.0	5.6	2.85	5.9	4.7	0	.01
22	2.1	2.35	1.36	1.69	3.0	.02	4.8	4.2	6.0	5.7	0	.01
23	2.1	2.2	1.36	1.64	2.85	.01	4.0	7.0	6.2	6.6	0	.01
24	1.92	3.05	1.36	1.47	3.2	.01	3.7	7.0	5.8	5.6	3.0	2.95
25	1.86	2.9	1.47	1.36	3.45	0	4.0	1.95	5.6	5.5	a5.5	7.5
26	1.86	2.3	1.47	1.36	2.9	0	3.8	0	5.5	5.2	a5.0	6.6
27	1.86	2.6	1.36	1.47	2.65	0	3.4	0	5.2	5.1	a7.5	6.6
28	1.80	2.55	1.36	1.52	2.7	0	3.25	.01	5.6	5.5	a4.4	2.75
29	1.80	2.3	1.36	1.69	3.2	0	3.2	-	5.9	*7.5	0	1.99
30	1.92	1.98	5.1	2.35	3.2	0	3.7	-----	5.1	2.6	0	1.94
31	1.74	1.80	-----	1.98	-----	0	3.4	-----	4.9	-----	0	-----
Total	67.79	80.17	51.81	58.70	99.93	84.69	89.05	81.61	88.6	165.0	58.54	73.60
Mean:												
mgd	2.19	2.59	1.73	1.89	3.33	2.73	2.87	2.91	2.86	5.50	1.89	2.45
cfs	5.39	4.01	2.68	2.92	5.15	4.22	4.44	4.50	4.43	8.51	2.92	3.79
Ac-ft	208	246	159	180	307	260	273	250	272	506	180	226
Calendar year 1953. Max	8.0				Min 0	Mean(mgd)	2.94	Mean(cfs)	4.55	Ac-ft	3,300	
Fiscal year 1953-54: Max	7.5				Min 0	Mean(mgd)	2.74	Mean(cfs)	4.24	Ac-ft	3,070	

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and observer's notes.

Kalihwai ditch near Kilauea

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

Records available--June 1934 to June 1954.

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

Average discharge--19 years (1934-42, 1943-54), 2.58 mgd (3.99 cfs).

Extremes--1934-54: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.23	1.16	0.82	0.86	0.76	0.25	0.19	0.95	1.46	3.45	1.96	0.82
2	1.62	2.85	.70	1.29	.59	.25	.02	1.02	1.70	1.70	1.70	.70
3	1.54	2.05	.64	.95	.47	.25	0	.82	1.54	1.46	1.46	.58
4	1.92	1.62	.64	.78	.76	.25	0	.82	.58	1.46	2.0	.5
5	1.30	1.16	.76	.64	.64	.25	0	.88	.47	4.5	1.54	.5
6	1.23	1.16	.76	.64	.95	.25	0	.88	.37	2.55	1.46	.4
7	1.23	1.02	.70	.64	7.5	.40	0	.82	.37	1.87	1.38	.4
8	1.09	1.58	.70	.64	1.78	.42	0	.70	.37	1.62	3.25	.4
9	1.02	1.62	.70	.64	1.30	.37	0	.70	.42	1.46	5.1	.4
10	1.02	1.09	1.23	.70	2.8	.29	0	.64	.47	1.46	3.75	.3
11	1.02	.88	.82	.64	1.72	.29	0	.64	.47	1.54	2.15	.3
12	.95	1.09	.70	*.58	1.16	.33	.61	.92	.52	1.30	1.78	.3
13	.95	3.25	.70	.52	.95	.29	1.46	3.95	.58	1.30	1.54	.3
14	1.23	1.62	.70	.52	1.02	.25	1.46	1.23	.64	1.23	1.46	.8
15	1.16	1.23	.70	.79	3.15	.11	1.46	2.15	.64	1.16	1.46	4.6
16	1.23	1.09	.64	.76	12.1	.04	1.30	10.7	1.52	1.42	1.46	3.0
17	1.30	1.02	.58	.78	5.9	.11	1.30	4.2	2.65	3.05	1.30	3.9
18	1.38	.88	.52	.70	1.06	.17	1.69	1.96	2.75	2.7	1.16	3.0
19	1.30	.88	.47	1.42	.42	.11	1.38	1.54	2.65	1.54	1.16	2.7
20	1.09	.88	.58	.76	.33	0	1.23	1.78	2.45	1.30	1.30	4.5
21	1.02	.82	.47	.64	.33	0	1.62	1.54	2.45	1.30	1.51	2.3
22	1.09	.82	.47	.64	.37	0	1.23	10.5	2.25	1.30	1.87	1.9
23	1.09	.82	.52	.70	.33	.08	1.16	6.7	2.05	1.38	6.5	1.8
24	1.23	.95	.64	.64	.29	.04	1.16	4.3	1.78	1.46	5.9	3.5
25	1.16	.88	.64	.58	.29	0	1.23	3.6	1.62	1.46	3.55	8.9
26	1.30	.88	.58	.52	.29	0	1.02	15.3	1.54	1.16	4.4	3.0
27	1.23	.88	.58	.52	.25	.06	.95	7.3	1.46	1.16	6.9	4.4
28	1.23	.88	.52	.52	.25	.02	.95	3.4	1.38	1.58	13.1	3.5
29	1.72	.88	.52	.64	.25	0	.88	-----	1.46	8.1	11.6	2.7
30	1.30	.82	.75	.76	.25	0	1.30	-----	1.54	3.05	17.1	2.5
31	1.16	.70	-----	.64	-----	0	.95	-----	1.46	-----	.82	-----
Total	38.34	37.45	19.75	22.01	48.25	4.88	24.55	89.97	40.21	60.10	111.62	62.90
Mean:												
mgd	1.24	1.21	0.658	0.710	1.61	0.157	0.792	3.21	1.30	2.00	3.60	2.10
cfs	1.92	1.87	1.02	1.10	2.49	0.243	1.23	4.97	2.01	3.09	5.57	3.25
Ac-Ft	118	115	61	68	148	15	75	276	123	184	343	193
Calendar year 1953:	Max 12.1	Min 0				Mean(mgd)	1.41	Mean(cfs)	2.18	Ac-ft	1,580	
Fiscal year 1953-54:	Max 17.1	Min 0				Mean(mgd)	1.53	Mean(cfs)	2.37	Ac-ft	1,720	

* Discharge measurement made on this day.

Note.--No gage-height record June 4-30; discharge estimated on basis of records for Ka Loko ditch.

Ka Loko ditch near Kilauea

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

Records available.--August 1932 to June 1954.

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

Average discharge.--21 years (1933-54), 3.59 mgd (5.55 cfs).

Extremes.--1932-54: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.46 mgd (0.71 cfs) Nov. 21, 22, 1949.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.02	0.88	0.81	1.44	0.81	0.88	7.9	0.88	46	6.7	1.98	13.3
2	1.56	2.65	.81	.88	.68	.88	3.55	.81	11.8	2.15	1.80	6.2
3	1.54	1.57	.81	.75	.63	.95	1.89	.75	8.3	1.80	1.63	5.5
4	1.86	1.40	.75	.68	.68	3.1	1.54	.75	*6.3	1.63	2.7	4.3
5	1.09	.95	.75	.68	.68	2.15	1.31	.81	5.8	5.3	1.98	3.8
6	1.09	1.02	.75	.63	1.18	1.54	1.16	.75	4.7	5.5	1.71	3.45
7	1.23	1.36	.75	.57	9.2	2.25	1.13	.68	3.8	3.15	1.63	4.2
8	1.16	2.65	.88	.57	1.96	1.98	1.09	.68	3.25	2.15	3.25	3.7
9	1.02	2.5	.81	.57	.95	1.98	1.02	.68	4.7	1.80	8.9	3.5
10	1.02	1.16	1.34	.63	2.95	1.23	1.02	.68	8.0	1.71	4.6	3.25
11	1.02	1.95	.75	.63	1.28	1.39	1.07	.75	3.35	1.54	2.15	2.95
12	.95	1.20	.75	*.57	.81	4.4	1.37	.68	3.25	1.47	1.89	2.65
13	.95	3.45	.75	.52	.68	4.9	1.02	1.29	2.85	1.47	1.80	2.75
14	1.23	2.85	.75	.57	.68	1.96	.95	.75	2.65	1.39	1.63	4.3
15	1.09	1.39	.75	.66	2.95	1.39	.88	2.4	2.65	1.39	1.54	6.7
16	1.39	.95	.75	.65	11.2	1.16	.88	10.1	2.55	1.54	1.54	4.1
17	1.16	.88	.68	.57	4.4	1.09	.81	2.75	2.35	4.2	1.63	5.3
18	1.09	.81	.68	.57	1.89	3.0	2.3	1.16	3.0	3.0	1.47	4.0
19	1.09	.88	.68	1.73	1.80	1.47	1.31	.88	3.2	1.54	1.39	3.7
20	.95	1.16	.68	.63	1.39	1.47	.95	1.02	2.35	1.39	1.51	5.2
21	.95	.81	.68	.63	1.09	1.54	1.54	.81	2.25	1.47	1.98	3.25
22	.95	.95	.68	.63	.95	1.74	1.09	7.2	3.3	1.80	2.05	2.75
23	.95	.81	.68	.63	.88	3.15	.88	4.4	2.75	5.8	5.0	2.75
24	.95	1.83	.68	.63	1.09	1.47	.81	2.25	2.05	3.2	3.85	4.4
25	.88	1.02	.68	.63	1.54	1.16	1.05	3.15	1.89	2.35	2.75	11.3
26	.88	.88	.68	.63	.95	1.52	1.02	17.0	1.80	1.71	4.8	3.45
27	.88	.88	.63	.57	.81	4.2	.81	11.5	1.80	1.54	6.2	5.0
28	.88	.88	.68	.57	.88	1.39	.81	36	1.80	3.45	5.1	3.9
29	1.31	.81	.63	.83	1.56	1.16	.81	-	1.71	10.6	4.1	3.05
30	.95	.81	4.2	.95	1.16	1.74	1.95	-----	1.63	2.75	25	2.95
31	.88	.81	-----	.75	-----	1.38	.95	-----	1.63	-----	9.2	-----
Total	33.97	41.15	25.90	21.95	57.71	59.62	44.87	111.56	153.46	85.49	116.76	135.65
Mean:												
mgd	1.10	1.33	0.863	0.708	1.92	1.92	1.45	3.98	4.95	2.85	3.77	4.52
cfs	1.70	2.06	1.34	1.10	2.97	2.97	2.24	6.16	7.66	4.41	5.83	6.99
Ac-ft	104	126	79	67	177	183	138	342	471	262	358	416
Calendar year 1953.	Max	24.5	Min	0.52	Mean(mgd)	2.23	Mean(cfs)	3.45	Ac-ft	2,500		
Fiscal year 1953-54:	Max	46	Min	0.52	Mean(mgd)	2.43	Mean(cfs)	3.76	Ac-ft	2,720		

* Discharge measurement made on this day.

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 1954.

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

Average discharge.--21 years (1933-54), 2.91 mgd (4.50 cfs).

Extremes.--1932-54: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times each year.

Remarks.--Records good. Ditch diverts water from Puu Ka Ele Stream 0.8 mile south of station. Water used for irrigation of sugarcane in vicinity of Kilauea. Flow regulated by wasteway gates.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.39	1.16	1.23	1.59	1.23	1.39	0.56	1.23	2.95	3.65	2.75	1.62
2	1.80	1.39	1.16	1.16	1.16	1.39	0	1.23	2.80	2.25	2.45	.05
3	1.47	1.67	1.09	1.09	1.09	1.54	0	1.23	3.65	2.05	2.25	0
4	1.99	1.47	1.09	1.09	1.23	3.05	0	1.16	5.3	1.98	2.65	0
5	1.54	1.39	1.16	1.02	1.09	2.35	0	1.23	5.5	3.8	2.35	0
6	1.47	1.54	1.09	1.02	1.35	2.3	0	1.23	4.9	3.45	2.15	0
7	1.54	1.39	1.02	1.09	6.4	2.85	0	1.16	4.3	2.85	2.15	0
8	1.54	2.5	1.16	1.09	1.98	2.45	0	1.16	3.9	2.35	4.7	0
9	1.47	2.4	1.16	1.09	1.39	2.25	0	1.16	4.4	2.15	6.1	0
10	1.39	1.54	1.39	1.09	2.55	1.98	0	1.16	4.4	2.05	6.0	2.0
11	1.39	1.31	1.16	1.09	1.80	1.98	0	1.31	3.8	2.05	3.15	3.45
12	1.31	1.39	1.09	*1.09	1.31	3.0	.47	1.23	3.45	1.98	2.75	3.05
13	1.31	2.4	1.02	1.16	1.23	3.8	1.36	1.47	3.25	1.98	2.65	3.15
14	1.65	2.4	1.02	1.16	1.23	2.25	1.47	1.23	3.05	1.89	2.45	4.4
15	1.47	1.71	1.02	1.31	2.45	1.98	1.39	1.84	2.95	1.89	2.35	5.9
16	1.63	1.47	.95	1.23	9.2	1.80	1.39	6.4	2.85	2.05	2.25	5.1
17	1.54	1.47	.95	1.23	5.1	1.71	1.31	3.85	2.65	2.75	2.25	5.4
18	1.47	1.39	.95	1.23	2.65	3.2	2.2	1.89	3.3	2.55	2.05	5.1
19	1.47	1.39	.95	1.72	2.45	1.98	1.80	1.63	3.55	1.98	1.98	4.7
20	1.31	1.39	1.02	1.23	1.98	1.89	1.39	1.63	2.75	1.80	2.15	5.6
21	1.23	1.31	.95	1.16	1.80	1.98	1.90	1.63	2.75	1.80	2.25	4.3
22	1.31	1.39	1.02	1.23	1.63	2.2	1.47	5.8	2.75	1.98	2.25	3.8
23	1.23	1.31	1.02	1.31	1.54	2.95	1.39	4.9	2.65	4.3	4.1	3.7
24	1.23	2.0	1.02	1.16	1.54	2.15	1.31	3.15	2.35	3.05	3.45	4.7
25	1.23	1.39	1.16	1.16	1.71	1.98	1.81	2.95	2.25	2.55	3.15	8.7
26	1.16	1.31	1.09	1.16	1.47	.74	1.54	1.81	2.25	2.15	3.05	4.6
27	1.16	1.39	1.02	1.16	1.39	0	1.39	1.01	2.15	1.98	5.1	5.5
28	1.23	1.39	1.09	1.16	1.39	0	1.31	2.75	2.05	2.65	4.0	4.7
29	1.95	1.31	1.09	1.31	1.80	0	1.23	-	2.05	6.9	3.7	4.0
30	1.23	1.16	2.3	1.31	1.47	0	1.87	-----	2.05	5.45	8.4	3.8
31	1.16	1.16	-----	1.23	-----	0	1.31	-----	1.98	-----	1.11	-----
Total	44.23	48.49	33.44	37.13	64.61	57.14	29.67	58.43	96.98	78.21	98.14	97.32
Mean:												
mgd	1.43	1.56	1.11	1.20	2.15	1.84	0.964	2.09	3.13	2.61	3.17	3.24
cfs	2.21	2.41	1.72	1.86	3.53	2.85	1.49	3.23	4.84	4.04	4.90	5.01
Ac-ft	136	149	103	114	198	175	92	179	298	240	301	299
Calendar year 1953. Max			10.2	Min	0	Mean(mgd)	1.50	Mean(cfs)	2.32	Ac-ft	1,680	
Fiscal year 1953-54: Max			9.2	Min	0	Mean(mgd)	2.04	Mean(cfs)	3.16	Ac-ft	2,280	

* Discharge measurement made on this day

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 1954 in reports of 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--22 years (1932-54), 21.4 mgd (33.1 cfs).

Extremes--1932-54: 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 Wailua 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.4	16.4	16.0	18.5	17.2	16.2	13.7	2.1	0.80	22.5	20.5	30
2	21.5	24	15.6	17.2	14.5	19.2	9.2	2.1	.30	15.6	19.6	27
3	19.2	21.5	14.8	14.8	14.1	19.6	3.8	2.1	.94	14.5	20.5	28.5
4	21	19.6	16.0	14.1	16.0	22.5	4.8	2.1	1.82	14.5	25	25
5	18.0	17.2	17.0	13.7	14.8	21	3.55	2.4	10.8	25	23	28.5
6	16.8	16.8	15.2	13.7	14.1	20.5	3.35	2.1	26	19.6	21.5	25.5
7	17.6	20.5	14.8	13.5	21	22.5	3.1	2.1	21.5	17.5	20	28
8	18.0	26	16.8	13.7	18.0	23	2.9	2.1	19.2	16.0	20.5	28.5
9	16.8	24.5	17.7	12.9	18.4	23.5	2.9	2.4	8.1	14.8	20.5	28
10	16.4	20	22	14.1	23	20.5	2.9	2.4	21	14.8	19.2	25
11	20.5	19.6	14.6	13.3	18.0	21.5	2.7	2.4	32	14.5	17.6	24
12	17.6	19.6	14.8	12.9	16.0	21	2.7	4.0	24	14.1	16.8	23
13	16.8	23	13.7	16.2	14.8	25.5	*2.5	6.4	21	14.5	16.8	23
14	23	21	13.7	16.8	18.4	18.4	2.5	5.8	19.2	14.1	16.4	29.5
15	20.5	18.4	13.7	19.6	21.5	16.0	2.5	4.3	16.4	13.7	16.8	35.5
16	20	16.8	13.3	16.0	28.5	14.8	2.5	6.4	17.2	23.5	16.8	27
17	18.8	16.4	12.9	16.8	25.5	14.1	2.5	3.5	16.8	38	21.5	28.5
18	18.8	16.8	12.9	16.0	*22.5	17.6	8.3	2.25	16.4	30.5	17.2	28
19	18.4	16.4	12.9	20.5	22	14.1	2.7	1.91	16.4	23	16.4	26
20	17.6	17.2	14.5	15.2	20	14.1	2.5	1.91	15.6	20	16.8	28
21	16.8	16.4	13.3	14.5	18.4	13.7	9.9	2.1	16.4	18.8	*16.4	23
22	19.4	16.4	13.7	15.6	16.8	16.8	3.1	8.7	16.4	18.8	21	21
23	16.8	17.6	13.7	17.2	16.4	17.9	2.7	2.9	16.0	18.8	29.5	20
24	18.4	21.5	16.0	14.1	20	14.8	2.5	.39	15.0	18.8	32.5	26
25	16.0	18.0	18.4	13.7	18.7	14.1	2.9	.67	14.8	18.0	25.5	30.5
26	17.2	16.8	16.0	13.7	16.8	16.8	2.5	1.17	14.8	16.8	28	21.5
27	18.0	18.8	14.5	13.7	16.0	14.8	2.4	.30	14.5	18.0	33	29.5
28	16.0	18.0	16.8	15.3	16.0	13.7	2.1	2.4	14.5	32.5	33	23.5
29	*24	16.4	16.8	16.4	18.8	33.3	2.4	-	14.5	33	29	23
30	17.2	15.6	18.7	17.6	17.6	12.9	2.9	-----	14.1	24	35.5	21.5
31	16.8	15.6	-----	18.4	-----	12.9	2.1	-----	14.1	-----	31	-----
Total	573.3	582.8	460.8	479.7	551.8	547.3	117.10	79.40	472.56	598.2	697.8	784.0
Mean:												
mgd	18.5	18.8	15.4	15.5	18.4	17.7	3.78	2.84	15.2	19.9	22.5	26.1
cfs	26.6	29.1	23.8	24.0	28.5	27.4	5.85	4.39	23.5	30.8	34.8	40.4
Ac-ft	1,750	1,790	1,410	1,470	1,690	1,680	359	244	1,450	1,840	2,140	2,410
Calendar year 1953. Max	28.5			Min 1.54		Mean(mgd)	13.1	Mean(cfs)	20.3	Ac-ft	14,690	
Fiscal year 1953-54: Max	36			Min 0.30		Mean(mgd)	16.3	Mean(cfs)	25.2	Ac-ft	18,230	

* Discharge measurement made on this day.

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 1954.

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.--35 years (1918-51, 1952-54), 46.2 mgd (71.5 cfs).

Extremes.--Maximum discharge during year, 4,880 mgd (7,550 cfs) Jan. 1 (gage height, 10.12 ft), from rating curve extended above 70 mgd as explained below; minimum, 7.1 mgd (11.0 cfs) Sept. 21, Oct. 11-13, 25-29.

1914-54: Maximum discharge, at least 9,200 mgd (14,200 cfs) Jan. 3, 1952 (gage height, at least 13.0 ft, from floodmark), from rating curve extended above 70 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.

Remarks.--Records good except those above 70 mgd, 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.

Revisions (fiscal years).--WSP 1289: 1948(M).

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge in million gallons a day)

July 1 to Dec. 31				Jan. 1 to June 30			
0.1	5.3	0.8	34.5	0.07	8.0	1.0	52.5
.2	7.9	1.1	56	.1	9.0	1.5	96
.3	11.0	1.4	82	.2	12.1	2.0	154
.4	14.5	2.0	150	.4	19.7	2.5	225
.5	18.7	2.5	225	.6	28.8	3.0	325
.6	23.5			.8	39.8		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.4	8.2	8.2	12.7	11.2	11.4	*212	20.5	262	22	17.3	52
2	17.4	33.5	7.9	27	8.2	15.8	66	20.5	101	11.5	15.3	33.5
3	13.1	24.5	7.6	10.7	7.6	17.6	34.5	19.7	99	10.2	15.0	37
4	18.8	14.7	7.9	8.5	9.1	39	38	19.3	110	9.9	26	27
5	11.1	10.7	8.5	7.9	8.2	29.5	31.5	21.5	131	34	22	38
6	9.1	9.8	7.6	7.6	8.5	33.5	27.5	19.7	64	14.8	18.9	26
7	9.4	18.6	7.4	7.6	8.3	40	28.5	18.9	46	11.8	16.5	43
8	9.4	35.5	9.1	7.6	16.7	40	25	18.9	43	10.2	15.3	46
9	8.8	27	9.4	7.4	12.4	48	23.5	18.5	56	9.3	19.0	31.5
10	8.5	11.4	31.5	7.6	42	23	23	18.5	51	9.0	16.5	28.5
11	10.7	12.6	13.1	7.4	15.5	30.5	23	18.9	40	9.0	12.8	24
12	9.1	17.8	9.4	7.1	10.4	91	*25	28.5	28	8.8	11.8	21
13	8.5	45	8.5	10.4	9.1	217	22	50	23.5	8.8	11.5	21.5
14	18.4	17.9	7.9	8.8	9.4	44	21.5	36	20.5	8.8	10.9	40
15	11.0	12.0	7.9	19.2	34	29	21.5	36	18.9	8.4	11.2	87
16	11.8	10.1	7.9	10.1	14.2	24	21	63	17.3	103	11.2	30
17	11.2	9.8	7.6	9.1	9.2	21	21	32.5	16.1	220	15.4	30.5
18	10.8	9.4	7.6	8.5	*42	42	54	24	15.7	44	11.8	31.5
19	9.8	8.8	7.4	27.5	38	19.6	25	22.5	15.7	21.5	10.6	26.5
20	8.8	10.1	7.6	8.8	24.5	18.7	22	23.5	14.3	16.1	*10.9	27
21	8.5	9.4	7.4	7.6	17.4	17.4	68	24	14.3	13.9	11.2	19.3
22	12.1	9.1	7.6	7.9	14.5	37	27	307	15.9	14.6	15.0	16.9
23	8.5	15.0	*7.4	10.7	13.1	34.5	24	122	13.2	17.8	43	15.7
24	10.0	20.5	8.8	7.6	2.4	20	22.5	46	11.8	15.3	57	26.5
25	8.2	10.7	13.7	7.4	19.6	17.0	*27.5	85	11.2	13.5	24.5	51
26	8.8	9.4	9.8	7.4	13.8	24	22.5	161	10.9	11.8	51	17.7
27	8.8	12.3	8.2	7.4	12.4	20	21.5	61	10.6	11.8	78	36
28	8.5	10.4	10.7	7.6	11.7	15.3	21	297	*10.9	150	65	24
29	26	9.4	9.9	8.8	17.3	14.2	21.5	-	10.9	77	45	21.5
30	*9.1	8.5	18.4	10.4	14.2	13.8	25.5	-----	10.2	23	137	21
31	8.1	8.2	-----	11.0	-----	13.4	20.5	-----	10.2	-----	64	-----
Total	341.7	470.3	291.9	315.3	761.8	1,061.2	1,063.0	1,633.9	1,303.1	919.8	890.6	951.1
Mean mgd	11.0	15.2	9.73	10.2	25.4	34.2	34.3	58.4	42.0	30.7	28.7	31.7
cfs	17.0	23.5	15.1	15.8	39.3	52.9	53.1	90.4	65.0	47.5	44.4	49.0
Ac-ft	1,050	1,440	896	968	2,340	3,260	3,260	5,010	4,000	2,820	2,730	2,920
Calendar year 1953	Max 360	Min 7.1	Mean(mgd) 28.3	Mean(cfs) 43.8	Ac-ft 31,680							
Fiscal year 1953-54	Max 307	Min 7.1	Mean(mgd) 27.4	Mean(cfs) 42.4	Ac-ft 30,690							

Peak discharge (base 2,000 mgd).--Jan. 1 (5:30 a.m.) 4,880 mgd (7,550 cfs), 10.12 ft; Feb. 26 (1 a.m.) 2,240 mgd (3,470 cfs), 7.42 ft.

* Discharge measurement made on this day.

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 1954.

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

Average discharge.--22 years (1932-54), 4.53 mgd (7.01 cfs).

Extremes.--Maximum discharge during year, 153 mgd (237 cfs) Apr. 29 (gage height, 3.02 ft), from rating curve extended above 18 mgd; minimum, 2.0 mgd (3.1 cfs) Dec. 2-12, 1931-54; Maximum discharge, 665 mgd (1,030 cfs) Aug. 15, 1950 (gage height, 4.55 ft), from rating curve extended above 18 mgd; 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 1953-54 (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		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9	2.9	2.55	2.4	2.1	2.1	2.8	2.8	28	5.2	6.5	4.7
2	2.9	2.9	2.55	2.3	2.1	2.0	2.8	2.55	11.1	3.95	5.4	4.2
3	2.9	2.9	2.55	2.3	2.1	2.0	2.55	2.4	6.5	3.4	4.9	3.95
4	2.9	2.9	2.55	2.2	2.1	2.0	2.85	2.4	15.0	3.3	6.3	3.8
5	2.9	2.9	2.55	2.2	2.1	2.0	3.05	3.8	23	4.0	6.1	3.7
6	2.9	2.9	2.55	2.2	2.1	2.0	2.65	3.7	14.8	3.8	5.6	3.55
7	2.9	2.9	2.55	2.2	2.1	2.0	2.55	*3.15	11.6	3.4	5.2	3.8
8	2.9	2.8	2.55	2.2	2.1	2.0	2.3	2.65	11.6	3.15	5.6	3.95
9	2.9	2.8	2.4	2.2	2.1	2.0	2.3	2.55	9.4	3.05	9.9	3.95
10	2.9	2.8	2.4	2.2	2.65	2.0	2.2	2.55	7.3	2.9	8.6	3.95
11	2.9	2.8	2.4	2.2	2.3	2.0	4.1	2.55	5.9	2.8	5.9	3.7
12	2.9	2.65	2.4	*2.2	2.1	3.05	5.8	2.3	5.0	2.8	5.0	3.55
13	2.9	2.65	2.4	*2.2	2.1	*11.6	3.7	2.3	4.7	2.8	4.5	3.55
14	2.9	2.65	2.4	2.2	2.1	3.95	3.05	2.65	4.7	2.65	4.1	3.7
15	2.9	2.65	2.4	2.2	2.9	3.05	2.65	2.9	3.95	2.65	3.95	3.7
16	2.9	2.65	2.3	2.2	4.9	2.55	2.55	3.05	3.55	3.2	3.7	3.55
17	2.9	2.65	2.3	2.2	3.55	2.3	2.4	2.8	3.3	5.5	3.55	3.4
18	2.9	2.55	2.3	2.2	2.55	3.7	5.0	2.55	3.7	3.8	3.55	3.4
19	2.9	2.55	2.3	2.1	2.3	2.65	4.2	2.4	4.7	3.3	3.4	3.4
20	2.8	2.55	2.3	2.1	2.2	2.55	3.3	2.4	3.8	*3.15	3.4	*3.3
21	2.8	2.55	2.3	2.1	2.1	2.4	3.3	2.3	3.4	3.05	3.4	3.3
22	2.8	2.55	2.3	2.1	2.1	2.3	3.15	3.5	12.9	3.15	3.3	3.3
23	2.8	2.55	2.3	2.1	2.2	2.2	2.8	24.5	12.2	3.15	3.8	3.3
24	2.8	2.55	2.3	2.1	2.8	2.2	2.65	7.9	6.3	2.9	3.95	3.3
25	2.8	2.55	2.3	2.1	2.65	2.1	3.05	5.9	4.7	2.9	3.55	3.3
26	2.8	2.55	2.3	2.1	2.3	5.0	2.9	4.7	4.1	2.8	3.7	3.3
27	2.8	2.55	2.3	2.1	2.2	8.1	2.65	4.1	3.7	2.8	3.95	3.55
28	2.9	2.55	2.3	2.1	2.2	4.2	2.4	12.1	3.4	10.8	3.8	3.55
29	2.9	2.55	2.3	2.1	2.1	3.8	2.55	-	3.15	5.0	3.7	3.95
30	2.9	2.55	2.3	2.1	2.1	3.8	4.5	-----	3.05	11.2	9.4	3.8
31	2.9	2.55	-----	2.1	-----	2.9	3.15	-----	3.05	-----	5.6	-----
Total	89.1	83.10	71.70	67.3	71.30	96.00	95.90	154.45	241.55	161.55	153.30	109.45
Mean:												
mgd	2.87	2.68	2.39	2.17	2.38	3.10	3.09	5.79	5.38	4.95	4.95	3.65
cfs	4.44	4.15	3.70	3.36	3.68	4.80	4.78	8.54	12.1	8.32	7.66	5.65
Ac-ft	273	255	220	207	219	295	294	474	741	496	470	336
Calendar year 1953:	Max	115	Min	2.0	Mean(mgd)	3.77	Mean(cfs)	5.83	Ac-ft	4,220		
Fiscal year 1953-54:	Max	50	Min	2.0	Mean(mgd)	3.82	Mean(cfs)	5.91	Ac-ft	4,280		

Peak discharge (base, 70 mgd).--Feb. 22 (4 p.m.) 144 mgd (223 cfs), 2.97 ft; Apr. 29 (7:30 a.m.) 153 mgd (237 cfs), 3.02 ft.

* Discharge measurement made on this day.

ISLAND OF KAUAI

Miscellaneous discharge measurements

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

Miscellaneous discharge measurement on Kauai during fiscal year July 1953 to June 1954					
Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
July 2	Kokee ditch.....	Canefields....	Below Puluu Reservoir, near Waimea.	4.44	2.87
Aug. 6	Koale.....	Waimea River..	1/3 mile above confluence with Waiahulu Stream, near Waimea.	15.5	10.0
Sept.12	Wahiawa.....	Pacific Ocean.	Above Alexander Reservoir, near Kalaheo.	1.20	.77
Nov. 2	Lihue ditch.....	Canefields....	At Lihue Plantation gage, near Lihue.	29.8	19.3
Aug. 9	Milolii.....	Pacific Ocean.	Near mouth, near Mana....	2.51	1.62

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 1954.

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

Average discharge.--7 years, 2.63 mgd (4.07 cfs).

Extremes.--1947-54: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	4.2	2.8	5.3	0.58	1.53	3.85	0.94	1.5	1.1	2.7	6.3
2	2.7	6.6	3.2	4.7	.54	4.1	2.2	.85	1.3	3.5	1.85	5.7
3	3.8	6.9	2.1	3.75	.46	3.2	1.69	.75	1.1	1.7	2.55	6.1
4	6.3	6.0	1.85	2.1	.46	3.8	1.61	.68	1.1	1.1	5.5	5.7
5	4.7	6.3	1.69	1.53	.78	2.9	1.69	.68	1.7	.94	4.0	6.0
6	3.75	6.3	1.69	1.32	2.45	3.0	1.39	.63	1.1	.88	6.1	5.5
7	3.4	*7.3	1.85	1.61	3.8	3.3	1.32	.54	1.1	.88	4.2	6.3
8	4.3	6.9	3.35	3.6	1.53	3.3	1.32	.54	1.2	.85	4.0	6.4
9	3.4	6.6	4.1	3.5	*.97	3.1	1.32	.50	1.4	.78	3.2	5.5
10	3.3	6.1	5.9	2.5	.99	2.6	1.18	.46	3.6	.73	2.2	5.4
11	3.3	6.0	3.25	2.85	1.53	2.6	1.18	.46	1.1	.63	1.85	5.2
12	4.8	6.0	2.05	2.5	.68	2.8	1.18	.57	1.1	.58	1.53	5.2
13	3.5	6.3	1.61	1.61	.42	3.2	1.18	1.12	1.0	*.63	1.39	5.1
14	5.5	6.0	1.32	1.46	.36	3.4	1.18	.83	1.0	.68	1.25	5.4
15	4.8	5.6	1.25	1.39	.50	2.8	1.18	.94	1.0	.65	1.12	5.6
16	5.2	5.2	1.12	1.25	4.0	2.7	1.12	*1.15	1.0	1.26	1.06	5.2
17	4.6	5.0	1.06	1.12	4.5	2.7	1.12	.88	1.0	4.1	2.35	5.4
18	4.1	4.7	1.06	1.18	3.2	3.9	1.18	.83	1.2	4.8	5.7	5.5
19	5.5	4.3	.94	3.6	3.2	2.8	1.25	.83	2.3	1.87	5.9	5.5
20	5.4	4.1	.88	1.53	2.4	2.9	1.12	.83	2.5	1.12	4.8	6.1
21	4.8	3.85	.83	1.25	1.46	2.9	1.12	1.1	4.5	.88	*5.7	5.6
22	5.1	3.5	.78	1.12	1.12	3.75	1.18	1.2	3.0	.85	3.85	5.4
23	3.9	5.0	.78	2.2	1.12	2.8	1.12	1.3	2.2	2.5	6.6	5.2
24	3.6	6.0	.78	1.25	2.2	2.6	1.06	2.0	1.8	1.94	6.6	6.8
25	3.0	4.3	.83	.83	4.1	2.5	1.06	1.6	1.7	.94	5.4	7.3
26	2.7	3.3	1.46	.78	2.7	2.4	1.06	1.7	1.5	3.3	5.7	7.4
27	2.7	2.9	.88	.88	2.1	2.7	1.00	1.5	1.5	1.12	5.7	7.4
28	4.0	2.8	2.85	.73	1.77	2.3	.94	1.2	1.3	.83	6.0	6.5
29	7.0	2.6	1.52	.58	2.65	*2.3	.88	-	1.4	.94	5.7	6.6
30	5.7	2.3	5.4	.50	2.05	2.2	1.00	-----	1.2	2.3	6.5	5.7
31	4.5	2.2	-----	.58	-----	2.2	1.00	-----	1.1	-----	7.0	-----
Total	132.15	155.15	59.18	59.10	54.62	88.98	40.68	26.57	49.5	44.32	128.00	177.0
Mean:												
mgd	4.26	5.00	1.97	1.91	1.82	2.87	1.31	0.949	1.60	1.48	4.13	5.90
cfs	6.59	7.74	3.05	2.96	2.82	4.44	2.03	1.47	2.48	2.29	6.39	9.13
Ac-ft	406	476	182	181	168	273	125	82	152	156	393	543
Calendar year 1954:	Max 7.5			Min 0.36	Mean(mgd) 3.44	Mean(cfs) 5.32	Ac-ft 3,850					
Fiscal year 1953-54:	Max 7.4			Min 0.36	Mean(mgd) 2.78	Mean(cfs) 4.30	Ac-ft 3,120					

* Discharge measurement made on this day.

Note.--No gage-height record Feb. 21 to Apr. 5; discharge estimated on basis of records for nearby stations.

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 1954.

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

Average discharge.--7 years (1947-54), 21.5 mgd (33.3 cfs).

Extremes.--Maximum discharge during year, 1,100 mgd (1,700 cfs) Apr. 29 (gage height, 8.39 ft), from rating curve extended above 180 mgd as explained below; no flow at times. 1946-54: Maximum discharge, 1,610 mgd (2,490 cfs) Apr. 3, 1948 (gage height, 11.34 ft), from rating curve extended above 180 mgd on basis of slope-area determinations at gage heights 8.39 ft, and at 15.55 ft for flood of Nov. 28, 1954; no flow at times in 1953.

Remarks.--Records good except those for period of no gage-height record, which are fair. 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).--WSP 1289: 1947-52.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.05	0	0.8	5.0
.1	.03	1.0	9.1
.2	.15	1.3	20
.3	.39	1.6	37.5
.4	.80	2.0	74
.5	1.45	2.5	140
.6	2.35	3.0	218

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.80	0.72	0.13	22.5	0	2.2	117	0.37	15.2	0.22	2.15	33
2	.76	25.5	.22	20	0	20	34.5	.22	21	5.6	1.12	11.0
3	.86	47	.32	2.75	0	7.0	8.6	.15	15.8	1.34	1.00	25
4	45	8.1	.15	.90	0	7.5	6.1	.13	8.4	.39	14.6	8.6
5	5.7	11.0	.09	.32	0	11	11.1	.13	45	.25	3.65	28
6	1.81	10.4	.06	.13	0	16	4.6	.12	10.0	.17	21	8.0
7	1.12	*82	.06	.06	10.5	8.0	3.65	.10	9.0	.15	4.7	34.5
8	2.0	42	.06	1.28	.98	7.0	3.4	.09	17.6	.15	2.85	45
9	2.45	18.2	.66	1.24	*.27	4.9	3.65	.05	17.7	.12	2.2	10.2
10	.95	5.7	25.5	1.14	.15	3.4	2.7	.03	37.5	.10	1.19	6.8
11	.93	3.25	2.15	.34	.10	3.2	2.35	.01	12.3	.10	.93	5.2
12	6.6	2.75	.43	1.38	.03	3.0	2.1	19.3	11.6	.07	.68	4.8
13	2.9	18.9	.22	.47	0	17	1.81	51	7.3	*.04	.55	4.4
14	11.2	5.3	.10	.22	0	28	1.54	3.2	5.5	.03	.43	11.0
15	3.15	2.95	.06	.12	0	12	1.32	2.4	5.4	.03	.37	31.5
16	3.05	1.06	.06	.05	20	7.0	1.00	*36.5	4.4	.06	.34	14.5
17	2.1	.72	.04	.03	19.7	2.3	.86	3.4	4.2	38	.38	17.3
18	1.99	.60	.02	.01	5.6	20	.86	1.32	4.4	10.8	8.0	20
19	9.6	.55	0	3.25	5.0	7.0	1.26	.72	2.05	.80	11.7	17.6
20	10.4	.47	0	.82	2.05	6.0	1.06	.51	1.45	.29	*14.9	50
21	3.85	.37	0	.22	.64	15	.80	1.06	6.2	.17	*9.6	17.3
22	2.75	.34	0	.10	.30	36	.80	5.7	7.8	.13	2.45	9.5
23	1.77	1.03	0	.05	.10	7.0	.86	5.9	1.26	.60	38	7.5
24	.68	11.3	0	.01	10	4.4	.55	28.5	.8	1.98	29.5	22.5
25	.51	2.05	0	0	35	3.7	.37	22	.68	.34	5.2	40
26	.47	.51	0	.02	14	3.1	.47	22.5	.64	.44	3.75	10.1
27	.39	.27	0	0	2.9	9.5	.60	22	.55	.53	15.9	29.5
28	.50	.20	0	0	1.8	2.7	.60	17.3	.51	20	10.1	15.0
29	50	.17	.70	0	6.5	*1.4	.47	---	.51	*157	5.3	35
30	5.5	.17	0	0	2.5	1.26	.64	---	.27	9.4	43	14.6
31	1.36	.15	0	0	---	1.00	.72	---	.22	---	158	---
Total	181.13	303.73	64.03	57.41	138.12	277.56	216.34	244.71	275.24	229.50	413.54	587.4
Mean:												
mgd	5.84	9.80	2.13	1.85	4.60	8.95	6.98	8.74	8.98	7.65	13.3	19.6
cfs	9.04	15.2	3.30	2.86	7.12	13.8	10.8	13.5	13.7	11.8	20.6	30.3
Ac-ft	556	932	197	176	424	852	664	751	845	704	1,270	1,800
Fiscal year 1953. Max	161				0		6.99		10.8		7.820	
Mean(mgd)							8.19		12.7		9,170	
Fiscal year 1953-54: Max	158				0							
Mean(mgd)												

Peak discharge (base, 1,100 mgd).--Apr. 29 (6:30 a.m.) 1,100 mgd (1,700 cfs), 8.39 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 22 to Dec. 29; discharge estimated on basis of records for nearby stations and recorded range in stage.

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 1954.

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

Average discharge.--10 years, 6.62 mgd (10.2 cfs).

Extremes.--Maximum discharge during year, 472 mgd (730 cfs) Apr. 29 (gage height, 4.62 ft), from rating curve extended above 14 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Nov. 14, 15.

1944-54: Maximum discharge, 765 mgd (1,180 cfs) Mar. 26, 1951 (gage height, 5.86 ft), from rating curve extended above 14 mgd as explained above; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 1945, Nov. 14, 15, 1953.

Remarks.--Records good.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.01	0.9	1.33
.2	.03	1.0	2.3
.3	.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		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.86	1.29	*0.60	4.8	0.08	0.50	41	0.19	6.8	0.33	1.25	6.9
2	.86	36	.93	1.91	.07	*8.1	5.2	.15	7.0	12.1	.77	4.7
3	15.8	20.5	.66	1.06	.05	2.5	1.84	.13	3.35	1.05	*1.06	10.5
4	36	5.1	.67	.38	.05	7.9	2.15	.12	4.7	.51	23	3.6
5	3.0	5.1	.49	.16	.06	6.4	4.3	.12	12.2	.32	3.3	3.95
6	1.73	3.2	.41	.12	1.24	7.8	1.25	.11	3.95	.25	13.9	3.3
7	1.84	19.4	.39	.16	5.5	5.8	.98	.09	2.3	.21	3.3	25.5
8	3.9	7.6	.82	2.05	.36	3.95	.95	.07	6.4	.20	2.8	17.4
9	1.63	7.6	1.04	1.73	.12	2.75	.95	.07	8.9	.18	2.5	5.9
10	1.37	3.3	10.8	1.04	.30	1.56	.77	.08	21.5	.16	1.5	4.3
11	1.50	2.5	1.01	3.0	.53	1.56	.68	.07	5.5	.15	1.05	3.6
12	4.4	3.6	.47	1.17	.13	1.56	.61	.08	12.6	.14	.86	3.0
13	1.96	8.1	.32	.55	.04	10.4	.57	12.8	3.6	.13	.73	3.0
14	7.5	3.3	.27	.36	.01	10.2	.53	.63	2.5	.13	.64	6.3
15	2.75	2.3	.27	.39	.07	2.3	.47	2.9	2.05	.11	.57	5.9
16	3.0	1.63	.23	.38	5.2	1.41	.47	10.4	1.50	.20	.53	6.4
17	2.3	1.45	.21	.23	1.63	1.21	.43	.75	1.63	30.5	5.5	9.4
18	1.45	1.33	.19	.18	.79	6.7	.43	.21	1.63	5.6	9.8	7.6
19	4.8	1.33	.18	7.5	.88	1.63	.53	.09	1.13	1.03	7.7	4.7
20	2.4	1.37	.17	.32	.68	4.6	.39	.09	1.05	.49	9.6	19.0
21	1.41	1.37	.16	.14	.23	3.4	.37	.10	2.75	.30	3.6	4.7
22	3.9	1.21	.15	.10	.10	31	.37	2.4	1.27	.21	1.50	3.0
23	1.40	1.43	.14	.10	.07	3.95	.51	6.8	.80	.79	9.9	3.75
24	1.75	8.8	.17	.09	5.9	2.5	.28	14.0	.61	.76	6.6	10.1
25	1.26	1.55	.23	.05	20.5	2.3	.27	9.6	.53	.40	2.05	13.5
26	.95	.95	.58	.06	2.7	1.84	.24	6.9	.47	2.65	8.9	4.3
27	.95	.77	.20	.08	.79	5.1	.23	5.2	.41	.50	15.9	13.4
28	2.2	.73	.60	.05	.49	1.73	.21	2.65	.39	.24	8.5	10.1
29	13.8	.66	.25	.03	3.75	1.41	.19	-	.39	60	5.1	15.1
30	2.3	.57	.22	.02	.69	1.33	.21	.19	.37	2.75	6.4	13.5
31	*1.29	.53	-----	.04	-----	1.11	.25	-----	*.31	-----	18.0	-----
Total	122.26	154.57	44.61	21.50	53.01	146.50	67.43	76.78	118.59	122.39	176.81	246.40
Mean	3.94	4.99	1.49	0.694	1.77	4.73	2.18	2.74	3.83	4.08	5.70	8.21
cfs	6.10	7.72	2.31	1.07	2.74	7.32	3.37	4.24	5.93	6.31	8.82	12.7
Ac-ft	375	474	137	66	163	450	207	236	364	376	543	756
Calendar year 1953	Max	46	Min	0.01	Mean(mgd)	3.16	Mean(cfs)	4.89	Ac-ft	3,530		
Fiscal year 1953-54	Max	60	Min	0.01	Mean(mgd)	3.70	Mean(cfs)	5.72	Ac-ft	4,150		

Peak discharge (base, 400 mgd).--Apr. 29 (4:30 a.m.) 472 mgd (730 cfs), 4.62 ft.

* Discharge measurement made on this day.

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 1954.

Gage.--Water-stage recorder and concrete control. Datum of gage is 844.51 ft above mean sea level, datum of 1929.

Average discharge.--7 years (1947-54), 14.7 mgd (22.7 cfs).

Extremes.--Maximum discharge during year, 680 mgd (1,050 cfs) Apr. 29 (gage height, 6.43 ft), from rating curve extended above 80 mgd; minimum, 0.27 mgd (0.42 cfs) Apr. 11-15, 26, 28.

1946-54: Maximum discharge uncertain, occurred Jan. 16, 1949 (gage height, 12.71 ft, backwater from Wahiawa Reservoir); minimum discharge, that of Apr. 11-15, 26, 28, 1954.

Remarks.--Records good except those above 100 mgd, which are poor.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.15	1.1	12.6
.3	.44	1.3	20.5
.4	.90	1.5	30.5
.5	1.58	1.7	43
.6	2.55	1.9	60
.7	3.7	2.2	92
.8	5.3	2.5	131
.9	7.2		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.7	1.67	*0.60	*1.59	0.48	1.09	53	0.65	*5.3	0.48	3.2	*15.0
2	3.7	35	.65	2.3	*.44	*15.4	12.3	.56	11.5	8.1	1.85	5.8
3	4.6	36.5	.70	1.44	.40	6.8	4.4	.52	5.2	1.86	*1.44	18.5
4	57	9.1	.70	.75	.48	7.5	3.05	.52	5.1	.70	31.5	6.2
5	8.9	5.8	.65	.48	.44	9.7	7.0	.52	16.7	.52	7.6	5.9
6	5.5	3.3	.60	.44	.48	11.8	2.85	.52	4.7	.48	16.6	5.2
7	5.3	20	.56	.44	1.20	8.0	2.15	.48	4.9	.44	7.3	57
8	7.2	12.1	.56	.52	.85	7.5	1.94	.44	5.2	.36	4.0	56
9	6.3	9.0	.52	1.85	.52	5.8	1.85	.44	9.7	.53	3.65	18.0
10	5.0	4.5	7.9	1.51	.60	3.2	1.51	.44	38	.33	2.35	15.3
11	5.3	2.85	3.0	2.5	.65	2.75	5.3	.48	11.4	.30	1.85	13.4
12	8.4	3.3	.85	3.8	.48	2.55	10.4	.44	21	.30	1.51	12.0
13	4.7	6.6	.60	1.58	.40	6.1	10.4	7.4	7.4	.27	1.30	11.8
14	9.9	5.2	.52	.96	.36	17.9	6.1	1.53	4.7	.27	1.16	13.7
15	4.8	2.85	.52	.75	.52	4.5	.90	.94	3.7	.70	1.09	15.3
16	4.2	2.35	.52	.60	1.43	2.55	.90	13.0	3.05	.33	.96	12.6
17	3.45	1.68	.52	.60	4.4	1.67	.80	2.3	3.05	20.5	1.57	16.4
18	2.85	1.60	.48	.52	2.25	14.9	.85	.75	2.95	10.6	7.5	16.4
19	6.4	1.58	.48	.52	1.81	5.7	1.16	.48	2.45	1.41	10.7	13.7
20	4.2	2.05	.44	.52	2.1	3.8	.90	.48	2.05	.52	5.7	29.5
21	2.35	2.05	.44	.48	1.23	7.0	.90	.52	3.0	.40	7.8	16.4
22	3.95	1.85	.40	.48	.60	29	.98	.56	2.7	1.40	2.45	8.3
23	2.7	1.58	.40	.52	.52	9.5	.95	1.75	1.67	.56	15.2	4.3
24	2.05	7.4	.44	.48	.56	3.95	.75	18.6	1.23	.65	18.9	12.7
25	2.45	3.7	.52	.48	30.5	2.75	.65	15.5	1.09	.44	4.7	15.5
26	1.67	1.58	.60	.40	7.7	2.35	.60	17.5	.96	.36	9.6	6.8
27	1.09	1.09	.48	.44	2.0	5.0	.60	12.4	.90	.48	20	15.1
28	.85	.85	.44	.40	1.02	3.0	.56	8.1	.85	.30	14.8	18.3
29	15.4	.90	.52	.36	4.3	*1.92	*.56	-	.75	*120	8.5	35
30	5.1	.80	18.9	.40	2.1	1.59	.75	-----	.60	9.0	6.3	*14.5
31	*1.76	.65	-----	.48	-----	2.35	.70	-----	*.52	-----	25	-----
Total	200.77	189.48	42.51	28.59	70.82	207.61	135.49	107.82	182.28	180.99	246.08	502.6
Mean:												
mgd	6.48	6.11	1.42	0.922	2.36	6.70	4.37	3.85	5.88	6.03	7.94	16.8
cfs	10.0	9.45	2.22	1.43	3.65	10.4	6.75	5.96	9.10	9.33	12.3	26.0
Ac-ft	616	581	130	88	217	637	418	331	559	555	755	1,540
Calendar year 1953: Max		83	Min	0.36	Mean(mgd)	5.31	Mean(cfs)	8.22	Ac-ft	5,950		
Fiscal year 1953-54: Max		120	Min	0.27	Mean(mgd)	5.74	Mean(cfs)	8.88	Ac-ft	6,420		

* Discharge measurement made on this day.

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 1954.

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

Average discharge.--7 years, 3.01 mgd (4.66 cfs).

Extremes.--Maximum discharge during year, 272 mgd (421 cfs) May 31 (gage height, 3.17 ft), from rating curve extended above 48 mgd by test on model of station site; no flow for several periods.

1947-54: Maximum discharge, 916 mgd (1,420 cfs) Mar. 30, 1947 (gage height, 5.68 ft), from rating curve extended as explained above; no flow at times.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0	0	0.6	2.45
.1	.03	.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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.18	0.09	0.04	3.15	0	0.14	1.20	0.16	0.12	0.16	0.16	0.01
2	.16	.16	.03	6.9	0	.86	.08	.06	.11	1.84	.09	.01
3	.16	.11	.02	2.3	0	1.20	.06	.03	.09	.57	.07	.01
4	3.85	.05	.02	.62	0	1.20	.06	.02	.08	.24	.06	.01
5	.95	.05	.01	.31	0	.93	.06	.01	.12	.16	.04	.01
6	.34	.28	.01	.20	0	.62	.05	.01	.08	.12	.04	.01
7	.22	*17.1	0	.12	1.96	1.54	.05	0	.07	.09	.03	.19
8	.22	6.0	0	.83	.31	2.15	.04	0	.08	.07	.03	.20
9	.51	2.0	0	.86	*.09	1.06	.04	0	.07	.07	.03	.14
10	.20	.94	8.0	.48	.06	.50	.04	0	.08	.06	.03	.11
11	.26	.62	.87	.20	.08	.54	.04	0	.06	.06	.02	.09
12	.24	.54	.24	.14	.09	3.3	.04	1.08	.06	*.03	.02	.08
13	.37	4.4	.11	.12	.04	5.9	.04	6.9	.06	.04	.02	.08
14	.61	1.39	.05	.09	.02	5.0	.03	.93	.05	.03	.02	.08
15	.58	.66	.03	.09	.02	1.00	.12	1.15	.05	.07	.02	.09
16	.26	.43	.02	.06	.63	.58	.20	*4.8	.04	.05	.02	.09
17	.51	.34	.01	.03	2.15	.46	.18	1.02	.04	3.45	.02	.09
18	.43	.31	0	.02	.77	5.1	.18	.50	.03	3.15	.02	.08
19	.51	.26	0	.04	.43	1.28	.43	.28	.03	.54	.02	.07
20	.43	.24	0	.26	.28	.71	.26	.24	.03	.28	.02	.07
21	.40	.20	0	.09	.11	1.34	.22	.37	.03	.18	.02	.06
22	.22	.22	0	.09	.06	4.6	.28	1.31	.04	.16	.02	.06
23	.16	.44	0	.04	.03	2.25	.20	1.07	.04	1.46	.02	.05
24	.11	1.40	0	.02	1.13	.66	.16	5.4	.03	.92	.02	.05
25	.06	.66	0	.02	5.8	.46	.09	6.4	.03	.24	.02	.06
26	.05	.24	0	.01	1.26	.46	.07	3.45	.03	.39	.02	.05
27	.04	.14	0	.01	.37	.37	.05	.24	.03	.31	.02	.06
28	.02	.09	0	0	.20	.31	.03	.20	.03	.14	.02	.05
29	2.2	.08	0	0	.49	*.26	.02	-	.15	3.6	.02	.05
30	.83	.08	5.7	0	.37	.24	.02	-----	.20	1.58	.02	.04
31	.22	.05	-----	0	-----	.24	.14	-----	.16	-----	12.2	-----
Total	14.70	39.57	15.16	17.10	16.77	45.26	4.48	35.63	2.12	20.06	13.18	2.05
Mean:												
mgd	0.474	1.28	0.505	0.552	0.559	1.46	0.145	1.27	0.068	0.669	0.425	0.068
cfs	0.733	1.98	0.781	0.854	0.865	2.26	0.224	1.96	0.105	1.04	0.658	0.105
Ac-ft	45	121	47	52	51	139	14	109	6.5	62	40	6.3
Calendar year 1953:	Max	20	Min	0	Mean(mgd)	1.24	Mean(cfs)	1.92	Ac-ft	1,390		
Fiscal year 1953-54:	Max	17.1	Min	0	Mean(mgd)	0.619	Mean(cfs)	0.958	Ac-ft	693		

Peak discharge (base, 130 mgd).--May 31 (4:30 a.m.) 272 mgd (421 cfs), 3.17 ft.

* 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 1954.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2.67 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 380 mgd (588 cfs) Apr. 29 (gage height, 4.03 ft); minimum recorded, 6.4 mgd (9.9 cfs) Sept. 28-30.
1951-54: Maximum discharge, 1,030 mgd (1,590 cfs) Dec. 31, 1951 (gage height, 5.81 ft); minimum recorded, 6.4 mgd (9.9 cfs) Sept. 28-30, 1953.

Remarks.--Records good except those for period of no gage-height record, which are poor. Flow is regulated by plantation operation.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.8	5.0	2.5	33
1.9	6.7	2.8	67
2.1	11.3	3.1	119
2.3	18.8		

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.7	8.5		7.1	10.6	7.1	52	10.6	14.6	9.4	16.9	8.7
2	8.7	9.6		7.4	10.6	6.9	35	13.0	*18.9	9.1	16.0	8.2
3	9.9	10.1		9.1	10.3	6.7	14.1	15.0	16.0	10.1	16.0	7.6
4	13.8	8.5		7.6	10.1	6.7	12.7	14.1	13.8	10.8	15.5	10.8
5	13.0	8.5		7.6	9.9	6.7	12.7	13.5	15.5	9.6	13.0	16.0
6	10.3	8.5		7.4	8.7	7.1	12.7	13.8	18.3	9.4	10.3	12.2
7	8.7	7.8		7.6	8.9	7.4	12.7	12.7	15.0	9.4	9.6	7.6
8	8.5	9.6		8.0	7.6	7.1	11.3	12.4	15.0	9.1	9.4	7.8
9	8.7	10.6		7.8	7.6	6.7	10.3	14.1	15.0	9.1	9.9	7.8
10	8.5	10.3		7.8	7.4	6.7	10.6	10.8	16.9	9.1	10.1	8.9
11	8.9	8.5		7.8	7.1	6.5	11.6	11.6	18.3	9.4	9.9	8.9
12	10.1	8.2		7.8	6.9	6.7	11.1	11.6	16.0	10.3	9.4	10.6
13	9.4	8.7	a7.5	7.4	7.1	8.0	12.1	11.1	15.5	9.6	8.5	11.3
14	10.3	9.4		7.1	7.4	7.6	11.9	11.6	16.0	8.9	7.8	7.4
15	10.6	10.3		7.1	7.6	7.6	11.9	12.7	14.6	9.1	7.8	8.2
16	9.6	10.6		7.1	8.0	8.2	11.9	14.1	13.0	11.1	8.2	8.0
17	9.1	9.9		7.4	7.8	7.1	12.1	13.3	13.3	11.6	8.5	8.0
18	9.4	8.9		7.8	7.4	9.1	12.1	13.5	13.5	10.8	7.8	7.8
19	9.6	8.2		7.6	7.1	10.1	12.1	11.9	13.5	10.6	8.0	9.6
20	8.5	8.0		7.4	7.1	10.6	11.9	14.6	13.5	9.9	8.2	13.0
21	8.2	8.0		7.6	7.1	11.3	12.1	13.8	13.5	8.7	8.0	8.7
22	8.5	8.0		7.4	7.4	11.1	12.1	13.3	13.5	8.2	7.8	7.4
23	8.5	9.6		8.2	7.4	11.3	12.4	11.3	13.3	8.5	8.5	7.8
24	8.2	9.1		8.9	7.1	11.1	12.7	11.6	13.5	9.1	8.7	7.4
25	8.9	7.6		7.8	7.1	9.4	12.7	11.6	13.5	8.5	7.4	7.1
26	10.1	7.8	6.9	7.8	7.1	9.1	12.4	*12.1	12.4	8.7	7.4	9.6
27	9.6	7.6	6.7	8.2	7.1	9.9	12.1	16.6	12.7	8.2	7.8	11.9
28	9.1	15.3	6.5	7.6	7.1	10.3	12.1	26.5	12.4	*8.0	7.6	8.0
29	8.0	8.7	6.5	7.6	7.4	11.6	9.9	-----	12.1	103	7.4	6.9
30	7.8	9.9	7.1	8.5	7.6	*11.6	11.9	-----	11.6	33	8.2	7.4
31	7.8	9.6	-----	9.9	-----	10.8	12.1	-----	10.3	-----	10.6	-----
Total	289.0	285.9	221.2	241.4	237.6	268.1	435.3	372.8	443.0	400.3	300.2	270.6
Mean:												
mgd	9.32	9.16	7.37	7.79	7.92	8.85	14.0	13.3	14.3	13.3	9.68	9.02
cfs	14.4	14.2	11.4	12.1	12.3	13.4	21.7	20.6	22.1	20.6	15.0	14.0
Ac-ft	887	871	679	741	729	823	1,340	1,140	1,360	1,230	921	830
Calendar year 1953. Max	153			Min	6.5	Mean(mgd)	10.7	Mean(cfs)	16.6	Ac-ft	11,940	
Fiscal year 1953-54: Max	103			Min	6.5	Mean(mgd)	10.3	Mean(cfs)	15.9	Ac-ft	11,550	

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 records for Waiawa Stream, weather records, and report of plantation operations.

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 1954.

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

Average discharge.--20 years (1931-34, 1937-54), 12.1 mgd (18.7 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.6	11.3	9.8	9.5	11.6	10.2	13.1	10.9	12.7	10.2	12.0	*8.8
2	11.3	11.3	10.2	10.2	9.8	9.8	13.1	10.9	12.7	10.2	12.0	8.5
3	11.3	11.3	9.8	10.9	9.8	10.9	13.1	10.5	12.7	12.0	10.2	8.5
4	11.6	11.3	9.5	12.0	9.8	11.6	13.1	10.5	12.7	12.0	10.5	9.1
5	11.6	11.3	9.5	12.0	9.5	11.6	13.1	10.5	12.7	9.8	10.5	12.0
6	11.6	9.8	10.2	12.0	9.1	11.6	13.1	12.3	13.1	8.8	10.2	12.0
7	9.8	9.5	11.6	10.9	11.6	11.6	13.1	12.3	13.1	9.1	10.5	8.8
8	9.8	9.5	9.8	10.2	11.6	11.6	12.7	10.9	13.1	10.5	10.2	8.5
9	9.8	11.3	10.2	9.8	9.8	11.6	12.7	10.5	13.5	9.5	12.0	8.8
10	10.2	9.8	10.2	12.0	9.5	11.3	13.1	10.9	13.5	9.8	10.2	9.8
11	10.2	9.8	10.5	12.0	9.5	11.3	13.1	10.2	13.1	11.6	12.0	8.5
12	11.6	11.3	10.5	9.8	*9.1	11.3	13.1	10.5	13.1	9.8	10.2	9.8
13	10.2	*11.3	10.9	11.6	9.5	11.3	12.7	12.0	13.1	8.8	8.8	12.0
14	10.2	11.6	11.3	11.6	11.3	11.3	12.7	12.3	13.1	9.5	6.5	10.2
15	11.3	11.6	10.9	11.6	11.3	11.3	12.7	12.3	13.1	9.5	11.3	9.1
16	11.3	11.6	10.5	10.5	9.8	11.3	12.7	12.3	13.1	11.3	11.6	8.8
17	11.3	10.2	8.8	11.6	9.8	11.3	12.7	12.3	13.1	11.6	10.2	9.1
18	11.3	10.2	9.5	11.6	9.8	11.6	12.7	12.0	13.1	11.6	9.8	8.8
19	11.3	10.2	9.1	10.5	9.5	11.6	12.7	12.0	12.7	9.1	9.1	9.8
20	10.2	10.5	10.9	11.6	9.5	12.0	12.7	12.0	12.7	8.5	8.2	12.7
21	10.2	11.6	9.8	11.6	11.6	12.0	12.7	12.3	13.1	8.2	8.2	9.1
22	9.8	10.9	9.5	11.6	11.6	12.0	12.7	10.2	12.7	*8.2	8.8	10.2
23	11.3	11.6	9.8	11.6	9.8	12.0	12.7	11.3	11.3	8.5	11.6	10.2
24	11.3	11.6	9.5	11.6	10.2	12.0	12.7	10.9	11.6	9.8	8.2	8.5
25	11.3	11.6	9.8	12.0	9.8	12.3	12.7	*12.7	10.9	12.0	8.5	8.2
26	11.3	11.3	10.2	12.0	11.6	12.3	12.7	12.3	12.7	9.8	9.1	8.5
27	10.5	9.8	11.6	9.8	9.8	12.3	12.7	12.3	12.7	9.8	8.2	12.7
28	11.3	9.8	10.2	9.8	11.6	12.3	12.7	12.7	12.7	9.8	10.2	9.5
29	11.3	10.2	10.2	9.5	11.6	12.3	10.9	-	10.2	12.0	10.5	9.1
30	7.9	11.6	8.2	9.8	9.8	*12.3	12.7	-	10.2	12.0	11.6	8.5
31	9.8	10.2	-----	11.6	-----	12.7	12.7	-----	12.0	-----	9.8	-----
Total	333.5	334.9	302.5	342.8	308.6	360.8	393.9	322.8	390.1	303.3	312.7	286.1
Mean:												
mgd	10.8	10.8	10.1	11.1	10.3	11.6	12.8	11.5	12.6	10.1	10.1	9.60
cfs	16.7	16.7	15.6	17.2	15.9	17.9	19.8	17.8	19.5	15.6	15.6	14.9
Ac-ft	1,020	1,030	928	1,050	947	1,110	1,210	991	1,200	931	960	884
Calendar year 1953: Max	15.2			Min	7.9	Mean(mgd)	12.0	Mean(cfs)	18.6	Ac-ft	13,420	
Fiscal year 1953-54: Max	13.5			Min	7.9	Mean(mgd)	10.9	Mean(cfs)	16.9	Ac-ft	12,280	

* Discharge measurement made on this day.

Waiawa Stream near Pearl City

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

Drainage area.--25.4 sq mi.

Records available.--June 1952 to June 1954.

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

Extremes.--Maximum discharge during year, 970 mgd (1,500 cfs) Jan. 1 (gage height, 7.21 ft); minimum, 1.86 mgd (2.88 cfs) Dec. 4.
1952-54: Maximum discharge, 1,160 mgd (1,790 cfs) Nov. 19, 1952 (gage height, 7.90 ft); minimum, that of Dec. 4, 1953.

Remarks.--Records good except those for period of no gage-height record, which are fair. Small quantity of water diverted occasionally for irrigation.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.5	1.67	2.2	14.9
1.6	2.6	2.5	29.5
1.8	5.4	3.0	75
2.0	9.2	3.5	155

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.25	3.45	2.5	3.1	2.3	2.6	129	2.4	9.2	2.5	7.6	*37
2	3.2	2.5	2.6	3.1	2.3	2.6	27.5	2.3	*32	2.5	4.9	12.0
3	3.2	2.75	2.5	3.1	2.4	2.6	10.6	2.4	*12.6	2.5	3.85	10.3
4	3.35	2.9	2.6	3.1	2.5	2.5	6.0	2.6	7.3	2.6	3.7	7.2
5	3.35	2.85	2.7	3.0	2.8	2.6	5.2	2.7	6.7	2.5	3.7	5.2
6	2.7	2.85	2.6	2.7	2.7	2.6	5.2	2.7	7.2	2.6	3.6	4.4
7	2.6	13.5	2.7	2.7	2.6	2.6	4.4	2.7	5.5	2.6	3.7	5.5
8	2.6	8.9	2.6	2.7	2.6	2.6	4.2	2.6	5.0	2.6	3.85	15.7
9	2.5	4.6	2.6	2.7	2.6	2.6	3.5	2.5	7.6	2.7	3.7	9.3
10	2.5	3.1	2.5	2.7	2.6	2.85	3.1	2.5	26.5	2.85	3.6	6.0
11	2.5	2.85	2.6	2.6	2.6	2.85	3.0	2.6	20.5	2.85	3.35	4.6
12	2.6	*2.8	2.6	2.6	2.6	2.85	2.85	2.6	11.7	2.85	3.35	4.0
13	2.5	18.6	2.6	2.6	2.6	2.7	4.9	8.7	2.7	3.2	3.2	3.7
14	2.5	9.1	2.5	2.6	2.6	3.55	2.7	4.2	6.2	2.95	3.2	3.5
15	2.6	3.5	2.5	2.6	2.7	5.5	2.6	3.3	5.0	2.8	3.2	3.35
16	2.6	3.0	2.4	2.6	2.6	3.1	2.5	21.5	4.2	2.85	3.2	3.1
17	2.6	2.85	2.5	2.6	2.6	2.7	2.5	8.7	6.0	2.85	3.1	3.0
18	2.5	2.85	2.4	2.6	2.7	5.6	2.5	3.6	7.9	2.85	3.0	3.0
19	2.5	2.7	2.5	2.4	2.7	9.4	2.5	3.0	6.4	2.7	3.3	4.3
20	2.5	2.7	2.5	2.4	2.85	4.6	2.4	2.7	5.4	2.7	4.6	10.0
21	2.5	2.7	2.5	2.4	2.7	12.6	2.6	2.6	4.0	2.7	3.5	15.2
22	2.5	2.6	2.4	2.3	2.7	42	2.5	2.6	3.6	*2.7	3.1	7.2
23	2.5	2.6	2.4	2.4	2.6	20.5	2.5	4.6	3.2	2.85	3.1	5.2
24	2.6	2.6	2.5	2.5	2.7	7.5	2.4	4.0	3.1	3.0	3.0	5.0
25	2.5	2.6	2.6	2.6	2.85	4.6	2.4	10.8	3.0	3.2	3.35	11.3
26	2.5	2.4	2.7	2.5	2.85	3.6	2.3	*18.5	2.85	3.0	3.2	8.7
27	2.6	2.6	2.6	2.4	2.7	4.6	2.3	11.3	2.85	3.0	3.2	6.4
28	3.0	2.5	2.6	2.5	2.7	5.2	2.3	12.6	2.7	2.85	5.7	10.0
29	3.75	2.5	2.6	2.6	2.7	5.0	2.4	-	2.6	*68	5.5	13.2
30	3.85	2.6	2.85	2.5	2.6	3.8	2.4	-----	2.6	*20.5	11.5	15.9
31	3.2	2.5	-----	2.4	-----	3.0	2.5	-----	2.6	-----	3.6	-----
Total	85.85	126.55	76.75	81.6	79.15	181.40	251.55	147.4	234.70	165.85	218.85	253.25
Mean:												
mgd	2.77	4.08	2.56	2.63	2.64	5.85	8.11	5.26	7.57	5.53	7.06	8.44
cfs	4.29	6.31	3.96	4.07	4.08	9.05	12.5	8.14	11.7	8.56	10.9	13.1
Ac-ft	263	588	236	250	243	557	772	452	720	509	672	777
Calendar year 1953: Max	88			Min	2.3	Mean(mgd)	4.41	Mean(cfs)	6.82	Ac-ft	4,940	
Fiscal year 1953-54: Max	129			Min	2.3	Mean(mgd)	5.21	Mean(cfs)	8.06	Ac-ft	5,840	

Peak discharge (base, 800 mgd).--Jan. 1 (8 a.m.) 970 mgd (1,500 cfs), 7.21 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 23 to Nov. 12; discharge estimated on basis of record for station on Halawa Stream.

Hawaiian Electric Co. tunnel at Wai'au, near Pearl City

Location.--Lat 21°23'30", long 157°57'55", on right bank of ditch at Hawaiian Electric Co's. Wai'au 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 1954.

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

Extremes.--1939-45, 1952-54: Maximum daily discharge, 17.3 mgd (26.8 cfs) Mar. 26, 27, 1940; minimum daily, 6.0 mgd (9.3 cfs) Aug. 3, 1941.

Remarks.--Records good. 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.4	11.6	8.2	9.4	7.7	8.9	8.2	10.3	10.1	10.4	8.7	10.0
2	11.6	8.2	8.8	8.8	8.8	7.7	8.2	10.8	10.6	10.6	8.9	10.3
3	11.6	8.8	8.2	8.2	8.8	7.7	8.2	8.8	10.7	9.3	9.5	9.9
4	11.0	9.9	8.8	8.2	8.2	8.5	8.4	7.7	10.9	9.2	9.4	10.7
5	8.8	*8.8	8.2	9.4	8.2	8.2	8.2	7.7	8.8	10.3	9.6	9.9
6	9.9	9.4	8.2	9.4	*8.6	9.6	8.2	7.7	8.4	9.3	10.5	10.9
7	9.4	10.4	7.7	9.4	7.7	8.5	8.2	8.2	10.9	10.6	10.5	11.0
8	10.4	7.7	9.4	9.4	8.2	9.3	8.2	8.2	11.7	11.6	9.3	10.5
9	11.0	8.2	11.0	9.4	10.9	9.7	8.2	9.6	10.9	11.6	9.8	11.0
10	9.9	9.9	11.0	7.7	11.3	10.6	8.2	10.3	11.1	11.3	10.8	11.0
11	9.9	9.9	9.9	7.7	10.2	10.6	8.4	10.0	12.2	9.0	10.1	11.0
12	8.2	11.6	9.4	9.4	7.7	9.9	8.2	8.9	12.2	11.1	10.1	11.0
13	10.4	11.6	8.2	8.8	9.2	7.7	8.2	8.2	11.3	10.7	10.4	11.0
14	10.4	11.6	10.4	9.9	9.7	9.8	8.2	8.2	11.4	11.6	10.0	11.0
15	11.6	11.6	11.0	8.8	7.9	10.7	8.2	8.7	11.1	10.5	10.0	10.0
16	11.6	8.2	11.0	8.8	8.5	10.6	8.2	9.1	11.4	10.6	10.2	10.0
17	11.6	8.2	11.0	7.7	8.6	10.2	8.2	9.8	11.9	9.6	10.7	10.0
18	11.6	9.9	9.4	8.2	8.5	8.5	9.3	10.1	11.3	9.0	10.2	10.1
19	11.6	11.0	8.2	8.2	8.4	8.4	9.2	8.2	11.2	11.6	10.9	9.9
20	11.6	9.4	7.7	8.2	8.1	8.2	9.8	8.2	11.1	10.8	10.0	9.6
21	11.0	8.8	9.4	8.2	7.7	10.2	8.9	8.2	10.9	10.5	9.8	9.9
22	11.6	8.2	10.4	8.2	7.7	10.7	8.2	8.2	12.0	10.3	9.9	9.9
23	11.6	7.7	8.8	7.7	7.7	10.5	8.2	10.1	10.4	10.4	8.8	9.4
24	11.6	9.4	10.4	7.7	7.9	8.7	8.2	9.8	10.7	9.8	9.9	10.2
25	7.7	8.2	9.9	7.7	7.7	7.7	9.2	10.6	10.5	8.3	9.9	8.9
26	7.7	10.4	9.4	7.7	7.7	8.2	8.2	9.8	10.5	*9.6	9.9	10.7
27	10.4	11.0	7.7	7.7	7.7	8.2	8.4	8.2	10.8	10.0	9.9	10.6
28	11.0	11.0	*9.4	7.7	7.7	10.9	9.1	8.2	10.9	9.8	*9.9	10.6
29	10.4	9.9	9.9	7.7	7.7	10.6	9.8	-	10.4	10.6	9.9	10.6
30	11.6	7.7	8.8	8.2	8.9	10.8	8.2	-	10.3	9.5	8.4	10.2
31	11.6	8.8	-----	7.7	-----	10.6	8.2	-----	10.4	-----	9.9	-----
Total	328.7	297.0	279.8	261.2	253.6	290.4	262.7	251.8	337.0	307.5	307.8	309.8
Mean:												
mgd	10.6	9.58	9.33	8.43	8.45	9.37	8.47	9.99	10.9	10.2	9.93	10.3
cfs	16.4	14.8	14.4	13.0	13.1	14.5	13.1	15.9	16.9	15.8	15.4	15.9
Ac-ft	1,010	911	859	802	778	891	806	773	1,030	944	945	951
Calendar year 1953: Max	13.4				Min 7.7	Mean(mgd)	9.86	Mean(cfs)	15.3	Ac-ft	11,040	
Fiscal year 1953-54: Max	12.2				Min 7.7	Mean(mgd)	9.55	Mean(cfs)	14.8	Ac-ft	10,700	

* Discharge measurement made on this day.

ISLAND OF OAHU

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 1954.

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

Extremes.--Maximum discharge during year, 260 mgd (402 cfs) Jan. 1 (gage height, 3.22 ft); minimum, 0.14 mgd (0.22 cfs) Feb. 20
1952-54: 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 fair. Small quantity of water diverted for irrigation.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.17	0.17	0.6	7.1
.2	.27	.8	16.0
.3	.95	1.0	30
.4	2.25	1.2	50
.5	4.2		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.55	0.41	0.41	0.86	0.69	0.20	33	0.31	2.1	0.41	1.27	16.9
2	.77	.41	.41	.69	.48	.20	5.6	.41	10.7	.36	.69	6.8
3	.86	.41	.36	.55	.48	.20	1.81	.41	*2.45	.36	.62	8.1
4	.69	.48	.41	.55	.41	.20	.62	.48	.77	.23	.41	4.5
5	.55	.62	.62	.77	.36	.20	.48	.55	.55	.27	.41	2.6
6	.48	*.62	.77	.77	.31	.20	.69	.48	.55	.20	.41	1.81
7	.41	.62	.62	.77	.27	.23	.36	.41	.27	.20	.48	2.3
8	.41	.62	.48	.62	.31	.23	.36	.41	.36	.20	.55	6.8
9	.36	.55	.88	.55	.27	.23	.31	.41	.36	.20	.69	2.55
10	.75	.41	1.65	.48	.41	.23	.23	.36	5.5	.28	.69	1.53
11	.55	.94	1.15	.41	.31	.23	.27	.36	4.1	.27	.77	.86
12	.55	1.88	.77	.36	*.27	.31	.23	.27	1.95	.36	.95	.95
13	.55	2.05	.55	.36	.23	.23	.20	.23	1.27	.36	.95	.86
14	.48	1.27	.48	.31	.20	.20	.20	.20	.77	.36	.77	.69
15	.41	.86	.41	.31	.23	.20	.20	.20	.48	.48	.69	.69
16	.41	.77	.41	*.27	.31	.20	.31	.20	.36	.55	.55	.69
17	1.36	.86	.41	.20	.67	.41	.27	.20	.48	.48	.62	.62
18	.95	.69	.36	.20	.41	.69	.23	.20	.77	.41	.55	1.22
19	.77	.93	.48	.20	.41	.62	.27	.27	.95	.41	.55	1.05
20	.86	1.42	.55	*.17	.36	.55	.20	.20	.55	.41	.62	1.30
21	.86	.95	.62	.17	.31	3.3	.92	.17	.41	.41	.69	2.2
22	.77	.86	.71	.20	.36	13.0	.62	.17	.41	.41	.69	1.15
23	.55	.62	.48	.23	.27	5.6	.41	.17	.36	.41	.62	1.15
24	.55	.95	.41	.20	.27	1.27	.27	.20	.41	.36	.48	.86
25	.62	1.15	*.36	.20	.27	.41	.27	.36	.55	.31	.69	1.78
26	.55	.86	.61	.20	.23	.31	.23	.95	.69	*.27	.55	1.05
27	.91	.62	.48	.52	.36	.41	.20	.69	.69	.36	*.57	.83
28	1.04	.55	.36	1.22	.31	*.31	.20	.41	.62	.36	.41	1.81
29	.77	.41	.55	1.05	.23	.27	.20	-	.69	25.5	.48	2.1
30	.55	.36	1.27	.95	.20	.36	.20	-----	.69	6.8	1.27	2.9
31	.48	.31	-----	.86	-----	.27	.20	-----	.41	-----	.48	-----
Total	20.37	24.46	18.03	15.20	10.20	31.27	49.56	9.68	41.22	41.99	67.69	78.65
Mean:												
mgd	0.657	0.789	0.601	0.490	0.340	1.01	1.60	0.346	1.33	1.40	2.18	2.62
cfs	1.02	1.22	0.930	0.758	0.526	1.56	2.48	0.535	2.06	2.17	3.37	4.05
Ac-ft	63	75	55	47	31	96	152	30	126	129	208	241
Calendar year 1953. Max	86			Min	0.17	Mean(mgd)	1.14	Mean(cfs)	1.76	Ac-ft	1,280	
Fiscal year 1953-54: Max	48			Min	0.17	Mean(mgd)	1.12	Mean(cfs)	1.73	Ac-ft	1,250	

Peak discharge (base, 250 mgd).--Jan. 1 (7 a.m.) 260 mgd (402 cfs), 3.22 ft.
* Discharge measurement made on this day.

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 1954 in reports of Geological Survey. July 1925 to November 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder and Parshall flume. July 1925 to November 1936 water-stage recorder at site 150 ft downstream at different datum.

Average discharge.--17 years (1937-54), 3.94 mgd (6.10 cfs).

Extremes.--1936-54: 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, Sept. 17-21, 1953.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.8	5.4	5.2	5.3	6.0	5.5	10.0	3.65	12.7	8.6	0.54	0.53
2	9.2	12.5	5.0	8.1	4.6	6.0	9.8	5.5	3.6	5.2	.22	.42
3	8.1	9.8	4.9	.06	4.3	6.6	6.0	3.45	1.40	4.2	5.0	.36
4	9.3	9.8	4.9	.03	5.8	12.1	6.0	3.45	.88	4.0	7.4	.31
5	7.4	7.8	5.2	1.92	5.0	11.4	5.5	3.45	.80	7.7	8.3	.25
6	6.4	7.4	5.0	3.8	5.8	9.8	4.6	3.5	.57	9.2	7.8	.20
7	6.9	10.6	4.6	4.2	9.8	10.4	4.4	3.45	.39	8.3	6.7	.22
8	7.4	11.4	7.2	5.0	8.5	12.0	4.2	3.45	.34	6.4	6.4	4.6
9	5.8	10.9	5.8	3.95	6.4	10.9	4.2	3.35	.28	5.5	6.9	9.3
10	5.4	7.8	8.8	5.2	12.6	6.9	3.95	3.45	.22	4.7	6.9	9.8
11	9.0	7.8	6.2	4.5	6.9	9.4	3.95	3.45	.22	4.6	5.7	8.2
12	6.4	7.8	5.7	3.95	5.2	7.5	4.2	3.7	.20	4.3	5.0	5.8
13	5.7	7.8	4.7	5.1	4.6	14.2	3.9	7.7	.17	4.3	5.0	5.8
14	10.4	7.6	4.6	5.6	5.4	10.4	3.7	6.3	.17	4.3	4.7	6.4
15	10.4	6.0	2.15	9.9	11.0	6.9	3.65	8.4	.14	4.1	4.6	6.4
16	10.4	5.4	.06	6.2	14.2	5.6	3.6	13.6	.18	6.4	5.4	6.0
17	8.5	5.1	.02	5.8	12.6	5.0	3.35	7.0	.12	12.0	9.5	6.4
18	8.2	5.7	.02	5.5	11.4	7.8	6.9	4.8	.12	10.4	8.0	6.0
19	7.4	5.4	.02	9.0	10.9	5.0	4.7	4.2	2.35	6.4	5.4	6.0
20	5.8	6.4	.02	5.2	7.5	4.6	3.9	5.0	3.95	5.4	6.5	6.4
21	5.4	5.4	.02	4.6	6.0	4.6	10.0	5.4	4.8	5.0	7.3	6.0
22	7.3	5.7	.03	5.4	5.3	5.0	6.0	11.5	6.1	8.8	8.8	5.7
23	6.0	6.7	.03	6.2	5.0	2.7	4.9	10.4	4.8	9.0	10.9	6.0
24	6.0	9.6	.03	4.5	11.3	.36	4.2	7.8	3.95	7.4	10.9	11.0
25	4.6	6.4	.03	4.2	9.3	.14	5.4	4.7	3.9	6.4	8.8	13.2
26	6.4	6.4	.03	4.2	5.8	.14	4.2	2.8	3.7	5.2	9.8	8.3
27	5.8	7.8	.03	4.2	5.1	.14	3.95	1.44	3.7	5.8	11.4	12.0
28	6.2	7.4	.03	4.3	6.0	.10	3.7	7.9	3.8	9.9	10.9	8.8
29	10.4	6.4	.03	6.8	9.5	.08	3.65	-	3.9	11.4	9.8	6.9
30	5.9	5.4	2.45	7.0	7.4	.08	3.9	-----	3.8	3.75	11.4	5.8
31	5.7	5.0	-----	7.4	-----	2.2	3.65	-----	3.65	-----	4.1	-----
Total	223.4	230.4	82.80	157.11	229.0	183.54	154.35	150.59	74.90	198.65	215.86	173.09
Mean:												
mgd	7.21	7.43	2.76	5.07	7.63	5.92	4.98	5.38	2.42	6.62	6.96	5.77
cfs	11.2	11.5	4.27	7.84	11.8	9.16	7.71	8.32	3.74	10.2	10.8	8.93
Ac-ft	686	707	254	482	703	563	474	462	230	610	662	531
Calendar year 1953: Max	14.2	Min	0.02	Mean(mgd)	5.43	Mean(cfs)	8.40	Ac-ft	6,090			
Fiscal year 1953-54: Max	14.2	Min	0.02	Mean(mgd)	5.68	Mean(cfs)	8.79	Ac-ft	6,360			

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 4.0 miles west of Kealia.

Records available.--April 1909 to May 1914, May 1915 to June 1954.

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.--36 years (1917-20, 1921-54), 5.23 mgd (8.09 cfs).

Extremes.--1909-14, 1915-54: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

Remarks.--Records excellent. 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.90	1.66	1.55	2.75	2.1	2.25	0.13	1.82	0.01	8.3	0.13	1.84
2	5.7	12.3	1.55	2.3	1.55	2.1	.18	1.73	.78	3.8	1.52	.19
3	2.75	5.9	1.38	.19	1.38	2.2	.16	1.73	2.1	2.75	4.1	.16
4	6.0	3.8	1.38	.13	1.64	10.2	2.2	1.73	2.35	2.65	5.3	.16
5	3.15	2.55	1.46	1.87	1.73	2.05	1.35	1.64	2.15	4.1	5.7	.16
6												
7	2.45	2.45	1.55	1.73	1.76	.27	.23	1.64	1.90	8.0	5.1	.19
8	2.35	7.6	1.38	1.73	21	5.1	.23	1.64	1.82	10.1	2.35	6.1
9	2.45	5.1	3.55	1.82	5.3	6.0	.54	1.64	1.82	6.7	1.89	6.2
8	2.25	1.38	1.82	1.64	2.55	5.3	1.81	1.64	1.73	5.2	.27	5.3
10	2.15	2.25	4.0	1.82	13.3	3.35	2.1	1.64	1.64	4.5	1.97	4.4
11	3.25	2.95	2.1	1.64	3.35	4.0	1.06	1.64	1.64	3.8	1.71	5.1
12	2.55	2.35	1.73	1.55	2.1	3.95	1.82	1.64	1.55	3.45	2.85	5.3
13	2.1	2.95	1.55	1.64	1.73	2.9	1.90	3.65	1.46	3.35	2.95	6.7
14	6.3	2.45	1.55	1.73	1.82	5.6	1.82	2.15	1.30	3.25	2.95	7.4
15	4.0	2.15	3.95	6.2	9.9	3.35	*1.78	3.05	1.14	3.15	2.85	5.5
16	6.0	1.90	5.6	2.45	9.8	3.25	1.73	16.2	.80	4.4	2.95	8.0
17	3.05	1.82	5.5	1.82	.10	3.25	1.73	3.85	.74	2.7	5.2	9.6
18	3.15	1.82	5.3	1.73	.07	1.24	1.24	1.99	6.7	.40	3.55	9.3
19	2.55	1.73	5.1	7.2	2.7	.27	2.45	1.73	6.0	4.1	2.85	9.1
20	2.15	1.82	5.5	1.90	4.5	.19	2.1	1.73	2.2	3.7	3.6	5.8
21	1.99	1.73	5.3	1.55	3.35	.16	1.08	1.73	.56	3.45	3.35	6.6
22	3.05	1.90	6.0	1.64	2.65	.16	.16	2.2	2.75	7.9	4.1	5.2
23	2.1	1.99	5.5	1.90	2.25	.16	.13	2.25	3.3	7.5	3.75	5.0
24	1.90	4.4	6.1	1.55	4.2	.19	.13	1.00	2.95	4.4	8.2	3.25
25	1.73	1.99	7.9	1.38	3.45	.19	.13	1.36	2.85	3.7	4.5	4.4
26	2.1	1.73	6.6	1.38	2.55	.19	1.46	.51	2.75	3.6	6.4	5.0
27	1.90	3.15	5.8	1.38	2.15	.10	2.1	.23	2.75	3.45	7.1	2.5
28	1.82	1.99	6.1	1.38	2.15	.10	1.99	.55	2.65	4.9	4.1	4.5
29	4.6	1.90	6.2	2.15	.90	.10	1.99	-	2.85	1.14	.19	5.6
30	1.99	1.64	8.0	2.1	2.05	.10	2.1	-----	2.65	.13	.19	6.1
31	1.73	1.46	-----	1.99	-----	.13	1.99	-----	2.55	-----	7.0	-----
Total	91.16	90.81	121.00	62.24	114.08	68.40	39.80	64.31	68.42	128.37	108.47	144.65
Mean:												
mgd	2.94	2.93	4.03	2.01	3.80	2.21	1.29	2.30	2.21	4.28	3.50	4.82
cfs	4.55	4.53	6.24	3.11	5.88	3.42	1.98	3.56	3.42	6.62	5.42	7.46
Ac-ft	280	279	371	191	350	210	122	197	210	394	333	444
Calendar year 1953: Max	21			Min	0	Mean(mgd)	2.84	Mean(cfs)	4.39	Ac-ft	3,180	
Fiscal year 1953-54: Max	21			Min	0.01	Mean(mgd)	3.02	Mean(cfs)	4.67	Ac-ft	3,380	

* Discharge measurement made on this day.

ISLAND OF KAUAI

Kapaa River at Kapahi ditch intake, near Kapaa

Location.--Lat 22°06'05", long 159°22'30", on right bank 4 miles northwest of Kapaa and 4.5 miles northwest of Waialua.

Drainage area.--3.3 sq mi.

Records available.--December 1936 to June 1954.

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

Average discharge.--17 years (1937-54), 12.5 mgd (19.3 cfs).

Extremes.--Maximum discharge during year, 850 mgd (1,320 cfs) Feb. 22 (gage height, 2.57 ft), from rating curve extended above 330 mgd by logarithmic plotting; no flow on many days.

1936-54: Maximum discharge, 3,570 mgd (5,520 cfs) Feb. 7, 1949 (gage height, 4.65 ft), from rating curve extended above 330 mgd 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

-0.03	0	0.7	40
0	.10	.8	54
.1	.74	.9	71
.2	2.55	1.0	90
.3	6.1	1.1	113
.4	11.5	1.2	140
.5	18.9	1.5	235
.6	28.5		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		0	0	0	0	0	44	0	228	7.1	9.7	27.5
2		0	0	0	0	0	11.2	0	40	0	7.0	17.3
3		.04	0	16.2	0	0	4.1	0	26.5	0	1.57	22
4		0	0	6.1	0	1.46	1.54	0	43	0	2.95	14.3
5		0	0	2.2	0	6.1	1.77	0	39	19.9	2.0	14.3
6		0	0	0	0	5.9	2.3	0	22.5	56	0	13.6
7		.57	0	0	4.1	2.1	2.3	0	14.3	3.3	1.72	12.5
8		3.65	0	0	0	2.75	1.99	0	12.9	0	2.1	10.6
9		7.8	0	0	0	1.69	.59	0	20.5	0	6.8	.22
10		.62	0	0	0	0	0	0	15.7	0	3.6	0
11		0	0	0	0	2.3	1.14	0	16.5	0	1.65	0
12		0	0	0	0	26	5.3	0	11.5	0	.28	0
13		0	0	0	0	60	0	0	10.9	0	0	.91
14		0	0	0	0	4.1	0	0	9.7	0	0	17.9
15		0	0	0	0	1.47	0	0	9.1	0	0	30.5
16		0	0	0	47	.63	0	4.0	8.6	9.3	0	5.0
17		0	0	0	36	.15	0	0	8.0	29	.73	7.7
18		0	0	0	10.9	5.9	9.1	0	.86	14.6	.03	3.9
19		0	0	.17	4.6	4.1	.43	0	.22	.58	0	2.0
20		0	0	0	0	6.5	0	0	1.39	0	.08	7.8
21		0	0	0	0	5.2	13.9	0	3.4	0	0	.51
22		0	0	0	0	11.4	3.1	105	3.2	.08	0	0
23		0	0	0	0	15.7	2.55	22.5	.34	.05	13.6	.06
24		.26	0	0	1.21	8.9	2.05	3.75	0	.61	3.3	6.6
25		0	0	0	.04	8.0	2.55	6.4	0	.86	0	23
26		0	0	0	0	9.1	.77	65	0	.10	8.0	.81
27		0	0	0	0	9.1	0	29.5	0	0	13.8	8.2
28		0	0	0	0	7.0	0	167	0	19.7	8.0	1.82
29		0	0	0	5.4	6.6	0	0	0	18.5	7.6	.09
30		0	0	0	.80	7.5	0	0	0	8.6	26.5	.17
31		0	.06	0	0	5.0	0	0	0	0	14.4	0
Total	0	12.94	0.06	32.17	110.05	224.65	110.68	403.15	546.11	186.28	135.41	249.29
Mean:	0	0.417	0.002	1.04	3.67	7.25	3.57	14.4	17.6	6.21	4.37	8.31
cfs	0	0.645	0.003	1.61	5.68	11.2	5.52	22.3	27.2	9.61	6.76	12.9
Ac-ft	0	40	0.2	39	338	689	340	1,240	1,680	572	416	765
Calendar year 1953: Max	120			Min	0		Mean(mgd)	5.76	Mean(cfs)	8.91	Ac-ft	6,450
Fiscal year 1953-54: Max	228			Min	0		Mean(mgd)	5.51	Mean(cfs)	8.53	Ac-ft	6,180

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

ISLAND OF KAUAI

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 1954.

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

Average discharge.--17 years (1937-54), 3.09 mgd (4.78 cfs).

Extremes.--1936-54: Maximum daily discharge, 48 mgd (74 cfs) Feb. 7, 1949; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Water that passes station flows into Kaupaku Stream and thence into Anahola River 2 miles below the Anahola River station.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	0	0.06	0	a3.7	0.06	34.5	0.12	3.0	15.8
2	.01	.13	0	.02	.02	0	a2.2	.06	17.1	.06	2.5	8.3
3	0	0	0	0	.02	0	a.30	.02	11.0	.06	2.15	9.1
4	.02	.02	0	0	.02	0	a.10	.02	14.9	.02	7.3	5.9
5	0	0	0	0	0	0	.06	.06	11.8	.06	.76	6.4
6	0	0	0	0	.02	0	.06	.06	8.0	.02	.06	5.0
7	0	.01	0	0	.01	0	.06	.06	5.4	.02	.06	3.2
8	0	.12	0	.02	0	0	.06	.06	4.8	.02	.06	.12
9	0	.09	0	.02	0	0	.06	.06	9.0	.02	.06	.12
10	0	0	.01	.02	0	0	.06	.06	11.1	.02	.02	.12
11	0	0	0	.02	0	0	.06	.06	6.5	.02	0	.12
12	0	.01	0	.06	0	0	.12	.06	4.5	.02	.02	.12
13	0	.06	0	.02	0	0	.06	.02	2.35	.02	.02	.12
14	0	.02	0	.02	0	0	.06	0	1.85	.02	.02	.12
15	0	0	0	.06	0	0	.12	.02	.52	.02	.06	4.9
16	.01	0	0	.02	0	0	.12	.06	.18	.06	.06	5.4
17	0	0	0	.02	0	0	.12	.02	.18	.06	.06	8.4
18	0	0	0	.06	0	2.7	.06	0	.18	.02	.02	5.9
19	0	0	0	.02	0	2.8	.02	0	.18	0	.02	5.4
20	0	.02	0	0	0	2.5	.02	0	.18	0	.06	8.1
21	0	.01	0	0	0	2.8	.02	0	.12	.02	.06	2.55
22	.02	.02	0	0	0	4.6	.02	.04	.18	0	.06	.12
23	0	.06	0	0	0	*7.6	.06	5.2	.12	.02	.12	.12
24	0	.06	0	0	0	3.05	.06	5.0	.12	0	.06	.12
25	0	0	0	.02	0	2.5	.12	7.0	.12	0	.02	.12
26	.02	0	0	.02	0	4.2	.06	a15	.18	0	.06	.12
27	.02	.01	0	.06	0	6.2	.06	13.1	.18	0	12.9	.12
28	.02	0	0	.06	0	2.5	.06	32.5	.12	.02	.12	.12
29	.04	0	0	.06	0	2.15	.06	-	.12	10.6	16.5	.12
30	0	0	0	.06	0	4.8	.06	-	.12	4.3	30	.12
31	0	0	-----	.06	-----	3.2	.06	-----	.12	-----	14.4	-----
Total	0.16	0.64	0.02	0.72	0.15	51.60	8.06	78.60	145.72	15.62	112.49	96.27
Mean												
mgd	0.005	0.021	0.001	0.023	0.005	1.66	0.260	2.81	4.70	0.521	3.63	3.21
cfs	0.008	0.032	0.002	0.036	0.008	2.57	0.402	4.35	7.27	0.806	5.62	4.97
Ac-ft	0.5	2.0	0.1	2.2	0.5	158	25	241	447	48	345	295

Calendar year 1953. Max 38 Min 0 Mean(mgd) 1.49 Mean(cfs) 2.31 Ac-ft 1,660
 Fiscal year 1953-54: Max 34.5 Min 0 Mean(mgd) 1.40 Mean(cfs) 2.17 Ac-ft 1,560

* Discharge measurement made on this day.
 a No gage-height record; discharge estimated on basis of records for nearby streams.

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 1954. May 1915 to December 1921 at site 0.3 mile upstream; records not equivalent owing to diversion.

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

Average discharge.--31 years (1921-25, 1927-54), 3.26 mgd (5.04 cfs).

Extremes.--1921-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.42	1.42	1.50	2.8	2.3	1.92	0.06	1.18	0.82	13.0	0.02	0.01
2	3.75	9.4	1.50	6.0	1.11	1.91	.06	1.11	.12	3.1	.02	.01
3	3.45	4.1	1.34	1.65	.90	1.73	.04	1.04	.06	2.1	.02	.01
4	5.4	4.9	1.26	.97	1.85	11.4	1.78	1.04	.06	1.82	.04	.01
5	2.25	2.2	1.34	*.77	1.18	5.6	2.55	1.11	.06	12.3	3.65	.01
6	1.91	2.0	1.34	.77	3.1	3.2	2.2	1.04	.04	12.7	3.35	.01
7	2.55	4.9	1.11	.77	13.2	5.0	2.0	.97	.04	5.3	3.1	2.55
8	2.35	10.2	2.6	.77	4.8	6.3	1.82	.90	.04	3.1	4.1	8.1
9	2.1	8.2	1.73	.71	1.91	6.5	1.73	.90	.04	2.55	10.6	5.7
10	1.64	2.8	3.0	.77	10.3	3.1	1.64	.90	.04	2.2	6.4	5.7
11	1.82	3.0	1.69	.77	2.95	5.7	1.73	.97	.04	2.1	3.25	4.2
12	1.64	4.4	1.42	.71	1.73	8.3	2.2	1.49	1.47	1.82	2.65	3.45
13	1.42	9.2	1.26	.94	1.42	18.0	1.50	9.9	1.91	1.82	2.55	3.6
14	3.25	5.4	1.18	1.18	1.50	6.2	1.42	1.50	1.58	1.73	2.2	9.9
15	2.65	3.35	1.26	3.35	12.1	3.8	1.34	8.6	2.9	1.58	2.0	13.4
16	4.7	2.25	1.11	1.82	29	3.0	1.34	18.8	2.8	10.0	2.0	1.58
17	2.95	2.0	1.11	1.34	10.4	2.65	1.26	4.4	2.55	29	4.6	2.65
18	2.9	2.0	1.04	1.95	5.4	3.65	5.7	2.2	3.3	10.6	2.55	1.76
19	2.35	2.2	1.04	7.0	4.6	.04	2.2	1.61	4.2	4.0	2.35	1.64
20	1.73	3.5	1.11	1.34	3.35	.04	1.42	2.2	2.35	3.1	3.95	2.65
21	1.64	2.4	1.04	.97	2.55	.04	6.3	1.73	2.35	2.65	4.0	2.85
22	2.35	2.25	1.18	.90	2.2	.04	2.0	17.2	4.9	3.1	4.2	4.0
23	1.73	3.15	1.04	1.11	1.91	.06	1.58	4.0	3.3	5.8	17.2	4.3
24	1.64	5.7	1.04	.90	5.9	.04	1.42	.04	2.2	4.6	10.6	8.6
25	1.42	2.35	1.66	.83	5.2	.04	2.6	.08	1.91	3.9	4.9	19.3
26	1.73	1.91	1.34	.83	2.25	.04	1.58	.05	1.82	2.55	21	4.9
27	2.0	4.1	.90	.71	1.82	.04	1.34	.06	1.82	2.35	5.8	7.5
28	1.42	2.55	.83	.90	2.1	.04	1.26	1.85	1.73	13.3	.04	6.5
29	4.5	1.82	.83	1.49	5.5	.04	1.18	-	1.82	4.2	.01	4.4
30	1.82	1.50	1.98	2.7	2.8	.04	1.64	-----	1.73	.04	.04	3.9
31	1.50	1.42	-----	1.82	-----	.04	1.26	-----	1.64	-----	.02	-----
Total	73.98	116.57	40.78	49.54	145.33	98.50	56.15	86.87	49.64	166.41	127.21	133.19
Mean:												
mgd	2.39	3.76	1.36	1.60	4.84	3.18	1.81	3.10	1.60	5.55	4.10	4.44
cfs	3.70	5.82	2.10	2.48	7.49	4.92	2.80	4.80	2.48	8.59	6.34	6.87
Ac-ft	227	358	125	152	446	302	172	267	152	511	390	409
Calendar year 1953:	Max 29			Min 0.04		Mean(mgd) 2.98		Mean(cfs) 4.61		Ac-ft 3,340		
Fiscal year 1953-54:	Max 29			Min 0.01		Mean(mgd) 3.13		Mean(cfs) 4.84		Ac-ft 3,510		

* 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 1954.

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 an eighth of a mile upstream at different datum.

Average discharge.--35 years (1919-54), 13.1 mgd (20.3 cfs).

Extremes.--Maximum discharge during year, 2,800 mgd (4,330 cfs) Feb. 26 (gage height, 7.03 ft), from rating curve extended above 230 mgd; minimum, 1.28 mgd (1.98 cfs) Oct. 27.

1910, 1912-54: Maximum discharge, 7,940 mgd (12,300 cfs) Apr. 1, 1948 (gage height, 11.06 ft), from rating curve extended above 230 mgd; minimum, that of Oct. 27, 1953.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.86	1.6	14.8
.7	1.46	1.8	25.5
.8	2.1	2.0	34
.9	2.8	2.3	62
1.0	3.55	2.6	99
1.2	5.3	3.0	170
1.4	7.6	3.5	295

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.45	1.84	1.87	3.85	2.05	2.55	32.5	2.65	257	19.2	7.8	31
2	2.95	4.5	1.84	2.15	1.77	2.25	7.6	2.55	46	6.5	6.9	20.5
3	3.35	3.7	1.78	2.1	1.52	2.25	5.8	2.45	50	5.7	6.3	18.3
4	4.0	3.4	1.78	1.65	1.91	5.6	4.9	2.45	24	5.3	9.1	15.5
5	2.7	2.5	1.91	*1.49	1.78	4.4	4.3	2.65	21	16.9	6.9	11.5
6	2.6	2.3	1.91	1.46	2.3	3.6	3.95	2.5	14.3	18.8	6.1	9.9
7	2.65	3.1	1.78	1.52	30.5	3.9	3.8	2.4	10.7	11.7	5.6	9.9
8	2.8	4.7	2.1	1.52	5.0	4.1	3.55	2.3	8.9	7.3	7.8	8.9
9	2.6	5.3	1.97	1.40	2.95	4.4	3.4	2.25	11.8	6.3	24	8.4
10	2.4	2.8	2.4	1.52	5.8	3.1	3.15	2.15	14.2	5.7	17.9	8.0
11	2.4	2.4	2.2	1.46	4.1	3.5	3.15	2.4	8.6	5.4	8.2	7.5
12	2.25	2.45	1.91	1.40	*2.5	12.5	3.6	2.3	7.8	5.1	7.3	7.0
13	2.25	4.5	1.72	1.52	2.1	22	3.0	3.65	7.2	5.1	6.6	6.8
14	2.6	4.7	1.72	1.59	2.05	6.4	2.85	2.7	6.9	4.8	6.2	8.4
15	2.65	3.0	1.72	1.84	4.9	4.2	2.8	4.8	7.0	4.6	6.1	16.0
16	3.3	2.3	1.65	2.4	*31	3.55	2.7	20	6.6	6.7	5.8	8.4
17	2.65	2.05	1.52	1.72	14.3	3.25	2.65	7.3	6.4	23	5.8	11.1
18	2.4	1.97	1.46	1.72	5.7	6.2	6.4	3.6	7.0	9.8	5.6	8.4
19	2.3	2.1	1.40	4.2	4.7	4.8	4.7	*2.95	8.4	6.0	5.0	8.0
20	1.97	3.0	1.40	2.05	3.6	4.8	2.95	2.85	6.0	5.0	5.5	9.2
21	1.91	2.3	1.40	1.59	3.1	4.7	7.8	2.7	5.7	4.9	6.3	8.0
22	2.05	2.25	1.52	1.52	2.7	4.4	4.3	39.5	15.1	6.3	5.7	7.3
23	*1.93	2.1	1.46	1.59	2.5	*8.2	3.3	18.6	8.3	15.7	13.7	6.9
24	*1.84	3.75	1.46	1.46	5.1	4.8	3.0	6.9	6.2	9.7	8.9	9.2
25	1.84	2.65	1.52	3.34	3.8	4.0	3.9	9.7	5.7	7.5	7.0	25
26	1.97	2.05	1.40	1.40	2.7	4.1	3.45	132	5.3	6.1	13.5	9.9
27	2.1	*2.45	1.34	1.40	2.45	8.9	2.85	33.5	5.3	5.5	12.9	9.9
28	1.97	2.4	1.40	1.52	2.45	4.2	2.7	252	5.4	10.7	10.7	10.3
29	2.3	2.1	1.34	1.91	3.6	3.7	2.7	-	5.0	*28.5	9.2	7.8
30	2.25	1.91	5.4	2.65	3.0	4.2	4.0	-----	4.6	11.5	69	7.5
31	1.91	1.78	-----	1.97	-----	4.3	3.0	-----	4.4	-----	24.5	-----
Total	75.34	88.35	54.28	56.91	159.93	162.85	148.75	571.80	580.8	285.3	341.7	332.3
Mean:	2.43	2.85	1.81	1.84	5.33	5.25	4.80	20.4	18.7	9.51	11.0	11.1
mgd	3.76	4.41	2.80	2.85	8.25	8.12	7.43	31.6	28.9	14.7	17.0	17.2
cfs	251	271	167	175	491	500	456	1,750	1,780	876	1,050	1,020
Ac-ft												
Calendar year 1953.	Max	215	Min	1.34	Mean(mgd)	8.19	Mean(cfs)	12.7	Ac-ft	9,160		
Fiscal year 1953-54.	Max	257	Min	1.34	Mean(mgd)	7.83	Mean(cfs)	12.1	Ac-ft	8,770		

Peak discharge (base, 900 mgd).--Feb. 26 (12:30 a.m.) 2,800 mgd (4,330 cfs), 7.03 ft; Feb. 28 (8 p.m.) 1,300 mgd (2,010 cfs), 5.45 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 wastewater, 1.3 miles southwest of mouth of Anahola River, and 2.5 miles northwest of Kealia.

Records available.--December 1936 to June 1954 in reports of Geological Survey. July 1925 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.--17 years (1937-54), 2.49 mgd (3.85 cfs).

Extremes.--1936-54: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times.

Remarks.--Records good except those for days of no gage-height record, which are fair. Ditch diverts water from Anahola River for irrigation of sugarcane. Flow regulated by spillways and gates.

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.35	1.69	1.92	4.1	1.92	2.8	0	3.1	0	6.2	0.03	0
2	2.45	2.3	1.92	2.45	1.80	2.6	0	3.0	0	5.8	.03	0
3	2.6	2.85	1.69	2.3	1.58	2.55	0	2.9	0	5.6	.01	0
4	3.05	2.65	1.63	1.92	1.69	3.6	0	2.85	0	5.4	.01	0
5	2.6	2.35	1.69	1.69	1.74	3.75	0	2.85	0	5.7	4.9	0
6	2.4	2.1	1.80	1.64	2.05	3.45	0	2.85	0	6.2	5.8	0
7	2.4	2.4	1.69	1.74	7.2	3.45	0	2.65	0	6.2	5.5	0
8	2.35	2.8	1.75	1.69	4.7	3.6	2.6	2.55	0	5.8	5.8	2.75
9	2.35	3.4	1.98	1.58	3.2	3.75	3.6	2.45	0	5.7	7.0	6.2
10	2.35	2.65	1.98	1.69	4.0	3.25	3.8	2.4	0	5.5	3.25	6.2
11	2.3	2.35	2.1	1.69	4.0	3.3	3.75	2.3	0	5.4	.01	6.2
12	2.15	2.35	1.86	*1.47	2.7	3.7	3.95	2.2	0	5.1	0	6.1
13	2.1	3.3	1.69	1.47	2.3	6.0	3.45	2.65	0	5.1	0	5.9
14	2.1	4.3	1.69	1.64	2.2	5.1	3.25	2.6	0	5.1	0	6.2
15	2.05	3.65	1.63	1.80	3.7	4.3	3.2	2.9	0	4.8	0	3.6
16	2.15	2.65	1.63	2.35	5.8	3.65	3.2	4.4	2.3	4.8	0	.03
17	2.25	2.4	1.47	1.86	5.9	3.6	3.05	4.6	6.1	5.3	0	.03
18	2.4	2.3	1.41	1.74	4.8	5.4	4.2	3.45	6.0	5.6	0	.01
19	2.3	2.3	1.36	3.25	4.4	7.0	4.7	3.0	6.4	6.6	0	.01
20	2.15	2.9	1.36	2.3	3.75	6.6	3.45	2.9	6.1	5.1	0	.01
21	1.98	2.45	1.36	1.80	3.35	3.0	5.6	2.65	5.9	4.7	0	.01
22	2.1	2.35	1.36	1.69	3.0	.02	4.8	4.2	6.0	5.7	0	.01
23	2.1	2.2	1.36	1.64	2.85	.01	4.0	7.0	6.2	6.6	0	.01
24	1.92	3.05	1.36	1.47	3.2	.01	3.7	7.0	5.8	5.6	3.0	2.95
25	1.86	2.9	1.47	1.36	3.45	0	4.0	1.95	5.6	5.5	a5.5	7.5
26	1.86	2.3	1.47	1.36	2.9	0	3.8	0	5.5	5.2	a6.0	6.6
27	1.86	2.6	1.36	1.47	2.65	0	3.4	0	5.2	5.1	a7.5	6.6
28	1.80	2.55	1.36	1.52	2.7	0	3.25	.01	5.6	5.5	a4.4	2.75
29	1.80	2.3	1.36	1.69	3.2	0	3.2	-	5.9	*7.5	0	1.99
30	1.92	1.98	5.1	2.35	3.2	0	3.7	-----	5.1	2.6	0	1.94
31	1.74	1.80	-----	1.98	-----	0	3.4	-----	4.9	-----	0	-----
Total	67.79	80.17	51.81	58.70	99.93	84.69	89.05	81.61	88.6	165.0	58.54	73.60
Mean:												
mgd	2.19	2.59	1.73	1.89	3.33	2.73	2.87	2.91	2.86	5.50	1.89	2.45
cfs	3.39	4.01	2.68	2.92	5.15	4.22	4.44	4.50	4.43	8.51	2.92	3.79
Ac-ft	208	246	159	160	307	260	273	250	272	506	180	226
Calendar year 1953: Max	8.0						Mean(mgd)	2.94	Mean(cfs)	4.55	Ac-ft	3,300
Fiscal year 1953-54: Max	7.5						Mean(mgd)	2.74	Mean(cfs)	4.24	Ac-ft	3,070

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and observer's notes.

Kalihwai ditch near Kilauea

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

Records available--June 1934 to June 1954.

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

Average discharge--19 years (1934-42, 1943-54), 2.58 mgd (3.99 cfs).

Extremes--1934-54: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.23	1.16	0.82	0.86	0.76	0.25	0.19	0.95	1.46	3.45	1.96	0.82
2	1.62	2.95	.70	1.29	.58	.25	.02	.95	1.02	1.70	1.70	.70
3	1.54	2.05	.64	.95	.47	.25	0	.82	.82	1.54	1.46	.58
4	1.92	1.62	.64	.76	.76	.25	0	.82	.58	1.46	2.0	.5
5	1.30	1.16	.76	.64	.64	.25	0	.88	.47	4.5	1.54	.5
6	1.23	1.16	.76	.64	.95	.25	0	.88	.37	2.55	1.46	.4
7	1.23	1.02	.70	.64	7.5	.40	0	.82	.37	1.87	1.38	.4
8	1.09	1.58	.70	.64	1.78	.42	0	.70	.37	1.62	3.25	.4
9	1.02	1.62	.70	.64	1.30	.37	0	.70	.42	1.46	5.1	.4
10	1.02	1.09	1.23	.70	2.8	.29	0	.64	.47	1.46	3.75	.3
11	1.02	.88	.82	.64	1.72	.29	0	.64	.47	1.54	2.15	.3
12	.95	1.08	.70	*.58	1.16	.33	.61	.92	.52	1.30	1.78	.3
13	.95	3.25	.70	.52	.95	.29	1.46	3.95	.58	1.30	1.54	.3
14	1.23	1.62	.70	.52	1.02	.25	1.46	1.23	.64	1.23	1.46	.8
15	1.16	1.23	.70	.79	3.15	.11	1.46	2.15	.64	1.16	1.46	4.6
16	1.23	1.09	.64	.76	12.1	.04	1.30	10.7	1.52	1.42	1.46	3.0
17	1.30	1.02	.58	.76	5.9	.11	1.30	4.2	2.65	3.05	1.30	3.9
18	1.38	.88	.52	.70	1.06	.17	1.69	1.96	2.75	2.7	1.16	3.0
19	1.30	.88	.47	1.42	.42	.11	1.38	1.54	2.65	1.54	1.16	2.7
20	1.09	.88	.58	.76	.33	0	1.23	1.78	2.45	1.30	1.30	4.5
21	1.02	.82	.47	.64	.33	0	1.62	1.54	2.45	1.30	1.51	2.3
22	1.09	.82	.47	.64	.37	0	1.23	10.6	2.25	1.30	1.87	1.9
23	1.09	.82	.52	.70	.33	.08	1.16	6.7	2.05	1.38	6.5	1.8
24	1.23	.95	.64	.64	.29	.04	1.16	4.3	1.78	1.48	5.9	3.5
25	1.16	.88	.64	.58	.29	0	1.23	3.6	1.62	1.46	3.55	8.9
26	1.30	.88	.58	.52	.29	0	1.02	15.3	1.54	1.16	4.4	3.0
27	1.23	.88	.58	.52	.25	.06	.95	7.3	1.46	1.16	6.9	4.4
28	1.23	.88	.52	.52	.25	.02	.95	3.4	1.38	1.58	13.1	3.5
29	1.72	.88	.52	.64	.25	0	.88	-----	1.46	8.1	11.6	2.7
30	1.30	.82	.75	.76	.25	0	1.30	-----	1.54	3.05	17.1	2.5
31	1.16	.70	-----	.64	-----	0	.95	-----	1.46	-----	.82	-----
Total	38.34	37.45	19.75	22.01	48.25	4.88	24.55	89.97	40.21	60.10	111.62	62.90
Mean:												
mgd	1.24	1.21	0.658	0.710	1.61	0.157	0.792	3.21	1.30	2.00	3.60	2.10
cfs	1.92	1.87	1.02	1.10	2.49	0.243	1.23	4.97	2.01	3.09	5.57	3.25
Ac-Ft	118	115	61	68	148	15	75	276	123	184	343	195
Calendar year 1953.	Max 12.1	Min 0				Mean(mgd) 1.41		Mean(cfs) 2.18		Ac-ft 1,580		
Fiscal year 1953-54:	Max 17.1	Min 0				Mean(mgd) 1.53		Mean(cfs) 2.37		Ac-ft 1,720		

* Discharge measurement made on this day.

Note.--No gage-height record June 4-30; discharge estimated on basis of records for Ka Loko ditch.

Ka Loko ditch near Kilauea

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

Records available.--August 1932 to June 1954.

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

Average discharge.--21 years (1933-54), 3.59 mgd (5.55 cfs).

Extremes.--1932-54: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.46 mgd (0.71 cfs) Nov. 21, 22, 1949.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.02	0.88	0.81	1.44	0.81	0.88	7.9	0.88	46	6.7	1.98	13.3
2	1.56	2.65	.81	.88	.68	.88	3.55	.81	11.8	2.15	1.80	6.2
3	1.54	1.57	.81	.75	.63	.95	1.89	.75	8.3	1.80	1.63	5.5
4	1.86	1.40	.75	.68	.68	3.1	1.54	.75	*6.3	1.63	2.7	4.3
5	1.09	.95	.75	.68	.68	2.15	1.31	.81	5.8	5.3	1.98	3.8
6	1.09	1.02	.75	.63	1.18	1.54	1.16	.75	4.7	5.5	1.71	3.45
7	1.23	1.36	.75	.57	9.2	2.25	1.13	.68	3.8	3.15	1.63	4.2
8	1.16	2.65	.88	.57	1.96	1.98	1.09	.88	3.25	2.15	3.25	3.7
9	1.02	2.5	.81	.57	.95	1.98	1.02	.68	4.7	1.80	8.9	3.5
10	1.02	1.16	1.34	.63	2.95	1.23	1.02	.68	8.0	1.71	4.6	3.25
11	1.02	.95	.75	.63	1.28	1.39	1.07	.75	3.35	1.54	2.15	2.95
12	.95	1.20	.75	*.57	.81	4.4	1.37	.68	3.25	1.47	1.89	2.65
13	.95	3.45	.75	.52	.68	4.9	1.02	1.29	2.85	1.47	1.80	2.75
14	1.23	2.85	.75	.57	.68	1.96	.95	.75	2.65	1.39	1.63	4.3
15	1.09	1.39	.75	.68	2.95	1.39	.88	2.4	2.65	1.39	1.54	6.7
16	1.39	.95	.75	.65	11.2	1.16	.88	10.1	2.55	1.54	1.54	4.1
17	1.16	.88	.68	.57	4.4	1.09	.81	2.75	2.35	4.2	1.63	5.3
18	1.09	.81	.68	.57	1.89	3.0	2.3	1.16	3.0	3.0	1.47	4.0
19	1.09	.88	.68	1.73	1.80	1.47	1.31	.88	3.2	1.54	1.39	3.7
20	.95	1.16	.68	.63	1.39	1.47	.95	1.02	2.35	1.39	1.51	5.2
21	.95	.81	.68	.63	1.09	1.54	1.54	.81	2.25	1.47	1.98	3.25
22	.95	.95	.88	.63	.95	1.74	1.09	7.2	3.3	1.80	2.05	2.75
23	.95	.81	.68	.63	.88	3.15	.88	4.4	2.75	5.8	5.0	2.75
24	.95	1.83	.68	.63	1.09	1.47	.81	2.25	2.05	3.2	3.85	4.4
25	.88	1.02	.68	.63	1.54	1.16	1.05	3.15	1.89	2.35	2.75	11.3
26	.88	.88	.68	.63	.95	1.52	1.02	17.0	1.80	1.71	4.8	3.45
27	.88	.88	.63	.57	.81	4.2	.81	11.5	1.80	1.54	6.2	5.0
28	.88	.88	.68	.57	.88	1.39	.81	36	1.80	3.45	5.1	3.9
29	1.31	.81	.63	.83	1.56	1.16	.81	-	1.71	10.6	4.1	3.05
30	.95	.81	4.2	.95	1.16	1.74	1.95	-----	1.63	2.75	25	2.95
31	.88	.81	-----	.75	-----	1.38	.95	-----	1.63	-----	9.2	-----
Total	35.97	41.15	25.90	21.95	57.71	59.62	44.87	111.56	153.46	85.49	116.76	135.65
Mean												
mgd	1.10	1.33	0.863	0.708	1.92	1.45	3.98	4.95	2.85	3.77	4.52	
cfs	1.70	2.06	1.34	1.10	2.97	2.97	2.24	6.16	7.66	4.41	5.83	6.99
Ac-ft	104	126	79	67	177	183	138	342	471	262	358	416
Calendar year 1953. Max	24.5			Min	0.52	Mean(mgd)	2.23	Mean(cfs)	3.45	Ac-ft	2,500	
Fiscal year 1953-54: Max	46			Min	0.52	Mean(mgd)	2.43	Mean(cfs)	3.76	Ac-ft	2,720	

* Discharge measurement made on this day.

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 1954.

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

Average discharge.--21 years (1933-54), 2.91 mgd (4.50 cfs).

Extremes.--1932-54: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times each year.

Remarks.--Records good. Ditch diverts water from Puu Ka Ele Stream 0.8 mile south of station. Water used for irrigation of sugarcane in vicinity of Kilauea. Flow regulated by wasteway gates.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.39	1.16	1.23	1.59	1.23	1.39	0.56	1.23	2.95	3.65	2.75	1.62
2	1.80	1.99	1.16	1.16	1.16	1.39	0	1.23	1.80	2.25	2.45	.05
3	1.47	1.67	1.09	1.09	1.09	1.54	0	1.23	3.65	2.05	2.25	0
4	1.99	1.47	1.09	1.09	1.23	3.05	0	1.16	5.3	1.98	2.65	0
5	1.54	1.39	1.16	1.02	1.09	2.35	0	1.23	5.5	3.8	2.35	0
6	1.47	1.54	1.09	1.02	1.35	2.3	0	1.23	4.9	3.45	2.15	0
7	1.54	1.39	1.02	1.09	6.4	2.85	0	1.16	4.3	2.85	2.15	0
8	1.54	2.5	1.16	1.09	1.98	2.45	0	1.16	3.9	2.35	4.7	0
9	1.47	2.4	1.16	1.09	1.39	2.25	0	1.16	4.4	2.15	6.1	0
10	1.39	1.54	1.39	1.09	2.55	1.98	0	1.16	4.4	2.05	6.0	2.0
11	1.39	1.31	1.16	1.09	1.80	1.98	0	1.31	3.8	2.05	3.15	3.45
12	1.31	1.39	1.09	*1.09	1.31	3.0	.47	1.23	3.45	1.98	2.75	3.05
13	1.31	2.4	1.02	1.16	1.23	3.8	1.36	1.47	3.25	1.98	2.65	3.15
14	1.63	2.4	1.02	1.16	1.23	2.25	1.47	1.23	3.05	1.89	2.45	4.4
15	1.47	1.71	1.02	1.31	2.45	1.98	1.39	1.84	2.95	1.89	2.35	5.9
16	1.63	1.47	.95	1.23	9.2	1.80	1.39	6.4	2.85	2.05	2.25	5.1
17	1.54	1.47	.95	1.23	5.1	1.71	1.31	3.65	2.65	2.75	2.25	5.4
18	1.47	1.39	.95	1.23	2.85	3.2	2.2	1.89	3.3	2.55	2.05	5.1
19	1.47	1.39	.95	1.72	2.45	1.98	1.80	1.63	3.55	1.98	1.98	4.7
20	1.31	1.39	1.02	1.23	1.98	1.89	1.39	1.63	2.75	1.80	2.15	5.6
21	1.23	1.31	.95	1.16	1.80	1.98	1.90	1.63	2.75	1.80	2.25	4.3
22	1.31	1.39	1.02	1.23	1.63	2.2	1.47	5.8	2.75	1.98	2.25	3.8
23	1.23	1.31	1.02	1.31	1.54	2.95	1.39	4.9	2.65	4.3	4.1	3.7
24	1.23	2.0	1.02	1.16	1.54	2.15	1.31	3.15	2.35	3.05	3.45	4.7
25	1.23	1.39	1.16	1.16	1.71	1.98	1.81	2.95	2.25	2.55	3.15	8.7
26	1.16	1.31	1.09	1.16	1.47	.74	1.54	1.81	2.25	2.15	3.05	4.6
27	1.16	1.39	1.02	1.16	1.39	0	1.39	1.01	2.15	1.98	5.1	5.5
28	1.23	1.39	1.09	1.16	1.39	0	1.31	2.75	2.05	2.65	4.0	4.7
29	1.93	1.31	1.09	1.31	1.80	0	1.23	-	2.05	6.8	3.7	4.0
30	1.23	1.16	2.3	1.31	1.47	0	1.87	-	2.05	3.45	6.4	3.8
31	1.16	1.16	-----	1.23	-----	0	1.31	-----	1.98	-----	1.11	-----
Total	44.23	48.49	33.44	37.13	64.61	57.14	29.87	58.43	96.98	78.21	98.14	97.32
Mean:	1.43	1.56	1.11	1.20	2.15	1.84	0.964	2.09	3.13	2.61	3.17	3.24
cfs	2.21	2.41	1.72	1.86	3.33	2.85	1.49	3.23	4.84	4.04	4.80	5.01
Ac-ft	156	149	103	114	198	175	92	179	298	240	301	299
Calendar year 1953.	Max	10.2	Min	0	Mean(mgd)	1.50	Mean(cfs)	2.32	Ac-ft	1,680		
Fiscal year 1953-54.	Max	9.2	Min	0	Mean(mgd)	2.04	Mean(cfs)	3.16	Ac-ft	2,280		

* Discharge measurement made on this day

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 1954 in reports of 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.--22 years (1932-54), 21.4 mgd (33.1 cfs).

Extremes.--1932-54: 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 Wailua 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.4	16.4	16.0	18.5	17.2	16.2	13.7	2.1	0.80	22.5	20.5	30
2	21.5	24	15.6	17.2	14.5	19.2	9.2	2.1	.30	15.6	19.6	27
3	19.2	21.5	14.8	14.8	14.1	19.6	3.8	2.1	.94	14.5	20.5	28.5
4	21	19.6	16.0	14.1	16.0	22.5	4.8	2.1	1.82	14.5	25	25
5	18.0	17.2	17.0	13.7	14.8	21	3.55	2.4	10.8	25	23	28.5
6	16.8	16.8	15.2	13.7	14.1	20.5	3.35	2.1	26	19.6	21.5	25.5
7	17.6	20.5	14.8	13.5	21	22.5	3.1	2.1	21.5	17.5	20	28
8	18.0	26	16.8	13.7	18.0	23	2.9	2.1	19.2	16.0	20.5	28.5
9	16.8	24.5	17.7	12.9	18.4	23.5	2.9	2.4	8.1	14.8	20.5	26
10	16.4	20	22	14.1	23	20.5	2.9	2.4	21	14.8	19.2	25
11	20.5	19.6	14.6	13.3	18.0	21.5	2.7	2.4	32	14.5	17.6	24
12	17.6	19.6	14.8	12.9	16.0	21	2.7	4.0	24	14.1	16.8	23
13	16.8	23	13.7	16.2	14.8	25.5	*2.5	6.4	21	14.5	16.8	23
14	23	21	13.7	16.8	16.4	18.4	2.5	5.8	19.2	14.1	16.4	29.5
15	20.5	18.4	13.7	19.6	21.5	16.0	2.5	4.3	16.4	13.7	16.8	35.5
16	20	16.8	13.3	16.0	28.5	14.8	2.5	6.4	17.2	23.5	16.8	27
17	18.8	16.4	12.9	16.8	25.5	14.1	2.5	3.5	16.8	38	21.5	28.5
18	18.8	16.8	12.9	16.0	*22.5	17.6	8.3	2.25	16.4	30.5	17.2	28
19	18.4	16.4	12.9	20.5	22	14.1	2.7	1.91	16.4	23	16.4	26
20	17.6	17.2	14.5	15.2	20	14.1	2.5	1.91	15.6	20	16.8	28
21	16.8	16.4	13.3	14.5	18.4	13.7	9.9	2.1	16.4	18.8	*16.4	23
22	19.4	18.4	13.7	15.6	16.8	16.8	3.1	8.7	16.4	18.8	21	21
23	16.8	17.6	13.7	17.2	16.4	17.9	2.7	2.9	16.0	18.8	29.5	20
24	18.4	21.5	16.0	14.1	20	14.8	2.5	.39	15.0	18.8	32.5	26
25	16.0	18.0	18.4	13.7	18.7	14.1	2.9	167	14.8	18.0	25.5	30.5
26	17.2	16.8	16.0	13.7	16.8	16.8	2.5	1.17	14.8	16.8	28	21.5
27	18.0	18.8	14.5	13.7	16.0	14.8	2.4	.50	14.5	18.0	33	29.5
28	18.0	18.0	16.8	15.3	16.0	13.7	2.1	2.4	14.5	32.5	33	23.5
29	*24	16.4	16.8	16.4	18.8	13.3	2.4	-	14.5	33	29	23
30	17.2	15.6	18.7	17.6	17.6	12.9	2.9	-----	14.1	24	35.5	21.5
31	16.8	15.6	-----	18.4	-----	12.9	2.1	-----	14.1	-----	31	-----
Total	573.3	582.8	460.8	479.7	551.8	547.3	117.10	79.40	472.56	598.2	697.8	784.0
Mean:												
mgd	18.5	18.8	15.4	15.5	18.4	17.7	3.78	2.84	15.2	19.9	22.5	26.1
cfs	28.6	29.1	23.8	24.0	28.5	27.4	5.85	4.39	23.5	30.8	34.8	40.4
Ac-ft	1,750	1,790	1,410	1,470	1,690	1,680	359	244	1,450	1,840	2,140	2,410
Calendar year 1953. Max	28.5			Min 1.54		Mean(mgd)	13.1	Mean(cfs)	20.3	Ac-ft	14,690	
Fiscal year 1953-54: Max	38			Min 0.30		Mean(mgd)	16.3	Mean(cfs)	25.2	Ac-ft	18,230	

* Discharge measurement made on this day.

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 1954.

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--35 years (1918-51, 1952-54), 46.2 mgd (71.5 cfs).

Extremes--Maximum discharge during year, 4,880 mgd (7,550 cfs) Jan. 1 (gage height, 10.12 ft), from rating curve extended above 70 mgd as explained below; minimum, 7.1 mgd (11.0 cfs) Sept. 21, Oct. 11-13, 25-29.

1914-54: Maximum discharge, at least 9,200 mgd (14,200 cfs) Jan. 3, 1952 (gage height, at least 13.0 ft, from floodmark), from rating curve extended above 70 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.

Remarks--Records good except those above 70 mgd, 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.

Revisions (fiscal years)--WSP 1289: 1948(M).

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge in million gallons a day)

July 1 to Dec. 31				Jan. 1 to June 30			
0.1	5.3	0.8	34.5	0.07	8.0	1.0	52.5
.2	7.9	1.1	56	.1	9.0	1.5	96
.3	11.0	1.4	82	.2	12.1	2.0	154
.4	14.5	2.0	150	.4	19.7	2.5	225
.5	18.7	2.5	225	.6	28.8	3.0	325
.6	23.5			.8	39.8		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.4	8.2	8.2	12.7	11.2	11.4	*212	20.5	262	22	17.3	52
2	17.4	33.5	7.9	27	6.2	15.8	66	20.5	101	11.5	15.3	33.5
3	13.1	24.5	7.6	10.7	7.6	17.6	34.5	19.7	99	10.2	15.0	37
4	18.8	14.7	7.9	8.5	9.1	39	38	19.3	110	9.9	26	27
5	11.1	10.7	8.5	7.9	8.2	29.5	31.5	21.5	131	34	22	58
6	9.1	9.8	7.6	7.6	8.5	33.5	27.5	19.7	64	14.8	18.9	26
7	9.4	18.6	7.4	7.6	63	40	26.5	18.9	46	11.8	16.5	43
8	9.4	35.5	9.1	7.6	16.7	40	25	18.9	43	10.2	15.3	46
9	8.8	27	9.4	7.4	12.4	48	23.5	18.5	56	9.3	19.0	31.5
10	8.5	11.4	31.5	7.6	42	23	23	18.5	51	9.0	16.5	28.5
11	10.7	12.6	13.1	7.4	15.5	30.5	23	18.9	40	9.0	12.8	24
12	9.1	17.8	9.4	7.1	10.4	91	*23	28.5	28	8.8	11.8	21
13	8.5	45	8.5	10.4	9.1	217	22	50	23.5	8.8	11.5	21.5
14	18.4	17.9	7.9	8.8	9.4	44	21.5	36	20.5	8.8	10.9	40
15	11.0	12.0	7.9	19.2	34	29	21.5	36	18.9	8.4	11.2	87
16	11.8	10.1	7.9	10.1	142	24	21	63	17.3	103	11.2	30
17	11.2	9.8	7.6	9.1	92	21	21	32.5	16.1	220	15.4	30.5
18	10.8	9.4	7.6	8.5	*42	42	54	24	15.7	44	11.8	31.5
19	9.8	8.8	7.4	27.5	38	19.6	25	22.5	15.7	21.5	10.6	26.5
20	8.8	10.1	7.6	8.8	24.5	18.7	22	23.5	14.3	16.1	*10.3	27
21	8.5	9.4	7.4	7.6	17.4	17.4	68	24	14.3	13.9	11.2	19.3
22	12.1	9.1	7.6	7.9	14.5	37	27	307	15.9	14.6	15.0	16.9
23	8.5	15.0	*7.4	10.7	13.1	34.5	24	122	13.2	17.8	43	15.7
24	10.0	20.5	8.8	7.6	24	20	22.5	46	11.8	15.3	57	26.5
25	8.2	10.7	13.7	7.4	19.6	17.0	*27.5	85	11.2	13.5	24.5	51
26	8.8	9.4	9.8	7.4	13.8	24	22.5	161	10.9	11.8	51	17.7
27	8.8	12.3	9.2	7.4	12.4	20	21.5	61	10.6	11.8	78	36
28	8.5	10.4	10.7	7.6	11.7	15.3	21	297	*10.9	130	65	24
29	26	9.4	9.9	8.8	17.3	14.2	21.5	-	10.9	77	45	21.5
30	*9.1	8.5	18.4	10.4	14.2	13.8	25.5	-----	10.2	23	137	21
31	8.1	8.2	-----	11.0	-----	13.4	20.5	-----	10.2	-----	64	-----
Total	341.7	470.3	291.9	315.3	761.8	1,061.2	1,063.0	1,633.9	1,303.1	919.8	890.6	951.1
Mean:												
mgd	11.0	15.2	9.73	10.2	25.4	34.2	34.3	58.4	42.0	30.7	28.7	31.7
cfs	17.0	23.5	15.1	15.8	39.3	52.9	53.1	90.4	65.0	47.5	44.4	49.0
Ac-ft	1,050	1,440	896	968	2,340	3,260	3,260	5,010	4,000	2,820	2,730	4,920
Calendar year 1953	Max	360	Min	7.1	Mean(mgd)	28.3	Mean(cfs)	43.8	Ac-ft	31,680		
Fiscal year 1953-54	Max	307	Min	7.1	Mean(mgd)	27.4	Mean(cfs)	42.4	Ac-ft	30,690		

Peak discharge (base, 2,000 mgd)--Jan. 1 (5:30 a.m.), 4,880 mgd (7,550 cfs), 10.12 ft; Feb. 26 (1 a.m.) 2,240 mgd (3,470 cfs), 7.42 ft.

* Discharge measurement made on this day.

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 1954.

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

Average discharge.--22 years (1932-54), 4.53 mgd (7.01 cfs).

Extremes.--Maximum discharge during year, 153 mgd (237 cfs) Apr. 29 (gage height, 3.02 ft), from rating curve extended above 18 mgd; minimum, 2.0 mgd (3.1 cfs) Dec. 2-12, 1931-54: Maximum discharge, 665 mgd (1,030 cfs) Aug. 15, 1950 (gage height, 4.55 ft), from rating curve extended above 18 mgd; 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 1953-54 (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		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9	2.9	2.55	2.4	2.1	2.1	2.8	2.8	28	5.2	6.5	4.7
2	2.9	2.9	2.55	2.3	2.1	2.0	2.8	2.55	11.1	3.95	5.4	4.2
3	2.9	2.9	2.55	2.3	2.1	2.0	2.55	2.4	6.5	3.4	4.9	3.95
4	2.9	2.9	2.55	2.2	2.1	2.0	2.85	2.4	15.0	3.3	6.3	3.8
5	2.9	2.9	2.55	2.2	2.1	2.0	3.05	3.8	23	4.0	6.1	3.7
6	2.9	2.9	2.55	2.2	2.1	2.0	2.65	3.7	14.8	3.8	5.6	3.55
7	2.9	2.9	2.55	2.2	2.1	2.0	2.55	*3.15	11.6	3.4	5.2	3.8
8	2.9	2.8	2.55	2.2	2.1	2.0	2.3	2.65	11.6	3.15	5.6	3.95
9	2.9	2.8	2.4	2.2	2.1	2.0	2.3	2.55	9.4	3.05	9.9	3.95
10	2.9	2.8	2.4	2.2	2.65	2.0	2.2	2.55	7.3	2.9	8.6	3.95
11	2.9	2.8	2.4	2.2	2.3	2.0	4.1	2.55	5.9	2.8	5.9	3.7
12	2.9	2.65	2.4	2.2	2.1	3.05	5.8	2.3	5.0	2.8	5.0	3.55
13	2.9	2.65	2.4	*2.2	2.1	*11.6	3.7	2.3	4.7	2.8	4.5	3.55
14	2.9	2.65	2.4	2.2	2.1	3.95	3.05	2.65	4.7	2.65	4.1	3.7
15	2.9	2.65	2.4	2.2	2.9	3.05	2.65	2.9	3.95	2.65	3.95	3.7
16	2.9	2.65	2.3	2.2	4.9	2.55	2.55	3.05	3.55	3.2	3.7	3.55
17	2.9	2.65	2.3	2.2	3.55	2.3	2.4	2.8	3.3	5.5	3.55	3.4
18	2.9	2.55	2.3	2.2	2.55	3.7	5.0	2.55	3.7	3.8	3.55	3.4
19	2.9	2.55	2.3	2.1	2.3	2.65	4.2	2.4	4.7	3.3	3.4	3.4
20	2.8	2.55	2.3	2.1	2.2	2.55	3.3	2.4	3.8	*3.15	3.4	*3.3
21	2.8	2.55	2.3	2.1	2.1	2.4	3.3	2.3	3.4	3.05	3.4	3.3
22	2.8	2.55	2.3	2.1	2.1	2.3	3.15	32.5	12.9	3.15	3.3	3.3
23	2.8	2.55	2.3	2.1	2.2	2.2	2.8	24.5	12.2	3.15	3.8	3.3
24	2.8	2.55	2.3	2.1	2.8	2.2	2.65	7.9	6.3	2.9	3.95	3.3
25	2.8	2.55	2.3	2.1	2.65	2.1	3.05	5.9	4.7	2.9	3.55	3.3
26	2.8	2.55	2.3	2.1	2.3	5.0	2.9	4.7	4.1	2.8	3.7	3.3
27	2.8	2.55	2.3	2.1	2.2	8.1	2.65	4.1	3.7	2.8	3.95	3.55
28	2.9	2.55	2.3	2.1	2.2	4.2	2.4	12.1	3.4	10.8	3.8	3.55
29	2.9	2.55	2.3	2.1	2.1	3.8	2.55	-	3.15	50	3.7	3.95
30	2.9	2.55	2.3	2.1	2.1	3.3	4.5	-	3.05	11.2	9.4	3.8
31	2.9	2.55	-----	2.1	-----	2.9	3.15	-----	3.05	-----	5.6	-----
Total	89.1	83.10	71.70	67.3	71.30	96.00	95.90	154.45	241.55	161.55	153.30	109.45
Mean												
mgd	2.87	2.68	2.59	2.17	2.38	3.10	3.09	5.52	7.79	5.38	4.95	3.65
cfs	4.44	4.15	3.70	3.36	3.68	4.80	4.78	8.54	12.1	8.32	7.66	5.65
Ac-ft	273	255	220	207	219	295	294	474	741	496	470	336
Calendar year 1953: Max	115				2.0		Mean(mgd)	3.77	Mean(cfs)	5.85	Ac-ft	4,220
Fiscal year 1953-54: Max	50				2.0		Mean(mgd)	3.82	Mean(cfs)	5.91	Ac-ft	4,280

Peak discharge (base, 70 mgd).--Feb. 22 (4 p.m.) 144 mgd (223 cfs), 2.97 ft; Apr. 29 (7:30 a.m.) 153 mgd (237 cfs), 3.02 ft.

* Discharge measurement made on this day.

ISLAND OF KAUAI

Miscellaneous discharge measurements

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

Miscellaneous discharge measurement on Kauai during fiscal year July 1953 to June 1954					
Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
July 2	Kokee ditch.....	Canefields....	Below Puluia Reservoir, near Waimea.	4.44	2.87
Aug. 6	Koale.....	Waimea River..	1/3 mile above confluence with Waiahulu Stream, near Waimea.	15.5	10.0
Sept.12	Wahiawa.....	Pacific Ocean.	Above Alexander Reservoir, near Kalaheo.	1.20	.77
Nov. 2	Lihue ditch.....	Canefields....	At Lihue Plantation gage, near Lihue.	29.8	19.3
Aug. 9	Milolii.....	Pacific Ocean.	Near mouth, near Mana....	2.51	1.62

ISLAND OF OAHU

39

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 1954.

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

Average discharge.--7 years, 2.63 mgd (4.07 cfs).

Extremes.--1947-54: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	4.2	2.8	5.3	0.58	1.53	3.85	0.94	1.5	1.1	2.7	6.3
2	2.7	6.6	3.2	4.7	.54	4.1	2.2	.85	1.3	3.5	1.85	5.7
3	3.8	6.9	2.1	3.75	.46	3.2	1.69	.73	1.1	1.7	2.55	6.1
4	6.3	6.0	1.85	2.1	.46	3.5	1.61	.68	1.1	1.1	5.5	5.7
5	4.7	6.3	1.69	1.53	.78	2.9	1.69	.68	1.7	.94	4.0	6.0
6	3.75	6.3	1.69	1.32	2.45	3.0	1.39	.63	1.1	.88	6.1	5.5
7	3.4	*7.3	1.85	1.61	3.8	3.3	1.32	.54	1.1	.88	4.2	6.3
8	4.3	6.9	3.35	3.6	1.53	3.3	1.32	.54	1.2	.85	4.0	6.4
9	3.4	6.6	4.1	3.5	*.97	3.1	1.32	.50	1.4	.78	5.2	5.5
10	3.3	6.1	5.9	2.5	.99	2.6	1.18	.46	3.6	.73	2.2	5.4
11	3.3	6.0	3.25	2.85	1.53	2.6	1.18	.46	1.1	.63	1.85	5.2
12	4.8	6.0	2.05	2.5	.68	2.8	1.18	.57	1.1	.58	1.53	5.2
13	3.5	6.3	1.61	1.61	.42	3.2	1.18	1.12	1.0	*.63	1.39	5.1
14	5.5	6.0	1.32	1.46	.36	3.4	1.18	.83	1.0	.68	1.75	5.4
15	4.8	5.6	1.25	1.39	.50	2.8	1.18	.94	1.0	.63	1.12	5.6
16	5.2	5.2	1.12	1.25	4.0	2.7	1.12	*1.15	1.0	1.26	1.06	5.2
17	4.6	5.0	1.06	1.12	4.5	2.7	1.12	.88	1.0	4.1	2.35	5.4
18	4.1	4.7	1.06	1.18	3.2	3.9	1.18	.83	1.2	4.8	5.7	5.5
19	5.5	4.3	.94	3.6	3.2	2.8	1.25	.83	2.3	1.87	5.9	5.5
20	5.4	4.1	.88	1.53	2.4	2.9	1.12	.83	2.5	1.12	4.8	6.1
21	4.8	3.85	.83	1.25	1.46	2.9	1.12	1.1	4.5	.88	*5.7	5.6
22	5.1	3.5	.78	1.12	1.12	3.75	1.18	1.2	3.0	.83	3.85	5.4
23	3.9	5.0	.78	2.2	1.12	2.8	1.12	1.3	2.2	2.5	6.6	5.2
24	3.6	6.0	.78	1.25	2.2	2.6	1.06	2.0	1.8	1.94	6.6	6.8
25	3.0	4.3	.83	.83	4.1	2.5	1.06	1.6	1.7	.94	5.4	7.3
26	2.7	3.3	1.46	.78	2.7	2.4	1.06	1.7	1.5	3.3	5.7	7.4
27	2.7	2.9	.88	.88	2.1	2.7	1.00	1.5	1.5	1.12	5.7	7.4
28	4.0	2.8	2.85	.73	1.77	2.3	.94	1.2	1.3	.83	6.0	6.5
29	7.0	2.6	1.52	.58	2.65	*2.3	.88	-	1.4	.94	5.7	6.6
30	5.7	2.3	5.4	.50	2.05	2.2	1.00	-----	1.2	2.3	6.5	5.7
31	4.5	2.2	-----	.58	-----	2.2	1.00	-----	1.1	-----	7.0	-----
Total	132.15	155.15	59.18	59.10	54.62	88.98	40.68	26.57	49.5	44.32	128.00	177.0
Mean:												
mgd	4.26	5.00	1.97	1.91	1.82	2.87	1.31	0.949	1.60	1.48	4.13	5.90
cfs	6.59	7.74	3.05	2.96	2.82	4.44	2.03	1.47	2.48	2.29	6.39	9.13
Ac-ft	406	476	182	181	168	275	125	82	152	136	393	543
Calendar year 1954:	Max 7.5			Min 0.36	Mean(mgd) 3.44	Mean(cfs) 5.32	Ac-ft 3,850					
Fiscal year 1953-54:	Max 7.4			Min 0.36	Mean(mgd) 2.78	Mean(cfs) 4.30	Ac-ft 3,120					

* Discharge measurement made on this day.

Note.--No gage-height record Feb. 21 to Apr. 5; discharge estimated on basis of records for nearby stations.

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 1954.

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

Average discharge.--7 years (1947-54), 21.5 mgd (33.3 cfs).

Extremes.--Maximum discharge during year, 1,100 mgd (1,700 cfs) Apr. 29 (gage height, 8.39 ft), from rating curve extended above 180 mgd as explained below; no flow at times. 1946-54: Maximum discharge, 1,610 mgd (2,490 cfs) Apr. 3, 1948 (gage height, 11.34 ft), from rating curve extended above 180 mgd on basis of slope-area determinations at gage heights 8.39 ft, and at 15.55 ft for flood of Nov. 28, 1954; no flow at times in 1953.

Remarks.--Records good except those for period of no gage-height record, which are fair. 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).--WSP 1289: 1947-52.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.05	0	0.8	5.0
.1	.03	1.0	9.1
.2	.15	1.3	20
.3	.39	1.6	37.5
.4	.80	2.0	74
.5	1.45	2.5	140
.6	2.35	3.0	218

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.80	0.72	0.13	22.5	0	2.2	117	0.37	15.2	0.22	2.15	33
2	.76	25.5	.22	20	0	20	34.5	.22	21	5.6	1.12	11.0
3	.86	47	.32	2.75	0	7.0	8.6	.15	15.8	1.34	1.00	25
4	45	8.1	.15	.90	0	7.5	6.1	.13	8.4	.39	14.6	8.6
5	5.7	11.0	.09	.32	0	11	11.1	.13	45	.25	3.65	28
6	1.81	10.4	.06	.13	0	16	4.6	.12	10.0	.17	21	8.0
7	1.12	*82	.06	.06	10.5	8.0	3.65	.10	9.0	.15	4.7	34.5
8	2.0	42	.06	1.28	.98	7.0	3.4	.09	17.6	.15	2.85	45
9	2.45	18.2	.66	1.24	*.27	4.9	3.65	.05	17.7	.12	2.2	10.2
10	.93	5.7	25.5	1.14	.15	3.4	2.7	.03	37.5	.10	1.19	6.8
11	.93	3.25	2.15	.34	.10	3.2	2.35	.01	12.3	.10	.93	5.2
12	8.6	2.75	.43	1.38	.03	3.0	2.1	19.3	11.6	.07	.68	4.8
13	2.9	18.9	.22	.47	0	17	1.81	51	7.3	*.04	.55	4.4
14	11.2	5.3	.10	.22	0	28	1.54	3.2	5.5	.03	.43	11.0
15	3.15	2.95	.06	.12	0	12	1.32	2.4	5.4	.03	.37	31.5
16	3.05	1.08	.06	.05	20	7.0	1.00	*36.5	4.4	.06	.34	14.5
17	2.1	.72	.04	.03	19.7	2.3	.86	3.4	4.2	.38	.58	17.3
18	1.99	.60	.02	.01	5.6	20	.86	1.32	4.4	10.8	8.0	20
19	9.8	.55	0	3.25	5.0	7.0	1.26	.72	2.05	.80	11.7	17.6
20	10.4	.47	0	.82	2.05	6.0	1.06	.51	1.45	.29	*14.9	50
21	3.85	.37	0	.22	.64	15	.80	1.06	6.2	.17	*9.6	17.3
22	2.75	.34	0	.10	.30	36	.80	5.7	7.8	.13	2.45	9.5
23	1.77	1.03	0	.05	.10	7.0	.88	5.9	1.26	.60	36	7.5
24	.98	11.3	0	.01	10	4.4	.55	28.5	.9	1.98	29.5	22.5
25	.51	2.05	0	0	33	3.7	.37	22	.68	.34	5.2	40
26	.47	.51	0	.02	14	3.1	.47	22.5	.64	.44	3.75	10.1
27	.39	.27	0	0	2.9	9.5	.80	22	.55	.53	15.9	29.5
28	.50	.20	0	0	1.8	2.7	.60	17.3	.51	20	10.1	15.0
29	50	.17	.70	0	6.5	*1.4	.47	-	.51	*157	5.3	35
30	5.5	.17	33	0	2.5	1.26	.64	-----	.27	9.4	45	14.6
31	1.36	.15	-----	-----	-----	1.00	.72	-----	.22	-----	158	-----
Total	181.13	303.73	64.03	57.41	138.12	277.56	216.34	244.71	275.24	229.50	413.54	587.4
Mean	5.84	9.80	2.13	1.85	4.60	8.95	6.98	8.74	8.88	7.65	13.3	19.6
mgd	9.04	15.2	3.30	2.86	7.12	13.8	10.8	13.5	13.7	11.8	20.6	30.3
cfs	556	932	197	176	424	852	664	751	845	704	1,270	1,800
Ac-ft												

Calendar year 1953. Max 161 Min 0 Mean(mgd) 6.99 Mean(cfs) 10.8 Ac-ft 7,820
Fiscal year 1953-54: Max 158 Min 0 Mean(mgd) 8.19 Mean(cfs) 12.7 Ac-ft 9,170

Peak discharge (base, 1,100 mgd).--Apr. 29 (6:30 a.m.) 1,100 mgd (1,700 cfs), 8.39 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 22 to Dec. 29; discharge estimated on basis of records for nearby stations and recorded range in stage.

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 1954.

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

Average discharge.--10 years, 6.62 mgd (10.2 cfs).

Extremes.--Maximum discharge during year, 472 mgd (730 cfs) Apr. 29 (gage height, 4.62 ft), from rating curve extended above 14 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Nov. 14, 15.

1944-54: Maximum discharge, 765 mgd (1,180 cfs) Mar. 26, 1951 (gage height, 5.86 ft), from rating curve extended above 14 mgd as explained above; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 1945, Nov. 14, 15, 1953.

Remarks.--Records good.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.01	0.9	1.33
.2	.03	1.0	2.3
.3	.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		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.86	1.29	*0.60	4.8	0.08	0.50	41	0.19	6.8	0.33	1.25	6.9
2	.86	36	.93	1.91	.07	*8.1	5.2	.15	7.0	12.1	.77	4.7
3	15.8	20.5	.86	1.06	.05	2.5	1.84	.13	3.35	1.05	*1.06	10.5
4	36	5.1	.87	.38	.05	7.9	2.15	.12	4.7	.51	23	3.6
5	3.0	5.1	.49	.16	.06	6.4	4.3	.12	12.2	.32	3.3	3.95
6	1.73	3.2	.41	.12	1.24	7.8	1.25	.11	3.95	.25	13.9	3.3
7	1.84	19.4	.39	.16	5.5	5.8	.98	.09	2.3	.21	3.3	25.5
8	3.9	7.6	.82	2.05	.36	3.95	.95	.07	6.4	.20	2.8	17.4
9	1.63	7.6	1.04	1.73	.12	2.75	.95	.07	8.9	.18	2.5	5.9
10	1.37	3.3	10.8	1.04	.30	1.56	.77	.06	21.5	.16	1.5	4.3
11	1.50	2.5	1.01	3.0	.53	1.56	.68	.07	5.5	.15	1.05	3.6
12	4.4	3.6	.47	1.17	.13	1.56	.61	.08	12.6	.14	.86	3.0
13	1.96	8.1	.32	.55	.04	10.4	.57	12.8	3.6	.13	.73	3.0
14	7.5	3.3	.27	.36	.01	10.2	.53	.63	2.5	.13	.64	6.3
15	2.75	2.3	.27	.39	.07	2.3	.47	2.9	2.05	.11	.57	5.9
16	3.0	1.63	.23	.38	5.2	1.41	.47	10.4	1.50	.20	.53	6.4
17	2.3	1.45	.21	.23	1.63	1.21	.43	.75	1.63	30.5	5.5	9.4
18	1.45	1.33	.19	.18	.79	8.7	.43	.21	1.83	5.6	9.8	7.6
19	4.8	1.33	.18	.75	.88	1.63	.53	.09	1.13	1.03	7.7	4.7
20	2.4	1.37	.17	.32	.68	4.6	.59	.09	1.05	.49	9.6	19.0
21	1.41	1.37	.16	.14	.23	3.4	.37	.10	2.75	.30	3.6	4.7
22	3.9	1.21	.15	.10	.10	31	.37	2.4	1.27	.21	1.50	3.0
23	1.40	1.43	.14	.10	.07	3.95	.51	6.8	.80	.79	9.9	3.75
24	1.75	8.8	.17	.09	5.9	2.5	.28	14.0	.61	.76	6.6	10.1
25	1.26	1.55	.23	.05	20.5	2.3	.27	9.6	.53	.40	2.05	15.5
26	.95	.95	.58	.06	2.7	1.84	.24	6.9	.47	2.65	8.9	4.3
27	.95	.77	.20	.08	.79	5.1	.23	5.2	.41	.50	15.9	13.4
28	2.2	.73	.60	.05	.49	1.73	.21	2.65	.39	.24	8.5	10.1
29	13.8	.68	.25	.03	3.75	1.41	.19	-	.39	60	5.1	15.1
30	2.3	.57	.22	.02	.69	1.33	.21	.19	.37	2.75	6.4	13.5
31	*1.29	.53	-----	.04	-----	1.11	.25	-----	*.31	-----	18.0	-----
Total	122.26	154.57	44.61	21.50	53.01	146.50	67.43	76.78	118.59	122.39	176.81	246.40
Mean:												
mgd	3.94	4.99	1.49	0.694	1.77	4.73	2.18	2.74	3.83	4.08	5.70	8.21
cfs	6.10	7.72	2.31	1.07	2.74	7.32	3.37	4.24	5.93	6.31	8.82	12.7
Ac-ft	375	474	137	66	163	450	207	236	364	376	543	756

Calendar year 1953: Max 46 Min 0.01 Mean(mgd) 3.16 Mean(cfs) 4.89 Ac-ft 3,530
 Fiscal year 1953-54: Max 80 Min 0.01 Mean(mgd) 3.70 Mean(cfs) 5.72 Ac-ft 4,150

Peak discharge (base, 400 mgd).--APR. 29 (4:30 a.m.) 472 mgd (730 cfs), 4.62 ft.

* Discharge measurement made on this day.

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 1954.

Gage.--Water-stage recorder and concrete control. Datum of gage is 844.51 ft above mean sea level, datum of 1929.

Average discharge.--7 years (1947-54), 14.7 mgd (22.7 cfs).

Extremes.--Maximum discharge during year, 680 mgd (1,050 cfs) Apr. 29 (gage height, 6.43 ft), from rating curve extended above 80 mgd; minimum, 0.27 mgd (0.42 cfs) Apr. 11-15, 26, 28.

1946-54: Maximum discharge uncertain, occurred Jan. 16, 1949 (gage height, 12.71 ft, backwater from Wahiawa Reservoir); minimum discharge, that of Apr. 11-15, 26, 28, 1954.

Remarks.--Records good except those above 100 mgd, which are poor.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.15	1.1	12.6
.3	.44	1.3	20.5
.4	.90	1.5	30.5
.5	1.58	1.7	43
.6	2.55	1.9	60
.7	3.7	2.2	92
.8	5.3	2.5	131
.9	7.2		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.7	1.67	*0.60	*1.59	0.48	1.09	53	0.65	*5.3	0.48	3.2	*15.0
2	3.7	35	.65	2.3	*.44	*15.4	12.3	.56	11.5	8.1	1.85	5.8
3	4.6	36.5	.70	1.44	.40	6.8	4.4	.52	5.2	1.86	*1.44	18.5
4	57	9.1	.70	.75	.48	7.5	3.05	.52	5.1	.70	31.5	6.2
5	8.9	5.8	.65	.48	.44	9.7	7.0	.52	16.7	.52	7.6	5.9
6	5.5	3.3	.60	.44	.48	11.8	2.85	.52	4.7	.48	16.6	5.2
7	5.3	20	.56	.44	1.20	8.0	2.15	.48	4.9	.44	7.3	57
8	7.2	12.1	.56	.52	.85	7.5	1.94	.44	5.2	.36	4.0	56
9	6.3	9.0	.52	1.85	.52	5.8	1.85	.44	9.7	.33	3.65	18.0
10	5.0	4.5	7.9	1.51	.60	3.2	1.51	.44	38	.33	2.35	15.3
11	5.3	2.85	3.0	2.5	.65	2.75	5.3	.48	11.4	.30	1.85	13.4
12	8.4	3.3	.85	3.8	.48	2.55	10.4	.44	21	.30	1.51	12.0
13	4.7	6.6	.60	1.58	.40	6.1	10.4	7.4	7.4	.27	1.30	11.8
14	9.9	5.2	.52	.96	.36	17.9	6.1	1.53	4.7	.27	1.16	13.7
15	4.8	2.85	.52	.75	.52	4.5	.90	.94	3.7	.30	1.09	15.3
16	4.2	2.35	.52	.60	1.43	2.55	.80	13.0	3.05	.33	.96	12.6
17	3.45	1.68	.52	.60	4.4	1.67	.80	2.3	3.05	20.5	1.57	16.4
18	2.85	1.60	.48	.52	2.25	14.9	.85	.75	2.95	10.6	7.5	16.4
19	6.4	1.58	.48	.52	1.81	5.7	1.16	.48	2.45	1.41	10.7	13.7
20	4.2	2.05	.44	.52	2.1	3.8	.90	.48	2.05	.52	5.7	29.5
21	2.35	2.05	.44	.48	1.23	7.0	.90	.52	3.0	.40	7.8	16.4
22	3.95	1.85	.40	.48	.60	29	.96	.56	2.7	.40	2.45	8.3
23	2.7	1.58	.40	.52	.52	9.5	.85	1.75	1.67	.56	15.2	4.3
24	2.05	7.4	.44	.48	.56	3.95	.75	18.8	1.23	.65	18.9	12.7
25	2.45	3.7	.52	.48	30.5	2.75	.65	15.5	1.09	.44	4.7	15.5
26	1.67	1.58	.60	.40	7.7	2.35	.60	17.5	.96	.36	9.6	6.8
27	1.09	1.09	.48	.44	2.0	5.0	.60	12.4	.90	.48	20	15.1
28	.85	.85	.44	.40	1.02	3.0	.56	8.1	.85	.30	14.8	16.3
29	15.4	.90	.52	.36	4.3	*1.92	*.56	-	.75	*120	8.5	53
30	5.1	.80	16.9	.40	2.1	1.58	.60	-----	1.56	9.0	6.3	*14.5
31	*1.76	.65	-----	.48	-----	2.35	.70	-----	*.52	-----	25	-----
Total	200.77	189.48	42.51	28.59	70.82	207.61	135.49	107.82	182.28	180.99	246.06	502.6
Mean:												
mgd	6.48	6.11	1.42	0.922	2.36	6.70	4.37	3.85	5.88	6.03	7.94	16.8
cfs	10.0	9.45	2.20	1.43	3.65	10.4	6.76	5.93	9.10	9.33	12.3	26.0
Ac-ft	616	581	130	88	217	637	416	331	559	555	755	1,540
Calendar year 1953. Max	83			Min	0.36	Mean(mgd)	5.31	Mean(cfs)	8.22	Ac-ft	5,950	
Fiscal year 1953-54: Max	120			Min	0.27	Mean(mgd)	5.74	Mean(cfs)	8.88	Ac-ft	6,420	

* Discharge measurement made on this day.

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 1954.

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

Average discharge.--7 years, 3.01 mgd (4.66 cfs).

Extremes.--Maximum discharge during year, 272 mgd (421 cfs) May 31 (gage height, 3.17 ft), from rating curve extended above 48 mgd by test on model of station site; no flow for several periods.

1947-54: Maximum discharge, 916 mgd (1,420 cfs) Mar. 30, 1947 (gage height, 5.68 ft), from rating curve extended as explained above; no flow at times.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0	0	0.6	2.45
.1	.03	.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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.18	0.09	0.04	3.15	0	0.14	1.20	0.16	0.12	0.16	0.16	0.01
2	.16	.16	.03	6.9	0	.86	.08	.06	.11	1.84	.09	.01
3	.16	.11	.02	2.3	0	1.20	.06	.03	.09	.57	.07	.01
4	5.85	.05	.02	.62	0	1.20	.06	.02	.08	.24	.06	.01
5	.95	.05	.01	.31	0	.93	.06	.01	.12	.16	.04	.01
6	.34	.28	.01	.20	0	.62	.05	.01	.08	.12	.04	.01
7	.22	*17.1	0	.12	1.98	1.54	.05	0	.07	.09	.03	.19
8	.22	6.0	0	.83	.31	2.15	.04	0	.09	.07	.03	.20
9	.31	2.0	0	.86	*.09	1.06	.04	0	.07	.07	.03	.14
10	.20	.94	8.0	.48	.08	.50	.04	0	.08	.06	.03	.11
11	.26	.62	.87	.20	.08	.54	.04	0	.06	.06	.02	.09
12	.24	.54	.24	.14	.09	3.3	.04	1.08	.06	*.03	.02	.08
13	.37	4.4	.11	.12	.04	5.9	.04	6.9	.06	.04	.02	.08
14	.61	1.39	.05	.09	.02	5.0	.03	.93	.05	.03	.02	.08
15	.58	.66	.03	.09	.02	1.00	.12	1.15	.05	.07	.02	.09
16	.26	.43	.02	.06	.63	.58	.20	*4.8	.04	.05	.02	.09
17	.31	.34	.01	.03	2.15	.46	.18	1.02	.04	3.45	.02	.09
18	.43	.31	0	.02	.77	5.1	.18	.50	.03	3.15	.02	.08
19	.31	.26	0	.04	.43	1.28	.43	.28	.03	.54	.02	.07
20	.43	.24	0	.26	.28	.71	.26	.24	.03	.28	.02	.07
21	.40	.20	0	.09	.11	1.34	.22	.37	.03	.18	.02	.06
22	.22	.22	0	.09	.06	4.6	.28	1.31	.04	.16	.02	.06
23	.16	.44	0	.04	.03	2.25	.20	1.07	.04	1.46	.02	.05
24	.11	1.40	0	.02	1.13	.66	.16	5.4	.03	.92	.02	.05
25	.06	.66	0	.02	5.8	.46	.09	6.4	.03	.24	.02	.06
26	.05	.24	0	.01	1.26	.46	.07	3.45	.03	.39	.02	.05
27	.04	.14	0	.01	.37	.37	.05	.24	.03	.31	.02	.06
28	.02	.09	0	0	.20	.31	.03	.20	.03	.14	.02	.05
29	2.2	.08	0	0	.49	*.26	.02	-	.15	3.6	.02	.05
30	.83	.08	5.7	0	.37	.24	.02	-----	.20	1.58	.02	.04
31	.22	.05	-----	0	-----	.24	.14	-----	.16	-----	12.2	-----
Total	14.70	39.57	15.16	17.10	16.77	45.26	4.48	35.63	2.12	20.06	13.18	2.05
Mean:												
mgd	0.474	1.28	0.505	0.552	0.559	1.46	0.145	1.27	0.068	0.669	0.425	0.068
cfs	0.733	1.98	0.781	0.854	0.865	2.26	0.224	1.96	0.105	1.04	0.658	0.105
Ac-ft	45	121	47	52	51	139	14	109	6.5	62	40	6.3
Calendar year 1953:	Max	20	Min	0	Mean(mgd)	1.24	Mean(cfs)	1.92	Ac-ft	1,390		
Fiscal year 1953-54:	Max	17.1	Min	0	Mean(mgd)	0.619	Mean(cfs)	0.958	Ac-ft	693		

Peak discharge (base, 130 mgd).--May 31 (4:30 a.m.) 272 mgd (421 cfs), 3.17 ft.

* 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 1954.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2.67 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 380 mgd (588 cfs) Apr. 29 (gage height, 4.03 ft); minimum recorded, 6.4 mgd (9.9 cfs) Sept. 28-30.
1951-54: Maximum discharge, 1,030 mgd (1,590 cfs) Dec. 31, 1951 (gage height, 5.81 ft); minimum recorded, 6.4 mgd (9.9 cfs) Sept. 28-30, 1953.

Remarks.--Records good except those for period of no gage-height record, which are poor. Flow is regulated by plantation operation.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.8	5.0	2.5	35
1.9	6.7	2.8	67
2.1	11.3	3.1	119
2.3	18.8		

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.7	8.5		7.1	10.6	7.1	52	10.6	14.6	9.4	16.9	8.7
2	8.7	9.8		7.4	10.6	6.9	35	13.0	*16.9	9.1	16.0	8.2
3	9.9	10.1		9.1	10.3	6.7	14.1	15.0	16.0	10.1	16.0	7.6
4	13.8	8.5		7.6	10.1	6.7	12.7	14.1	13.8	10.8	15.5	10.8
5	13.0	8.5		7.6	9.9	6.7	12.7	13.5	15.5	9.6	13.0	16.0
6	10.3	8.5		7.4	8.7	7.1	12.7	13.8	18.3	9.4	10.3	12.2
7	8.7	7.8		7.6	8.9	7.4	12.7	12.7	15.0	9.4	9.6	7.6
8	8.5	9.6		8.0	7.6	7.1	11.3	12.4	15.0	9.1	9.4	7.8
9	8.7	10.6		7.8	7.6	6.7	10.3	14.1	15.0	9.1	9.9	7.8
10	8.5	10.3		7.8	7.4	6.7	10.6	10.8	16.9	9.1	10.1	8.9
11	8.9	8.5		7.8	7.1	6.5	11.6	11.6	18.3	9.4	9.9	8.9
12	10.1	8.2		7.8	6.9	6.7	11.1	11.6	16.0	10.3	9.4	10.6
13	9.4	8.7	a7.5	7.4	7.1	8.0	12.1	11.1	15.5	9.6	8.5	11.3
14	10.3	9.4		7.1	7.4	7.6	11.9	11.6	16.0	8.9	7.8	7.4
15	10.6	10.3		7.1	7.6	7.6	11.9	12.7	14.6	9.1	7.8	8.2
16	9.6	10.6		7.1	8.0	8.2	11.9	14.1	13.0	11.1	8.2	8.0
17	9.1	9.9		7.4	7.8	7.1	12.1	13.3	13.3	11.6	8.5	8.0
18	9.4	8.9		7.8	7.4	9.1	12.1	13.5	13.5	10.8	7.8	7.8
19	9.6	8.2		7.6	7.1	10.1	12.1	11.9	13.5	10.6	8.0	9.6
20	8.5	8.0		7.4	7.1	10.6	11.9	14.6	13.5	9.9	8.2	13.0
21	8.2	8.0		7.6	7.1	11.3	12.1	13.8	13.5	8.7	8.0	8.7
22	8.5	8.0		7.4	7.4	11.1	12.1	13.3	13.5	8.2	7.8	7.4
23	8.5	9.6		8.2	7.4	11.3	12.4	11.3	13.3	8.5	8.5	7.8
24	8.2	9.1		8.9	7.1	11.1	12.7	11.6	13.5	9.1	8.7	7.4
25	8.9	7.6		7.8	7.1	9.4	12.7	11.8	13.5	8.5	7.4	7.1
26	10.1	7.8	6.9	7.8	7.1	9.1	12.4	*12.1	12.4	8.7	7.4	9.6
27	9.6	7.6	6.7	8.2	7.1	9.9	12.1	16.6	12.7	8.2	7.8	11.9
28	9.1	15.3	6.5	7.6	7.1	10.3	12.1	26.5	12.4	*8.0	7.6	8.0
29	8.0	8.7	6.5	7.6	7.4	11.6	9.9	-----	12.1	103	7.4	6.9
30	7.8	9.9	7.1	8.5	7.6	*11.6	11.9	-----	11.6	33	8.2	7.4
31	7.8	9.6	-----	9.9	-----	10.8	12.1	-----	10.3	-----	10.6	-----
Total	289.0	283.9	221.2	241.4	237.6	268.1	435.3	372.8	443.0	400.3	300.2	270.6
Mean:												
mgd	9.32	9.16	7.37	7.79	7.92	8.65	14.0	13.3	14.3	13.3	9.68	9.02
cfs	14.4	14.2	11.4	12.1	12.3	13.4	21.7	20.6	22.1	20.6	15.0	14.0
Ac-ft	887	871	679	741	729	823	1,340	1,140	1,360	1,230	921	830

Calendar year 1953: Max 153 Min 6.5 Mean(mgd) 10.7 Mean(cfs) 16.6 Ac-ft 11,940
Fiscal year 1953-54: Max 103 Min 6.5 Mean(mgd) 10.3 Mean(cfs) 15.9 Ac-ft 11,550

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 records for Waiawa Stream, weather records, and report of plantation operations.

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 1954.

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

Average discharge.--20 years (1931-34, 1937-54), 12.1 mgd (18.7 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.6	11.3	9.8	9.5	11.6	10.2	13.1	10.9	12.7	10.2	12.0	*8.8
2	11.3	11.3	10.2	10.2	9.8	9.8	13.1	10.9	12.7	10.2	12.0	8.5
3	11.3	11.3	9.8	10.9	9.8	10.9	13.1	10.5	12.7	12.0	10.2	8.5
4	11.6	11.3	9.5	12.0	9.8	11.6	13.1	10.5	12.7	12.0	10.5	9.1
5	11.6	11.3	9.5	12.0	9.5	11.6	13.1	10.5	12.7	9.8	10.5	12.0
6	11.6	9.8	10.2	12.0	9.1	11.6	13.1	12.3	13.1	8.8	10.2	12.0
7	9.8	9.5	11.6	10.9	11.6	11.6	13.1	12.3	13.1	9.1	10.5	8.8
8	9.8	9.5	9.8	10.2	11.6	11.6	12.7	10.9	13.1	10.5	10.2	8.5
9	9.8	11.3	10.2	9.8	9.8	11.6	12.7	10.5	13.5	9.5	12.0	8.8
10	10.2	9.8	10.2	12.0	9.5	11.3	13.1	10.9	13.5	9.8	10.2	9.8
11	10.2	9.8	10.5	12.0	9.5	11.3	13.1	10.2	13.1	11.6	12.0	8.5
12	11.6	11.3	10.5	9.8	*9.1	11.3	13.1	10.5	13.1	9.8	10.2	9.8
13	10.2	*11.3	10.9	11.6	9.5	11.3	12.7	12.0	13.1	8.8	8.8	12.0
14	10.2	11.6	11.3	11.6	11.3	11.3	12.7	12.3	13.1	9.5	8.5	10.2
15	11.3	11.6	10.9	11.6	11.3	11.3	12.7	12.3	13.1	9.5	11.3	9.1
16	11.3	11.6	10.5	10.5	9.8	11.3	12.7	12.3	13.1	11.3	11.6	8.8
17	11.3	10.2	8.8	11.6	9.8	11.3	12.7	12.3	13.1	11.6	10.2	9.1
18	11.3	10.2	9.5	11.6	9.8	11.6	12.7	12.0	13.1	11.6	9.8	8.8
19	11.3	10.2	9.1	10.5	9.5	11.6	12.7	12.0	12.7	9.1	9.1	9.8
20	10.2	10.5	10.9	11.6	9.5	12.0	12.7	12.0	12.7	8.5	8.2	12.7
21	10.2	11.6	9.8	11.6	11.6	12.0	12.7	12.3	13.1	8.2	8.2	9.1
22	9.8	10.9	9.5	11.6	11.6	12.0	12.7	10.2	12.7	*8.2	8.8	10.2
23	11.3	11.6	9.8	11.6	9.8	12.0	12.7	11.3	11.3	8.5	11.6	10.2
24	11.3	11.6	9.5	11.6	10.2	12.0	12.7	10.9	11.6	9.8	8.2	8.5
25	11.3	11.6	9.8	12.0	9.8	12.3	12.7	*12.7	10.9	12.0	8.5	8.2
26	11.3	11.3	10.2	12.0	11.6	12.3	12.7	12.3	12.7	9.8	9.1	8.5
27	10.5	9.8	11.6	9.8	9.8	12.3	12.7	12.3	12.7	9.8	8.2	12.7
28	11.3	9.8	10.2	9.8	11.6	12.3	12.7	12.7	12.7	9.8	10.2	9.5
29	11.3	10.2	10.2	9.5	11.6	12.3	10.9	-	10.2	12.0	10.5	9.1
30	7.9	11.6	8.2	9.8	9.8	*12.3	12.7	-----	10.2	12.0	11.8	8.5
31	9.8	10.2	-----	11.6	-----	12.7	12.7	-----	12.0	-----	9.8	-----
Total	333.5	334.9	302.5	342.8	308.6	360.6	398.9	322.8	390.1	303.3	312.7	288.1
Mean:												
mgd	10.8	10.8	10.1	11.1	10.3	11.6	12.8	11.5	12.6	10.1	10.1	9.60
cfs	16.7	16.7	15.6	17.2	15.9	17.9	19.8	17.8	19.5	15.6	15.6	14.9
Ac-ft	1,020	1,030	928	1,050	947	1,110	1,210	991	1,200	931	960	884
Calendar year 1953: Max	15.2			Min	7.9	Mean(mgd)	12.0	Mean(cfs)	18.6	Ac-ft	13,420	
Fiscal year 1953-54: Max	13.5			Min	7.9	Mean(mgd)	10.9	Mean(cfs)	16.9	Ac-ft	12,260	

* Discharge measurement made on this day.

Waiawa Stream near Pearl City

Location.--Lat 21°23'55", long 157°58'55", on left bank 100 ft upstream from bridge on Farrington Highway (revised), 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 1954.

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

Extremes.--Maximum discharge during year, 970 mgd (1,500 cfs) Jan. 1 (gage height, 7.21 ft); minimum, 1.86 mgd (2.88 cfs) Dec. 4, 1952-54; Maximum discharge, 1,160 mgd (1,790 cfs) Nov. 19, 1952 (gage height, 7.90 ft); minimum, that of Dec. 4, 1953.

Remarks.--Records good except those for period of no gage-height record, which are fair. Small quantity of water diverted occasionally for irrigation.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.5	1.67	2.2	14.9
1.6	2.6	2.5	29.5
1.8	5.4	3.0	75
2.0	9.2	3.5	155

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.25	3.45	2.5	3.1	2.3	2.6	129	2.4	9.2	2.5	7.6	*37
2	3.2	2.5	2.6	3.1	2.3	2.6	27.5	2.3	*32	2.5	4.9	12.0
3	3.2	2.75	2.5	3.1	2.4	2.6	10.6	2.4	*12.6	2.5	3.85	10.3
4	3.35	2.9	2.6	3.1	2.5	2.6	6.0	2.6	7.3	2.6	3.7	7.2
5	3.35	2.85	2.7	3.0	2.8	2.6	5.2	2.7	6.7	2.5	3.7	5.2
6	2.7	2.85	2.6	2.7	2.7	2.6	5.2	2.7	7.2	2.6	3.6	4.4
7	2.6	13.5	2.7	2.7	2.6	2.6	4.4	2.6	5.5	2.6	3.7	5.5
8	2.6	8.9	2.6	2.7	2.6	2.6	4.2	2.6	5.0	2.6	3.85	15.7
9	2.5	4.6	2.6	2.7	2.7	2.6	3.5	2.5	7.6	2.7	3.7	9.3
10	2.5	3.1	2.5	2.7	2.6	2.85	3.1	2.5	26.5	2.85	3.6	6.0
11	2.5	2.85	2.6	2.6	2.6	2.85	3.0	2.6	20.5	2.85	3.35	4.6
12	2.6	*2.8	2.6	2.6	2.6	2.85	2.85	2.6	11.7	2.85	3.35	4.0
13	2.5	18.6	2.6	2.6	2.6	2.7	4.9	8.7	2.7	3.2	3.2	3.7
14	2.5	9.1	2.5	2.6	2.6	3.55	2.7	4.2	6.2	2.95	3.2	3.5
15	2.6	3.5	2.5	2.6	2.7	5.5	2.6	3.3	5.0	2.6	3.2	3.35
16	2.6	3.0	2.4	2.6	2.6	3.1	2.5	21.5	4.2	2.85	3.2	3.1
17	2.6	2.85	2.5	2.6	2.6	2.7	2.5	6.7	6.0	2.85	3.1	3.0
18	2.5	2.85	2.4	2.6	2.7	5.6	2.5	3.6	7.9	2.85	3.0	3.0
19	2.5	2.7	2.5	2.4	2.7	9.4	2.5	3.0	6.4	2.7	3.3	4.3
20	2.5	2.7	2.5	2.4	2.85	4.6	2.4	2.7	5.4	2.7	4.6	10.0
21	2.5	2.7	2.5	2.4	2.7	12.6	2.6	2.6	4.0	2.7	3.5	15.2
22	2.5	2.6	2.4	2.3	2.7	42	2.5	2.6	3.6	*2.7	3.1	7.2
23	2.5	2.6	2.4	2.4	2.6	20.5	2.5	4.6	3.2	2.85	3.1	5.2
24	2.6	2.6	2.5	2.5	2.7	7.5	2.4	4.0	3.1	3.0	3.0	5.0
25	2.5	2.6	2.6	2.6	2.85	4.6	2.4	10.8	3.0	3.2	3.35	11.3
26	2.5	2.4	2.7	2.5	2.85	3.6	2.3	*18.5	2.85	3.0	3.2	8.7
27	2.6	2.6	2.6	2.4	2.7	4.6	2.3	11.3	2.85	3.0	3.2	6.4
28	3.0	2.5	2.6	2.5	2.7	5.2	2.3	12.6	2.7	2.85	5.7	10.0
29	3.75	2.5	2.6	2.6	2.7	5.0	2.4	-	2.6	*68	5.5	13.2
30	3.55	2.6	2.85	2.5	2.6	3.8	2.4	-----	2.6	*20.5	11.5	15.9
31	3.2	2.5	-----	2.4	-----	3.0	2.5	-----	2.6	-----	38	-----
Total	65.85	126.55	76.75	81.6	79.15	181.40	251.55	147.4	234.70	165.85	218.85	253.25
Mean:												
mgd	2.77	4.08	2.56	2.63	2.64	5.85	8.11	5.26	7.57	5.53	7.06	8.44
cfs	4.29	6.31	3.96	4.07	4.08	9.05	12.5	8.14	11.7	8.56	10.9	13.1
Ac-ft	263	388	236	250	243	557	772	452	720	509	672	777
Calendar year 1953:	Max	88	Min	2.3	Mean(mgd)	4.41	Mean(cfs)	6.82	Ac-ft	4,940		
Fiscal year 1953-54:	Max	129	Min	2.3	Mean(mgd)	5.21	Mean(cfs)	8.06	Ac-ft	5,840		

Peak discharge (base, 800 mgd).--Jan. 1 (8 a.m.) 970 mgd (1,500 cfs), 7.21 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 23 to Nov. 12; discharge estimated on basis of record for station on Halawa Stream.

Hawaiian Electric Co. tunnel at Waiau, near Pearl City

Location.--Lat 21°23'30", long 157°57'55", on right bank of ditch at Hawaiian Electric Co's. Waiau 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 1954.

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

Extremes.--1939-45, 1952-54: Maximum daily discharge, 17.3 mgd (26.8 cfs) Mar. 26, 27, 1940; minimum daily, 6.0 mgd (9.3 cfs) Aug. 3, 1941.

Remarks.--Records good. 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.4	11.6	8.2	9.4	7.7	8.9	8.2	10.3	10.1	10.4	8.7	10.0
2	11.6	8.2	8.8	8.8	8.8	7.7	8.2	10.8	10.6	10.6	8.9	10.3
3	11.6	8.8	8.2	8.2	8.8	7.7	8.2	8.8	10.7	9.3	9.5	9.9
4	11.0	9.9	8.8	8.2	8.2	8.5	8.4	7.7	10.9	9.2	9.4	10.7
5	8.8	*8.8	8.2	9.4	8.2	8.2	8.2	7.7	8.8	10.3	9.6	9.9
6	9.9	9.4	8.2	9.4	*8.6	9.6	8.2	7.7	8.4	9.3	10.5	10.9
7	9.4	10.4	7.7	9.4	7.7	8.5	8.2	8.2	10.9	10.6	10.5	11.0
8	10.4	7.7	9.4	9.4	8.2	9.3	8.2	8.2	11.7	11.6	9.3	10.5
9	11.0	8.2	11.0	9.4	10.9	9.7	8.2	9.6	10.9	11.6	9.8	11.0
10	9.9	9.9	11.0	7.7	11.3	10.6	8.2	10.3	11.1	11.3	10.8	11.0
11	9.9	9.9	9.9	7.7	10.2	10.6	8.4	10.0	12.2	9.0	10.1	11.0
12	8.2	11.6	9.4	9.4	7.7	9.9	8.2	8.9	12.2	11.1	10.1	11.0
13	10.4	11.6	8.2	8.8	9.2	7.7	8.2	8.2	11.3	10.7	10.4	11.0
14	10.4	11.6	10.4	9.9	9.7	9.8	8.2	8.2	11.4	11.6	10.0	11.0
15	11.6	11.6	11.0	8.8	7.9	10.7	8.2	8.7	11.1	10.5	10.0	10.0
16	11.6	8.2	11.0	8.8	8.5	10.6	8.2	9.1	11.4	10.6	10.2	10.0
17	11.6	8.2	11.0	7.7	8.6	10.2	8.2	9.8	11.9	9.6	10.7	10.1
18	11.6	9.9	9.4	8.2	8.5	8.5	9.3	10.1	11.3	9.0	10.2	10.0
19	11.6	11.0	8.2	8.2	8.4	8.4	9.2	8.2	11.2	11.6	10.9	9.6
20	11.6	9.4	7.7	8.2	8.1	8.2	9.8	8.2	11.1	10.8	10.0	9.9
21	11.0	8.8	9.4	8.2	7.7	10.2	8.9	8.2	10.9	10.5	9.8	9.9
22	11.6	8.2	10.4	8.2	7.7	10.7	8.2	8.2	12.0	10.3	9.9	9.9
23	11.6	7.7	8.8	7.7	7.7	10.5	8.2	10.1	10.4	10.4	9.8	9.4
24	11.6	9.4	10.4	7.7	7.9	8.7	8.2	9.8	10.7	9.8	9.9	10.2
25	7.7	8.2	9.9	7.7	7.7	7.7	9.2	10.6	10.5	8.3	9.9	8.9
26	7.7	10.4	9.4	7.7	7.7	8.2	8.2	9.8	10.5	*9.6	9.9	10.7
27	10.4	11.0	7.7	7.7	7.7	8.2	8.4	8.2	10.8	10.0	9.9	10.6
28	11.0	11.0	*9.4	7.7	7.7	10.9	9.1	8.2	10.9	9.8	*9.9	10.6
29	10.4	9.9	9.9	7.7	7.7	10.8	9.8	-	10.4	10.6	9.9	10.6
30	11.6	7.7	8.8	8.2	8.9	10.8	8.2	-----	10.3	9.5	9.4	10.2
31	11.6	8.8	-----	7.7	-----	10.6	8.2	-----	10.4	-----	9.9	-----
Total	328.7	297.0	279.8	261.2	253.6	290.4	262.7	251.8	337.0	307.5	307.8	309.8
Mean:												
mgd	10.6	9.58	9.33	8.43	8.45	9.37	8.47	8.99	10.9	10.2	9.93	10.3
cfs	16.4	14.8	14.4	13.0	13.1	14.5	13.1	13.9	16.9	15.8	15.4	15.9
Ac-ft	1,010	911	859	802	778	891	806	773	1,030	944	945	951
Calendar year 1953: Max	13.4			Min	7.7	Mean(mgd)	9.86	Mean(cfs)	15.3	Ac-ft	11,040	
Fiscal year 1953-54: Max	12.2			Min	7.7	Mean(mgd)	9.55	Mean(cfs)	14.8	Ac-ft	10,700	

* Discharge measurement made on this day.

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 1954.

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

Extremes--Maximum discharge during year, 260 mgd (402 cfs) Jan. 1 (gage height, 3.22 ft); minimum, 0.14 mgd (0.22 cfs) Feb. 20.

1952-54: 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 fair. Small quantity of water diverted for irrigation.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.17	0.17	0.6	7.1
.2	.27	.8	16.0
.3	.95	1.0	30
.4	2.25	1.2	50
.5	4.2		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1		0.55	0.41	0.41	0.86	0.69	0.20	33	0.31	2.1	0.41	1.27	16.9
2		.77	.41	.41	.69	.48	.20	5.6	.41	10.7	.36	.69	6.8
3		.86	.41	.36	.55	.48	.20	1.81	.41	*2.45	.36	.62	8.1
4		.69	.48	.41	.55	.41	.20	.62	.48	.77	.23	.41	4.5
5		.55	.62	.62	.77	.36	.20	.48	.55	.55	.27	.41	2.6
6		.48	*.62	.77	.77	.31	.20	.69	.48	.55	.20	.41	1.81
7		.41	.62	.62	.77	.27	.23	.36	.41	.27	.20	.48	2.3
8		.41	.62	.48	.62	.31	.23	.36	.41	.36	.20	.55	6.8
9		.36	.55	.88	.55	.27	.23	.31	.41	.36	.20	.69	2.55
10		.75	.41	1.65	.48	.41	.23	.23	.36	5.5	.28	.69	1.53
11		.55	.94	1.15	.41	.31	.23	.27	.36	4.1	.27	.77	.86
12		.55	1.88	.77	.36	*.27	.31	.23	.27	1.95	.36	.95	.95
13		.55	2.05	.55	.36	.23	.23	.20	.23	1.27	.36	.95	.86
14		.48	1.27	.48	.31	.20	.20	.20	.20	.77	.36	.77	.69
15		.41	.86	.41	.31	.23	.20	.20	.20	.48	.48	.69	.69
16		.41	.77	.41	*.27	.31	.20	.31	.20	.36	.55	.55	.69
17		1.36	.86	.41	.20	.67	.41	.27	.20	.48	.48	.62	.62
18		.95	.69	.36	.20	.41	.69	.23	.20	.77	.41	.55	1.22
19		.77	.93	.48	.20	.41	.62	.27	.27	.95	.41	.55	1.05
20		.86	1.42	.55	*.17	.36	.55	.20	.20	.55	.41	.62	1.30
21		.86	.95	.62	.17	.31	3.3	.92	.17	.41	.41	.69	2.2
22		.77	.86	.71	.20	.36	13.0	.62	.17	.41	.41	.69	1.15
23		.55	.62	.48	.23	.27	5.8	.41	.17	.36	.41	.62	1.15
24		.55	.95	.41	.20	.27	1.27	.27	.20	.41	.36	.48	.86
25		.62	1.15	*.36	.20	.27	.41	.27	.36	.55	.31	.69	1.78
26		.55	.86	.61	.20	.23	.31	.23	.95	.69	*.27	.55	1.05
27		.91	.62	.48	.52	.36	.41	.20	.69	.69	.36	*.57	.83
28		1.04	.55	.36	1.22	.31	*.31	.20	.41	.62	.36	.41	1.81
29		.77	.41	.55	1.05	.23	.27	.20	-	.69	25.5	.48	2.1
30		.55	.36	1.27	.95	.20	.36	.20	-----	.69	6.8	1.27	2.9
31		.48	.31	-----	.86	-----	.27	.20	-----	.41	-----	.48	-----
Total	20.37	24.46	18.03	15.20	10.20	31.27	49.56	9.68	41.22	41.99	67.69	78.65	
mgd	0.657	0.789	0.601	0.490	0.340	1.01	1.60	0.346	1.33	1.40	2.18	2.62	
cfs	1.02	1.22	0.930	0.758	0.526	1.56	2.48	0.535	2.06	2.17	3.37	4.05	
Ac-ft	63	75	55	47	31	96	152	30	126	129	208	241	
Calendar year 1953.	Max	86		Min	0.17	Mean(mgd)	1.14	Mean(cfs)	1.76	Ac-ft	1,280		
Fiscal year 1953-54:	Max	48		Min	0.17	Mean(mgd)	1.12	Mean(cfs)	1.73	Ac-ft	1,250		

Peak discharge (base, 250 mgd)--Jan. 1 (7 a.m.) 260 mgd (402 cfs), 3.22 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 1954.

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

Average discharge.--23 years, 15.9 mgd (24.6 cfs), unadjusted for pumpage.

Extremes.--1931-54: 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. 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.8	16.3	8.4	7.7	15.9	11.0	17.6	12.1	17.6	11.3	17.6	11.7
2	9.8	13.3	8.1	8.1	15.9	10.6	17.6	14.2	17.6	16.3	17.6	*12.5
3	12.5	9.8	8.1	13.3	15.9	10.6	17.6	17.2	17.6	16.7	17.6	14.6
4	17.2	8.8	8.1	12.5	15.0	13.3	17.6	16.7	17.6	16.3	17.2	13.3
5	14.6	8.8	8.4	8.1	9.1	15.4	17.6	13.3	17.6	11.3	11.3	16.3
6	12.1	8.8	11.3	8.1	*15.9	12.9	17.6	17.2	17.2	12.5	11.7	15.9
7	11.3	9.5	15.9	10.6	15.9	13.8	17.6	16.7	17.2	12.5	15.9	11.7
8	9.5	13.8	10.2	13.3	12.9	14.2	17.6	13.3	17.6	11.7	15.9	12.5
9	9.5	14.6	8.4	15.9	11.3	13.3	17.6	17.2	17.6	11.3	17.6	10.2
10	9.5	11.0	8.4	15.9	11.3	15.0	17.6	16.7	17.6	15.4	14.6	9.8
11	13.3	8.8	8.4	13.3	9.8	15.0	18.0	16.7	17.2	16.3	13.3	9.8
12	15.9	*8.8	15.9	11.7	11.0	15.4	17.6	16.7	17.2	15.4	10.2	11.7
13	11.7	8.8	13.8	15.9	13.8	15.4	17.6	17.2	17.2	15.9	11.0	15.0
14	13.3	8.8	8.4	13.8	15.9	15.4	15.0	17.2	17.2	10.6	11.0	14.6
15	11.3	16.3	8.4	11.0	12.9	14.6	17.6	17.6	17.2	18.3	14.2	11.3
16	11.3	15.4	8.1	15.9	11.0	9.1	17.6	17.6	17.2	16.7	16.3	9.8
17	10.2	8.8	9.8	15.9	11.0	11.3	17.2	17.6	17.2	16.7	9.1	9.5
18	13.8	9.1	8.1	15.9	11.0	15.9	12.9	*17.2	17.2	16.3	10.2	9.8
19	13.8	8.4	13.3	12.5	11.3	15.9	17.2	16.7	17.2	11.0	11.0	11.3
20	9.5	8.4	12.9	12.5	13.8	15.9	12.5	16.7	17.2	12.9	12.5	14.6
21	9.5	12.5	9.5	11.7	15.9	15.9	15.0	17.2	17.6	13.8	11.3	11.0
22	8.8	15.9	9.5	10.6	13.3	15.9	17.6	17.2	15.0	*13.3	11.0	9.8
23	9.1	12.9	8.1	12.9	13.3	16.3	17.6	16.3	14.6	13.3	16.3	11.0
24	8.8	9.5	8.1	15.9	13.3	16.3	17.6	16.3	14.2	15.4	13.8	9.8
25	11.7	9.1	8.1	15.4	15.4	16.7	17.6	16.7	14.2	17.6	10.2	9.8
26	13.8	9.1	12.5	10.6	13.8	16.7	17.6	17.2	17.2	13.3	11.3	11.0
27	8.8	9.8	12.1	13.8	14.2	16.7	16.7	17.2	17.2	14.6	13.3	12.5
28	8.8	9.1	9.8	11.0	15.9	16.7	11.7	17.2	17.2	14.6	11.0	10.2
29	12.9	15.9	7.7	11.3	13.3	17.2	17.6	-	17.2	15.4	11.0	9.5
30	8.8	13.3	7.7	15.0	11.7	*17.2	17.6	-	16.7	17.6	14.6	9.5
31	12.5	8.4	-----	15.9	-----	17.6	17.2	-----	16.7	-----	11.7	-----
Total	353.4	341.8	295.5	396.0	400.7	457.2	523.0	461.1	525.0	432.3	411.3	350.0
Mean:	mgd	11.4	11.0	9.85	12.8	13.4	14.7	16.5	16.9	14.4	13.3	11.7
	cfs	17.6	17.0	15.2	19.8	20.7	22.7	26.1	25.5	26.1	22.3	20.6
	Ac-ft	1,080	1,050	907	1,220	1,230	1,400	1,610	1,420	1,610	1,330	1,260
Calendar year 1953:	Max	20.5	Min	7.7	Mean(mgd)	13.5	Mean(cfs)	20.9	Ac-ft	15,170		
Fiscal year 1953-54:	Max	18.0	Min	7.7	Mean(mgd)	13.6	Mean(cfs)	21.0	Ac-ft	15,190		

* Discharge measurement made on this day.

ISLAND OF OAHU

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 1954.

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--28 years, 2.01 mgd (3.11 cfs).

Extremes--Maximum discharge during year, 91 mgd (141 cfs) May 31 (gage height, 2.48 ft); no flow during most of year.
1926-54: 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. Continuous records of rainfall are obtained at station.

Revisions (fiscal years)--WSP 905: Drainage area. WSP 935: 1931(M).

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

-0.2	0	0.4	1.13
-1	.01	.5	1.86
0	.03	.6	2.85
.1	.10	.8	5.7
.2	.30	1.1	15.0
.3	.63	1.5	27

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1							5.4	0	0.76	0	0.02	5.4
2							1.06	0	2.45	0	0	1.36
3							.07	0	.54	0	0	.51
4							.01	0	.12	0	0	.13
5							0	0	.26	0	0	.03
6							0	0	.23	0	0	.01
7							0	0	.07	0	0	.01
8							0	0	.04	0	0	.94
9							0	0	.03	0	0	.38
10							0	0	1.10	0	0	.08
11							0	0	.84	0	0	.03
12							0	0	.35	0	0	.02
13							0	0	.12	0	0	.01
14							0	0	.05	0	0	0
15							0	0	.04	0	0	0
16							0	0	.03	0	0	0
17							0	0	.04	0	0	0
18							0	0	.06	0	0	0
19							0	0	.06	0	0	0
20							0	0	.04	0	0	0
21							0	0	.04	0	0	0
22							0	0	.03	0	0	0
23							0	0	.02	0	0	0
24							0	0	.01	0	0	0
25							0	0	0	0	0	0
26							0	.34	0	0	0	0
27							0	.56	0	0	0	0
28							0	1.05	0	0	0	0
29							0	0	0	0	0	0
30							0	0	0	5.4	0	0
31							0	0	0	.59	1.19	0
									0	-----	19.9	-----
Total	0	0	0	0	0	0	6.54	1.93	7.33	5.99	21.11	8.91
Mean:												
mgd	0	0	0	0	0	0	0.211	0.069	0.236	0.200	0.681	0.297
cfs	0	0	0	0	0	0	0.326	0.107	0.365	0.309	1.05	0.460
Ac-ft	0	0	0	0	0	0	20	5.9	22	18	65	27
Calendar year 1953:	Max	7.6	Min	0	Mean(mgd)	0.123	Mean(cfs)	0.190	Ac-ft	137		
Fiscal year 1953-54:	Max	19.9	Min	0	Mean(mgd)	0.142	Mean(cfs)	0.220	Ac-ft	158		

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

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 1954.

Gage.--Water-stage recorder and concrete control. Datum of gage is 464.40 ft above mean sea level, datum of 1929. Prior to Oct. 12, 1923, water-stage recorder at same site at datum 2.00 ft lower.

Average discharge.--37 years (1916-20, 1921-54), 4.54 mgd (7.02 cfs).

Extremes.--Maximum discharge during year, 152 mgd (235 cfs) May 31 (gage height, 5.17 ft); minimum, 0.10 mgd (0.16 cfs) Nov. 5, 6.
1913-54: 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

2.0	0.06	2.4	3.9
2.1	.37	2.7	10.9
2.2	1.05	3.0	19.2
2.3	2.2	3.5	38

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.37	0.28	0.28	0.28	0.17	0.24	10.0	0.52	5.7	1.05	1.54	9.7
2	.42	.82	.28	.32	.14	.37	5.4	.47	6.7	1.78	1.05	5.7
3	.57	.87	.32	.24	.14	.32	2.8	.47	4.8	1.13	.87	4.4
4	.87	*.52	.32	.20	.17	.58	2.2	.52	*3.7	1.05	.87	3.5
5	.52	.65	.26	.20	.17	.65	1.45	.47	5.5	.96	.87	2.6
6	.42	.84	.26	.20	.33	.42	1.45	a.46	3.9	.87	1.43	2.65
7	.37	5.0	.26	.28	1.06	.52	1.13	a.45	2.95	.87	.96	4.6
8	.47	2.2	.28	.37	.32	.52	1.05	a.47	2.8	.75	1.97	4.6
9	.42	1.22	.32	.28	.24	.42	.87	a.48	2.65	.72	1.13	3.5
10	.47	.79	.32	.24	*.28	.37	.87	a.45	6.3	.72	.96	2.8
11	.37	.72	.32	.32	.26	.47	.87	a.50	4.6	.65	.79	2.35
12	.58	.65	.28	.24	.20	.96	.87	a5.0	3.15	.65	.72	2.35
13	.47	2.6	.26	.24	.17	1.43	.87	a6.0	2.5	.58	.65	1.90
14	.89	1.13	.26	.24	.17	2.05	.79	a2.8	2.2	.58	.65	2.05
15	.58	.72	.24	.24	.24	1.05	.65	a1.9	2.05	.58	.58	2.05
16	.58	.65	.24	.24	.37	.58	.65	1.54	1.78	.65	.52	1.78
17	.58	.58	.24	.20	.28	.52	.65	.96	6.6	1.22	.87	1.66
18	.47	.58	.24	.20	.26	1.57	.65	.72	4.8	1.22	1.32	1.54
19	.58	.58	.24	.32	.24	1.05	.65	.65	3.3	.72	3.9	1.34
20	.42	.58	.24	.24	.20	5.0	.65	.65	2.5	.65	2.05	2.2
21	.37	.52	.24	.24	.17	3.7	.65	.79	2.5	.58	1.66	1.78
22	.37	.52	.20	.20	.17	6.0	.65	1.43	2.05	.58	1.22	1.54
23	.32	.58	.24	.20	.20	3.8	.65	3.5	1.90	.87	1.13	1.54
24	.28	.87	.24	.17	.28	*1.92	.58	7.4	1.66	.87	1.66	1.78
25	.28	.47	.24	.17	1.05	1.32	.58	8.0	1.54	.65	1.22	2.2
26	.28	.42	.26	.20	.47	1.13	.52	6.7	1.32	.87	1.13	1.66
27	.24	.37	.20	.20	.28	1.22	.52	5.3	1.32	.65	2.1	2.65
28	.32	.42	.37	.17	.24	.96	.47	6.0	1.32	.58	3.15	2.05
29	.87	.32	*.28	.17	.32	.83	.47	-	1.32	7.5	2.2	3.15
30	.42	.28	.28	.17	.28	.63	.58	-----	1.13	3.15	4.9	2.8
31	.32	.28	-----	.17	-----	.92	.52	-----	1.13	-----	28	-----
Total	14.49	27.03	8.13	7.15	8.93	41.52	40.67	64.60	95.67	33.70	72.07	85.02
Mean:												
mgd	0.467	0.672	0.271	0.251	0.298	1.34	1.31	2.31	3.09	1.12	2.32	2.63
cfs	0.723	1.35	0.419	0.357	0.461	2.07	2.03	3.57	4.78	1.73	3.59	4.38
Ac-ft	44	83	25	22	27	127	125	198	294	103	221	261
Calendar year 1953: Max	16.3											1,290
Fiscal year 1953-54: Max	28											1,530
Min												
Mean(mgd)												
Mean(cfs)												
Ac-ft												

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

* Discharge measurement made on this day.

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

ISLAND OF OAHU

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 1954.

Gage.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level, datum of 1929. Prior to Sept. 7, 1915, staff gage at same site at datum 0.03 ft lower. Sept. 7, 1915, to Apr. 4, 1918, staff gage at same site and datum.

Average discharge.--35 years (1917-20, 1922-54), 4.84 mgd (7.49 cfs).

Extremes.--Maximum discharge during year, 64 mgd (99 cfs) May 31 (gage height, 2.45 ft); minimum, 0.28 mgd (0.43 cfs) Oct. 29, 30.
1913-54: 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 except those for period of no gage-height record, which are fair. 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.14	0.8	2.95
.2	.38	.9	3.5
.3	.69	1.0	4.1
.4	1.05	1.1	5.2
.5	1.45	1.3	9.7
.6	1.90	1.7	23
.7	2.4		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1												
2	0.94	0.91	0.73	0.63	0.31	0.54	1.98	0.44	2.95	1.72	1.37	3.2
3	.94	1.18	.76	.65	.33	.60	1.37	.38	2.8	1.81	1.29	27.15
4	1.26	1.38	.83	.57	.31	.63	.94	.38	2.1	1.58	1.25	2.0
5	1.58	*.85	.91	.54	.33	.91	.92	.38	2.1	1.54	1.21	1.86
	1.01	.83	.83	.50	.33	.47	.91	.48	3.2	1.96	1.29	1.76
6	.98	1.01	.80	.47	*.67	.50	.80	.38	1.81	1.96	1.41	1.68
7	.94	4.1	.83	.50	.58	.53	.91	.36	1.86	2.1	1.25	2.8
8	.94	1.92	1.01	.54	.44	.50	.83	.38	2.1	2.2	1.33	2.2
9	.91	1.05	.80	.54	.41	.47	.80	.41	2.05	2.2	1.17	1.68
10	.91	.94	.73	.44	.50	.47	.73	.36	5.2	2.15	1.13	1.58
11	.91	.91	.57	.64	.44	.59	1.01	.41	2.45	a2.2	1.23	1.63
12	1.00	.94	.54	.54	.38	.54	.66	2.05	2.0	a2.1	1.10	1.72
13	.87	1.57	.57	.57	.38	.77	.59	2.55	1.81	a1.8	1.09	1.58
14	1.07	1.24	.54	.47	.38	1.14	.60	.76	1.72	a1.2	1.01	1.76
15	.91	1.09	.54	.57	.47	.60	.54	.73	2.15	1.13	1.05	1.81
16	.91	1.13	.54	.56	.50	.54	.54	.66	1.76	1.13	1.05	1.72
17	.91	1.57	.60	.38	.54	.57	.54	.60	8.6	1.97	1.29	1.68
18	.87	1.54	.57	.40	.62	.66	.63	.57	3.1	1.63	1.37	1.63
19	.87	1.66	.57	.53	.54	.63	.69	*.57	2.45	1.33	2.65	1.81
20	1.16	1.21	.57	.41	.44	2.4	.88	.60	2.35	*1.25	1.54	1.95
21	1.00	.94	.57	.38	.44	1.49	1.08	.66	2.2	1.25	1.33	1.72
22	.83	.91	.57	.41	.44	*2.7	.63	3.05	2.05	1.29	1.21	1.54
23	.80	.91	.54	.44	.47	1.75	.60	2.15	1.95	1.54	1.32	1.83
24	.80	.81	*.57	.38	.64	.98	.57	3.25	1.88	1.33	1.54	1.72
25	.80	.41	.60	.36	.79	.87	.80	4.3	1.81	1.29	*1.25	1.68
26	.80	.38	.63	.38	.54	.83	.47	3.2	1.76	1.25	1.33	1.68
27	.80	.63	.54	.33	.50	.99	.53	1.95	1.76	1.13	1.51	1.95
28	.83	.76	.75	.36	.50	.80	.54	2.75	1.76	1.17	1.81	1.76
29	1.04	.73	.60	.31	.67	.80	.47	-	1.68	4.5	1.37	2.1
30	.87	.73	1.18	.31	.54	.80	.41	-----	1.63	1.72	2.2	1.66
31	1.08	.73	-----	.33	-----	.83	.47	-----	1.83	-----	11.8	-----
Total	29.34	34.97	20.39	14.40	14.43	26.60	23.44	34.76	74.65	51.43	52.75	55.84
Mean:												
mgd	0.946	1.13	0.680	0.465	0.481	0.858	0.756	1.24	2.41	1.71	1.70	1.86
cfs	1.46	1.75	1.05	0.719	0.744	1.33	1.17	1.92	3.73	2.65	2.63	2.88
Ac-ft	90	107	63	44	44	82	72	107	229	158	162	171
Calendar year 1953: Max	12.2											
Fiscal year 1953-54: Max	11.8											
Min	0.31											
Mean(mgd)	1.46											
Mean(cfs)	2.26											
Ac-ft	1,640											
1953	1.330											

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

* Discharge measurement made on this day.

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

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 1954.

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.--35 years (1913-20, 1926-54), 3.07 mgd (4.75 cfs).

Extremes.--Maximum discharge during year, 225 mgd (348 cfs) May 30 (gage height, 3.36 ft), from rating curve extended above 21 mgd by test on model of station site; minimum daily, 0.77 mgd (1.19 cfs) Feb. 3-11.

1913-21, 1925-54: 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 table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 17 to Feb. 1, Apr. 21-30, May 16-24)

0.2	0.61	0.7	4.5
.3	1.15	.8	5.6
.4	1.85	.9	6.7
.5	2.65	1.1	9.4
.6	3.5	1.3	14.5

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.43	2.3	1.36	1.22	1.04	1.10	3.2	0.88	3.05	1.29	1.29	3.65
2	1.43	7.5	1.29	1.15	.93	1.51	2.05	.80	3.0	1.79	1.10	2.55
3	2.75	3.6	1.22	1.10	.93	1.38	1.29	.77	2.25	1.15	1.10	2.8
4	5.0	1.93	1.22	1.04	.93	2.1	1.22	.77	2.1	1.15	1.15	2.1
5	2.1	2.9	1.22	1.04	*.97	1.57	1.28	.77	3.15	1.15	1.22	1.93
6	1.71	6.9	1.22	1.10	2.9	1.64	1.10	.77	1.93	1.15	3.1	1.78
7	1.57	7.9	1.22	1.50	1.69	1.96	1.10	.77	1.78	1.15	1.57	5.2
8	2.4	3.9	1.29	1.50	1.15	1.7	1.84	.77	2.6	1.15	5.3	3.0
9	1.64	2.5	1.29	1.4	1.10	1.5	1.10	.77	2.6	1.15	1.64	2.1
10	1.71	2.1	1.36	1.2	1.39	1.37	1.04	.77	10.2	1.15	1.36	1.93
11	1.50	1.85	1.22	1.6	1.15	3.1	1.04	.77	3.15	1.15	1.22	1.78
12	2.75	1.78	1.15	1.2	1.04	2.2	*.99	5.5	2.55	1.15	1.15	1.78
13	1.71	4.5	1.15	1.3	1.04	2.0	.99	3.8	2.0	1.10	1.10	1.71
14	2.15	2.1	1.15	1.2	1.04	3.05	.99	1.8	1.85	.99	1.04	2.35
15	1.71	1.78	1.15	1.3	1.36	1.57	.93	1.6	2.7	.99	1.04	2.35
16	1.93	1.71	1.15	1.2	1.22	1.36	.93	2.0	1.78	.99	1.02	1.93
17	2.15	1.64	1.22	1.2	1.15	1.22	.95	1.5	3.65	6.8	2.0	2.1
18	1.78	1.64	1.15	1.6	1.10	*2.3	1.06	1.2	2.1	2.9	2.85	2.1
19	1.6	1.88	1.10	1.7	1.04	1.43	1.02	*1.0	1.71	*1.36	5.4	2.0
20	1.5	1.84	1.10	1.2	1.04	6.1	1.06	.93	1.71	1.15	2.7	3.55
21	1.5	2.0	1.10	1.1	.93	3.15	1.66	1.36	1.93	1.06	2.15	2.15
22	1.5	1.67	1.10	1.1	.93	9.2	1.18	10.5	1.57	1.10	1.98	1.78
23	1.4	2.4	1.04	1.04	.93	2.7	.93	4.9	1.43	1.41	*1.88	2.4
24	1.4	3.25	1.10	1.10	2.45	1.93	.88	*3.8	1.36	1.15	2.3	3.0
25	1.4	1.78	1.10	1.04	4.5	1.57	.88	5.2	1.29	1.85	1.64	3.2
26	1.4	1.64	1.15	1.15	1.50	1.43	.88	3.55	1.22	3.35	1.78	2.5
27	1.4	1.97	1.10	1.10	1.15	1.72	.88	2.1	1.22	1.04	3.2	5.5
28	1.6	1.57	1.10	1.04	1.10	1.29	.88	2	1.22	.87	2.5	2.7
29	5.5	1.50	1.48	.99	1.74	1.22	.88	-	1.15	6.4	1.85	4.5
30	2.0	1.43	1.78	.99	1.15	1.22	.88	-----	1.15	1.78	6.7	2.75
31	1.5	1.43	-----	1.10	-----	1.15	.88	-----	1.15	-----	14.4	-----
Total	61.12	82.49	36.28	37.50	40.59	66.74	35.99	61.97	70.75	50.87	80.71	77.17
Means	1.97	2.66	1.21	1.21	1.35	2.15	1.16	2.21	2.28	1.70	2.60	2.57
mgd	3.05	4.12	1.67	1.67	2.09	3.33	1.79	3.42	3.53	2.63	4.02	3.96
cfs	188	253	111	115	125	205	110	190	217	156	248	237
Ac-ft												
Calendar year 1953.	Max	25.5	Min	0.93	Mean(mgd)	2.12	Mean(cfs)	3.28	Ac-ft	2,380		
Fiscal year 1953-54:	Max	14.4	Min	0.77	Mean(mgd)	1.92	Mean(cfs)	2.97	Ac-ft	2,160		

Peak discharge (base, 200 mgd)--Feb. 22 (4:30 p.m.) 204 mgd (316 cfs), 3.27 ft; May 30 (11:30 p.m.) 225 mgd (348 cfs), 3.36 ft.

* Discharge measurement made on this day.

Note.--No gage-height record July 19 to Aug. 3, Oct. 9-22, Dec. 8-10, Feb. 2-19, June 24-29; discharge estimated on basis of records for 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 northwest of Honolulu Post Office.

Drainage area--1.1 sq mi.

Records available--May 1913 to January 1921, August 1925 to June 1954.

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--35 years (1913-20, 1926-54), 2.49 mgd (3.85 cfs).

Extremes--Maximum discharge during year, 140 mgd (217 cfs) Feb. 22 (gage height, 2.69 ft), from rating curve extended above 33 mgd by test on model of station site; minimum, 0.07 mgd (0.11 cfs) Nov. 3, 4, Feb. 9-11.

1913-21, 1925-54: 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 period of no gage-height record, which are fair. Small quantity of water is diverted above station occasionally for irrigation.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used June 25-28)

0.05	0.07	0.6	3.8
.1	.22	.8	6.5
.2	.67	1.0	11.4
.3	1.28	1.2	18.7
.4	2.0		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.30	1.2	0.30	0.22	0.13	0.30	2.55	0.13	1.83	0.38	0.62	3.35
2	.30	5.0	.28	.36	.10	.61	1.56	.13	2.2	.57	.42	2.25
3	1.24	*2.5	.22	.22	.07	.75	.85	.13	1.75	.34	.34	2.05
4	5.0	1.45	.22	.16	.07	1.45	.62	.13	1.40	.30	.58	1.16
5	1.40	1.68	.22	.16	*.08	.85	.57	.13	2.2	.26	.38	.98
6	.79	4.8	.22	.19	1.24	1.05	.42	.13	1.16	.22	1.18	.79
7	.57	9.9	.26	.42	.71	1.51	.42	.13	.91	.22	.57	4.9
8	1.20	4.6	.30	.46	.19	1.04	.57	.10	1.45	.22	1.08	3.4
9	.62	2.2	.30	.39	.16	.73	.34	.07	1.46	.19	.57	1.86
10	.67	1.42	.34	.22	.41	.58	.30	.07	9.4	.16	.47	1.28
11	.52	1.16	.26	.53	.30	2.15	.30	.07	3.85	.16	.38	.98
12	1.65	.98	.22	.26	.19	1.14	.31	4.6	2.2	.16	.34	.98
13	.73	2.65	.22	.30	.26	.86	.30	2.65	1.57	.19	.30	.85
14	1.70	1.16	.22	.22	.26	2.3	.26	4.2	1.42	.22	.26	1.21
15	.79	.85	.19	.34	.42	.85	.26	.34	2.1	.22	.22	1.25
16	.60	.73	.16	.26	.42	.62	.22	.52	1.22	.26	.19	1.04
17	.90	.67	.19	.22	.34	.52	.22	.30	3.65	4.2	.56	1.34
18	.70	.57	.16	.51	.22	*1.58	.26	.22	1.93	1.70	1.09	1.28
19	.55	.89	.16	.57	.34	.57	.26	*1.16	1.35	.67	1.74	1.28
20	.50	.93	.16	.22	.16	4.9	.22	.16	1.16	*.47	1.19	2.95
21	.47	.73	.13	.19	.13	2.85	.53	.57	1.20	.34	.57	1.86
22	.45	.57	.13	.19	.13	5.9	.34	5.7	.91	.30	.42	1.28
23	.43	1.02	.13	.16	.13	2.15	.22	2.65	.73	.50	.47	1.84
24	.42	2.05	.13	.13	.83	1.28	.22	*2.1	.62	.38	.96	2.25
25	.41	.73	.13	.13	2.15	.91	.19	3.8	.57	.34	*.52	2.5
26	.41	.57	.22	.16	.52	.67	.16	3.2	.52	.50	.66	1.83
27	.40	.47	.16	.19	.34	.90	.16	1.93	.47	.26	2.3	2.65
28	.50	.47	.19	.13	.26	.52	.13	1.92	.47	.22	1.64	2.3
29	4.0	.42	.41	.13	1.16	.38	.19	-	.42	3.8	1.04	3.7
30	2.0	.38	1.61	.13	.34	.42	.13	-----	.42	1.04	2.35	2.6
31	.80	.34	-----	.16	-----	.52	.13	-----	.58	-----	12.1	-----
Total	31.02	53.09	7.82	7.92	12.06	40.84	13.15	32.46	50.92	18.79	35.31	57.79
Mean:												
mgd	1.00	1.71	0.261	0.255	0.402	1.32	0.424	1.16	1.64	0.626	1.14	1.93
cfs	1.55	2.65	0.404	0.395	0.622	2.04	0.656	1.79	2.54	0.969	1.76	2.99
Ac-ft	95	163	24	24	37	125	40	100	156	58	108	177
Fiscal year 1953:	Max 14.8	Min 0.07	Mean(mgd)	0.966	Mean(cfs)	1.49	Ac-ft	1,080				
Fiscal year 1953-54:	Max 12.1	Min 0.07	Mean(mgd)	0.989	Mean(cfs)	1.53	Ac-ft	1,110				

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

* Discharge measurement made on this day.

Note.--No gage-height record July 16 to Aug. 3; discharge estimated on basis of records for nearby streams.

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 Waiomāo 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 1954.

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--28 years (1926-54), 1.24 mgd (1.92 cfs).

Extremes--Maximum discharge during year, 86 mgd (133 cfs) Feb. 22 (gage height, 3.37 ft), from rating curve extended above 36 mgd by test on model of station site; minimum, 0.10 mgd (0.16 cfs) Nov. 1.

1912-13, 1926-54: 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.95	0.13	1.4	2.7
1.0	.23	1.6	4.9
1.1	.55	1.8	8.0
1.2	1.00		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.23	0.17	0.31	0.23	0.13	0.17	0.63	0.23	1.50	0.47	0.43	1.12
2	.23	.38	.31	.23	.13	.15	.43	.21	1.67	.68	.43	.67
3	.23	*.92	.31	.23	.13	.17	.40	.21	1.06	.43	.43	.71
4	.25	.28	.28	.23	.13	.17	.42	.21	1.07	.43	.47	.75
5	.23	.28	.28	.23	*.16	.17	.43	.19	1.77	.43	.47	.75
6	.23	.73	.28	.23	.15	.17	.43	.19	1.07	.43	.47	.75
7	.21	1.52	.25	.23	.17	.17	.43	.19	1.06	.43	.43	1.44
8	.23	.72	.25	.23	.17	.17	.43	.19	1.16	.43	.46	1.14
9	.23	.47	.25	.23	.15	.17	.43	.19	1.21	.43	.43	.85
10	.23	.51	.25	.23	.15	.17	.43	.19	4.9	.43	.40	.85
11	.21	.55	.25	.23	.15	.17	.43	.19	1.99	.40	.40	.85
12	.23	.55	.25	.21	.15	.17	.40	1.24	1.28	.40	.40	.85
13	.23	.87	.23	.21	.15	.24	.40	.89	1.21	.40	.37	.75
14	.23	*.51	.23	.21	.17	.50	.40	.25	1.21	.37	.37	.75
15	.23	.47	.25	.21	.17	.25	.40	.23	1.27	.37	.37	.71
16	.21	.47	.25	.21	.17	.25	.40	.23	1.07	.37	.34	.63
17	.23	.43	.25	.21	.17	.25	.37	.23	1.42	1.21	.34	.63
18	.23	.43	.25	.21	.17	*.25	.37	.23	1.14	.51	.47	.59
19	.21	.43	.25	.21	.17	.23	.37	*.23	1.07	*.37	2.0	.55
20	.21	.40	.25	.21	.17	1.82	.31	.23	1.00	.37	.47	.59
21	.19	.37	.23	.21	.17	.80	.38	.23	1.00	.37	.51	.51
22	.21	.34	.23	.21	.15	3.25	.31	3.8	.90	.40	.55	.47
23	.19	.34	.23	.21	.15	.85	.28	.90	.85	.45	.55	.43
24	.19	.34	.23	.21	.17	.59	.28	*1.77	.85	.43	*.59	.47
25	.19	.34	.23	.19	.19	.63	.25	2.95	.80	.40	.59	.43
26	.17	.31	.23	.19	.19	.63	.25	2.15	.71	.37	.59	.43
27	.17	.31	.23	.19	.17	.67	.23	.75	.63	.37	.63	.43
28	.17	.31	.23	.17	.17	.59	.23	.94	.59	.37	.55	.47
29	.19	.31	.23	.17	.17	.51	.23	-	.55	1.66	.51	.86
30	.19	.31	.23	.15	.17	.47	.23	-----	.51	.47	.75	.59
31	.19	.31	-----	.13	-----	.47	.23	-----	.47	-----	.53	-----
Total	6.57	14.68	7.53	6.45	4.81	15.27	11.21	19.44	36.99	14.65	21.07	21.02
Mean:												
mgd	0.212	0.474	0.251	0.208	0.160	0.493	0.362	0.694	1.19	0.488	0.680	0.701
cfs	0.328	0.733	0.368	0.322	0.248	0.763	0.560	1.07	1.84	0.755	1.05	1.08
Ac-ft	20	45	23	20	15	47	34	60	114	45	65	65
Calendar year 1953:	Max 35		Min 0.13		Mean(mgd) 0.537		Mean(cfs) 0.831		Ac-ft 602			
Fiscal year 1953-54:	Max 5.3		Min 0.13		Mean(mgd) 0.492		Mean(cfs) 0.761		Ac-ft 553			

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

* 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 1954.

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.--28 years (1926-54), 1.14 mgd (1.76 cfs).

Extremes.--Maximum discharge during year, 62 mgd (96 cfs) May 31 (gage height, 3.11 ft); no flow for many days.
1911-12, 1926-54: 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 except those for periods of fragmentary or no gage-height record, which are fair. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 22					Feb. 23 to June 30				
0.64	0	1.4	1.78		0.64	0	1.4	1.95	
1.0	.06	1.5	2.7		.9	.02	1.5	2.9	
1.1	.22	1.7	5.2		1.0	.10	1.7	5.4	
1.2	.55	1.9	8.5		1.1	.32	1.9	8.6	
1.3	1.07				1.2	.69	2.2	16.5	
					1.3	1.22			

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.01	0.04	0.01	0	0	0.04	1.30	0.03	2.85	0.10	0.52	2.15
2	0	1.79	0	0	0	.08	1.19	.03	2.3	1.44	.35	1.10
3	.11	*.40	0	0	0	.12	.36	.02	1.39	.41	.26	1.35
4	1.13	.23	0	0	0	.55	.22	.02	1.37	.23	.23	.74
5	.40	.35	0	0	0	.33	.22	.02	2.35	.17	.21	.60
6	.18	2.0	0	0	.29	.22	.14	.01	.99	.13	.55	.41
7	.09	4.0	0	0	.64	.47	.12	.01	.79	.10	.35	2.5
8	.26	1.5	0	0	.16	.33	1.18	0	1.14	.09	2.3	1.72
9	.18	.50	0	0	.06	.18	.38	0	1.52	.08	.55	.74
10	.12	.27	0	0	.05	.09	.20	0	5.7	.07	.29	.64
11	.11	.22	0	0	.07	.63	.14	.06	1.75	.07	.23	.38
12	.58	.20	0	0	.04	.87	.12	5.3	1.04	.05	.17	.41
13	.20	1.1	0	0	.02	1.24	.08	2.9	.89	.04	.15	.32
14	.28	.25	0	0	.01	1.97	.06	.59	.52	.04	.13	.60
15	.20	.20	0	0	.01	.43	.06	.51	1.00	.04	.10	.72
16	.20	.16	0	0	0	.22	.05	.40	.56	.04	.09	.41
17	.25	.13	0	0	0	.16	.04	.22	2.05	2.2	1.32	.41
18	.28	.12	0	0	.02	*.58	.04	.14	1.24	1.66	2.15	.55
19	.14	.16	0	.02	.02	.36	.06	*.09	.89	*.50	3.85	.29
20	.11	.16	0	0	.04	4.2	.05	.09	.56	.29	1.22	.44
21	.08	.17	0	0	.04	2.4	.75	.33	1.04	.19	.84	.41
22	.11	.12	0	0	.02	6.5	.42	6.3	.56	.15	.56	.29
23	.07	.30	0	0	.01	1.81	.18	1.6	.41	.21	6.6	f.32
24	.05	.70	0	0	.01	.88	.09	*3.3	.32	.26	*.71	f1.71
25	.04	.20	0	0	1.02	.51	.07	5.4	.26	.24	.44	1.73
26	.05	.15	0	0	.20	.33	.05	3.5	.21	.61	.41	.56
27	.04	.11	0	0	.07	.80	.04	1.57	.19	.29	.85	1.53
28	.08	.08	0	0	.04	.30	.03	2.5	.15	.21	.93	.94
29	.79	.05	0	0	.11	.20	.03	-	.15	4.1	.56	1.61
30	.16	.03	0	0	.06	.14	.03	-----	.11	1.13	f1.49	.99
31	.06	.02	-----	0	-----	.12	.03	-----	.10	-----	9.9	-----
Total	6.36	15.71	0.01	0.04	2.99	27.06	7.73	35.14	34.00	15.14	38.31	26.37
Mean	0.205	0.507	0.0003	0.001	0.100	0.873	0.249	1.26	1.10	0.505	1.24	0.879
cfs	0.317	0.784	0.0005	0.002	0.155	1.35	0.385	1.95	1.70	0.781	1.92	1.36
Ac-ft	20	48	0.03	0.1	9.2	83	24	108	104	46	118	81

Calendar year 1953: Max 42 Min 0 Mean(mgd) 0.517 Mean(cfs) 0.800 Ac-ft 578
 Fiscal year 1953-54: Max 9.9 Min 0 Mean(mgd) 0.572 Mean(cfs) 0.885 Ac-ft 641

Peak discharge (base, 70 mgd).--No peak above base.

* Discharge measurement made on this day.

f Computed on basis of partly estimated gage heights.

Note.--No gage-height record Aug. 3 to Sept. 16, Sept. 25 to Nov. 5, Feb. 23, 24; discharge estimated on basis of recorded range in stage and records for nearby stations.

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 1954.

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, 166 mgd (257 cfs) May 31 (gage height, 2.44 ft), from rating curve extended above 22 mgd by test on model of station site; minimum, 0.10 mgd (0.16 cfs) Sept. 29.
1952-54: Maximum discharge, 830 mgd (1,280 cfs) Mar. 3, 1953 (gage height, 3.49 ft), from rating curve extended above 22 mgd as explained above; minimum, that of Sept. 29, 1953.

Remarks.--Records poor.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.2	0.12	1.6	2.0
1.3	.24	1.7	4.5
1.4	.50	1.8	15.0
1.5	1.00	2.0	33

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.50	0.25	0.36	0.21	0.15	0.20	4.0	0.36	8.6	0.66	1.08	4.3
2	.29	3.2	.35	.21	.17	.28	2.5	.34	9.0	2.85	.94	2.0
3	.50	2.0	.31	.21	.16	.52	1.55	.34	4.1	1.00	.94	2.15
4	2.0	1.00	.25	.18	.16	.77	1.77	.34	4.2	.82	1.05	1.65
5	1.1	1.75	.26	.18	*.16	.71	1.42	.34	12.2	.71	.82	1.55
6	.60	2.25	.24	.18	.26	.52	.82	.32	3.2	.66	1.16	1.35
7	.45	13.6	.28	.20	.91	.65	.76	.32	3.35	.58	.88	7.1
8	.70	3.65	.30	.22	.36	.76	1.92	.28	7.2	.50	2.25	3.5
9	.60	1.78	.25	.24	.26	.42	1.08	.26	5.4	.50	1.35	1.9
10	.54	1.35	.24	.18	.30	.32	.76	.24	21.5	.50	.94	1.7
11	.50	1.00	.24	.21	.22	.69	.71	.31	4.0	.50	.86	1.5
12	1.2	.94	.28	.19	.21	1.71	.66	2.25	2.55	.46	.77	1.4
13	.70	2.95	.26	.17	.17	1.84	.66	8.6	1.88	.42	.62	1.3
14	.80	1.55	.24	.18	.17	3.7	.58	1.55	1.65	.36	.50	1.5
15	.66	1.00	.27	.26	.21	1.16	.54	1.35	2.7	.40	.50	1.9
16	.60	.88	*.28	.20	.21	.71	.50	1.16	1.25	.39	.46	1.4
17	.70	.71	.28	.17	.18	.54	.47	1.00	3.8	3.8	1.28	1.5
18	.75	.68	.24	.17	.17	1.29	.70	.62	2.15	4.0	2.4	1.2
19	.50	.76	.22	.17	.26	1.00	.66	.50	1.88	1.25	8.5	1.1
20	.44	.74	.22	.17	.20	10.3	.46	.50	2.55	.94	1.88	1.3
21	.36	.71	.21	.17	.20	3.2	1.3	.50	3.05	.82	1.65	1.1
22	.40	.66	.26	.17	.18	13.2	.86	12.4	3.4	.88	1.45	1.0
23	.53	.94	.24	.16	.17	3.65	.64	7.5	2.0	1.51	1.55	1.0
24	.29	1.68	.24	.16	.41	1.88	.56	9.4	1.67	1.00	1.45	2.95
25	.28	.89	.22	.15	1.99	1.65	.50	18.8	1.55	.76	1.16	2.95
26	.25	.54	.24	.15	.56	1.76	.42	17.3	1.65	1.33	1.06	2.15
27	.24	.46	.21	.16	.28	3.1	.46	4.5	1.25	.88	1.78	3.5
28	.30	.42	.18	.15	.21	1.65	.46	7.6	.76	.76	1.55	2.55
29	1.5	.39	.21	.15	.31	1.25	.46	-	.76	11.6	1.25	3.75
30	.45	.34	.23	.15	.24	1.08	.46	-----	.66	2.05	2.5	2.35
31	.50	.32	-----	.16	-----	.96	.39	-----	.66	-----	17.1	-----
Total	18.61	49.35	7.63	5.63	9.46	61.47	28.53	98.98	120.57	42.89	61.72	64.40
Mean:												
mgd	0.600	1.59	0.254	0.182	0.315	1.96	0.920	3.54	3.89	1.43	1.99	2.15
cfs	0.928	2.46	0.393	0.282	0.467	3.06	1.42	5.48	6.02	2.21	3.08	3.33
Ac-ft	57	151	23	17	29	189	88	304	370	132	189	198

Calendar year 1953: Max 73 Min 0.15 Mean(mgd) 1.61 Mean(cfs) 2.49 Ac-ft 1,800
Fiscal year 1953-54: Max 21.5 Min 0.15 Mean(mgd) 1.56 Mean(cfs) 2.41 Ac-ft 1,750

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

* Discharge measurement made on this day.

Note.--Doubtful gage-height record July 1 to Aug. 3, Nov. 20-22, Jan. 21-25, June 8-23; discharge estimated on basis of records for Waioaio and Pukele Streams.

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 1954.

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, 42 mgd (65 cfs) Apr. 29 (gage height, 2.15 ft), from rating curve extended as explained below; minimum, 0.21 mgd (0.32 cfs) Sept. 6, 1914-19, 1939-54: 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used June 27-30)

0.9	0.21	1.3	2.1
1.0	.53	1.5	4.2
1.1	.92	1.7	9.2
1.2	1.45		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.72	0.80	0.39	0.65	0.57	0.61	4.9	0.69	1.09	0.46	0.72	1.34
2	.74	.80	.31	.57	.57	.65	1.61	.50	1.34	.50	.61	1.08
3	.76	.80	.31	.46	*.56	.61	1.08	.28	1.13	.43	.57	.97
4	.80	.76	.28	.46	.57	.65	.80	.28	.92	.43	.53	.92
5	.80	.68	.28	.50	.57	.61	.76	.28	.68	.43	.53	.92
6	.84	.43	.25	.69	.72	.61	.72	.25	.76	.39	.53	.92
7	.76	.61	.28	.72	.69	.61	.72	.23	.72	.39	.53	.97
8	.76	.61	.43	.72	.65	.61	.76	.23	.69	.31	.53	.92
9	.72	.61	.46	.69	.65	.61	.72	.23	.69	.31	.53	.72
10	.78	*.57	.28	.69	.69	.61	.72	.23	.76	.28	.53	.50
11	.76	.50	.25	.69	.65	.65	.72	.31	.69	.28	.50	.50
12	.80	.46	.28	.69	.69	.65	.72	.31	.80	.28	.50	.50
13	.80	1.34	.28	.69	.69	.72	.72	.35	.92	.28	.46	.50
14	.80	.80	.28	.69	.69	.65	.72	.31	.92	.28	.46	.46
15	.80	.76	.28	.69	.72	.65	.72	.48	.84	.28	.43	.53
16	.80	.72	.31	.65	.65	.65	.72	1.33	.69	.25	.43	.65
17	.80	.61	.31	.65	.69	.65	.72	.57	.84	.28	.43	.43
18	.80	.53	.53	.69	.69	.78	.75	.39	.76	.25	.43	.43
19	.80	.35	.31	.70	.65	.72	.76	.31	.72	.23	.43	.43
20	.80	.50	.39	.65	.65	.88	.72	.28	.69	.23	.50	.46
21	.80	.69	.31	.65	.65	1.03	.72	.35	.80	*.25	.50	.43
22	.80	.69	.38	.65	.65	1.46	.69	1.80	.80	.28	.46	.43
23	.76	.76	.65	.65	.65	*1.04	.69	*1.04	.65	.35	.46	.43
24	.76	.65	.69	.61	.69	.80	.69	1.29	.65	.35	.53	.50
25	.76	.57	.65	.57	.69	.72	.63	1.58	.69	.61	.46	.46
26	.76	.53	.69	.61	.65	.71	.50	1.44	.61	.99	*.46	.46
27	.76	.65	.69	.61	.65	1.00	.65	1.24	.57	.57	.50	.48
28	.80	.61	.65	.57	.61	.84	.65	1.08	.53	.43	.50	.46
29	.80	.53	.65	.53	.61	.76	.65	-	.50	6.1	.50	.53
30	.80	.46	.96	.57	.61	.72	.69	-	.46	1.46	1.62	.46
31	.76	.53	-----	.57	-----	.77	.69	-----	.46	-----	3.0	-----
Total	24.20	19.91	12.81	19.53	19.47	23.03	27.31	17.66	23.57	17.98	19.17	18.79
Mean	0.781	0.642	0.427	0.630	0.649	0.743	0.861	0.631	0.760	0.599	0.618	0.626
cfs	1.21	0.993	0.661	0.975	1.00	1.15	1.36	0.976	1.18	0.927	0.956	0.969
Ac-ft	74	61	39	60	60	71	84	54	72	55	59	58

Calendar year 1953. Max 9.1 Min 0.25 Mean(mgd) 0.840 Mean(cfs) 1.30 Ac-ft 940
Fiscal year 1953-54: Max 6.1 Min 0.23 Mean(mgd) 0.667 Mean(cfs) 1.03 Ac-ft 747

Peak discharge (base, 100 mgd).--No peak above base.

* 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 1954.

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.--13 years (1940-42, 1943-54), 0.359 mgd (0.555 cfs).

Extremes.--Maximum discharge during year, 16.3 mgd (25.2 cfs) Jan. 1 (gage height, 1.58 ft); minimum, 0.17 mgd (0.26 cfs) Apr. 23.

1940-54: 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 except those for period of faulty intake action, which are poor.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.26	0.30	0.28	0.26	0.21	0.23	2.35	0.28	0.62	0.21	0.35	0.32
2	.26	.35	.28	.25	.21	.23	.73	.26	.60	.20	.28	.28
3	.28	.32	.28	.23	.21	.23	.45	.26	.45	.20	.26	.26
4	.28	.30	.28	.21	*.23	.23	.30	.28	.35	.20	.25	.25
5	.26	.30	.28	.21	.23	.23	.26	.26	.32	.20	.23	.25
6	.26	.30	.26	.21	.23	.23	.26	.25	.30	.20	.23	.23
7	.28	.35	.26	.25	.26	.25	.25	.25	.28	.20	.23	.25
8	.28	.26	.26	.25	.25	.25	.26	.25	.28	.20	.23	.23
9	.26	.25	.26	.23	.25	.23	.25	.25	.28	.20	.25	.21
10	.28	.25	.26	.23	.25	.23	.25	.25	.28	.20	.23	.21
11	.28	*.25	.26	.23	.25	.25	.25	.37	.26	.20	.21	.21
12	.28	.25	.26	.23	.25	.25	.25	.38	.26	.20	.21	.21
13	.28	.59	.26	.23	.25	.33	.25	.59	.25	.20	.21	.21
14	.28	.28	.26	.21	.25	.28	.25	.30	.25	.20	.21	.21
15	.28	.26	.26	.20	.26	.26	.25	1.07	.26	.21	.20	.21
16	.28	.26	.26	.20	.26	.25	.25	1.62	.25	.20	.20	.21
17	.28	.26	.26	.20	.26	.25	.25	1.04	.30	.21	.21	.21
18	.28	.26	.26	.21	.25	.57	.27	.94	.28	.21	.20	.20
19	.28	.26	.26	.21	.25	.26	.26	.89	.26	.18	.21	.20
20	.28	.26	.25	.20	.25	.69	.26	.89	.26	.18	.23	.20
21	.28	.28	.25	*.21	.25	.33	.30	.94	.28	*.18	.21	.18
22	.28	.28	.25	*.21	.25	.86	.30	1.68	.26	.18	.18	.18
23	.28	.28	.25	.21	.25	*.35	.28	*.73	.25	.20	.35	.18
24	.28	.28	.25	.20	.25	.30	.28	.96	.25	.18	.35	.23
25	.30	.28	.25	.20	.25	.26	.28	1.03	.25	.52	.18	.23
26	.30	.28	.23	.21	.25	.27	.28	.73	.25	.32	.18	.20
27	.30	.28	.21	.21	.23	.50	.28	.61	.23	.20	.24	.21
28	.30	.28	.23	.21	.23	.30	.28	.45	.23	.20	.21	.20
29	.30	.28	.26	.21	.23	.28	.28	-	.21	2.65	*.21	.21
30	.30	.28	.60	.21	.23	.26	.28	-----	.21	.68	.41	.23
31	.28	.28	-----	.21	-----	.28	.28	-----	.21	-----	.75	-----
Total	8.70	8.99	8.07	6.74	7.34	9.72	11.02	17.79	9.02	9.31	7.88	6.61
Mean:												
mgd	0.281	0.290	0.269	0.217	0.245	0.314	0.355	0.635	0.291	0.310	0.254	0.220
cfs	0.435	0.449	0.416	0.336	0.379	0.486	0.549	0.982	0.450	0.480	0.393	0.340
Ac-ft	27	28	25	21	23	30	34	55	28	29	24	20
Calendar year 1953.	Max 1.45			Min 0.20			Mean(mgd) 0.319		Mean(cfs) 0.494		Ac-ft 358	
Fiscal year 1953-54:	Max 2.65			Min 0.18			Mean(mgd) 0.305		Mean(cfs) 0.472		Ac-ft 344	

Peak discharge (base, 15 mgd).--Jan. 1 (4:30 a.m.) 16.3 mgd (25.2 cfs), 1.58 ft.

* Discharge measurement made on this day.

Note.--Faulty intake action Jan. 22 to Feb. 11; discharge estimated on basis of records for nearby streams.

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 1954.

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, 32.5 mgd (50.3 cfs) Jan. 1 (gage height, 2.16 ft), from rating curve extended above 9 mgd by test on model of station site; minimum, 0.26 mgd (0.40 cfs) Apr. 6, 7, 12, 13, 17.

1935-54: 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.13	0.4	1.40
.2	.43	.5	2.1
.3	.84	.7	3.9

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.55	0.51	0.47	0.51	0.35	0.35	3.85	0.43	0.77	0.43	0.51	0.63
2	.55	.63	.43	.47	.35	.35	.71	.39	.81	.47	.43	.43
3	.59	.59	.43	.43	*.32	.35	.59	.39	.51	.35	.43	.47
4	.55	.55	.43	.39	.32	.35	.47	.39	.51	.35	.39	.59
5	.55	.51	.43	.43	.32	.35	.47	.43	.51	.32	.43	.39
6	.51	.55	.43	.43	.35	.39	.43	.39	.51	.35	.47	.39
7	.47	.74	.43	.47	.35	.39	.39	.39	.51	.32	.43	.47
8	.51	.55	.43	.47	.35	.39	.43	.39	.51	.32	.49	.43
9	.51	.55	.43	.47	.35	.35	.43	.39	.55	.32	.43	.43
10	.51	.51	.43	.43	.35	.35	.43	.35	.55	.32	.47	.32
11	.51	*.43	.39	.43	.39	.35	.39	.43	.55	.32	.47	.35
12	.35	.43	.39	.43	.39	.35	.39	.47	.55	.32	.47	.32
13	.51	.82	.39	.43	.35	.55	.39	.88	.51	.29	.43	.35
14	.51	.51	.39	.43	.39	.43	.39	.51	.43	.32	.43	.35
15	.55	.47	.39	.43	.35	.35	.39	1.91	.47	.32	.43	.35
16	.55	.47	.39	.43	.35	.35	.39	1.30	.47	.32	.43	.32
17	.51	.47	.39	.43	.35	.39	.39	.51	.55	.29	.47	.32
18	.51	.47	.35	.43	.35	.63	.43	.47	.51	.32	.47	.32
19	.55	.47	.35	.43	.35	.47	.47	.43	.51	.35	.51	.32
20	.55	.47	.35	.43	.35	.73	.43	.47	.47	.29	.43	.32
21	.55	.47	.35	.39	.32	.63	.47	.47	.51	*.31	.43	.35
22	.55	.47	.32	*.39	.32	1.43	.47	1.23	.47	.39	.43	.32
23	.55	.51	.32	.35	.35	*.65	.43	*.71	.43	.39	.47	.32
24	.55	.51	.32	.39	.39	.51	.43	.91	.43	.39	.47	.32
25	.51	.51	.32	.35	.39	.51	.43	.92	.39	.47	.39	.47
26	.51	.47	.35	.39	.39	.50	.47	.71	.47	.43	*.39	.35
27	.51	.47	.35	.39	.35	.71	.43	.59	.43	.35	.43	.35
28	.47	.47	.35	.35	.35	.51	.43	.55	.47	.35	.39	.35
29	.55	.47	.42	.35	.35	.47	.43	-	.43	3.4	.43	.32
30	.55	.47	.50	.35	.35	.47	.43	-----	.43	.65	.64	.35
31	.51	.47	-----	.35	-----	.55	.43	-----	.43	-----	1.97	-----
Total	16.41	15.99	11.72	12.85	10.59	15.20	17.11	17.41	15.65	13.82	15.46	11.17
Mean:												
mgd	0.529	0.516	0.391	0.415	0.353	0.490	0.552	0.622	0.505	0.461	0.499	0.372
cfs	0.818	0.798	0.605	0.642	0.546	0.758	0.854	0.962	0.781	0.713	0.772	0.576
Ac-ft	50	49	36	39	32	47	53	53	48	42	47	34

Calendar year 1953. Max 3.45 Min 0.32 Mean(mgd) 0.593 Mean(cfs) 0.918 Ac-ft 684
 Fiscal year 1953-54: Max 3.85 Min 0.29 Mean(mgd) 0.475 Mean(cfs) 0.735 Ac-ft 530

Peak discharge (base, 30 mgd).--Jan. 1 (4:30 a.m.) 32.5 mgd (50.3 cfs), 2.16 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 Kihe 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 1954.

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

Average discharge.--18 years (1936-54), 6.21 mgd (9.61 cfs).

Extremes.--Maximum discharge during year, 88 mgd (136 cfs) Jan. 1 (gage height, 3.20 ft); minimum, 3.7 mgd (5.7 cfs) Feb. 7, 8.

1935-54: 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. A 2-inch pipeline diverts water above station for domestic use.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.7	3.55
.9	6.2
1.2	11.6
1.6	21.5

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.9	4.6	4.4	5.2	4.0	3.8	15.3	3.9	5.9	4.2	4.6	5.2
2	4.9	5.1	4.4	4.8	4.0	3.9	8.5	3.9	5.8	4.2	4.3	4.7
3	5.1	4.7	4.4	4.6	*4.0	3.8	5.1	3.9	5.2	4.0	4.3	4.6
4	5.1	4.6	4.4	4.3	4.0	3.9	4.7	3.8	4.8	4.2	4.2	4.4
5	4.9	4.7	4.4	4.4	4.0	3.9	4.4	3.8	4.7	4.2	4.2	4.3
6	4.9	4.8	4.4	4.4	4.3	4.0	4.4	3.8	4.6	4.0	4.2	4.3
7	4.9	5.4	4.3	4.7	4.2	4.0	4.2	3.7	4.4	4.0	4.0	4.4
8	4.9	4.7	4.3	4.7	3.9	3.9	4.3	3.7	4.4	4.0	4.3	4.3
9	4.8	4.7	4.3	4.6	4.0	3.9	4.2	3.8	4.4	4.0	4.2	4.0
10	4.8	*4.4	4.3	4.4	4.0	3.9	4.2	3.8	4.6	4.0	4.0	3.9
11	4.8	4.6	4.3	4.4	4.0	4.2	4.2	4.0	4.3	4.0	4.0	3.9
12	4.8	4.7	4.3	4.4	4.0	4.2	4.2	4.3	4.3	4.0	4.0	3.9
13	4.8	6.1	4.3	4.4	4.0	4.8	4.3	5.6	4.2	4.0	4.0	3.9
14	4.8	4.9	4.3	4.4	4.0	4.9	4.2	4.4	4.2	4.0	4.0	3.9
15	4.8	4.8	4.3	4.4	4.0	4.2	4.0	8.1	4.2	*4.0	4.2	3.9
16	4.8	4.7	4.3	4.4	4.0	4.3	4.0	7.2	4.0	4.0	4.2	3.9
17	4.8	4.8	4.3	4.6	4.0	4.3	4.0	*4.9	4.5	4.2	4.7	3.9
18	4.8	4.7	4.4	4.6	3.9	4.9	4.0	4.4	4.5	3.9	4.4	3.9
19	4.8	4.7	4.4	4.6	3.9	4.6	4.0	4.4	4.3	3.9	4.7	3.9
20	4.8	4.6	4.4	4.6	3.9	4.9	3.9	4.2	4.2	3.9	4.4	4.0
21	4.8	4.6	4.4	4.6	4.0	*5.0	4.2	4.4	4.4	3.9	4.4	3.9
22	4.8	4.6	4.3	*4.4	4.0	7.6	4.0	7.5	4.2	3.9	4.2	3.8
23	4.8	4.7	4.4	4.3	4.0	5.8	4.0	5.5	4.0	4.0	4.2	3.9
24	4.8	4.6	4.6	4.3	4.0	4.9	4.0	5.5	4.0	3.9	4.4	3.9
25	4.8	4.6	4.4	4.3	4.0	4.7	4.0	6.2	4.2	4.5	4.3	4.2
26	4.8	4.6	4.4	4.2	4.0	4.5	4.0	5.8	4.2	4.3	*4.2	3.9
27	4.7	4.6	4.4	4.2	3.9	5.1	3.8	5.4	4.2	4.0	4.4	3.9
28	4.6	4.6	4.4	4.2	3.9	4.4	3.8	5.1	4.3	4.0	4.4	3.9
29	4.7	4.4	4.8	4.2	3.9	4.4	3.8	-	4.2	12.5	4.2	3.9
30	4.6	4.4	5.6	4.2	3.8	4.3	3.9	-	4.2	5.4	5.1	4.2
31	4.6	4.4	-----	4.2	-----	4.4	4.0	-	4.2	-----	6.6	-----
Total	149.2	146.4	132.6	158.0	119.6	139.2	141.6	135.0	137.6	131.1	135.3	122.7
Mean:												
mgd	4.81	4.72	4.42	4.45	3.99	4.49	4.57	4.82	4.44	4.37	4.36	4.09
cfs	7.44	7.30	6.84	6.89	6.17	6.95	7.07	7.46	6.87	6.76	6.75	6.33
Ac-ft	458	449	407	424	367	427	435	414	422	402	415	377
Calendar year 1953.	Max	14.8	Min	3.8	Mean(mgd)	5.06	Mean(cfs)	7.85	Ac-ft	5,670		
Fiscal year 1953-54.	Max	15.3	Min	3.7	Mean(mgd)	4.46	Mean(cfs)	6.90	Ac-ft	5,000		

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

* Discharge measurement made on this day.

Waiahole tunnel at Waianu, near Waiahole

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

Records available.--December 1950 to June 1954 in reports of Geological Survey. June 1916 to November 1950 in files of Waiahole Water Co.

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

Extremes.--1950-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19.7	19.5	18.6	26.3	18.2	17.4	36.8	16.8	24.1	*17.6	18.6	21.1
2	19.7	28.8	18.4	22.3	18.0	*18.0	20.5	16.8	22.2	18.6	18.2	19.5
3	22.4	25.6	18.4	21.4	18.0	17.4	18.6	16.8	20.3	17.8	18.2	19.7
4	24.9	20.3	18.4	19.5	18.0	18.8	18.2	16.8	19.0	17.6	18.2	18.8
5	20.3	24.1	18.4	19.0	18.0	18.4	18.2	16.6	19.5	17.6	17.8	18.8
6	19.9	26.1	18.4	18.8	19.3	18.0	17.8	16.6	18.6	17.4	18.6	18.6
7	19.9	33.1	18.4	19.3	19.1	18.8	17.6	16.8	18.2	17.4	18.0	21.2
8	20.5	22.2	18.6	19.5	18.0	18.0	18.2	16.6	18.6	17.4	18.2	20.5
9	19.7	21.8	18.4	19.3	18.0	17.8	17.8	16.8	18.8	17.2	18.0	18.8
10	19.7	20.1	22.3	19.0	18.0	17.4	17.6	16.6	18.8	17.2	17.6	18.6
11	19.5	19.7	18.4	18.8	17.8	18.0	17.6	16.6	18.4	17.2	17.6	18.4
12	19.9	19.5	18.2	18.6	17.8	17.8	17.4	22.1	18.4	17.0	17.6	18.4
13	19.7	21.9	18.2	18.6	17.6	19.3	17.4	24.0	18.2	17.3	17.4	18.4
14	20.3	20.9	18.2	18.6	17.6	20.5	17.4	17.2	18.0	17.0	17.4	18.6
15	19.7	19.7	18.2	18.6	17.6	18.0	17.4	27.5	18.0	17.1	17.4	19.0
16	19.9	19.5	18.2	18.6	18.6	17.6	17.4	29.4	18.0	18.4	17.4	19.0
17	19.5	19.5	18.0	18.6	17.8	17.6	17.4	18.0	18.2	24.7	19.5	19.5
18	19.5	19.3	18.0	18.8	17.8	19.8	17.4	17.4	18.2	18.6	27.7	18.8
19	19.5	19.3	18.0	18.8	17.8	18.0	17.4	17.2	18.0	17.6	23.4	18.6
20	19.7	19.3	18.0	18.6	17.6	18.4	17.2	17.0	18.2	17.4	25.5	21.5
21	19.5	19.3	18.0	18.6	17.6	18.6	17.4	17.2	19.0	17.4	19.9	19.0
22	19.7	19.0	18.0	18.4	17.6	32.8	17.2	21.7	18.4	17.2	18.6	18.6
23	19.5	19.7	18.0	18.4	17.4	20.5	17.0	21.0	18.0	18.9	18.8	18.8
24	19.5	21.2	17.8	18.4	19.1	18.6	17.0	29.7	19.0	17.4	18.6	19.5
25	19.3	19.3	17.8	18.4	21.1	18.0	17.0	23.7	17.8	21.0	18.4	22.4
26	19.3	19.0	17.8	18.4	18.0	18.0	17.0	21.2	17.8	20.5	19.3	19.3
27	19.3	18.8	17.8	18.4	17.8	18.9	17.0	24.7	17.8	18.2	21.1	20.1
28	20.3	18.8	17.8	18.2	17.6	18.0	17.0	22.0	17.8	17.6	19.5	19.5
29	24.5	18.6	21.1	18.2	18.0	18.0	17.0	-	17.6	46.0	18.6	19.5
30	19.5	18.8	37.2	18.2	17.6	17.8	17.0	-	17.6	20.5	20.2	21.2
31	19.3	18.6	-----	18.2	-----	17.6	17.0	-----	17.6	-----	29.7	-----
Total	623.6	651.1	571.0	592.8	542.4	581.8	562.9	554.2	577.1	572.5	605.0	583.7
Mean	20.1	21.0	19.0	19.1	18.1	18.8	18.2	19.8	18.6	19.1	19.5	19.5
cfs	31.1	32.5	29.4	29.6	28.0	29.1	28.2	30.6	28.8	29.6	30.2	30.2
Ac-ft	1,910	2,000	1,750	1,820	1,660	1,780	1,730	1,700	1,770	1,760	1,860	1,790
Calendar year 1953.	Max	47	Min	17.4	Mean(mgd)	21.4	Mean(cfs)	33.1	Ac-ft	24,010		
Fiscal year 1953-54:	Max	46.0	Min	16.6	Mean(mgd)	19.2	Mean(cfs)	29.7	Ac-ft	21,530		

* Discharge measurement made on this day.

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 1954.

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

Extremes.--1951-54: 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 1953 to June 1954

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					.05		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			.02					-		.12		
31			.25					-----		-----		
Total	0	0	0.27	0	0	0	0	0.05	0	0.12	0	0
Mean												
mgd	0	0	0.009	0	0	0	0	0.001	0	0.004	0	0
cfs	0	0	0.014	0	0	0	0	0.002	0	0.008	0	0
Ac-ft	0	0	0.8	0	0	0	0	0.1	0	0.4	0	0
Calendar year 1953:	Max	0.25	Min	0	Mean(mgd)	0.001	Mean(cfs)	0.002	Ac-ft	0.9		
Fiscal year 1953-54:	Max	0.25	Min	0	Mean(mgd)	0.001	Mean(cfs)	0.002	Ac-ft	1.3		

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 1954 in reports of Geological Survey. May 1916 to December 1950 in files of Waiahole Water Co.

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

Extremes.--1951-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21.9	21.0	21.2	30.2	19.5	18.8	42.3	18.2	25.4	*18.4	19.3	23.0
2	21.9	30.5	21.2	24.1	19.5	*19.9	22.5	18.0	23.5	19.5	18.6	20.8
3	24.0	28.0	21.2	23.0	19.5	19.5	20.5	18.0	21.2	18.6	18.8	21.0
4	28.0	22.3	21.2	21.2	19.5	20.5	19.9	17.6	20.1	18.4	19.5	20.3
5	22.3	26.2	21.2	20.8	19.5	20.3	19.9	17.8	20.8	18.4	19.7	20.3
6	22.1	28.8	21.0	20.8	20.3	19.9	19.7	18.2	19.7	18.4	20.5	20.1
7	21.9	35.9	20.8	21.0	20.5	20.8	19.7	18.6	19.3	18.4	19.9	22.5
8	22.5	24.5	21.2	21.2	19.5	20.1	20.1	18.4	19.7	18.2	20.5	22.1
9	21.9	24.1	20.5	21.0	19.5	19.7	19.9	18.4	19.9	18.6	19.9	20.3
10	21.9	22.3	24.5	20.8	19.3	19.5	19.7	18.4	19.9	18.6	19.5	19.9
11	21.6	21.9	20.5	20.5	19.0	19.7	19.7	18.4	19.5	18.6	19.5	19.9
12	22.1	21.9	20.3	20.5	19.0	19.9	19.5	24.0	19.5	18.4	19.5	19.7
13	21.6	26.0	20.8	20.1	19.0	21.2	19.5	26.8	19.0	18.4	19.5	19.7
14	22.3	23.2	20.5	20.3	19.0	23.4	19.5	19.5	18.8	18.4	19.3	19.9
15	21.6	22.3	20.5	20.3	19.0	19.9	19.5	31.8	18.8	19.3	19.0	20.1
16	21.9	22.1	20.5	20.1	19.9	19.5	19.5	30.7	18.8	20.2	19.0	20.1
17	21.6	21.9	20.5	20.1	19.3	19.3	19.3	20.5	19.3	27.1	22.5	20.5
18	21.4	21.9	20.5	20.3	19.3	21.4	19.3	19.5	19.0	20.5	26.9	19.9
19	21.6	21.8	20.5	20.5	18.8	19.7	18.8	19.0	18.6	19.5	25.0	19.5
20	21.6	21.6	20.5	20.1	18.8	20.1	18.6	19.0	18.6	19.3	26.6	22.4
21	21.4	21.6	20.5	19.9	18.6	20.5	19.2	19.3	20.1	19.0	21.6	19.9
22	21.6	21.6	20.5	19.9	18.6	35.8	18.6	23.5	19.5	18.8	20.3	19.5
23	21.2	21.9	20.5	19.9	18.6	22.1	18.6	23.3	18.6	20.6	20.5	19.5
24	21.2	23.4	20.3	19.9	20.3	20.3	18.6	30.6	18.6	19.3	20.1	20.3
25	21.0	21.6	20.3	19.9	22.1	19.7	18.6	25.2	18.6	22.9	19.5	25.2
26	21.0	21.4	20.3	19.9	19.3	19.5	18.4	22.4	18.6	22.2	20.5	20.3
27	20.8	21.2	20.1	19.7	18.8	20.3	18.4	26.0	18.6	19.9	23.0	21.4
28	21.9	21.2	20.1	19.7	18.6	19.5	18.4	22.9	18.6	19.5	20.8	20.5
29	25.6	21.2	22.8	19.7	18.8	19.5	18.4	-	18.4	49.6	20.1	20.5
30	21.4	21.2	40.8	19.7	18.6	19.3	18.4	-----	18.4	21.2	21.9	22.4
31	21.2	21.2	-----	19.7	-----	19.0	18.4	-----	18.4	-----	30.8	-----
Total	684.0	725.5	645.3	644.8	580.0	638.6	621.4	603.8	605.8	618.2	654.1	621.5
Mean:												
mgd	22.1	23.4	21.5	20.8	19.3	20.6	20.0	21.6	19.5	20.6	21.1	20.7
cfs	34.2	36.2	33.3	32.2	29.9	31.9	30.9	33.4	30.2	31.9	32.6	32.0
Ac-ft	2,100	2,230	1,980	1,980	1,780	1,960	1,910	1,850	1,860	1,900	2,010	1,910
Calendar year 1953: Max	47			Min	18.6	Mean(mgd)	23.4	Mean(cfs)	36.2	Ac-ft	26,240	
Fiscal year 1953-54: Max	49.6			Min	17.6	Mean(mgd)	20.9	Mean(cfs)	32.3	Ac-ft	23,470	

* Discharge measurement made on this day.

Punaluu ditch near Punaluu

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

Records available.--May 1953 to June 1954.

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

Extremes.--1953-54: Maximum daily discharge, 16.0 mgd (24.8 cfs) Apr. 29, 1954; minimum daily, 1.48 mgd (2.29 cfs) June 25, 1954.

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

Discharge, in million gallons a day, 1953

Day	May	June	Day	May	June	Day	May	June	Day	May	June
1	-	10.5	9	-	9.8	17	11.2	9.8	25	10.5	9.4
2	-	9.8	10	-	9.8	18	10.5	9.8	26	10.5	9.3
3	-	9.8	11	-	10.5	19	10.5	9.8	27	10.5	9.3
4	-	9.8	12	-	9.8	20	10.5	9.6	28	11.2	9.2
5	-	9.8	13	-	9.8	21	10.5	9.6	29	10.5	*9.2
6	-	9.8	14	-	9.8	22	10.5	9.5	30	10.5	9.2
7	-	9.8	15	-	9.8	23	10.5	9.5	31	10.5	-
8	-	9.8	16	11.2	9.8	24	10.5	9.4			
Total											290.8
Mean, million gallons a day											9.69
Mean, cubic feet per second											15.0
Runoff in acre feet											892

* Discharge measurement made on this day.
 † No gage-height record; discharge estimated on basis of recorded range in stage.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.2	8.8	7.8	8.5	3.45	4.0	3.9	3.1	2.7	9.1	12.0	12.8
2	9.2	9.7	7.8	8.7	3.45	4.0	3.5	3.1	2.7	9.8	11.2	12.0
3	9.7	9.5	7.8	8.2	3.45	4.0	3.45	3.1	2.6	9.0	11.2	12.0
4	9.7	9.0	7.8	7.4	*3.35	4.0	3.35	3.1	2.6	8.8	10.5	11.2
5	9.2	9.4	7.8	7.0	3.35	3.75	3.3	3.1	2.6	9.1	10.5	11.2
6	9.0	9.7	7.2	6.9	3.45	3.7	3.3	3.1	2.6	8.8	10.5	11.2
7	9.0	14.1	6.6	7.0	3.45	3.7	3.3	3.05	2.6	8.7	9.8	11.2
8	9.0	10.5	7.1	7.0	3.45	3.7	3.35	3.05	2.6	8.4	12.0	11.2
9	9.0	9.8	7.4	7.1	3.5	3.7	3.3	3.05	2.7	8.2	11.2	10.5
10	9.0	*9.4	10.0	7.0	3.5	3.6	3.3	3.05	2.7	8.3	10.5	10.5
11	9.0	9.1	8.3	6.9	3.6	3.7	3.3	3.05	2.7	8.4	10.5	10.5
12	9.0	9.0	8.2	6.6	3.6	3.75	3.3	3.2	2.7	8.4	9.8	9.8
13	9.0	9.4	8.2	4.6	3.6	3.75	3.3	3.35	2.75	8.4	9.8	9.8
14	9.1	9.2	8.3	3.6	3.6	3.75	3.35	3.1	2.75	8.4	9.7	9.8
15	9.0	8.8	8.3	3.5	3.6	3.75	3.35	3.3	2.75	*8.7	9.5	10.5
16	9.0	8.7	8.3	3.3	3.6	3.7	3.35	2.75	2.75	8.7	9.7	9.8
17	9.2	8.7	*8.3	3.2	3.5	3.75	3.35	*2.6	2.75	11.3	9.8	10.5
18	9.1	8.7	8.2	3.3	3.5	3.85	3.45	2.5	2.75	9.5	10.5	9.8
19	9.0	8.7	7.8	3.5	3.5	3.75	3.45	2.5	2.75	8.8	11.2	9.8
20	9.0	8.5	7.6	3.5	3.6	3.75	3.45	2.5	2.75	8.5	11.2	9.8
21	9.0	8.7	7.4	3.5	3.6	*3.75	3.5	2.5	2.9	8.5	11.2	9.8
22	9.0	8.3	7.3	3.5	3.6	3.9	3.2	2.6	2.9	8.4	10.5	5.0
23	8.8	8.3	7.7	3.5	3.6	3.9	3.05	2.6	2.9	9.8	10.5	1.73
24	8.8	8.2	7.8	3.5	3.6	3.85	3.05	2.75	2.9	8.0	10.5	1.73
25	8.8	7.8	7.9	3.5	3.6	3.9	3.1	2.7	2.9	9.1	10.5	1.48
26	8.4	7.8	7.9	3.5	3.6	3.85	3.1	2.7	2.9	9.4	10.5	1.67
27	7.6	7.8	7.8	3.5	3.85	3.9	3.1	2.75	2.9	8.8	10.5	1.67
28	8.7	7.7	7.6	3.5	4.0	3.85	3.1	2.7	2.9	8.7	10.5	1.67
29	9.1	7.6	8.1	3.5	4.0	3.85	3.05	-	2.9	15.0	*10.5	1.67
30	9.0	7.7	12.3	3.5	4.0	3.85	3.1	-----	2.9	12.8	11.2	1.67
31	8.7	7.7	-----	3.5	-----	3.9	3.1	-----	5.7	-----	13.6	-----
Total	278.3	276.3	240.6	155.3	107.55	118.15	102.15	80.95	88.50	277.8	331.1	241.99
Mean:												
mgd	8.98	8.91	8.02	5.01	3.58	3.81	3.30	2.89	2.85	9.26	10.7	8.07
cfs	13.9	13.8	12.4	7.75	5.54	5.89	5.11	4.47	4.41	14.3	16.6	12.5
Ac-ft	854	848	738	477	330	363	313	248	272	853	1,020	743

Calendar year 1953. Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
 Fiscal year 1953-54: Max 16.0 Min 1.48 Mean(mgd) 6.30 Mean(cfs) 9.75 Ac-ft 7,050

* 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 1953 to June 1954

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
July 1	Makaha tunnel..	Farm land....	At mouth in Makaha Valley, near Waianae.	1.028	0.666
Sept. 4	....do.....	....do.....	....do.....	1.108	.717
Nov. 17	....do.....	....do.....	....do.....	1.040	.672
Jan. 27	....do.....	....do.....	....do.....	1.211	.785
Apr. 8	....do.....	....do.....	....do.....	1.293	.834
June 30	....do.....	....do.....	....do.....	1.293	.834
Apr. 8	Makaha mauka ditch	....do.....	At 4-foot Parshall flume about 2,000 ft below tunnel in Makaha Valley, near Waianae.	1.370	.885
June 30	....do.....	....do.....	....do.....	1.076	.695
July 2	Tunnel 19.....	Kanewai Stream.	At weir 28, near Waianae.....	.854	.552
Sept. 3	....do.....	....do.....	....do.....	.837	.541
Nov. 18	....do.....	....do.....	....do.....	.757	.489
Jan. 27	....do.....	....do.....	....do.....	.670	.434
Apr. 7	....do.....	....do.....	....do.....	.667	.431
June 29	....do.....	....do.....	....do.....	.604	.390
July 2	Tunnel 6.....	....do.....	At weir 7, near Waianae.....	.090	.058
Sept. 3	....do.....	....do.....	....do.....	.067	.056
Nov. 18	....do.....	....do.....	....do.....	.079	.051
Jan. 27	....do.....	....do.....	....do.....	.063	.041
Apr. 7	....do.....	....do.....	....do.....	.070	.045
June 29	....do.....	....do.....	....do.....	.054	.035
July 2	Tunnel 6-A.....	....do.....	At weir 20, near Waianae.....	.032	.021
Sept. 3	....do.....	....do.....	....do.....	.029	.019
Nov. 18	....do.....	....do.....	....do.....	.040	.026
Jan. 27	....do.....	....do.....	....do.....	.025	.016
Apr. 7	....do.....	....do.....	....do.....	.028	.018
June 29	....do.....	....do.....	....do.....	.045	.029
July 2	Tunnel 7.....	....do.....	At weir 21, near Waianae.....	.066	.043
Sept. 3	....do.....	....do.....	....do.....	.070	.045
Nov. 18	....do.....	....do.....	....do.....	.066	.043
Jan. 27	....do.....	....do.....	....do.....	.054	.035
Apr. 7	....do.....	....do.....	....do.....	.060	.039
July 2	Tunnel 9.....	....do.....	At weir 23, near Waianae.....	.040	.026
Sept. 23	....do.....	....do.....	....do.....	.051	.033
Nov. 18	....do.....	....do.....	....do.....	.045	.029
Jan. 27	....do.....	....do.....	....do.....	.051	.033
Apr. 7	....do.....	....do.....	....do.....	.048	.031
June 29	....do.....	....do.....	....do.....	.076	.049
July 2	Kanewai.....	Honua Stream.	Above flume entrance, near Waianae	1.126	.730
Sept. 3	....do.....	....do.....	....do.....	1.065	.685
Nov. 18	....do.....	....do.....	....do.....	1.116	.721
Jan. 27	....do.....	....do.....	....do.....	.951	.615
Apr. 7	....do.....	....do.....	....do.....	.976	.631
June 29	....do.....	....do.....	....do.....	.932	.602
July 1	Right Branch of West Fork Kalaialua.	West Fork Kalaialua Stream.	At weir 25, above tunnel 14, near Waianae.	.066	.043
Sept. 2	....do.....	....do.....	....do.....	.063	.041
Nov. 17	....do.....	....do.....	....do.....	.070	.045
Jan. 26	....do.....	....do.....	....do.....	.070	.045
Apr. 6	....do.....	....do.....	....do.....	.057	.037
June 28	....do.....	....do.....	....do.....	.063	.041
July 1	Tunnel 14.....	Right Branch of West Fork Kalaialua Stream	At weir 24, near Waianae.....	.098	.063
Sept. 3	....do.....	....do.....	....do.....	.098	.063
Nov. 17	....do.....	....do.....	....do.....	.084	.054
Jan. 26	....do.....	....do.....	....do.....	.073	.047
Apr. 6	....do.....	....do.....	....do.....	.070	.045
June 28	....do.....	....do.....	....do.....	.070	.045
July 1	Right Branch of West Fork Kalaialua.	West Fork Kalaialua Stream.	At weir 10, near Waianae.....	.189	.122
Sept. 2	....do.....	....do.....	....do.....	.158	.102
Nov. 17	....do.....	....do.....	....do.....	.153	.099
Jan. 26	....do.....	....do.....	....do.....	.175	.113
Apr. 10	....do.....	....do.....	....do.....	.198	.128
June 28	....do.....	....do.....	....do.....	.167	.108
July 1	Left Branch of West Fork Kalaialua.	....do.....	At weir 9, below tunnel 11, near Waianae.	.009	.006
Sept. 2	....do.....	....do.....	....do.....	-	(a)
Nov. 17	....do.....	....do.....	....do.....	-	(a)
Jan. 26	....do.....	....do.....	....do.....	-	(a)
Apr. 6	....do.....	....do.....	....do.....	-	(a)
June 28	....do.....	....do.....	....do.....	-	(a)

(a) Trace

Miscellaneous discharge measurements

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

Miscellaneous discharge measurement on Oahu during fiscal year July 1953 to June 1954--Continued

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
July 1	Tunnel 15.....	West Fork Kalalula Stream.	At weir 13, near Waianae.....	0.413	0.267
Sept. 2	....do.....	....do.....	....do.....	.389	.251
Nov. 17	....do.....	....do.....	....do.....	.364	.235
Jan. 26	....do.....	....do.....	....do.....	.385	.249
Apr. 6	....do.....	....do.....	....do.....	.373	.241
June 28	....do.....	....do.....	....do.....	.431	.279
July 1	West Fork Kalalula.	Kalalula Stream.	At weir 14, below tunnel 15, above pipeline diversion, near Waianae.	.633	.409
Sept. 2	....do.....	....do.....	....do.....	.480	.310
Nov. 17	....do.....	....do.....	....do.....	.540	.349
Jan. 26	....do.....	....do.....	....do.....	.500	.323
Apr. 6	....do.....	....do.....	....do.....	.473	.306
June 28	....do.....	....do.....	....do.....	.585	.378
Sept.23	East Fork Kalalula.	....do.....	At weir 30, near Waianae.....	-	0
July 1	Kalalula.	Honua Stream.	At weir 15, near Waianae.....	.009	.006
Sept. 3	....do.....	....do.....	....do.....	.005	.003
Jan. 27	....do.....	....do.....	....do.....	.008	.005
Apr. 7	....do.....	....do.....	....do.....	.009	.006
June 29	....do.....	....do.....	....do.....	.057	.037
Sept. 4	Hiu .....	....do.....	At weir 26, above flume outlet, near Waianae.	.028	.018
Nov. 19	....do.....	....do.....	....do.....	.032	.021
Jan. 28	....do.....	....do.....	....do.....	.040	.026
Apr. 8	....do.....	....do.....	....do.....	.040	.026
June 30	....do.....	....do.....	....do.....	.032	.021
Sept. 4	....do.....	....do.....	At weir 17, near Waianae.....	.040	.026
Nov. 19	....do.....	....do.....	....do.....	.051	.033
Jan. 28	....do.....	....do.....	....do.....	.066	.043
Apr. 8	....do.....	....do.....	....do.....	.122	.079
June 30	....do.....	....do.....	....do.....	.084	.054
Sept. 4	Kumaipo.....	....do.....	At weir 11, below tunnel 16, near Waianae.	.048	.031
Nov. 19	....do.....	....do.....	....do.....	.054	.035
Jan. 28	....do.....	....do.....	....do.....	.065	.041
Apr. 8	....do.....	....do.....	....do.....	.101	.065
June 30	....do.....	....do.....	....do.....	.063	.041
Sept. 4	....do.....	....do.....	At weir 12, above diversion flume to Hiu Stream, near Waianae.	.040	.026
Nov. 19	....do.....	....do.....	....do.....	.042	.027
Jan. 28	....do.....	....do.....	....do.....	.111	.072
Apr. 8	....do.....	....do.....	....do.....	.135	.087
June 30	....do.....	....do.....	....do.....	.078	.049
Sept. 4	Punanaula.....	....do.....	At weir 16, below tunnel 17, near Waianae.	.028	.018
Nov. 19	....do.....	....do.....	....do.....	.028	.018
Jan. 28	....do.....	....do.....	....do.....	.032	.021
Apr. 8	....do.....	....do.....	....do.....	.029	.019
June 30	....do.....	....do.....	....do.....	.037	.024
Sept. 3	City and county of Honolulu tunnel.	....do.....	40 ft below tunnel portal, near Waianae.	2.02	1.31
Nov. 18	....do.....	....do.....	....do.....	2.27	1.47
Jan. 28	....do.....	....do.....	....do.....	2.40	1.55
Apr. 7	....do.....	....do.....	....do.....	2.27	1.47
June 29	....do.....	....do.....	....do.....	2.32	1.50
Sept. 3	Puea mauka ditch.	Farm land....	At 2-foot Parshall flume below powerplant, near Waianae.	2.36	1.53
Nov. 18	....do.....	....do.....	....do.....	2.00	1.29
Jan. 28	....do.....	....do.....	....do.....	2.20	1.42
Apr. 7	....do.....	....do.....	....do.....	2.38	1.54
June 29	....do.....	....do.....	....do.....	2.65	1.71
Aug. 14	Moiilili caverns.	Ala Wai Canal	At Kalo Lane, at Honolulu...	1.19	.77
Sept.24	Drainage ditch No. 13.	Pacific Ocean	Drainage ditch from field No. 13, Waimanalo Agricultural Development Co., near Waimanalo.	.279	.180
24	Drainage ditch No. 26	....do.....	Drainage ditch from field No. 26, Waimanalo Agricultural Development Co., near Waimanalo.	.480	.310
July 23	Baskerville Springs.	Kealahala Stream.	At old rice mill, 0.6 mile downstream from head of valley, near Kaneohe.	3.14	2.03
Aug. 17	....do.....	....do.....	....do.....	3.03	1.96
Sept. 21	....do.....	....do.....	....do.....	2.79	1.80
Oct. 27	....do.....	....do.....	....do.....	3.06	1.98
Nov. 27	....do.....	....do.....	....do.....	2.86	1.85
July 23	Kealahala.....	Pacific Ocean	At Kamehameha Highway bridge, near Kaneohe.	2.89	1.87
Aug. 17	....do.....	....do.....	....do.....	3.39	2.19

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 1953 to June 1954--Continued

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Sept. 21	Keaahala.....	Pacific Ocean	At Kamehameha Highway bridge, near Kaneohe.	3.14	2.03
Oct. 27	....do.....	....do.....	....do.....	3.30	2.13
Nov. 27	....do.....	....do.....	....do.....	3.03	1.96
Dec. 23	....do.....	....do.....	....do.....	3.99	2.58
Jan. 25	....do.....	....do.....	....do.....	3.33	2.15
Feb. 28	....do.....	....do.....	....do.....	4.64	3.00
Mar. 24	....do.....	....do.....	....do.....	3.91	2.53
Apr. 21	....do.....	....do.....	....do.....	3.78	2.44
May 24	....do.....	....do.....	....do.....	3.85	2.49
June 24	....do.....	....do.....	....do.....	3.13	2.02
Nov. 3	Left tributary to Kahaluu.	Kahaluu Stream.	At first culvert below gaging station.	.552	.357
Dec. 23	....do.....	....do.....	....do.....	.664	.429
Feb. 23	....do.....	....do.....	....do.....	.755	.488
Apr. 21	....do.....	....do.....	....do.....	.542	.350
May 26	....do.....	....do.....	....do.....	.504	.326

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 1954.

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.--30 years (1918-32, 1938-54), 18.9 mgd (29.2 cfs).

Extremes.--Maximum discharge during year, 2,000 mgd (3,090 cfs) Mar. 1 (gage height, 8.02 ft), from rating curve extended as explained below; minimum, 0.80 mgd (1.24 cfs) Feb. 11.

1917-32, 1937-54: 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, 0.80 mgd (1.24 cfs) Oct. 13-15, 19, 1917, Feb. 11, 1954.

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

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1-4		July 5 to June 30			
1.0	4.7	0.55	0.76	1.5	11.3
1.2	6.9	.6	.95	2.0	42
1.4	10.4	.7	1.35	2.5	77
1.6	18.0	.9	2.55	3.0	130
2.0	42	1.1	4.4	3.5	200
2.5	77	1.3	7.2		

Discharge, in million gallons a day, fiscal year July 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.2	5.7	4.1	*34	4.4	6.7	43	1.90	155	5.0	21.5	25
2	5.2	52	5.0	9.8	3.9	22	17.0	1.74	44	22	17.8	11.3
3	17.3	32	5.2	6.4	3.35	7.2	8.2	1.52	27.5	16.5	14.4	10.2
4	49	19.1	5.4	5.0	3.35	17.6	7.2	1.31	16.0	7.2	21	10.2
5	10.4	15.6	3.9	4.4	3.35	12.2	27	1.56	71	20.5	10.9	10.2
6	7.2	55	3.35	4.4	67	15.6	7.3	2.4	13.4	7.8	34	7.2
7	7.4	64	3.35	5.0	17.0	18.9	8.1	1.35	15.3	9.4	10.8	41
8	5.7	27	3.6	3.9	9.2	14.1	51	1.11	20	5.7	7.2	16.7
9	5.0	13.9	3.35	3.9	9.6	13.5	13.7	.95	23.5	5.0	6.4	9.1
10	4.4	11.3	17.4	3.9	7.5	7.2	8.2	.87	61	4.4	5.0	7.2
11	3.9	9.1	3.9	16.6	11.3	17.4	6.4	.87	19.5	4.4	4.4	6.4
12	5.1	12.1	3.35	8.2	5.0	11.5	5.7	14.5	27.5	3.9	5.0	6.4
13	3.9	23	2.95	15.3	4.4	11.3	5.0	19.3	16.4	4.4	6.3	5.7
14	16.7	14.2	2.55	7.2	3.9	26	12.1	3.9	9.1	3.9	5.0	24
15	7.2	9.1	2.55	5.0	3.9	7.2	6.8	2.55	9.1	5.0	4.4	16.5
16	16.0	6.4	2.2	42	4.4	5.7	5.0	1.79	7.2	3.9	14.5	8.6
17	7.5	7.2	3.5	14.6	5.9	5.0	4.4	1.35	18.6	15.9	33.5	16.3
18	8.9	5.7	2.95	19.6	7.2	5.8	3.9	1.07	32.5	32	*78	11.9
19	16.8	13.7	2.2	14.3	7.6	5.0	3.9	1.24	39	7.1	68	9.2
20	7.8	9.9	2.2	6.4	5.0	3.9	*3.35	3.55	16.6	5.0	29.5	14.9
21	6.6	7.2	2.2	12.2	3.9	8.6	3.35	19.9	42	4.4	19.8	9.2
22	16.7	16.3	2.2	7.7	*4.6	32.5	3.35	35.5	28	4.4	15.6	6.4
23	6.4	21	2.2	19.8	3.9	6.9	2.95	30.5	14.4	4.4	11.3	11.5
24	5.0	21.5	1.90	6.4	17.6	5.0	2.95	25	*9.5	3.9	10.2	30
25	4.4	7.2	16.4	5.0	57	4.4	2.95	33	8.2	3.35	10.2	31.5
26	4.4	6.4	*4.8	11.9	10.6	6.0	3.35	9.9	11.1	3.35	29.5	12.0
27	5.0	5.0	2.95	6.4	6.4	10.9	2.95	8.8	7.2	4.4	41	34
28	18.4	5.0	2.55	8.0	7.9	22.5	2.55	21.8	6.4	3.35	32	21
29	*38.5	4.4	2.2	4.4	16.9	9.1	2.55	-	5.7	50	14.0	41
30	14.8	3.9	133	7.4	6.4	6.4	2.2	-----	5.0	17.3	10.2	12.5
31	6.4	3.9	-----	5.0	-----	12.1	2.2	-----	5.0	-----	55	-----
Total	337.2	507.8	253.40	321.1	322.45	455.3	278.60	248.03	784.7	287.85	648.4	477.1
Mean:												
mgd	10.9	16.4	8.45	10.4	10.7	14.7	9.99	8.86	25.3	9.60	20.9	15.9
cfs	16.9	25.4	13.1	16.1	15.6	22.7	13.9	13.7	39.1	14.9	32.3	24.6
Ac-ft	1,030	1,560	778	985	990	1,400	855	761	2,410	883	1,990	1,460
Calendar year 1953: Max	168	Min	1.90	Mean(mgd)	13.0	Mean(cfs)	20.1	Ac-ft	14,530			
Fiscal year 1953-54: Max	155	Min	0.87	Mean(mgd)	13.5	Mean(cfs)	20.9	Ac-ft	15,100			

Peak discharge (base, 350 mgd)--Sept. 30 (8:30 a.m.) 1,230 mgd (1,900 cfs), 6.73 ft; Mar. 1 (8 p.m.) 2,000 mgd (3,090 cfs), 8.02 ft.

* Discharge measurement made on this day.

ISLAND OF MOLOKAI

Pulena Stream near Wallau

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

Drainage area.--4.4 sq mi.

Records available.--October 1919 to December 1928, September 1937 to June 1954.

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.--24 years (1920-28, 1938-54), 21.8 mgd (33.7 cfs).

Extremes.--Maximum discharge during year, 635 mgd (982 cfs) Dec. 27 (gage height, 4.50 ft), from rating curve extended above 220 mgd as explained below; minimum, 3.0 mgd (4.6 cfs) Sept. 27, 29, Oct. 10.

1919-28, 1937-54: 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, Sept. 27, 29, Oct. 10, 1953.

Flood of Jan. 20, 1929, reached a stage of at least 22 ft (discharge, approximately, 11,000 mgd, 17,000 cfs).

Remarks.--Records good.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.5	3.0	1.6	48
.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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.8	13.3	6.0	18.8	4.6	21.5	22.5	4.6	25	7.8	13.7	28
2	7.3	*59	5.6	4.4	4.6	31	12.6	4.4	31	12.8	10.4	15.9
3	24	38.5	7.5	3.8	4.1	16.6	9.9	4.4	14.4	9.3	11.9	13.3
4	32.5	24	5.4	3.5	3.95	21	11.7	4.3	17.5	7.3	21.5	13.0
5	13.7	16.7	5.0	3.8	4.6	14.8	65	4.8	145	7.1	15.7	12.3
6	11.0	18.3	4.8	3.8	15.0	25.5	17.9	4.8	42	6.6	42	11.1
7	10.7	42	4.6	3.95	8.1	20.5	13.7	4.1	41	6.4	19.7	65
8	9.6	26	4.6	3.5	9.3	21.5	15.0	3.95	48	6.2	13.0	30
9	9.0	18.7	4.6	3.5	7.8	23	11.9	3.8	42	6.0	10.4	17.5
10	7.8	15.1	7.2	3.3	9.8	13.7	9.9	3.65	56	5.8	9.3	13.0
11	7.3	11.6	4.3	7.5	8.2	18.5	9.0	4.2	37	5.8	8.5	11.3
12	7.8	11.6	4.3	6.2	5.2	11.0	8.5	6.6	38	5.4	8.0	11.6
13	7.1	13.5	4.1	11.2	4.6	14.0	8.3	12.0	22.5	5.8	8.0	9.9
14	17.1	9.9	3.95	5.2	4.6	18.0	9.1	4.4	17.5	5.2	7.3	13.1
15	8.5	9.0	3.8	5.0	4.3	10.7	7.6	3.95	34	5.2	6.8	16.6
16	8.8	8.3	3.8	4.6	9.7	9.3	7.1	3.65	17.5	5.2	7.1	10.2
17	7.8	7.8	4.7	12.3	17.4	8.3	6.6	3.5	27.5	27	9.0	10.4
18	8.3	7.3	3.65	9.8	9.3	9.3	6.4	3.5	34	31.5	10.8	10.2
19	14.6	11.1	3.8	7.6	21	7.6	7.6	3.65	25	9.3	25.5	11.9
20	9.3	14.7	3.65	5.6	*9.8	8.1	6.2	5.2	29.5	7.3	*10.4	21.5
21	8.3	8.5	3.65	6.0	7.1	11.4	6.2	12.7	23.5	6.6	9.3	13.0
22	12.3	7.3	3.65	6.4	6.0	24.5	5.8	8.4	19.9	7.1	15.3	9.6
23	7.1	8.2	3.5	8.5	5.4	9.9	5.8	26.5	18.8	6.6	10.2	10.2
24	7.1	15.4	3.5	5.2	15.2	8.0	5.4	11.0	13.7	6.0	10.2	16.7
25	6.4	8.0	5.6	4.6	7.0	7.3	*5.4	25	*11.9	5.6	9.0	21
26	12.1	6.8	3.8	5.6	21.5	7.8	5.4	20.5	11.6	5.6	12.3	13.1
27	8.3	6.2	3.3	4.6	12.3	102	5.2	17.3	10.4	5.2	33	23.5
28	29	7.1	3.5	4.4	12.1	35.5	5.0	15.1	9.6	5.0	39.5	30
29	47	6.0	3.3	4.3	14.3	18.3	5.0	-	8.8	7.1	19.7	34.5
30	21	5.6	7.1	7.0	8.8	14.1	4.8	-----	8.5	24.5	13.7	21.5
31	13.0	5.7	-----	5.9	-----	12.6	4.8	-----	8.0	-----	31	-----
Total	401.0	411.1	135.65	231.25	336.25	575.3	325.3	229.95	689.1	326.1	472.2	538.9
Mean:												
mgd	13.0	14.9	4.52	7.46	11.3	18.6	10.5	8.21	28.7	10.9	15.2	18.0
cfs	20.1	23.1	6.99	11.5	17.5	28.6	16.2	12.7	44.4	16.9	23.5	27.9
Ac-ft	1,230	1,420	416	710	1,040	1,770	998	706	2,730	1,000	1,450	1,650
Calendar year 1953.	Max	102	Min	3.3	Mean(mgd)	11.8	Mean(cfs)	18.3	Ac-ft	13,250		
Fiscal year 1953-54.	Max	145	Min	3.3	Mean(mgd)	13.5	Mean(cfs)	20.9	Ac-ft	15,120		

Peak discharge (base, 1,800 mgd).--No peak above base.
* Discharge measurement made on this day.

Waiakeakua Stream near Waialou

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 Waialou, and 3.8 miles northwest of Pukoo.

Drainage area.--1.4 sq mi.

Records available.--November 1919 to September 1929, September 1937 to June 1954.

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.--25 years (1920-29, 1938-54), 7.44 mgd (11.5 cfs).

Extremes.--Maximum discharge during year, 141 mgd (218 cfs) Mar. 1 (gage height, 3.88 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 1.35 mgd (2.09 cfs) Feb. 17, 18.

1919-29, 1937-54: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 26, Apr. 2, 1948, from rating curve extended as explained above; maximum gage height, 9.90 ft Jan. 26, 1948; minimum discharge, 1.15 mgd (1.78 cfs) Nov. 1, 1949.

Remarks.--Records poor.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.65	1.35	2.2	13.1
1.7	1.85	2.5	26
1.8	3.15	3.0	56
1.9	4.9		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.5	4.7	3.3	9.1	2.75	5.9	13.0	1.85	11.9	3.0	3.7	9.8
2	3.3	24	3.0	3.3	2.65	7.6	5.6	1.75	11.0	4.9	3.5	6.4
3	8.9	*12.0	3.7	2.75	2.5	4.2	4.2	1.65	6.9	3.5	4.4	5.3
4	16.6	8.4	3.15	2.5	2.5	6.7	4.6	1.65	7.1	2.9	5.3	5.1
5	5.3	6.7	2.9	2.5	2.65	4.7	16.0	1.85	28	3.95	5.4	4.4
6	4.6	20	2.75	2.5	23	6.7	4.7	1.65	8.4	2.75	11.6	4.4
7	4.4	25	2.65	2.5	5.5	7.5	4.5	1.55	7.1	2.75	4.9	21.5
8	4.0	10.4	2.75	2.25	5.1	5.6	11.5	1.55	9.8	2.5	4.0	6.7
9	3.85	7.1	2.75	2.25	4.6	5.5	4.7	1.55	10.7	2.5	3.5	5.3
10	3.5	6.4	3.5	2.1	6.7	4.4	4.0	1.55	17.4	2.35	3.15	4.6
11	3.3	5.3	2.65	5.7	4.6	5.6	3.7	1.65	9.2	2.25	2.9	4.4
12	3.5	5.3	2.5	3.15	3.55	4.2	3.5	3.15	9.2	2.25	2.75	4.4
13	3.15	9.6	2.35	6.4	3.3	6.8	3.3	4.4	6.9	2.35	2.75	3.7
14	6.2	5.3	2.35	3.0	3.15	7.9	3.5	1.85	5.3	2.25	2.5	7.1
15	3.5	4.6	2.35	3.15	3.15	4.2	3.0	1.65	5.3	2.25	2.35	5.3
16	4.5	4.4	2.35	24.5	3.4	3.7	2.9	1.55	4.4	2.25	2.75	4.0
17	3.5	4.4	2.65	6.5	3.9	3.3	2.75	1.45	6.4	9.0	3.65	4.7
18	3.7	4.0	2.25	7.6	3.4	3.5	2.65	1.45	9.9	10.5	13.1	4.4
19	6.4	5.1	2.1	5.0	4.2	3.0	2.65	1.55	5.3	3.5	14.4	4.9
20	4.2	5.5	2.25	4.1	*3.3	2.75	2.5	1.75	7.9	2.9	*5.6	5.6
21	3.7	4.2	2.1	5.2	3.05	2.9	2.35	4.6	10.0	2.75	5.1	4.4
22	5.7	4.3	2.1	3.9	2.9	10.3	2.35	5.3	7.4	2.75	5.3	3.7
23	3.5	4.9	1.98	5.4	2.75	3.3	2.25	6.7	5.3	2.5	3.85	5.4
24	3.3	8.8	2.1	3.4	11.5	2.9	2.25	3.7	4.6	2.35	4.0	9.4
25	3.0	4.2	3.3	3.3	26.5	2.75	*2.25	6.6	*4.2	2.25	3.5	15.0
26	3.9	3.85	2.25	3.55	6.2	2.75	2.1	4.0	4.4	2.25	6.6	6.7
27	3.3	3.7	2.1	3.15	4.6	20.5	2.1	6.0	-3.85	2.25	12.7	9.6
28	9.6	3.7	2.1	2.9	5.8	8.1	1.98	12.4	3.7	1.98	10.8	9.1
29	16.6	3.3	*1.85	2.9	5.7	4.6	1.85	-----	3.5	14.5	5.6	10.4
30	6.0	3.0	13.3	3.3	3.7	4.0	1.85	-----	3.15	4.0	4.7	6.4
31	4.7	3.0	-----	2.9	-----	6.1	1.85	-----	3.15	-----	22	-----
Total	163.20	225.15	87.43	140.75	166.60	171.95	126.43	86.35	241.35	108.18	186.35	202.1
Mean:	5.26	7.26	2.91	4.54	5.55	5.55	4.08	3.08	7.79	3.61	6.01	6.74
mgd	8.14	11.2	4.50	7.02	8.59	8.59	6.31	4.77	12.1	5.59	9.30	10.4
cfs	501	691	268	432	511	528	388	265	741	332	572	620
Ac-ft												
Calendar year 1953:	Max	31.5	Min	1.85	Mean(mgd)	5.40	Mean(cfs)	8.36	Ac-ft	6,050		
Fiscal year 1953-54:	Max	28.5	Min	1.45	Mean(mgd)	5.22	Mean(cfs)	8.08	Ac-ft	5,850		

Peak discharge (base 240 mgd).--No peak above base.

* Discharge measurement made on this day.

ISLAND OF MOLOKAI

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 1954.

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.--23 years (1920-28, 1938-47, 1948-54), 10.7 mgd (16.6 cfs).

Extremes.--Maximum discharge during year not determined, occurred Dec. 27 (gage height, 3.22 ft); minimum daily, 1.71 mgd (2.65 cfs) Oct. 10. 1919-29, 1937-54: Maximum discharge observed, 3,080 mgd (4,770 cfs) Nov. 20, 1940 (gage height, 6.81 ft), from rating curve extended above 80 mgd, 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 diversion above station.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 1-3)

0.5	1.55	1.2	8.3
.6	1.82	1.4	14.3
.7	2.2	1.6	23.5
.8	2.65	1.8	38
.9	3.2	2.0	58
1.0	4.1	2.3	110

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.95	6.2	3.05	2.7	2.3	9.8	11.5	3.3	6.9	5.3	11.0	10.2
2	2.85	20.5	3.05	2.1	2.35	17.9	8.0	3.2	12.7	8.2	9.1	7.8
3	8.5	14.9	3.6	1.97	1.90	9.6	6.8	3.15	7.6	6.3	8.6	7.0
4	10.4	10.2	3.05	1.90	2.0	11.1	7.5	3.1	7.3	5.3	9.9	7.0
5	5.3	8.0	2.9	1.90	2.6	9.4	9.2	4.0	7.7	5.0	9.9	7.3
6	4.6	7.0	2.85	1.93	3.55	12.6	15.1	3.7	18.1	4.6	23.5	6.8
7	4.4	11.2	2.8	1.93	3.15	11.3	11.3	3.1	16.0	4.4	13.3	33.5
8	3.9	9.6	2.7	1.77	5.8	14.4	9.9	3.05	25.5	4.3	9.9	17.2
9	3.9	8.0	2.75	1.79	3.95	15.2	8.6	3.0	19.5	4.0	8.3	11.0
10	3.65	7.0	3.85	1.71	3.4	9.9	7.3	2.9	24.5	3.9	7.6	9.1
11	3.45	5.7	2.75	2.65	4.1	10.2	6.6	3.25	16.0	3.85	7.0	7.8
12	3.65	5.7	2.65	2.7	2.6	7.3	6.3	3.75	16.0	3.75	6.6	7.6
13	3.4	5.7	2.65	3.8	2.35	8.3	5.8	5.0	11.7	3.85	6.3	6.6
14	6.4	4.9	2.65	2.5	2.2	8.3	5.8	3.2	9.6	3.65	5.8	7.0
15	3.85	4.4	2.55	2.4	2.2	6.6	5.5	3.05	27.5	3.55	5.5	8.0
16	3.45	4.1	2.5	13.0	6.1	5.5	5.0	3.0	11.7	3.45	5.6	6.3
17	3.55	3.9	2.5	4.3	13.1	5.0	4.4	2.85	16.9	3.5	7.3	5.8
18	3.75	3.8	2.35	3.65	7.2	5.0	4.3	2.8	18.2	16.0	7.6	5.8
19	5.2	4.9	2.35	3.45	16.0	4.3	5.5	2.9	17.8	7.0	11.8	6.0
20	3.9	5.5	2.35	2.7	7.6	4.3	4.1	3.7	15.1	5.6	7.8	8.8
21	3.45	4.0	2.25	2.75	5.0	6.4	*4.0	6.7	12.0	5.0	*7.3	7.0
22	5.0	3.65	2.35	3.0	3.85	8.6	3.9	4.3	10.5	5.0	8.3	5.8
23	3.3	3.55	*2.3	3.45	3.3	5.0	3.75	17.6	11.0	4.8	7.3	5.5
24	3.2	4.8	2.3	2.5	5.0	4.1	3.65	9.8	8.8	4.3	7.3	6.8
25	3.1	3.7	3.1	2.25	21.5	3.85	3.65	13.9	8.0	4.0	6.8	6.6
26	4.6	3.35	2.5	2.55	9.4	3.85	3.75	12.1	7.6	3.9	7.0	5.6
27	3.75	3.25	2.2	2.2	6.6	e55	3.45	10.0	7.0	3.75	10.2	10.2
28	10.0	3.65	2.2	2.2	5.5	22	3.4	7.3	6.6	3.55	13.0	12.3
29	13.6	3.25	2.1	2.1	5.8	12.3	3.4	-	5.8	4.4	9.1	15.2
30	8.3	3.1	2.15	3.35	4.1	9.6	3.3	-----	5.6	16.2	7.6	10.5
31	*5.8	3.05	-----	2.9	-----	8.3	3.4	-----	5.3	-----	9.8	-----
Total	153.15	190.55	79.35	90.10	164.50	324.80	270.95	146.70	463.8	206.10	276.1	271.9
Mean												
mgd	4.94	6.15	2.64	2.91	5.48	10.5	8.74	5.24	15.0	6.87	8.91	9.06
cfs	7.84	9.52	4.08	4.50	8.48	16.2	13.5	8.11	23.2	10.6	13.8	14.0
Ac-ft	470	585	244	277	505	997	832	450	1,420	632	847	834
Calendar year 1953: Max	58	Min	1.71	Mean(mgd)	5.59	Mean(cfs)	8.65	Ac-ft	6,260			
Fiscal year 1953-54: Max	92	Min	1.71	Mean(mgd)	7.23	Mean(cfs)	11.2	Ac-ft	8,090			

Peak discharge (base, 300 mgd).--Dec. 27 (8 p.m.) discharge unknown.

* Discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge estimated on basis of records for Lanipuni Stream.

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 1954.

Gage.--Water-stage recorder. Datum of gage is 418 ft above mean sea level (by hand levels from Geological Survey benchmark).

Average discharge.--24 years (1920-29, 1938-47, 1948-54), 9.23 mgd (14.3 cfs).

Extremes.--Maximum discharge during year, 233 mgd (361 cfs) Mar. 5 (gage height, 4.03 ft), from rating curve extended as explained below; minimum daily, 1.70 mgd (2.63 cfs) Apr. 15.

1919-29, 1937-54: 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 diversion.

Revisions (fiscal years).--WSP 1249: 1943(M).

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	5.8	3.5	6.6	2.8	9.4	7.4	2.6	8.2	2.35	5.8	7.4
2	3.3	28	3.5	2.8	2.8	14.3	5.2	2.6	8.2	9.7	4.7	5.5
3	10.0	14.4	4.0	2.7	2.6	7.9	4.2	2.6	5.0	4.7	7.4	5.1
4	12.0	8.6	3.5	2.6	2.8	9.5	4.9	2.6	5.9	2.85	12.1	5.1
5	5.3	6.6	3.25	2.8	3.05	8.1	20	2.7	44	2.6	10.0	5.0
6	4.6	7.1	3.25	2.8	5.0	13.6	6.8	2.6	7.6	2.35	28.5	5.0
7	4.3	12.4	3.15	2.6	3.8	9.7	5.9	2.5	7.4	2.25	8.4	30.5
8	3.75	9.4	3.15	2.6	6.4	10.6	6.0	2.5	12.8	2.15	5.7	11.8
9	3.45	6.8	3.15	2.6	4.5	9.2	5.2	2.5	12.8	1.91	4.6	6.6
10	3.15	5.9	4.6	2.5	5.2	6.8	4.4	2.4	20.5	1.80	3.95	5.1
11	3.15	5.4	3.15	3.3	4.6	6.8	4.0	3.15	9.6	1.80	3.6	4.6
12	3.3	5.9	3.15	3.2	3.4	5.7	3.9	3.9	12.0	1.80	3.45	4.6
13	3.15	5.7	3.05	4.1	3.15	7.6	3.75	4.2	6.2	2.0	3.3	3.75
14	9.1	4.8	3.05	2.9	3.15	8.4	4.0	2.6	4.9	1.80	2.65	5.3
15	4.4	4.7	2.9	3.1	3.05	5.7	3.65	2.6	8.1	1.70	2.6	6.1
16	3.95	4.2	2.9	21.5	5.9	5.0	3.4	2.5	4.9	1.80	3.2	4.4
17	3.95	4.0	2.9	5.8	8.9	4.4	3.4	2.4	8.0	18.9	8.0	4.3
18	3.75	4.0	2.8	4.9	5.4	4.4	3.25	2.4	8.1	20	12.0	4.6
19	5.4	4.9	2.8	4.0	13.6	4.0	3.15	2.7	10.3	5.9	17.8	5.0
20	3.95	5.6	2.8	3.4	6.4	3.75	3.15	3.15	8.6	4.4	7.2	9.5
21	3.6	4.2	2.8	3.4	4.5	5.9	*3.15	4.8	5.9	3.5	*6.1	5.3
22	5.7	4.0	2.9	3.5	3.75	10.0	3.05	5.4	5.0	3.3	10.4	4.1
23	3.45	4.5	*2.7	3.7	3.65	4.8	3.05	13.0	4.8	3.0	6.8	4.9
24	3.3	5.6	2.8	3.05	9.7	4.2	2.9	6.1	3.45	2.6	6.6	6.4
25	3.15	4.2	3.7	2.9	27.5	3.9	2.9	8.0	3.0	2.85	5.9	6.6
26	4.7	3.9	2.8	3.25	8.6	3.75	3.05	7.5	3.65	2.6	6.6	5.5
27	3.6	3.75	2.8	2.8	5.9	21	2.8	5.7	2.75	2.35	15.7	8.4
28	10.2	4.0	2.7	2.8	5.7	8.8	2.8	3.35	2.5	2.15	14.4	14.4
29	12.7	3.65	2.7	2.8	5.5	6.2	2.8	-	2.35	13.8	7.0	15.2
30	7.0	3.5	2.95	3.4	4.2	5.2	2.7	-----	2.25	6.2	5.7	7.6
31	*4.8	3.4	-----	2.9	-----	5.0	2.7	-----	2.15	-----	8.9	-----
Total	159.45	198.90	93.40	121.30	175.50	233.60	137.55	109.05	250.90	135.21	249.25	217.65
Mean:												
mgd	5.14	6.42	3.11	3.91	5.85	7.54	4.44	3.89	8.09	4.51	8.04	7.26
cfs	7.95	9.93	4.81	6.05	9.05	11.7	6.87	6.02	12.5	6.98	12.4	11.2
Ac-ft	489	610	287	372	539	717	422	335	770	415	765	668
Calendar year 1953: Max	46				1.91				5.13		7.94	5,750
Min					1.70				5.70		8.82	6,390
Fiscal year 1953-54: Max	44											
Min												

Peak discharge (base, 300 mgd).--No peak above base.
* Discharge measurement made on this day.

ISLAND OF MOLOKAI

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 1954. Prior to November 1930, published as Waikolu Stream at pipeline crossing.

Gage.--Water-stage recorder and concrete 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.--24 years (1919-29, 1938-47, 1949-54), 11.4 mgd (17.6 cfs).

Extremes.--Maximum discharge during year, 566 mgd (876 cfs) Mar. 5 (gage height, 4.99 ft), from rating curve extended as explained below; minimum, 2.65 mgd (4.10 cfs) Oct. 26.

1919-32, 1937-54: 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 tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 5					Mar. 5 to June 30			
1.6	2.85	2.2	14.3	1.8	3.1	2.4	28.5	
1.9	4.7	2.3	19.5	1.9	5.2	2.6	47	
2.0	7.2	2.5	35	2.0	8.0	3.0	97	
2.1	10.3	2.8	68	2.2	16.2			

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	*4.5	4.1	4.1	3.5	4.3	6.6	3.9	4.5	5.0	8.0	8.8
2	4.5	14.8	4.1	3.9	3.5	13.5	5.4	3.9	9.0	13.6	6.5	7.4
3	5.4	12.5	4.1	3.7	3.5	6.4	4.7	3.9	4.7	7.7	8.4	6.8
4	11.1	6.6	4.1	3.5	3.5	7.8	5.1	3.9	4.5	6.0	16.2	6.8
5	5.4	4.9	4.1	3.5	3.5	6.1	56	3.9	92	5.5	10.2	7.1
6	4.7	4.7	4.1	3.5	3.9	8.4	5.8	4.3	16.7	5.2	54	6.8
7	4.7	5.8	4.1	3.5	4.3	9.8	4.9	4.1	14.9	5.2	9.5	27
8	4.5	7.0	4.1	3.5	5.3	10.4	4.7	3.9	25.5	5.2	6.5	15.0
9	4.5	5.6	3.9	3.5	5.8	14.2	4.9	3.9	13.9	5.0	6.0	7.1
10	4.3	5.4	3.9	3.5	4.5	5.6	4.5	3.7	21.5	5.0	5.5	6.2
11	4.3	4.9	3.9	3.5	6.8	5.4	4.3	3.9	9.4	5.0	5.5	6.0
12	4.3	4.7	3.9	3.5	4.1	4.9	4.3	4.7	15.0	5.0	5.2	6.0
13	4.3	4.7	3.9	3.5	3.7	5.1	4.3	4.3	7.1	4.8	5.5	8.0
14	4.7	4.7	3.9	3.5	3.7	11.8	4.9	4.1	5.8	4.8	5.2	6.0
15	5.1	4.5	3.9	3.5	3.7	5.1	4.7	3.9	14.5	4.3	5.2	7.1
16	4.7	4.3	3.9	3.5	3.7	4.5	4.3	3.9	6.0	4.3	5.8	6.5
17	4.5	4.3	3.7	6.0	9.1	4.3	4.3	3.9	11.6	26	11.9	6.0
18	4.5	4.3	3.7	4.1	7.0	4.3	4.1	3.9	17.6	32.5	15.0	5.8
19	4.7	4.5	3.7	4.3	16.4	4.3	*4.3	3.7	11.7	7.1	*28	5.8
20	4.7	4.5	3.7	3.9	6.0	4.1	4.5	3.9	11.2	5.5	16.2	7.8
21	4.7	4.5	3.7	3.9	4.3	9.4	4.3	7.0	7.4	5.0	10.8	7.7
22	5.4	4.3	3.7	3.7	3.9	12.0	4.1	6.6	6.0	5.0	15.2	6.2
23	4.9	4.3	3.7	3.7	*3.5	5.4	4.1	35.5	8.6	5.0	11.0	6.0
24	4.5	4.3	*3.7	3.7	11.5	4.5	4.1	9.8	5.8	4.8	9.1	7.7
25	4.3	4.3	3.9	3.5	4.1	4.3	4.1	17.8	5.2	5.0	8.0	7.4
26	4.5	4.3	3.7	3.55	6.6	4.3	4.9	9.2	5.5	7.7	8.0	6.2
27	4.7	4.3	3.7	3.7	4.5	55	4.3	6.4	*5.2	5.2	13.9	11.1
28	8.0	4.3	3.5	3.5	4.3	15.6	4.1	5.1	5.2	4.8	17.7	17.8
29	11.5	4.1	3.5	3.5	4.5	5.8	4.1	-	5.2	45	8.8	22
30	7.9	4.1	3.5	3.5	4.1	4.9	3.9	-----	5.0	14.9	7.4	7.7
31	4.9	4.1	-----	3.5	-----	4.5	3.9	-----	5.0	-----	6.8	-----
Total	184.7	184.1	115.4	142.05	193.7	266.0	202.5	177.0	381.2	265.1	351.0	261.8
Mean:												
mgd	5.31	5.29	3.85	4.58	6.46	8.58	6.53	6.32	12.3	8.84	11.3	8.73
cfs	8.22	8.18	5.96	7.09	10.0	13.3	10.1	9.78	19.0	13.7	17.5	13.5
Ac-ft	505	504	354	436	594	816	621	543	1,170	814	1,080	803
Calendar year 1953. Max	127		Min	3.35	Mean(mgd)	6.60	Mean(cfs)	10.2	Ac-ft	7,380		
Fiscal Year 1953-54: Max	129		Min	3.35	Mean(mgd)	7.35	Mean(cfs)	11.4	Ac-ft	8,240		

Peak discharge (base, 450 mgd).--Mar. 5 (4 a.m.) 566 mgd (876 cfs), 4.99 ft.

* Discharge measurement made on this day.

Waialala Springs near Kalae

Location.--Lat 21°10'20", long 157°00'05", on left bank on highway from Kalae to Kalau-papa Pali, 0.8 mile northeast of Kalae and 5.7 miles northeast of Kaunakakai Post Office.

Records available.--September 1940 to June 1954.

Gage.--Water-stage recorder and sharp-crested V-notch weir. Altitude of gage is 1,600 ft (from topographic map).

Average discharge.--13 years (1941-54), 0.017 mgd (0.026 cfs).

Extremes.--1940-54: 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.010	0.010	0.011	0.010	0.012	0.013	0.009	0.009	0.009	0.008	0.010	0.008
2	0.010	0.010	0.011	0.010	0.012	0.013	0.009	0.009	0.009	0.008	0.010	0.008
3	0.010	0.010	0.011	0.010	0.012	0.012	0.009	0.009	0.009	0.008	0.010	0.008
4	0.010	0.010	0.011	0.010	0.012	0.010	0.009	0.009	0.009	0.008	0.010	0.008
5	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.009	0.009	0.008	0.010	0.008
6	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.009	0.009	0.008	0.009	0.008
7	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.009	0.009	0.008	0.009	0.008
8	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.009	0.009	0.008	0.009	0.008
9	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.009	0.009	0.008	0.009	0.008
10	0.010	0.010	0.010	0.011	0.012	0.010	0.009	0.009	0.009	0.008	0.009	0.008
11	0.010	0.010	0.010	0.011	0.012	0.010	0.009	0.009	0.009	0.008	0.009	0.008
12	0.010	0.010	0.010	0.011	0.012	0.010	0.009	0.009	0.009	0.009	0.009	0.008
13	0.010	0.010	0.010	0.011	0.012	0.010	0.009	0.009	0.009	0.008	0.009	0.008
14	0.010	0.010	0.010	0.011	0.012	0.010	0.009	0.008	0.008	0.009	0.009	0.008
15	0.010	0.010	0.010	0.011	0.012	0.010	0.009	0.008	0.009	0.009	0.010	0.008
16	0.010	0.010	0.010	0.011	0.012	0.010	0.009	0.008	0.009	0.009	0.009	0.008
17	0.010	0.010	0.010	0.011	0.013	0.010	0.009	0.008	0.010	0.008	0.009	0.008
18	0.010	0.010	0.010	0.010	0.013	0.010	0.009	0.008	0.010	0.008	0.010	0.008
19	0.010	0.010	0.011	0.010	0.013	0.010	0.009	0.008	0.009	0.008	0.010	0.008
20	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.008	0.008	0.008	0.009	0.008
21	0.010	0.011	0.010	0.010	0.012	0.010	0.009	0.008	0.008	0.008	0.009	0.008
22	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.008	0.008	0.008	0.009	0.008
23	0.010	0.010	0.010	0.010	0.012	0.010	0.009	0.008	0.008	0.008	0.009	0.008
24	0.010	0.011	0.010	0.010	0.013	0.011	0.009	0.008	0.008	0.008	0.008	0.008
25	0.010	0.011	0.010	0.009	0.016	0.010	0.009	0.009	0.008	0.008	0.008	0.008
26	0.010	0.011	0.010	0.009	0.014	0.010	0.009	0.009	0.008	0.008	0.008	0.008
27	0.011	0.011	*.010	0.009	0.014	0.013	0.009	0.009	0.009	0.008	0.008	0.008
28	0.011	0.011	0.010	0.009	0.014	0.011	0.009	0.009	0.008	0.008	0.008	0.008
29	0.011	0.011	0.010	0.010	0.013	0.011	0.009	-	0.008	0.011	0.008	0.008
30	0.010	0.011	0.010	0.012	0.013	0.011	0.009	0.009	0.009	0.010	0.008	0.008
31	0.010	0.011	-----	0.012	-----	0.010	0.009	-----	0.008	-----	0.008	-----
Total	0.313	0.319	0.305	0.318	0.376	0.325	0.279	0.241	0.270	0.249	0.279	0.241
Mean:	0.010	0.010	0.010	0.010	0.013	0.010	0.009	0.009	0.009	0.008	0.009	0.008
mgd	0.016	0.016	0.016	0.016	0.020	0.016	0.014	0.014	0.014	0.012	0.014	0.012
cfs	1.0	1.0	0.9	1.0	1.2	1.0	0.9	0.7	0.8	0.8	0.9	0.7
Ac-ft												
Calendar year 1953. Max	0.019	Min	0.009	Mean(mgd)	0.011	Mean(cfs)	0.017	Ac-ft	12			
Fiscal year 1953-54: Max	0.016	Min	0.008	Mean(mgd)	0.010	Mean(cfs)	0.016	Ac-ft	11			

* 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 1954.

Gage.--Water-stage recorder. Altitude of gage is 240 ft (from topographic map).

Extremes.--Maximum discharge during year, 115 mgd (178 cfs) Jan. 5 (gage height, 3.82 ft); no flow most of time.
1949-54: Maximum discharge, 1,120 mgd (1,730 cfs) Mar. 13, 1951 (gage height, 7.10 ft), from rating curve extended above 130 mgd; no flow most of time.

Remarks.--Records fair.

Revisions (fiscal years).--WSP 1289: 1950-51.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.2	0	2.1	5.2
1.3	.33	2.4	10.2
1.4	.69	2.7	18.5
1.6	1.49	3.0	33
1.8	2.45		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1						0	0		0	0		
2						0	0		0	0		
3						0	0		0	0		
4						0	0		0	0		
5						0	22.5		19.8	0		
6						0	.97		4.3	0		
7						0	0		2.85	0		
8						0	0		9.2	0		
9						0	0		5.2	0		
10						0	0		1.60	0		
11						0	0		.56	0		
12						0	0		0	0		
13						0	0		0	0		
14						0	0		0	0		
15						0	0		0	0		
16						0	0		0	0		
17						0	0		0	0		
18						0	0		0	0		
19						0	0		0	0		
20						0	0		0	0		
21						0	0		0	0		
22						0	0		0	0		
23						0	0		0	0		
24						0	0		0	0		
25						0	0		0	0		
26						0	0		0	0		
27						3.75	0		0	0		
28						2.15	0		0	0		
29						0	0		0	1.17		
30						0	0		0	2.3		
31						0	0		0	-----		
Total	0	0	0	0	0	5.90	23.47	0	43.51	4.07	0	0
Mean:												
mgd	0	0	0	0	0	0.190	0.757	0	1.40	0.136	0	0
cfs	0	0	0	0	0	0.294	1.17	0	2.17	0.210	0	0
Ac-ft	0	0	0	0	0	18	72	0	134	12	0	0
Calendar year 1953.	Max	3.75	Min	0	Mean(mgd)	0.016	Mean(cfs)	0.025	Ac-ft	18		
Fiscal year 1953-54:	Max	22.5	Min	0	Mean(mgd)	0.211	Mean(cfs)	0.326	Ac-ft	236		

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 east of Kaunakakai.

Drainage area.--0.2 sq mi.

Records available.--September 1946 to June 1954.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,624.86 ft above mean sea level (Territorial Survey benchmark).

Average discharge.--7 years (1947-54), 1.45 mgd (2.24 cfs).

Extremes.--Maximum discharge during year, 70 mgd (108 cfs) Dec. 27 (gage height, 3.95 ft), from rating curve extended as explained below; no flow for many days.
 1946-54: 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 gage pool.

Rating tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Dec. 27				Dec. 28 to June 30			
2.28	0	2.8	1.18	2.3	0	2.9	2.15
2.4	.03	2.9	1.84	2.4	.03	3.0	3.15
2.5	.14	3.1	4.2	2.5	.17	3.1	5.1
2.6	.36	3.3	12.5	2.6	.45	3.2	8.1
2.7	.71			2.7	.86	3.3	12.5
				2.8	1.43	3.5	25.5

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0.36		0.02	0	3.2	0.82	0	0.03	0	0.86	2.3
2	0	8.7		0	0	6.1	.60	0	1.57	1.03	.58	.68
3	1.91	3.45		0	0	1.95	.05	0	.23	.99	.58	.38
4	3.4	1.20		0	0	3.45	.02	0	.55	.08	1.54	.56
5	.35	.20		0	.09	1.95	16.9	0	12.8	0	.93	1.20
6	.08	.01		0	.19	3.2	.86	0	4.4	0	6.6	.75
7	.16	1.76		0	.58	2.9	.11	0	4.5	0	.82	14.2
8	.01	1.53		0	1.45	4.2	0	0	10.5	0	.04	3.7
9	0	1.12		0	1.48	4.9	.25	0	3.65	0	0	.68
10	0	.87		0	.42	.82	.02	0	5.3	0	0	.16
11	0	.14		0	1.10	1.44	0	0	1.84	0	0	0
12	0	.10		0	.04	.46	0	.03	2.85	0	0	.19
13	0	.30		.15	0	.54	0	.36	.48	0	0	.18
14	1.62	.11		.07	0	1.50	0	.02	.05	0	0	.46
15	.45	0		.02	0	.29	0	0	4.2	0	0	1.49
16	.06	0		5.5	1.62	.01	0	0	.48	0	0	.32
17	.07	0		1.04	5.3	0	0	0	1.98	2.45	.56	.04
18	.29	0		.12	1.87	0	0	0	3.85	5.9	1.29	.02
19	1.04	.31		.57	6.9	0	.66	0	1.03	.67	3.5	.16
20	.41	.88		.01	1.09	.23	.27	.46	3.65	.04	.44	2.3
21	.06	.19		0	.16	1.90	0	3.1	1.12	0	.39	1.64
22	1.57	0		.02	0	2.7	0	.80	.56	0	.93	.25
23	0.15	0		.49	0	.47	0	10.1	*1.54	0	.97	.02
24	0	.24		.02	.66	.03	0	2.35	.30	0	1.36	.77
25	0	.10		0	7.5	0	0	4.9	0	0	.91	1.31
26	.84	.02		0	1.11	0	0	2.75	0	0	.96	.23
27	a.65	0		0	.16	10.5	0	1.17	0	0	2.75	4.5
28	a3.3	.07		0	.01	3.7	0	.32	0	0	3.95	5.4
29	a3.5	0		0	.96	.41	0	0	0	0	.90	5.1
30	*a1.6	0		.11	.36	.01	0	0	0	1.85	.11	1.01
31	.22	0		.04	0	0	0	0	0	0	.95	0
Total	21.74	21.66	0	8.18	32.85	56.86	20.56	26.36	67.46	22.21	31.92	50.00
Mean:												
mgd	0.701	0.699	0	0.264	1.10	1.83	0.663	0.941	2.18	0.740	1.03	1.67
cfs	1.08	1.08	0	0.408	1.70	2.83	1.03	1.46	3.57	1.14	1.59	2.58
Ac-ft	67	66	0	25	101	174	63	81	207	68	98	153
Calendar year 1953: Max	11.3	Min	0	Mean(mgd)	0.779	Mean(cfs)	1.21	Ac-ft	872			
Fiscal year 1953-54: Max	16.9	Min	0	Mean(mgd)	0.986	Mean(cfs)	1.53	Ac-ft	1,100			

Peak discharge (base, 100 mgd).--No peak above base.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Waikolu Stream.

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 1954.

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

Average discharge.--7 years, 0.761 mgd (1.18 cfs).

Extremes.--Maximum discharge during year, 88 mgd (136 cfs) Sept. 30 (gage height, 3.24 ft), from rating curve extended above 3.3 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) Feb. 19.

1947-54: Maximum discharge, 330 mgd (511 cfs) Apr. 2, 1948 (gage height, 6.35 ft), from rating curve extended above 3.3 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Mar. 13, 1947, Feb. 19, 1954.

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

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.01	.9	1.48
.5	.04	1.0	2.55
.6	.16	1.1	3.85
.7	.39	1.3	7.2
.8	.78		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.09	a0.16	0.07	1.68	0.07	0.20	1.78	0.02	2.5	0.07	0.66	1.17
2	.08	a2.0	.10	.26	.04	1.15	.67	.02	1.50	.25	.60	.30
3	2.3	a1.0	.28	.10	.04	.22	.24	.02	.52	.37	.75	.24
4	1.28	a.64	.20	.05	.03	1.05	.27	.02	1.37	.10	.49	.30
5	.40	*a.42	.11	.04	.03	.55	3.4	.02	5.5	.51	.51	.24
6	.20	3.5	.07	.04	4.7	.77	.30	.04	1.08	.16	2.05	.19
7	.14	3.3	.04	.04	.70	1.30	.16	.03	1.04	.20	.41	5.0
8	.11	.88	.05	.04	.63	.70	1.98	.02	2.55	.10	.18	.72
9	.12	.39	.06	.03	.41	.63	.49	.02	1.22	.08	.10	.28
10	.09	.33	.09	.03	.52	.28	.20	.02	2.5	.05	.08	.18
11	.07	.22	.04	.39	.52	.50	.12	.02	.52	.04	.06	.14
12	.10	.32	.04	.24	.11	.44	.09	.04	.75	.04	.06	.16
13	.22	1.61	.03	.54	.06	.89	.09	.34	.33	.04	.07	.14
14	.79	.39	.03	.21	.04	1.53	.09	.05	.20	.04	.08	.75
15	.20	.24	.02	.11	.04	.26	.08	.02	.22	.04	.07	.56
16	.49	.14	.02	4.5	.04	.16	.06	.02	.14	.04	.06	.26
17	.30	.16	.07	.79	.10	.10	.05	.02	1.27	1.28	.32	.24
18	.49	.11	.04	.58	.12	.25	.05	.02	3.0	2.7	2.55	.28
19	.65	.30	.03	.44	.30	.18	.05	.02	.36	.30	3.15	.26
20	.32	.42	.03	.14	.21	.10	.04	.02	.91	.10	.56	.36
21	.42	.20	.03	.54	*.08	.13	.04	.54	2.25	.08	.54	.30
22	.67	.14	.03	.24	.06	1.77	.04	.91	1.31	.07	1.24	.18
23	.16	.33	.03	.37	.04	.28	.04	1.30	.45	.10	*.30	.32
24	.10	.93	.02	.12	1.26	.12	.03	.34	.20	.05	.48	1.36
25	.08	.20	.08	.07	3.9	.09	.03	1.70	.14	.04	.26	2.3
26	.14	.12	*.06	.10	.45	.08	*.02	.63	*.14	.04	.61	.46
27	.14	.09	.04	.08	.16	5.1	.02	.44	.11	.04	1.46	1.44
28	1.91	.11	.03	.05	.16	1.50	.02	2.55	.09	.04	1.60	1.37
29	a2.8	.08	.03	.04	.77	.26	.02	-	.09	3.05	.36	1.27
30	a.64	.07	2.5	.09	.18	.14	.02	-	.08	1.02	.22	.36
31	a.22	.05	.08	-----	-----	.14	.03	-----	.08	-----	5.1	-----
Total	15.72	18.85	4.27	12.03	15.77	20.87	10.52	9.21	32.42	11.04	22.98	21.15
Mean:												
mgd	0.507	0.608	0.142	0.388	0.526	0.673	0.339	0.329	1.05	0.368	0.741	0.705
cfs	0.784	0.941	0.220	0.600	0.814	1.04	0.525	0.509	1.62	0.569	1.15	1.09
Ac-ft	48	58	13	37	48	64	32	28	99	34	71	65

Calendar year 1953: Max 7.3 Min 0.02 Mean(mgd) 0.477 Mean(cfs) 0.738 Ac-ft 533

Fiscal year 1953-54: Max 5.5 Min 0.02 Mean(mgd) 0.534 Mean(cfs) 0.828 Ac-ft 597

Peak discharge (base, 70 mgd).--Sept. 30 (10 p.m.) 88 mgd (136 cfs), 3.24 ft.

* Discharge measurement made on this day.

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

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 1954. 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.--19 years (1927-29, 1932-35, 1940-54), 35.9 mgd (55.5 cfs).

Extremes.--Maximum discharge during year, 1,530 mgd (2,370 cfs) Mar. 1 (gage height, 8.72 ft) from rating curve extended above 750 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Sept. 29.

1927-29, 1931-54: 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 except those for period of no gage-height record, which are poor.

Revisions (fiscal years).--WSP 1155: 1932-35(M), 1937-40(M).

Rating table, fiscal year 1953-54 (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	7.0	1,010

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.20	7.0	0.08	86	0.26	19.0	128	0.02	724	0.16	3.45	15
2	.16	298	.08	18.0	.72	81	14.6	.02	256	.10	.43	1.0
3	25.5	41	.08	1.92	.38	67	7.2	.02	139	.08	.56	.60
4	72	9.7	.08	.64	.09	33.5	1.69	.02	36	.13	28.5	.75
5	5.4	6.9	.08	.85	16.3	53	280	.02	68	1.98	2.8	.80
6	.74	70	.08	.34	84	95	6.3	.02	4.4	.23	.80	3.0
7	.37	201	.08	.18	6.8	111	25.5	.02	1.94	.51	.20	1.6
8	.24	25.5	8.2	.12	.78	48	30.5	.02	.78	.14	.50	2.5
9	.20	21	.17	.07	.68	58	2.8	.02	1.13	.08	.18	3.5
10	.13	3.6	19.9	.12	.47	11.2	.92	.02	65	.05	.16	1.1
11	.12	.92	.17	7.8	1.31	29.5	.82	.02	23.5	.03	.40	.56
12	.11	.66	.09	.80	.20	3.8	.54	.02	14.9	.03	.14	2.4
13	.10	.62	.08	.34	.12	.97	.34	.05	1.14	.03	.10	.70
14	.13	.43	.08	.11	.07	.62	.26	.06	.62	.20	.06	1.7
15	.13	.24	.08	.04	.05	.46	.76	.03	.50	14.2	.05	4.0
16	.10	.16	.07	36.5	52	*.34	7.3	.02	*.34	.43	.03	.80
17	.09	.12	.09	24	284	.28	.43	.02	.69	27	.02	14
18	.09	.11	.02	4.9	18.6	.22	.22	.02	17.7	26.5	5.6	2.5
19	7.4	.12	.02	3.25	162	.18	.18	.02	.52	.40	7.0	9.0
20	15.3	.12	.02	.26	17.2	.12	.12	.02	.28	.14	1.2	12
21	.39	.10	.02	37.5	1.61	.08	.09	4.7	8.9	.10	.35	3.0
22	2.25	.09	.02	8.8	.99	.07	.08	20.5	104	.13	2.5	1.2
23	.14	.09	.02	23	.46	.08	.06	1.84	5.2	.14	.38	*1.2
24	.12	.37	.02	1.13	.38	.04	.04	95	.93	.06	3.5	10.3
25	.11	.34	.02	.43	47	10.8	.11	150	.58	.03	1.1	13.3
26	.22	.11	.02	.66	4.8	32	.09	199	.40	.03	9.0	1.22
27	1.93	.09	.02	.73	.70	74	.05	316	.70	.03	1.4	11.8
28	22.5	.08	.02	.40	.43	108	.03	241	8.2	.07	14	.43
29	43	.08	1.08	.16	.47	12.3	.03	-	.49	8.0	2.5	24
30	7.9	.08	94	.75	.46	1.72	.03	-----	.22	24.5	3.0	21
31	1.25	.08	-----	.54	-----	26.5	.03	-----	.22	-----	70	-----
Total	208.32	688.71	124.79	260.14	703.29	878.78	509.12	1,028.52	1,486.28	105.49	159.91	221.93
Mean	6.72	22.2	4.16	8.39	23.4	28.3	16.4	36.7	47.9	3.52	5.16	7.40
cfs	10.4	34.3	6.44	13.0	36.2	43.8	25.4	56.8	74.1	5.45	7.98	11.4
Ac-ft	639	2,110	383	798	2,160	2,700	1,560	3,160	4,560	324	491	681
Calendar year 1953: Max	322	Min	0.01	Mean(mgd)	19.9	Mean(cfs)	30.8	Ac-ft	22,310			
Fiscal year 1953-54: Max	724	Min	0.02	Mean(mgd)	17.5	Mean(cfs)	27.1	Ac-ft	19,570			

Peak discharge (base, 1,600 mgd).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record May 6 to June 23; discharge estimated on basis of records for stations on nearby streams.

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 1954.

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.--24 years (1927-34, 1935-36, 1938-54), 3.48 mgd (5.38 cfs).

Extremes.--Maximum discharge during year, 460 mgd (712 cfs) Mar. 1 (gage height, 3.77 ft), from rating curve extended as explained below; minimum, 0.33 mgd (0.51 cfs) Feb. 18, 1927-37, 1938-54: Maximum discharge, 2,300 mgd (3,560 cfs) Apr. 29, 1937 (gage height, 15.74 ft, datum then in use), from rating curve extended above 54 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Dec. 18, 1929.

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

Revisions (fiscal year).--WSP 1219: 1935(M), 1937(M).

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.8	0.35	1.6	9.3
.9	.62	1.7	12.4
1.0	1.01	1.8	17.4
1.1	1.54	1.9	25
1.2	2.3	2.0	29.5
1.3	3.3	2.2	47
1.4	4.8	2.4	73
1.5	6.8		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.60	2.55	1.10	9.6	1.10	3.05	5.1	0.58	63	0.87	1.47	6.1
2	1.60	15.4	1.30	3.2	1.15	4.1	1.89	.56	22.5	.79	1.10	2.1
3	8.9	6.5	1.41	1.30	1.01	2.1	1.47	.53	8.4	.97	2.5	1.80
4	10.3	3.35	1.35	1.05	.92	4.0	1.66	.50	7.4	1.16	3.05	1.87
5	3.05	3.2	1.20	1.52	.97	5.5	9.0	.47	4.4	2.3	1.35	1.87
6	2.2	7.3	1.05	.97	20	6.0	1.60	.45	1.73	1.05	1.10	2.65
7	1.80	14.7	.92	.87	1.98	4.6	4.9	.45	1.42	1.34	.92	6.0
8	1.66	3.65	11.2	.83	1.35	3.2	8.3	.42	1.58	.87	1.16	2.3
9	1.47	5.4	2.65	.71	1.25	3.5	1.66	.40	2.25	.79	.87	2.6
10	1.35	2.55	2.55	.95	1.36	2.05	1.41	.40	5.5	.71	.83	1.73
11	1.30	2.1	1.20	4.8	1.72	3.95	1.25	.37	1.87	.65	1.12	1.60
12	1.35	2.1	1.10	1.43	1.05	1.95	1.2	.63	1.66	.62	.92	2.05
13	1.25	2.5	.92	1.38	.92	1.66	1.1	2.35	1.30	.75	.75	1.80
14	1.66	2.2	.87	1.01	.92	1.41	1.0	.55	1.15	.76	.71	2.6
15	1.73	1.80	.83	.87	.92	1.30	1.1	.47	1.10	15.5	.68	3.15
16	1.54	1.66	.79	6.9	4.0	*1.25	2.0	.42	*1.01	1.10	.62	1.73
17	1.30	1.54	1.62	1.93	4.5	1.20	1.2	.40	1.17	4.5	3.62	5.8
18	1.75	1.41	.83	1.51	1.98	1.15	1.1	.35	3.9	4.1	3.35	2.7
19	3.0	1.73	.97	1.20	6.4	1.10	.95	.40	1.10	1.15	4.1	4.2
20	1.54	1.76	1.01	1.01	2.15	1.05	.86	.91	1.01	1.01	1.47	5.3
21	1.30	1.41	1.05	5.2	1.41	1.01	.82	2.3	1.74	.87	1.25	3.1
22	2.1	1.35	.83	1.55	1.30	1.20	.78	6.4	12.8	.92	2.0	2.05
23	1.20	1.52	.71	3.35	1.10	1.01	.76	1.29	2.55	1.14	1.30	2.1
24	1.15	5.0	.68	1.35	1.49	.97	.74	1.42	1.25	.87	2.8	3.55
25	1.20	2.2	.68	1.10	13.6	1.06	.90	1.60	1.10	.71	1.80	5.8
26	3.15	1.47	.93	1.56	2.05	6.5	.80	1.92	.92	.71	4.7	2.1
27	2.1	1.50	.71	2.8	1.60	4.8	.75	5.9	.98	.75	1.95	2.4
28	5.5	1.15	1.06	1.35	1.35	6.3	.72	4.1	1.48	1.62	6.1	2.85
29	8.5	1.10	4.1	*1.15	1.43	2.2	.68		1.05	*6.2	2.5	3.45
30	2.7	1.10	13.3	1.41	1.60	1.35	.64		.92	6.2	2.6	4.0
31	1.73	1.10	-----	1.25	-----	4.3	.62	-----	.87	-----	9.6	-----
Total	81.18	102.10	58.92	65.11	82.56	84.82	56.97	36.54	159.10	60.98	65.29	91.35
Mean:												
mgd	2.82	3.29	1.96	2.10	2.75	2.74	1.84	1.30	5.13	2.05	2.11	3.04
cfs	4.05	5.09	3.03	3.25	4.25	4.24	2.85	2.01	7.94	3.14	3.26	4.70
Ac-ft	249	313	181	200	253	260	175	112	488	187	200	280
Calendar year 1953:	Max 25.5	Min 0.40	Mean(mgd) 2.52	Mean(cfs) 3.90	Ac-ft 2,820							
Fiscal year 1953-54:	Max 63	Min 0.35	Mean(mgd) 2.59	Mean(cfs) 4.01	Ac-ft 2,900							

Peak discharge (base, 200 mgd).--Mar. 1 (10 p.m.) 460 mgd (712 cfs), 3.77 ft; Mar. 22 (4 a.m.) 205 mgd (317 cfs), 3.02 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 12 to Feb. 2; discharge estimated on basis of records for stations on nearby streams.

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 1954.

Gage--Water-stage recorder and Parshall flume. Altitude of gage is 1,350 ft (from topographic map).

Average discharge--6 years, 2.88 mgd (4.46 cfs).

Extremes--1948-54: 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 excellent except those for period of no gage-height record, which are fair.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.1	2.6	1.60	0.75	0.75	3.6	1.87	1.15	4.0	1.71	1.93	5.6
2	1.99	4.7	1.55	.75	.79	3.6	1.87	1.15	4.7	1.71	1.99	5.6
3	2.3	6.0	1.55	.72	.79	3.9	1.81	1.11	4.6	1.99	3.2	4.9
4	2.85	*4.9	1.45	.72	.79	4.3	1.76	1.06	4.8	2.1	4.7	4.6
5	3.05	4.6	1.45	.72	.97	4.3	3.6	1.01	5.2	2.05	5.1	4.3
6	3.0	4.3	1.39	.68	1.06	5.1	2.35	1.01	5.6	1.99	5.2	3.95
7	2.85	4.3	1.34	.64	1.06	5.6	2.15	.97	5.2	1.93	6.0	3.9
8	2.7	3.95	1.29	.64	1.06	5.1	2.2	.97	5.2	1.81	6.0	3.9
9	2.6	3.9	1.24	.64	1.06	4.9	2.3	.92	5.0	1.76	5.6	3.95
10	2.45	3.8	1.20	.64	1.11	4.7	2.35	.92	4.9	1.71	5.1	3.9
11	2.3	3.6	1.20	.64	1.15	4.5	2.35	.92	5.0	1.65	4.5	3.75
12	2.2	3.55	1.20	.64	1.15	4.3	2.35	.92	5.0	1.65	4.1	3.7
13	2.1	3.25	1.15	a.64	1.15	3.95	2.3	.92	5.1	1.60	3.9	5.6
14	2.05	3.2	1.11	a.64	1.15	3.75	2.2	.88	5.0	1.55	3.7	3.55
15	1.99	3.1	1.15	a.70	1.15	3.55	2.1	.83	*4.6	1.50	3.6	3.4
16	1.93	2.9	1.15	a.85	1.20	3.35	1.99	.83	4.2	1.45	3.45	3.2
17	1.87	2.85	1.11	a1.0	2.4	3.05	1.93	.79	3.9	2.35	4.3	3.05
18	1.76	2.65	*1.01	a1.0	1.71	2.85	1.87	.75	3.9	3.4	5.6	2.9
19	1.81	2.55	.97	a1.0	2.5	2.6	1.76	.75	3.6	2.45	6.0	2.85
20	1.76	2.4	.97	a.95	2.8	2.55	1.71	.75	3.55	2.15	6.5	2.8
21	1.76	2.3	.92	a.90	2.85	2.35	1.60	.75	3.25	2.1	6.5	2.7
22	1.76	2.15	.92	a.90	2.9	2.3	1.60	.75	3.05	2.2	6.5	2.7
23	1.71	2.1	.88	a.90	3.0	2.1	1.55	.75	2.85	2.3	6.5	2.65
24	1.71	1.99	.83	a.85	3.55	1.99	1.50	.83	2.6	2.4	6.0	2.6
25	1.71	1.99	.83	a.80	5.8	1.93	1.70	4.1	2.55	2.4	5.6	2.55
26	1.71	1.93	.79	a.80	5.2	1.81	1.50	3.7	2.35	2.4	5.6	2.55
27	1.71	1.93	.75	a.80	4.6	1.87	1.39	3.75	2.2	2.35	5.2	2.55
28	1.87	1.87	.75	a.75	4.3	1.93	1.29	3.0	2.05	2.3	5.6	2.55
29	2.15	1.71	.75	.75	3.95	1.93	1.29	-	1.99	*2.15	6.0	2.6
30	2.3	1.71	.75	.75	3.8	1.87	1.24	-----	1.87	1.99	6.0	2.65
31	2.4	1.65	-----	.75	-----	1.81	1.20	-----	1.76	-----	5.6	-----
Total	66.45	94.43	33.25	23.91	65.75	101.44	58.68	36.24	119.57	61.10	155.57	103.50
Mean	2.14	3.05	1.11	0.771	2.19	3.27	1.89	1.29	3.86	2.04	5.02	3.45
cfs	3.31	4.72	1.72	1.19	3.39	5.06	2.92	2.00	5.97	3.16	7.77	5.34
Ac-ft	204	290	102	73	202	311	180	111	367	188	477	318

Calendar year 1953. Max 6.0 Min 0.56 Mean(mgd) 2.15 Mean(cfs) 3.33 Ac-ft 2,400
 Fiscal year 1953-54: Max 6.5 Min 0.64 Mean(mgd) 2.52 Mean(cfs) 3.90 Ac-ft 2,820

* Discharge measurement made on this day.

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

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 1954.

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--32 years (1922-54), 13.4 mgd (20.7 cfs).

Extremes--Maximum discharge during year, 840 mgd (1,300 cfs) Mar. 5 (gage height, 5.82 ft), from rating curve extended as explained below; minimum, 1.21 mgd (1.87 cfs) Oct. 9, 10.

1914-16, 1921-54: Maximum discharge, about 3,600 mgd (5,570 cfs) Jan. 18, 1916 (gage height, 11.6 ft at present site), from rating curve extended above 260 mgd by test on model of station site; minimum, 1.1 mgd (1.7 cfs) Feb. 19, 20, 1944.

Remarks--Records good. Water used for irrigation in central Maui.

Revisions (fiscal years)--WSP 1045: 1922-43(M).

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.99	1.6	21
.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
1.3	14.3		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.35	8.0	1.92	1.54	1.65	3.4	4.6	1.60	44	2.6	2.9	17.4
2	2.45	62	1.87	1.34	1.82	7.2	2.8	1.54	53	4.5	5.6	9.2
3	7.9	*12.9	1.92	1.34	1.65	18.1	2.5	1.48	43	16.2	47	7.8
4	13.0	7.1	1.98	1.30	1.60	6.6	2.35	1.48	95	6.0	88	6.8
5	4.3	4.6	1.82	1.43	5.4	11.6	17.4	1.43	146	3.5	14.3	6.3
6	3.3	3.9	1.76	1.34	2.3	20.5	6.8	1.43	19.8	3.1	43	6.8
7	3.0	4.1	1.76	1.30	1.82	9.2	3.25	1.43	23.5	2.95	12.1	14.8
8	2.8	3.4	1.82	1.30	1.87	5.9	3.25	1.43	20.5	2.8	11.8	13.7
9	2.55	4.7	1.70	1.25	2.5	6.8	2.85	1.39	24.5	2.7	6.0	10.0
10	2.45	3.65	1.70	1.30	2.1	4.5	2.5	1.39	42	2.55	4.6	8.5
11	2.3	3.1	1.65	1.39	3.05	3.55	2.35	1.66	22.5	2.5	3.95	6.8
12	2.45	3.7	1.60	1.60	1.92	3.0	2.35	6.3	21	2.5	3.85	6.2
13	2.25	5.5	1.54	1.54	1.70	2.7	2.3	1.92	6.8	2.45	4.6	5.7
14	4.5	4.0	1.48	1.30	1.65	2.55	2.35	1.65	4.3	2.3	5.5	5.7
15	3.15	3.25	*1.48	1.34	1.70	2.45	2.25	1.54	3.65	2.25	4.9	5.2
16	2.45	2.95	1.48	15.7	8.8	2.35	2.05	1.48	3.15	2.25	4.6	4.8
17	2.25	2.7	1.48	8.1	40	2.3	1.98	1.43	3.2	100	23	4.6
18	2.25	2.55	1.43	2.3	4.2	2.25	1.92	1.43	10.2	121	40	5.0
19	3.0	2.6	1.43	1.87	29.5	2.1	1.87	1.43	3.95	8.6	105	5.0
20	2.6	2.45	1.43	1.70	5.5	2.05	1.82	1.60	3.4	3.8	50	6.6
21	2.3	2.3	1.43	1.65	2.6	3.35	1.82	1.82	3.3	3.15	9.6	6.3
22	2.6	2.75	1.43	1.65	2.25	4.1	1.76	1.48	3.3	2.95	25.5	5.0
23	2.55	2.45	1.39	1.82	2.15	2.5	1.70	1.82	3.3	*2.8	29	4.5
24	2.55	3.2	1.34	1.60	7.9	2.15	1.70	2.85	3.3	2.45	25	5.5
25	2.5	3.6	1.39	1.54	36	2.1	8.2	1.40	3.1	2.3	15.7	5.0
26	3.1	2.55	1.39	1.60	6.9	2.1	*2.25	68	3.0	5.0	17.7	4.4
27	5.1	2.3	1.34	3.75	3.4	3.7	1.76	9.2	2.95	2.75	26	5.7
28	6.0	2.15	1.34	1.87	2.7	10.7	1.70	3.7	2.85	2.3	68	12.2
29	4.9	2.1	1.63	1.65	2.45	4.5	1.65	-	2.8	2.3	18.7	17.6
30	4.8	2.05	1.85	1.70	2.3	2.7	1.65	-----	2.7	2.25	9.3	8.9
31	5.6	1.98	-----	1.70	-----	2.95	1.60	-----	2.6	-----	8.7	-----
Total	113.30	174.58	47.78	70.81	189.38	159.95	251.93	263.91	626.65	322.80	733.70	232.0
Mean:												
mgd	3.65	5.63	1.59	2.28	6.31	5.16	8.13	9.43	20.2	10.8	23.7	7.73
cfs	5.65	8.71	2.46	3.53	9.76	7.98	12.6	14.6	31.3	16.7	36.7	12.0
Ac-ft	348	536	147	217	581	491	773	810	1,920	991	2,250	712
Calendar year 1954: Max	184			Min	1.25	Mean(mgd)	5.88	Mean(cfs)	9.10	Ac-ft	6,580	
Fiscal year 1953-54: Max	174			Min	1.25	Mean(mgd)	8.73	Mean(cfs)	13.5	Ac-ft	9,780	

Peak discharge (base, 850 mgd)--No peak above base.

* Discharge measurement made on this day.

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 1954.

Gage.--Water-stage recorder.

Average discharge.--32 years (1922-54), 10.5 mgd (16.2 cfs).

Extremes.--Maximum discharge during year, 344 mgd (532 cfs) Mar. 5 (gage height, 4.07 ft); minimum, 0.26 mgd (0.40 cfs) Oct. 9, 10.

1921-54: 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 except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.35	0.19	1.2	11.6
.4	.38	1.4	12.4
.5	1.08	1.7	26
.6	2.2	2.1	50
.7	3.35	2.5	83
.8	4.8	2.9	127
1.0	8.6		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.42	7.1	0.80	0.59	1.01	3.65	4.0	0.52	22.5	0.94	2.3	12.9
2	1.48	62	.80	.45	1.32	7.8	1.86	.45	37	4.3	6.3	7.7
3	8.6	*12.5	.87	.38	1.64	15.6	1.19	.45	35	14.5	50	5.1
4	12.9	5.2	1.00	.33	.94	7.2	1.01	.45	81	6.2	75	*3.8
5	3.55	2.9	.80	.52	6.5	10.2	*89	.38	92	2.3	13.6	3.55
6	2.3	2.35	.73	.38	1.87	20	8.9	.45	16.2	1.64	37.5	4.1
7	1.86	2.85	.66	.29	.94	9.7	a3.0	.38	20.5	1.30	10.2	11.5
8	1.53	2.2	.87	.29	1.08	5.2	a2.5	.38	18.1	1.08	10.8	11.4
9	1.30	3.8	.73	.29	2.55	6.5	a2.6	.38	23.5	.94	5.0	7.8
10	1.19	2.65	.73	.30	1.72	3.8	a1.8	.33	*39	.87	3.25	6.1
11	1.08	1.98	.68	.52	3.95	*2.55	a1.4	.70	21.5	.80	2.55	4.2
12	1.30	2.65	.59	.91	1.42	1.98	a1.2	6.8	20.5	.80	2.45	3.5
13	1.08	4.7	.52	.83	.87	1.53	a1.0	1.64	7.2	.87	4.4	3.25
14	3.65	3.5	.52	.45	.73	1.19	a1.2	.73	3.35	.80	5.8	3.5
15	2.6	2.45	*.52	.45	.73	1.01	a1.0	.59	2.8	.73	4.5	3.0
16	1.64	1.75	.52	18.1	6.9	.94	a.90	.52	2.2	.73	4.4	2.65
17	1.30	1.42	.45	9.2	28.5	.87	a.84	.45	2.6	76	25.5	2.65
18	1.19	1.30	.38	2.1	5.8	.87	.80	.38	13.2	96	43	3.35
19	2.55	1.30	.45	.94	24.5	.80	.73	.38	3.45	8.7	79	3.1
20	1.98	1.30	.45	.73	7.0	.73	.66	.52	2.3	3.2	44	5.6
21	1.64	1.08	.45	.59	2.6	2.85	.66	.87	1.98	2.2	7.0	4.8
22	1.98	1.64	.38	.59	1.75	3.85	.59	.59	1.64	1.75	22	3.1
23	1.86	1.53	.38	.80	1.53	1.42	.59	1.28	3.0	1.64	25.5	2.65
24	1.75	2.6	.38	.59	9.1	.94	.52	2.55	2.15	1.19	21	3.95
25	1.64	3.15	.38	.52	32	.87	4.1	83	1.42	1.01	12.6	3.65
26	2.5	1.75	.38	.59	7.3	.80	*1.72	37.5	1.30	3.65	15.1	3.0
27	4.8	1.30	.33	4.0	2.9	4.9	.80	8.7	1.68	2.1	23.5	4.7
28	5.7	1.08	.38	*1.35	2.1	10.7	.66	2.6	1.90	1.30	57	10.1
29	4.7	.94	.97	.80	1.64	4.6	.59	-	1.08	1.01	14.9	16.1
30	4.2	.87	.94	.80	1.64	1.88	.52	-----	.94	1.08	7.4	9.5
31	5.2	.87	-----	.80	-----	1.85	.52	-----	.87	-----	7.0	-----
Total	90.27	142.71	18.02	49.48	162.55	136.78	134.86	151.97	482.06	241.83	642.55	170.10
Mean	2.91	4.60	0.601	1.60	5.42	4.41	4.35	5.43	15.6	8.06	20.7	5.67
mgd	4.50	7.12	0.930	2.48	8.39	6.82	6.73	8.40	24.1	12.5	32.0	8.77
cfs	277	438	55	152	499	420	414	466	1,480	742	1,970	522
Ac-ft												
Calendar year 1953.	Max	124	Min	0.29	Mean(mgd)	4.32	Mean(cfs)	6.68	Ac-ft	4,830		
Fiscal year 1953-54.	Max	96	Min	0.29	Mean(mgd)	6.64	Mean(cfs)	10.3	Ac-ft	7,440		

Peak discharge (base, 450 mgd).--No peak above base.

* Discharge measurement made on this day.

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

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 Keanae.

Records available.--February 1919 to June 1954. 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, datum of 1929. Prior to Apr. 28, 1922, staff gage at same site and datum.

Average discharge.--35 years, 21.5 mgd (33.3 cfs).

Extremes.--1919-54: Maximum daily discharge, 58 mgd (90 cfs) Apr. 11, 1942; no flow at times.

Remarks.--Records excellent. Flow regulated by spillways and gates. Ditch diverts water from nearly all streams from the Makapipi west to the Aio. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.1	27.5	7.4	5.0	5.7	18.0	15.7	5.7	40	8.9	12.1	50
2	10.1	55	7.1	4.8	6.1	27.5	10.7	5.7	40	14.2	21.5	40
3	*27	*45	7.1	4.3	6.1	44	9.2	5.4	43	40	43	35.5
4	38	34	7.4	4.3	5.5	31	8.9	5.4	50	23	55	29.5
5	18.5	25	6.9	4.8	20.5	42	46	5.4	50	13.8	48	28.5
6	14.8	19.9	6.4	4.3	8.9	52	22	5.2	45	11.9	55	26
7	13.2	21	6.4	4.1	7.1	42	13.8	5.0	45	11.3	46	45
8	12.2	17.5	6.9	4.1	7.1	31	14.2	5.0	45	10.4	47	42
9	11.3	21	6.4	5.6	9.2	35.5	12.9	5.0	45	9.8	31	35.5
10	10.1	17.8	6.4	3.85	8.2	24.5	11.6	4.8	*47	9.5	25.5	33.5
11	9.8	15.5	6.1	4.8	11.9	19.8	10.7	5.6	45	8.7	21	26.5
12	9.8	16.8	5.9	5.4	7.4	16.8	10.4	17.7	45	8.7	18.8	24
13	8.9	21.5	5.7	5.2	6.6	14.8	9.8	7.6	33.5	8.7	21.5	22.5
14	15.2	19.5	5.4	4.3	6.1	13.5	10.7	5.9	25	8.2	24	23.5
15	12.2	15.5	*5.5	4.3	6.1	12.5	9.5	5.2	21	7.9	21	18.8
16	9.8	13.5	5.2	30.5	11.2	11.6	8.7	5.0	18.1	7.6	21	19.2
17	8.9	12.2	5.2	24.5	42	11.0	8.2	5.0	17.2	35.5	52	18.1
18	8.7	11.6	5.0	9.2	16.5	10.1	7.9	4.8	30.5	53	52	19.9
19	12.5	11.3	5.0	6.9	37.5	9.5	7.6	4.8	18.5	29.5	55	19.5
20	10.7	10.4	5.0	6.0	25	9.2	7.4	5.0	15.8	16.2	55	24.5
21	9.5	9.8	5.0	5.7	14.5	13.4	7.1	5.9	14.5	13.2	45	23.5
22	10.4	10.9	4.8	5.4	12.2	14.8	6.9	5.0	13.5	12.5	52	19.2
23	9.8	10.1	4.8	6.1	11.9	10.1	6.6	6.7	14.5	*11.8	52	17.5
24	9.5	12.9	4.5	5.2	32.5	8.9	6.4	10.1	12.9	10.7	52	20.5
25	9.2	13.8	4.5	5.0	55	8.4	14.7	49	11.6	10.1	48	19.5
26	11.0	10.7	4.5	5.0	34	8.2	*8.8	39	11.3	17.9	50	17.5
27	15.8	9.2	4.5	11.8	21	15.3	6.6	32	11.3	12.9	47	20.5
28	20.5	8.9	4.5	6.6	17.2	28.5	6.1	18.1	10.7	10.7	55	34
29	19.9	8.2	5.6	5.4	14.8	16.2	6.1	-	9.8	10.1	52	37.5
30	18.5	7.9	6.1	5.7	13.8	10.7	5.9	-----	9.2	9.8	42	32.5
31	20.5	7.4	-----	5.4	-----	10.9	5.9	-----	8.2	-----	40	-----
Total	426.4	544.3	170.6	211.55	481.6	619.7	337.0	285.0	847.8	456.5	1,260.4	820.2
Mean:	13.8	17.6	5.69	6.82	16.1	20.0	10.9	10.2	27.3	15.2	40.7	27.3
mgd	21.4	27.2	8.80	10.6	24.9	30.9	16.9	15.8	42.2	23.5	63.0	42.2
cfs	1,310	1,670	524	649	1,480	1,900	1,030	875	2,600	1,400	3,870	2,520
Ac-ft												
Calendar year 1953. Max	55		Min	3.6	Mean(mgd)	14.1	Mean(cfs)	21.8	Ac-ft	15,790		
Fiscal year 1953-54: Max	55		Min	3.6	Mean(mgd)	17.7	Mean(cfs)	27.4	Ac-ft	19,530		

* Discharge measurement made on this day.

Waiohuk 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 Keanae.

Drainage area--1.5 sq mi.

Records available--October 1921 to June 1954.

Gage--Water-stage recorder.

Average discharge--32 years (1922-54), 7.58 mgd (11.7 cfs).

Extremes--Maximum discharge during year, 189 mgd (292 cfs) Mar. 5 (gage height, 3.43 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 1.36 mgd (2.10 cfs) Oct. 9, 10.

1921-54: 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, that of Oct. 9, 10, 1953).

Remarks--Records good except those above 50 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.12	1.0	7.0
.5	1.61	1.2	11.1
.6	2.25	1.4	16.5
.7	3.05	1.6	24
.8	4.1	1.8	33.5
.9	5.4	2.0	45

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.7	6.1	2.25	1.67	1.67	4.3	3.3	1.73	9.2	2.15	<u>3.15</u>	<u>10.5</u>
2	2.75	<u>29</u>	2.15	1.56	1.98	5.5	2.7	1.67	15.2	4.3	4.8	5.9
3	8.2	7.4	2.25	1.56	1.80	10.9	2.55	1.87	14.3	10.5	25	5.3
4	9.2	*4.9	<u>2.35</u>	1.51	1.73	5.3	2.5	1.61	28.5	3.95	27	4.8
5	<u>3.7</u>	3.9	<u>2.1</u>	1.56	7.2	8.4	<u>33.5</u>	1.61	<u>39.5</u>	2.7	7.3	4.5
6	3.25	3.55	2.05	1.51	2.1	<u>12.2</u>	3.4	1.61	6.7	2.5	16.6	4.4
7	2.9	4.0	1.98	1.46	1.92	7.1	2.95	1.61	8.2	2.4	6.9	8.1
8	2.7	3.35	2.1	<u>1.41</u>	2.05	5.0	3.05	1.56	8.2	2.3	8.0	6.8
9	2.65	4.9	1.98	<u>1.41</u>	2.6	6.1	2.7	1.56	10.1	2.15	4.4	5.4
10	<u>2.55</u>	3.7	2.05	1.51	2.3	4.6	2.55	<u>1.51</u>	15.9	2.15	3.7	4.8
11	2.5	3.25	1.92	1.55	2.45	4.0	2.5	2.05	9.7	2.1	3.35	4.1
12	2.55	4.0	1.86	2.05	1.98	3.7	2.5	6.2	10.4	2.1	3.25	4.0
13	<u>2.45</u>	5.3	1.86	1.79	1.86	3.45	2.5	1.92	4.3	2.15	4.5	3.9
14	<u>4.5</u>	4.9	1.80	1.46	1.80	3.35	2.95	1.73	3.35	2.05	4.2	4.2
15	3.05	3.7	*1.73	1.53	1.86	3.15	2.55	1.61	3.05	<u>1.98</u>	3.55	3.8
16	2.55	3.25	1.73	<u>13.5</u>	5.0	3.05	2.4	1.61	2.9	1.98	4.1	<u>3.45</u>
17	2.5	2.95	1.67	4.3	12.1	2.95	2.3	1.58	3.0	32	18.3	<u>3.45</u>
18	2.5	2.8	1.61	2.05	2.85	2.9	2.25	1.51	7.3	<u>36</u>	24	4.4
19	3.75	2.9	1.67	1.86	13.1	2.8	2.25	1.51	*3.25	4.3	31	3.9
20	2.95	2.8	1.67	1.73	3.35	2.7	2.15	1.56	2.9	2.85	25.5	5.1
21	2.5	2.65	1.61	1.61	2.55	4.6	2.1	1.86	2.8	2.4	5.7	4.2
22	2.9	3.4	1.61	1.61	2.3	3.7	2.05	1.56	2.7	2.3	10.9	3.7
23	2.65	2.9	1.61	1.80	2.75	2.9	1.98	2.0	2.65	2.25	12.3	*3.45
24	2.55	3.85	1.56	1.56	7.8	2.65	1.98	2.7	2.65	2.15	11.7	4.1
25	2.55	3.35	<u>1.56</u>	1.60	<u>20.5</u>	<u>2.55</u>	3.4	<u>33</u>	2.55	2.1	7.7	3.9
26	3.05	2.8	1.56	1.67	4.3	2.55	2.1	16.4	2.5	5.2	9.4	3.45
27	3.45	2.55	1.56	4.5	3.15	5.3	1.92	3.25	2.4	2.75	11.9	4.0
28	4.6	2.5	1.56	1.86	2.9	6.2	1.92	2.4	2.3	2.3	23	6.8
29	4.6	2.4	2.15	1.87	2.8	3.2	1.86	-	2.3	2.25	9.8	8.7
30	4.2	2.3	2.2	1.80	2.9	2.7	1.80	-----	<u>2.15</u>	2.25	6.0	5.3
31	4.9	<u>2.25</u>	-----	1.73	-----	3.3	<u>1.73</u>	-----	<u>2.15</u>	-----	6.7	-----
Total	107.85	137.60	55.76	68.39	123.65	141.10	106.39	100.57	233.10	148.36	343.70	148.40
Means												
mgd	3.48	4.44	1.86	2.21	4.12	4.55	3.43	3.59	7.52	4.95	11.1	4.95
cfs	5.35	6.87	2.88	3.42	6.37	7.04	5.31	5.55	11.6	7.66	17.2	7.65
Ac-ft	331	422	171	210	379	433	326	309	715	455	1,050	455
Calendar year 1953: Max	68	Min	1.41	Mean(mgd)	3.89	Mean(cfs)	6.02	Ac-ft	4,360			
Fiscal year 1953-54: Max	39.5	Min	1.41	Mean(mgd)	4.70	Mean(cfs)	7.27	Ac-ft	5,260			

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

* 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 1954.

Gage.--Water-stage recorder. Datum of gage is 1,292.30 ft above mean sea level, datum of 1929. Prior to Dec. 9, 1935, at several sites within 200 ft of present site at various datums.

Average discharge.--32 years (1915-17, 1922-34, 1936-54), 17.7 mgd (27.4 cfs).

Extremes.--Maximum discharge during year, 780 mgd (1,210 cfs) Mar. 5, Apr. 18 (gage height, 4.58 ft), from rating curve extended above 75 mgd by logarithmic plotting; minimum, 0.64 mgd (0.99 cfs) Oct. 10.

1914-17, 1921-54: 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

-0.1	0.60	0.6	10.9
0.	1.20	.9	19.2
.1	2.1	1.3	36
.2	3.3	1.7	66
.3	4.8	2.1	109
.4	6.7	2.7	200

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	7.1	1.54	1.13	1.81	5.1	6.3	1.06	14.7	2.4	4.1	16.1
2	2.3	49	1.54	.80	2.3	9.4	3.05	.99	39.5	7.1	8.7	10.5
3	9.0	14.5	1.81	.80	*2.4	17.1	2.4	*.99	31	18.2	38.5	8.3
4	12.7	*7.3	1.91	.75	1.89	8.5	2.2	1.06	76	7.6	70	6.9
5	3.55	4.5	1.54	.99	6.2	13.4	193	1.13	146	3.75	16.2	5.9
6	2.75	3.6	1.36	.80	2.2	20.5	13.6	1.13	22.5	2.9	30.5	6.8
7	2.4	3.75	1.28	.70	1.72	11.5	6.7	1.06	23.5	2.55	15.1	14.7
8	2.2	2.75	1.36	.75	2.05	7.3	4.8	.99	20.5	2.4	14.9	13.3
9	2.0	4.6	1.28	.70	4.6	7.9	4.4	.92	24	2.2	8.6	10.2
10	1.90	2.9	1.36	.75	2.5	5.6	3.05	.92	33.5	2.0	6.5	8.5
11	1.90	2.55	1.20	.92	7.3	4.2	2.75	1.74	23	1.90	5.2	6.1
12	2.1	3.7	1.06	1.64	2.2	3.3	2.75	9.7	21.5	1.81	4.8	5.4
13	1.90	5.7	1.06	1.26	1.81	3.05	2.55	1.63	11.6	1.90	7.5	4.8
14	5.1	4.0	1.06	.80	1.54	2.75	2.9	1.20	7.3	1.72	9.4	4.8
15	2.4	2.9	.99	.80	1.90	2.55	2.3	1.06	6.1	1.63	8.3	4.0
16	1.90	2.55	*.99	24	10.5	2.4	2.0	.99	4.6	1.72	8.4	3.75
17	1.81	2.4	.92	12.4	34.5	2.3	1.81	.99	5.1	117	23.5	3.6
18	1.81	2.2	.92	2.3	8.1	2.3	1.72	.92	18.0	172	37.5	4.8
19	3.2	2.4	.92	1.36	25	2.2	1.83	.92	6.7	15.6	94	3.9
20	2.2	2.2	.99	1.06	9.8	2.1	1.54	1.36	4.5	7.5	37.5	6.0
21	1.90	2.0	.99	.92	4.4	6.8	1.45	1.54	3.9	5.1	12.1	4.9
22	2.4	3.0	.92	.92	3.05	5.8	1.36	.99	4.2	4.1	22	3.75
23	2.2	2.3	.86	1.28	2.75	2.4	1.36	1.49	7.2	4.2	25	3.6
24	2.1	3.5	.80	.92	13.9	2.2	1.28	2.25	5.6	2.9	21.5	4.7
25	2.0	3.6	.86	.92	33.5	2.1	2.5	65	4.0	2.55	16.0	4.2
26	3.05	2.2	.92	.99	9.3	2.0	1.67	41	3.45	7.6	17.3	3.75
27	4.5	2.0	.86	5.9	4.8	10.7	1.28	9.0	4.6	3.0	21.5	5.2
28	5.2	1.90	.80	1.63	3.6	20	1.13	3.4	5.0	2.4	52	12.5
29	4.2	1.72	1.50	1.13	2.9	9.0	1.13	-	3.15	2.2	19.4	14.3
30	4.4	1.63	1.96	1.28	2.65	3.9	1.13	-----	2.65	2.4	12.6	12.0
31	5.6	1.54	-----	1.54	-----	4.4	1.06	-----	2.4	-----	10.9	-----
Total	102.67	155.99	35.56	72.14	213.17	202.75	276.80	155.43	585.75	410.33	679.5	216.85
Mean:												
mgd	3.31	5.03	1.19	2.33	7.11	6.54	8.93	5.55	18.9	13.7	21.9	7.23
cfs	5.12	7.78	1.84	3.61	11.0	10.1	13.8	8.59	29.2	21.2	33.9	11.2
Ac-ft	315	479	109	221	654	622	849	477	1,800	1,260	2,090	665
Calendar year 1953:	Max	175	Min	0.70	Mean(mgd)	5.64	Mean(cfs)	8.73	Ac-ft	6,310		
Fiscal year 1953-54:	Max	193	Min	0.70	Mean(mgd)	8.51	Mean(cfs)	13.2	Ac-ft	9,540		

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

* Discharge measurement made on this day.

West Wailuaiki 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 1954.

Gage.--Water-stage recorder.

Average discharge.--32 years (1922-54), 23.8 mgd (36.8 cfs).

Extremes.--Maximum discharge during year, 1,270 mgd (1,960 cfs) Apr. 18 (gage height, 7.21 ft), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 0.62 mgd (0.96 cfs) Oct. 10.

1914-17, 1921-54: 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 periods of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.29	0.70	1.0	6.3	2.6	81
.4	1.20	1.1	7.8	3.0	121
.5	1.74	1.2	9.5	3.5	185
.6	2.4	1.4	14.2	4.0	270
.7	3.15	1.6	21	4.5	375
.8	4.0	1.8	29.5		
.9	5.0	2.2	51		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.75	10.4	1.83	2.2	3.15	8.0	7.0	1.47	9.8	3.5	6.7	25.5
2	3.2	10.6	2.0	1.20	3.95	13	4.0	1.47	47	10.9	11.6	12.6
3	13.5	23.5	2.6	1.05	4.7	38	3.4	1.36	45	31	76	9.9
4	21	9.8	2.6	.86	3.35	11	3.05	1.36	128	10.8	162	8.3
5	5.0	6.4	2.05	1.17	10.4	22	2.67	1.36	242	5.3	27.5	7.4
6	4.3	5.4	1.74	.86	3.3	42	17.4	1.42	36	4.4	66	9.3
7	3.6	5.2	1.63	.74	2.7	15	7.8	1.20	39.5	3.95	22.5	18.4
8	3.25	4.3	1.74	.70	4.0	9.0	6.1	1.15	33.5	3.6	26	16.5
9	2.9	5.7	1.58	.70	6.0	11	5.4	1.10	41	3.25	12.1	11.4
10	2.7	*4.1	1.63	.71	3.7	7.2	4.5	1.05	68	3.0	8.8	9.8
11	2.55	3.85	1.42	1.05	8.0	5.5	3.5	2.05	39.5	2.85	7.5	7.4
12	3.05	5.2	1.36	2.1	3.0	4.6	3.6	17.6	41	2.75	7.5	6.9
13	2.55	8.5	1.25	1.84	2.6	4.1	3.5	2.4	16.1	2.85	10.0	6.2
14	6.8	6.0	1.15	.95	2.5	3.8	4.6	1.69	9.5	2.7	11.9	8.2
15	3.4	4.3	1.10	1.03	2.8	*3.6	3.6	1.47	*8.0	2.75	10.1	5.4
16	2.7	3.65	*1.15	67	10	3.3	2.9	1.36	6.6	3.2	10.6	5.0
17	2.45	3.3	1.05	22.5	65	3.05	2.7	1.20	6.6	22.4	46	4.8
18	2.55	3.05	.95	4.3	8.0	3.0	2.55	1.10	26.5	328	77	5.9
19	4.4	3.3	1.00	2.7	50	2.85	2.4	1.15	8.1	26	208	4.8
20	3.0	3.05	1.10	2.2	10	2.6	2.3	1.93	5.9	9.7	93	7.6
21	2.6	2.6	1.25	1.80	4.8	10.8	2.2	1.83	5.2	7.0	16.9	6.6
22	3.5	4.9	1.05	1.63	4.0	7.7	2.1	1.31	5.9	6.0	43	4.8
23	3.15	3.75	.86	2.2	3.7	3.4	2.05	1.86	6.9	5.6	49	4.6
24	3.15	5.0	.82	1.52	24	2.9	2.0	2.45	6.8	4.7	39	6.6
25	3.0	5.4	.90	1.42	75	2.7	2.25	71	5.0	4.3	23	5.4
26	4.5	3.15	1.00	2.05	13	2.6	2.25	48	4.3	11.9	25	4.6
27	6.8	2.7	.86	9.2	5.5	18.9	1.80	9.8	6.6	5.2	45	7.0
28	6.9	2.55	.82	2.85	4.7	17.1	1.69	4.3	5.9	*4.1	116	19.5
29	5.4	2.3	1.75	2.0	4.2	9.2	1.63	-	4.1	3.95	33.5	27
30	6.2	2.1	4.9	*2.55	4.1	4.7	1.58	-----	3.6	4.3	16.8	13.3
31	7.5	2.0	-----	2.85	-----	4.6	1.58	-----	3.25	-----	13.7	-----
Total	148.35	261.45	45.24	145.93	350.15	297.20	378.43	185.44	915.15	741.55	1,321.7	288.7
Mean:	4.79	8.43	1.51	4.71	11.7	9.59	12.2	6.82	29.5	24.7	42.6	9.62
mgd	7.41	13.0	2.34	7.29	18.1	14.8	18.9	10.2	45.6	36.2	65.9	14.9
cfs	455	802	159	448	1,070	912	1,180	589	2,810	2,280	4,060	886
Ac-ft												
Calendar year 1953:	Max 370	Min 0.70	Mean(mgd) 9.05	Mean(cfs) 14.0	Ac-ft 10,130							
Fiscal year 1953-54:	Max 328	Min 0.70	Mean(mgd) 13.9	Mean(cfs) 21.5	Ac-ft 15,590							

Peak discharge (base, 1,200 mgd)--Mar. 5 (4 a.m.), 1,270 mgd (1,960 cfs), 7.15 ft; Apr. 18 (2 a.m.), 1,270 mgd (1,960 cfs), 7.21 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 10 to Dec. 15, Jan. 10-14; discharge estimated on basis of records for 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, 1954.

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.--32 years (1922-54), 8.86 mgd (13.7 cfs).

Extremes.--Maximum discharge during year, 330 mgd (511 cfs) Mar. 5 (gage height, 3.92 ft), from rating curve extended above 130 mgd; minimum, 0.44 mgd (0.66 cfs) Oct. 10, 1913-17, 1922-54; Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 25, 1948 (gage height, 7.32 ft), from rating curve extended above 130 mgd; 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.38	1.4	7.7
.7	.61	1.6	13.5
.8	.91	1.8	22.5
.9	1.28	2.0	35.5
1.0	1.77	2.3	60
1.1	2.6	2.7	106
1.2	3.9		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.42	7.0	1.16	1.00	1.24	4.4	2.75	*0.69	5.5	1.28	2.75	11.4
2	1.64	33.5	1.16	.69	1.72	6.4	1.52	.69	13.6	5.1	5.2	5.3
3	8.8	8.7	1.32	.61	2.15	15.1	1.37	.66	18.4	13.7	26	4.4
4	11.0	4.7	1.42	.58	1.37	5.3	1.32	.63	33	3.75	50	3.5
5	2.4	3.35	1.12	.75	9.1	9.7	85	.63	83	1.77	10.3	2.95
6	1.96	2.7	1.00	.63	1.77	14.9	7.6	.66	15.4	1.52	23	3.5
7	1.67	2.95	.97	.56	1.42	7.6	2.95	.58	10.8	1.42	9.3	8.1
8	1.52	2.1	1.00	.52	1.58	4.4	2.5	.56	12.5	1.28	12.9	6.4
9	1.42	3.5	.94	.52	3.05	6.0	1.96	.56	12.6	1.20	4.7	4.5
10	1.37	*2.2	.97	.52	1.74	3.6	1.62	.52	21.5	1.12	3.35	4.2
11	1.28	1.89	.94	.78	2.85	2.95	1.42	.78	12.8	1.04	2.85	2.95
12	1.47	2.8	.87	1.52	1.42	2.5	1.42	7.7	12.9	1.04	2.85	2.7
13	1.32	6.1	.84	1.16	1.32	2.2	1.37	.94	5.9	1.12	4.5	2.4
14	4.6	4.6	.81	.66	1.24	1.96	2.15	.72	3.6	1.00	3.75	2.6
15	1.72	2.4	.81	.66	1.32	*1.77	1.52	.66	2.95	.97	3.35	2.1
16	1.37	1.96	.81	19.6	2.15	1.67	a1.2	.63	2.5	.97	3.35	1.89
17	1.28	1.77	.75	7.3	14.7	1.57	a1.1	.58	2.3	58	20.5	1.89
18	1.28	1.67	.72	1.57	2.6	1.52	a1.1	.52	7.1	86	31.5	2.7
19	3.15	1.72	.75	1.20	14.8	1.42	a1.0	.56	2.95	9.5	65	1.96
20	1.57	1.57	.81	1.00	4.4	1.37	a1.1	.81	2.1	3.9	44	4.0
21	1.32	1.42	.81	.97	2.3	5.5	a1.0	1.00	1.83	2.4	7.1	2.85
22	1.67	3.25	.69	.91	1.89	3.0	a.92	.63	1.89	1.89	13.6	1.96
23	1.57	1.72	.66	1.04	1.77	1.52	a.88	.98	1.89	1.72	14.3	2.0
24	1.42	2.95	.63	.84	10.3	1.37	a.90	1.32	1.77	1.52	14.8	3.5
25	1.42	2.5	.66	.87	27	1.32	a.94	24	1.57	1.42	7.6	2.3
26	2.1	1.62	.66	.97	5.4	1.32	a.87	18.4	1.47	8.4	9.0	1.89
27	3.2	1.42	.66	7.5	2.95	7.2	a.80	3.25	1.52	2.3	14.8	2.8
28	3.75	1.37	.63	1.37	2.4	3.1	a.76	1.47	1.62	*1.47	34.5	6.9
29	5.5	1.28	1.35	1.08	2.1	1.96	a.72	-	1.37	1.37	12.1	11.2
30	3.75	1.20	3.1	*1.35	1.96	1.62	a.71	-----	1.20	1.42	6.9	4.3
31	5.3	1.16	-----	1.28	-----	2.75	a.70	-----	1.16	-----	6.3	-----
Total Mean:	81.24	116.97	29.02	60.01	130.01	126.99	131.17	71.13	298.69	219.59	470.15	119.14
mgd	2.62	3.77	0.967	1.94	4.33	4.10	4.23	2.54	9.64	7.32	15.2	3.97
cfs	4.05	5.83	1.50	3.00	6.70	6.34	6.54	3.93	14.9	11.3	23.5	6.14
Ac-ft	249	359	89	184	399	390	403	218	917	674	1,440	366
Calendar year 1953: Max	129			Min	0.40	Mean(mgd)	3.59	Mean(cfs)	5.55	Ac-ft	4,020	
Fiscal year 1953-54: Max	86			Min	0.52	Mean(mgd)	5.08	Mean(cfs)	7.86	Ac-ft	5,690	

Peak discharge (base, 300 mgd).--Mar. 5 (4:30 a.m.) 330 mgd (511 cfs), 3.92 ft.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for 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 1954.

Gage.--Water-stage recorder. Jan. 1, 1914, to Oct. 23, 1917, at site 500 ft upstream at different datum.

Average discharge.--32 years (1922-54), 5.53 mgd (8.56 cfs).

Extremes.--Maximum discharge during year, 180 mgd (279 cfs) Mar. 5 (gage height, 2.82 ft) from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.37 mgd (0.57 cfs) Oct. 9, 10.

1914-17, 1921-54: 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 except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.35	.8	9.1
.4	.89	1.1	22.
.5	2.05	1.5	45
.6	3.8		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.17	6.0	0.97	0.81	1.17	4.0	2.55	0.45	4.6	0.89	2.5	10.1
2	1.59	3.1	.97	.55	1.65	5.5	1.27	.49	10.3	4.3	4.8	4.0
3	8.0	7.3	1.07	.45	1.91	13	1.07	.49	17.2	13.6	25	3.25
4	10.9	3.85	1.17	.45	1.27	4.5	1.07	.49	21.5	3.15	38.5	2.7
5	2.35	2.7	.89	.55	9.3	9.0	10.2	.49	32	1.51	6.9	2.35
6	1.91	2.55	.81	.49	1.77	13	1.77	.49	4.2	1.27	18.4	2.8
7	1.63	2.35	.73	.45	1.39	6.5	1.39	.45	4.5	1.07	6.5	6.2
8	1.59	1.91	.73	.41	1.80	4.0	1.59	.45	6.5	.97	11.7	4.8
9	1.27	2.9	.73	.41	2.6	5.2	1.17	.41	6.7	.89	3.4	3.45
10	1.17	*1.95	.73	.41	1.98	3.2	1.07	.41	14.5	.81	2.55	3.35
11	1.07	1.77	.67	.61	2.45	2.7	.97	.81	7.0	.73	2.2	2.35
12	1.17	2.55	.61	1.27	1.39	2.3	.97	9.5	9.1	.73	2.2	2.2
13	1.07	5.3	.61	1.07	1.17	2.0	1.07	.73	3.4	.73	3.4	2.05
14	3.85	4.2	.55	.55	1.07	1.8	1.91	.61	2.35	.73	3.1	2.35
15	1.63	2.35	.55	.55	1.17	*1.6	1.27	.55	*2.05	.67	2.55	1.77
16	1.17	2.05	*.55	18.2	2.4	1.39	.97	.49	1.77	.67	2.55	1.63
17	1.07	1.77	.55	4.8	7.6	1.27	.89	.45	1.77	29.5	20	1.83
18	1.07	1.63	.49	1.51	2.05	1.17	.61	.45	4.2	23.5	26.5	2.55
19	2.35	1.63	.55	1.07	14.8	1.07	.73	.45	1.91	2.35	31.5	1.77
20	1.39	1.39	.55	.89	3.15	1.07	.81	.67	1.51	1.51	35.5	3.35
21	1.17	1.27	.55	.81	1.91	4.6	.73	.73	1.39	1.27	4.2	2.55
22	1.63	2.9	.49	.73	1.63	2.5	.67	.55	1.27	1.17	9.3	*1.91
23	1.59	1.63	.45	.97	1.63	1.17	.67	.81	1.17	1.07	10.4	1.91
24	1.27	2.6	.45	.73	11.5	1.07	.61	1.33	1.17	.89	12.2	3.05
25	1.27	2.3	.45	.73	22	.97	.67	19.8	1.07	.89	4.9	2.35
26	2.05	1.39	.49	.73	4.6	.97	.61	15.2	.97	7.9	6.4	1.91
27	2.85	1.27	.45	7.6	2.5	5.2	.55	2.5	.97	1.96	12.6	2.7
28	3.4	1.17	.45	1.39	2.0	2.55	.55	1.59	.89	1.17	19.2	6.7
29	3.05	1.17	.94	.97	1.8	1.51	.49	-	.89	1.17	7.1	11.7
30	3.6	1.07	2.65	1.17	1.7	1.17	.49	-----	.73	1.27	4.0	3.95
31	4.6	.97	-----	1.17	-----	2.35	.45	-----	.73	-----	4.0	-----
Total	73.30	104.69	21.85	52.50	112.94	108.33	39.64	61.64	168.31	108.34	344.05	103.38
Mean:												
mgd	2.36	3.38	0.728	1.69	3.76	3.49	1.28	2.20	5.43	3.61	11.1	3.45
cfs	3.65	5.23	1.13	2.61	5.82	5.40	1.98	3.40	8.40	5.59	17.2	5.34
Ac-ft	225	321	67	161	347	332	122	189	517	332	1,060	317

Calendar year 1953: Max 59 Min 0.37 Mean(mgd) 2.78 Mean(cfs) 4.30 Ac-ft 3,110
 Fiscal year 1953-54: Max 38.5 Min 0.41 Mean(mgd) 3.56 Mean(cfs) 5.51 Ac-ft 3,990

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

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 25 to Dec. 15; discharge estimated on basis of records for nearby streams.

Taro patch feeder ditch at Keanae

Location.--Lat 20°51'40", long 156°09'00", on left bank 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 1954.

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

Average discharge.--19 years (1935-54), 2.24 mgd (3.47 cfs).

Extremes.--1934-54: 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 excellent except those for days of fragmentary gage-height record, which are fair. Ditch diverts water from Palauhulu Stream for irrigation of taro lands at Keanae.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.85	1.61	1.48	1.75	1.57	1.71	2.05	1.66	1.97	1.99	1.80	2.75
2	1.90	3.65	1.48	1.75	1.61	1.92	1.90	1.66	3.4	2.05	1.85	2.45
3	1.97	*2.35	1.48	1.71	1.57	2.8	1.85	1.66	4.3	2.55	3.05	2.4
4	2.45	1.66	1.48	1.71	1.57	1.85	1.85	1.61	5.4	2.05	*5.0	2.35
5	1.90	1.57	1.66	1.71	1.57	2.4	3.95	1.71	5.5	2.05	2.8	2.3
6	1.85	1.61	1.80	1.71	1.57	3.55	1.85	1.66	2.3	1.99	3.45	2.3
7	1.71	1.71	1.80	1.71	1.57	2.4	1.95	1.61	1.28	1.99	2.45	2.55
8	1.61	1.66	1.85	1.75	1.57	2.3	1.90	1.61	1.40	1.99	2.65	2.55
9	1.61	1.71	1.80	1.71	1.57	2.25	1.85	1.61	2.1	1.99	2.3	2.35
10	1.61	1.66	1.80	1.71	1.57	2.2	1.85	1.57	*2.5	1.99	2.15	2.35
11	1.61	1.66	1.80	1.71	1.57	*2.15	1.85	1.57	1.99	1.99	2.1	2.3
12	1.61	1.71	1.80	1.71	1.52	2.05	1.85	2.2	2.4	1.99	2.05	2.25
13	1.61	1.75	1.75	1.71	1.52	2.05	f1.96	1.66	1.95	1.99	2.05	2.2
14	1.71	1.80	1.75	1.66	1.52	1.99	f2.55	1.61	1.80	1.95	2.15	2.25
15	1.61	1.71	*1.75	1.66	1.52	1.99	2.1	1.57	1.80	1.95	2.1	2.2
16	1.61	1.66	1.80	2.95	1.61	1.99	1.90	1.57	1.85	2.05	2.05	2.15
17	1.57	1.61	1.80	2.1	2.6	1.99	1.85	1.57	2.05	4.1	3.0	2.15
18	1.57	1.61	1.80	1.52	1.61	2.05	1.80	1.57	2.25	4.5	3.4	2.15
19	1.61	1.61	1.80	1.48	3.0	1.99	1.80	1.52	2.15	2.1	4.8	2.15
20	1.57	1.61	1.80	1.45	1.91	1.95	1.85	1.57	2.05	1.95	4.5	2.2
21	1.57	1.61	1.80	1.43	1.75	2.35	1.80	1.57	2.05	1.90	2.5	2.2
22	1.57	1.78	1.80	1.43	1.71	2.3	1.75	1.57	2.05	1.90	3.15	2.15
23	1.57	1.61	1.75	1.43	1.61	1.99	1.75	1.71	2.05	1.85	3.1	2.15
24	1.57	1.57	1.75	1.48	2.55	1.95	1.75	1.61	2.05	1.85	3.15	2.15
25	1.52	1.57	1.80	1.52	4.1	1.95	1.71	3.2	2.05	1.85	2.65	2.15
26	1.52	1.92	1.80	1.52	2.15	1.90	1.71	3.25	1.99	2.6	2.65	2.15
27	1.52	1.52	1.80	1.80	1.75	2.7	1.71	2.25	1.99	1.95	3.0	2.1
28	1.57	1.52	1.80	1.57	1.71	2.25	1.71	1.80	1.99	1.85	3.9	2.4
29	1.66	1.52	1.80	1.57	1.66	1.99	1.71	-	1.99	1.85	2.75	2.55
30	1.57	1.52	1.80	1.57	1.66	1.90	1.66	-----	1.99	1.80	2.45	2.2
31	1.57	1.48	-----	1.57	-----	1.95	1.66	-----	1.99	-----	2.45	-----
Total	51.75	53.14	52.58	-52.04	54.77	66.81	59.43	49.73	72.63	64.61	87.25	68.55
Mean	1.67	1.71	1.75	1.68	1.83	2.16	1.92	1.78	2.34	2.15	2.81	2.28
cfs	2.58	2.65	2.71	2.60	2.83	3.34	2.97	2.75	3.62	3.33	4.35	3.53
Ac-ft	159	163	161	160	168	205	182	153	223	198	268	210
Calendar year 1953.	Max 5.0	Min 1.43	Mean(mgd) 1.87	Mean(cfs) 2.89	Ac-ft 2,090							
Fiscal year 1953-54:	Max 5.5	Min 1.28	Mean(mgd) 2.01	Mean(cfs) 3.11	Ac-ft 2,250							

* Discharge measurement made on this day.

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

ISLAND OF MAUI

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 1954. 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.--36 years (1918-54), 66.3 mgd (103 cfs).

Extremes.--1910-12, 1917-54: 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 Aio for power and irrigation in central Maui. No diversion above station except from several spillways.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	30	94	23.5	19.5	23.5	69	63	18.0	83	28	54	136
2	32	129	23.5	*14.6	30	99	36	18.0	121	64	96	120
3	99	131	25	13.9	36	126	30	16.8	132	133	115	98
4	115	101	26.5	13.4	23.5	101	28	16.8	122	86	*120	84
5	54	73	23.5	15.5	86	122	112	16.8	120	45	156	77
6	45	58	20.5	13.9	32	134	98	16.8	134	36	124	80
7	36	60	20.5	13.0	25	125	54	15.5	94	32	135	133
8	34	49	22	12.8	30.5	90	51	15.0	87	30	134	120
9	32	68	19.2	12.8	52	104	45	14.6	101	28	101	110
10	28	49	20.5	12.6	34	73	36	14.1	104	26.5	77	98
11	26.5	43	18.0	15.5	60	60	32	16.7	128	25	65	77
12	30	55	18.0	23.5	28	51	34	84	106	25	65	69
13	26.5	85	16.8	21.5	23.5	45	32	23.5	112	28.5	89	65
14	71	72	16.8	14.6	22	40	40	18.0	77	25	91	70
15	40	47	16.8	14.6	25	38	34	16.8	65	23.5	77	54
16	30	43	16.8	121	35.5	34	28	15.3	54	26.5	78	51
17	26.5	*37	15.5	97	133	32	25	14.8	52	92	131	51
18	26.5	34	15.5	32	63	30	25	14.4	111	122	128	65
19	49	36	15.0	22	107	30	23.5	14.4	53	119	119	56
20	34	34	15.5	20.5	86	28	23.5	16.8	49	65	120	80
21	28	30	16.8	18.0	47	58	22	20.5	43	49	129	74
22	36	46	14.4	18.0	38	64	22	15.5	45	43	125	54
23	32	37.5	14.4	20.5	37	32	20.5	21.5	50	40	122	51
24	32	50	13.9	18.0	102	30	20.5	29.5	45	34	122	70
25	30	55	13.9	16.8	134	26.5	32	126	38	32	136	60
26	42	34	14.6	18.0	103	26.5	25	106	34	99	135	49
27	60	30	13.9	66	60	76	20.5	87	39	48	125	71
28	74	28	13.7	25	49	108	19.2	43	40	34	120	110
29	67	26.5	23.5	19.2	43	*63	19.2	-	32	32	128	121
30	69	25	36.5	22	40	36	18.0	-	28	32	133	108
31	80	23.5	-----	23.5	-----	38.5	18.0	-----	26.5	-----	123	-----
Total	1,415.0	1,683.5	565.0	791.2	1,608.5	1,989.5	1,086.9	846.1	2,325.5	1,501.0	3,453	2,462
Mean												
mgd	45.6	54.3	18.8	25.5	53.6	64.2	35.1	30.2	75.0	50.0	111	82.1
cfs	70.6	84.0	29.1	39.5	82.9	99.3	54.3	46.7	116	77.4	172	127
Ac-ft	4,340	5,170	1,730	2,430	4,940	6,110	3,340	2,600	7,140	4,610	10,600	7,560
Calendar year 1953: Max	134			Min	12.6	Mean(mgd)	44.6	Mean(cfs)	69.0	Ac-ft	50,000	
Fiscal year 1953-54: Max	136			Min	12.6	Mean(mgd)	54.0	Mean(cfs)	83.6	Ac-ft	60,570	

* 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 6.2 miles (revised) south of Kailua.

Records available.--July 1945 to June 1954.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,300 ft (from topographic map).

Average discharge.--8 years (1946-54), 0.426 mgd (0.659 cfs).

Extremes.--1945-54: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; minimum daily, 0.01 mgd (0.02 cfs) for several days in January, February, September, October 1953, January and February 1954.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Kula diversion flume diverts water from Haipuaena Stream of station for domestic use and irrigation of truck crops in the Olinda and Kula areas.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.10	0.31	0.08	0.22	0.14	0.12	0.54	0.01	0.18	0.05	0.11	1.06
2	.09	.98	.09	.16	.14	.38	.23	.01	.89	.15	.27	.58
3	.60	.79	.21	.09	.14	.32	.14	.01	.73	.64	.94	.35
4	1.03	.54	.30	.05	.08	.28	.10	.01	1.41	.47	1.56	.26
5	.60	.38	.16	.03	.06	.78	.54	.01	1.57	.17	.95	.18
6	.27	.71	.10	.02	.06	1.10	.64	.01	1.49	.10	1.40	.18
7	.17	1.04	.09	.02	.06	.53	.66	.01	1.52	.07	.94	.77
8	.11	.50	*.10	.02	.18	.32	.60	.01	1.45	.05	.64	.64
9	.09	.26	.27	.01	.66	.21	.36	.01	*1.60	.04	.36	.44
10	.07	.19	.54	.01	.34	.16	.25	.01	1.68	.03	.23	.27
11	.06	.12	.18	.01	.76	.16	*.18	.01	1.35	.03	.19	.17
12	.05	.11	.11	.01	.21	.28	.15	.02	1.11	.02	.46	.12
13	.04	.28	.09	.01	.10	.16	.12	.02	.55	.02	.28	.09
14	.08	.27	.09	.01	.07	.10	.10	.02	.32	.02	.40	.08
15	.16	.17	.06	.02	.06	.09	.11	.01	.34	.02	.32	.07
16	.09	.10	.04	1.55	.35	.06	.09	.01	.34	.03	.23	.09
17	.06	.06	.03	1.02	1.01	.05	.08	.01	.22	.75	.57	.17
18	.05	.05	.02	.37	.65	.05	.06	.01	1.20	.88	1.27	.15
19	.05	.04	.02	.25	1.21	a.05	.05	.01	.50	.72	1.51	.10
20	.05	.03	.02	.15	.81	a.04	.04	.01	.28	.40	1.24	.42
21	.04	.03	.02	.09	.30	a.36	.03	.01	.63	.23	.66	.39
22	.04	.37	.02	.09	.18	a.63	.03	.01	.65	.17	1.02	.16
23	.03	.56	.02	.09	.12	.22	.02	.01	.63	.23	1.19	.45
24	.03	.40	.01	.07	.98	a.10	.02	.01	.44	.19	.98	.97
25	.02	.36	.01	.05	1.63	a.08	.02	.50	.25	.14	.87	.56
26	.03	.17	.01	.04	.75	a.06	.01	.86	.17	.12	1.01	.27
27	.09	.10	.01	.04	.30	a.78	.01	.54	.14	.14	1.14	.45
28	.09	.06	.01	.04	.21	.74	.01	.30	.11	.09	1.76	.88
29	.11	.05	.10	.03	.16	.62	.01	-	.09	.08	1.15	.87
30	*.22	.04	.37	.03	.11	.26	.01	-----	.08	.07	.64	1.02
31	.15	.04	-----	.06	-----	.17	.01	-----	.06	-----	.86	-----
Total	4.67	9.11	3.18	4.66	11.83	9.26	5.22	2.47	21.98	6.12	25.15	12.21
Mean	0.151	0.294	0.106	0.150	0.394	0.299	0.168	0.088	0.709	0.204	0.811	0.407
cfs	0.234	0.455	0.164	0.232	0.610	0.463	0.260	0.136	1.10	0.316	1.25	0.630
Ac-ft	14	28	9.8	14	36	28	16	7.6	67	19	77	37

Calendar year 1953: Max 1.63 Min 0.01 Mean(mgd) 0.251 Mean(cfs) 0.388 Ac-ft 281
 Fiscal year 1953-54: Max 1.76 Min 0.01 Mean(mgd) 0.317 Mean(cfs) 0.490 Ac-ft 353

* Discharge measurement made on this day.
 a No gage-height record; discharge estimated on basis of records for nearby streams.

ISLAND OF MAUI

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 Kaenae, and 3.7 miles southeast of Kailua.

Records available.--March 1938 to June 1954.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,800 ft (from topographic map).

Average discharge.--16 years, 2.03 mgd (3.14 cfs).

Extremes.--1938-54: 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 excellent. Ditch diverts water from Haipuaena Stream for East Maui Irrigation Co.'s hydroelectric plant about 1 mile downstream, from where it discharges into Koolan ditch for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.42	2.1	1.25	1.28	1.42	1.83	1.69	0.70	1.44	1.36	1.83	2.4
2	1.56	4.2	1.25	.90	1.49	2.05	1.42	.70	2.35	1.87	2.1	2.05
3	2.3	2.8	1.36	.70	1.56	2.45	1.36	.64	3.1	2.55	3.0	1.90
4	2.9	2.1	1.42	.59	1.36	1.96	1.31	.59	3.4	1.96	4.5	1.83
5	1.96	1.90	1.31	.75	1.84	2.3	3.85	.70	4.2	1.69	2.4	1.76
6	1.69	*1.98	1.13	.59	1.42	2.85	1.90	.75	2.5	1.56	3.3	1.83
7	1.62	2.1	1.07	.49	1.36	2.1	1.85	.59	2.6	1.49	2.3	2.25
8	1.49	1.69	1.36	.49	1.52	1.90	1.76	.54	2.6	1.42	2.4	2.1
9	1.42	1.76	1.13	.43	1.90	1.90	1.62	.54	2.7	1.36	1.96	2.05
10	1.36	1.69	1.36	.43	1.62	1.76	1.49	.49	3.2	1.31	1.76	1.90
11	1.36	1.62	1.07	.80	1.90	1.69	1.42	.71	2.65	1.19	1.76	1.76
12	1.42	1.83	.96	1.31	1.49	1.69	1.49	1.94	2.6	1.13	1.76	1.76
13	1.36	2.25	.90	1.13	1.36	1.62	1.56	1.13	2.05	1.13	1.90	1.69
14	2.05	1.96	.90	.70	1.31	1.56	1.62	.75	1.90	1.13	1.96	1.69
15	1.56	1.83	.80	.64	1.36	1.49	1.56	.64	1.76	1.13	1.76	1.56
16	1.42	1.69	.75	3.55	1.52	1.42	1.42	.59	1.69	1.19	1.76	1.56
17	1.36	1.62	.75	2.4	2.95	1.42	1.36	.54	1.69	3.6	2.6	1.69
18	1.36	1.56	.70	1.62	1.76	1.42	1.31	.49	2.1	3.8	3.35	1.76
19	1.62	1.56	.70	1.36	2.65	1.42	1.31	.49	1.90	2.05	4.4	1.62
20	1.42	1.49	.80	1.25	1.96	1.36	1.25	.75	1.69	1.69	4.3	2.0
21	1.36	1.42	.90	1.19	1.69	1.92	1.19	.80	1.73	1.62	2.2	1.90
22	1.49	1.90	*.75	1.13	1.62	1.86	1.13	.62	1.69	1.56	2.8	1.62
23	1.42	1.82	.64	1.31	1.56	1.49	1.07	.96	1.62	1.56	2.85	1.69
24	1.42	1.76	.54	1.07	2.45	1.42	1.02	.90	1.56	1.49	2.6	2.05
25	1.36	1.76	.54	.96	3.5	1.36	.96	1.94	1.49	1.42	2.3	1.90
26	1.56	1.56	.59	1.02	2.05	1.31	.90	2.45	1.42	*2.3	2.4	1.69
27	1.83	1.49	.62	1.76	1.76	1.90	*.85	1.62	1.49	1.76	2.75	1.83
28	1.76	1.42	.70	1.36	1.69	1.76	.85	1.31	1.42	1.56	3.7	2.4
29	1.76	1.36	1.06	1.13	1.62	1.69	.80	-	1.36	1.42	2.3	2.55
30	1.96	1.31	1.62	1.31	1.56	1.42	.75	-	1.31	1.56	2.05	2.2
31	2.05	1.25	-----	1.36	-----	1.55	.70	-----	1.31	-----	2.05	-----
Total	50.62	56.58	28.93	35.01	53.25	53.89	42.75	24.87	64.52	50.86	79.10	56.99
Mean	1.63	1.83	0.964	1.13	1.78	1.74	1.38	0.888	2.08	1.70	2.55	1.90
mgd	2.52	2.83	1.49	1.75	2.75	2.69	2.14	1.37	3.22	2.63	3.95	2.94
cfs	155	174	89	107	163	165	131	76	196	156	243	175
Ac-ft												
Calendar year 1953: Max	8.8			Min	0.36	Mean(mgd)	1.65	Mean(cfs)	2.55	Ac-ft	1,840	
Fiscal year 1953-54: Max	4.5			Min	0.43	Mean(mgd)	1.64	Mean(cfs)	2.54	Ac-ft	1,830	

* Discharge measurement made on this day.

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 southeast of Huelo.

Drainage area.--1.1 sq mi.

Records available.--October 1913 to June 1954. December 1910 to September 1913 at site 800 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.--38 years (1916-54), 9.72 mgd (15.0 cfs).

Extremes.--Maximum discharge during year, 220 mgd (340 cfs) Apr. 18 (gage height, 4.32 ft), from rating curve extended above 32 mgd by logarithmic plotting; minimum, slightly less than 0.1 mgd (about 0.2 cfs) Oct. 9, 10.

1913-54: 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, June 1945 and October 1953.

Remarks.--Records poor. Haipuaena diversion ditch diverts water above station (see preceding page).

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.58	5.2	e0.52	e0.55	e1.0	3.25	2.65	e0.18	0.63	e0.55	3.3	10.2
2	.82	53	e.50	e.50	e1.1	6.0	.93	e.17	11.0	3.8	5.9	5.4
3	7.5	11.0	e.58	e.20	e1.6	11.3	.61	e.16	27	12.3	*21	4.0
4	<u>16.4</u>	4.9	e.85	e.16	e1.2	4.8	e.50	*e.14	32	4.6	62	2.95
5	3.3	3.05	e.55	e.15	*4.6	10.0	<u>6.4</u>	e.14	<u>8.1</u>	1.67	9.5	2.35
6	1.89	4.0	e.45	e.18	.96	<u>19.2</u>	4.4	e.19	10.6	1.12	29.5	2.6
7	1.22	5.5	e.40	e.13	.73	6.8	2.5	e.16	7.8	.88	9.2	8.1
8	.93	2.05	e.38	e.12	.98	3.8	2.95	e.14	12.0	*.70	10.1	7.0
9	.70	2.55	e.36	e.13	3.8	4.5	1.65	e.13	15.7	.54	4.2	5.3
10	.50	1.82	e.55	<u>e.10</u>	1.35	2.75	1.08	e.12	27	.38	2.6	4.6
11	<u>.34</u>	*1.54	e.40	e.25	4.1	2.35	.85	e.15	13.6	.27	<u>1.97</u>	2.6
12	.80	2.8	e.35	e.70	.90	2.0	.85	e1.5	15.7	<u>.21</u>	<u>1.97</u>	2.05
13	.35	7.0	e.31	e.40	.45	1.44	1.19	e.70	5.7	.34	3.1	1.81
14	<u>4.4</u>	<u>4.4</u>	e.28	e.25	.29	1.13	2.05	e.30	3.45	.31	4.2	2.15
15	1.36	2.85	e.26	e.15	.36	.89	1.52	e.18	2.8	.57	2.35	1.36
16	.66	2.05	e.24	<u>32</u>	.93	.77	.77	e.15	1.99	1.46	1.98	<u>1.15</u>
17	.42	1.54	e.23	9.7	20.5	e.65	e.62	e.13	2.15	65	14.5	1.39
18	.50	1.28	e.22	1.27	2.35	e.60	e.55	e.12	6.3	70	30.5	2.15
19	1.73	1.28	e.22	e.75	16.3	e.58	e.50	e.11	3.4	6.4	68	1.55
20	.78	e1.1	e.25	e.55	4.7	e.48	e.46	e.28	1.68	2.2	49	4.8
21	.50	e.90	e.30	e.45	1.72	6.4	e.41	e.45	2.25	1.43	6.7	3.35
22	.89	4.3	e.21	e.38	1.13	4.2	e.52	e.52	*2.25	1.15	17.7	1.65
23	.70	2.75	*e.18	e.45	.93	.93	e.40	.87	1.40	.93	18.6	*1.44
24	.58	2.55	e.16	e.36	11.9	e.65	e.33	.46	1.16	.66	14.3	4.9
25	.50	2.35	e.16	e.31	<u>31.5</u>	e.52	e.27	8.1	.76	.50	9.3	3.35
26	1.02	1.18	e.22	e.40	5.8	<u>e.45</u>	e.30	<u>14.5</u>	.72	7.9	8.7	1.73
27	2.45	e.90	e.18	e1.5	2.55	5.6	e.28	<u>2.55</u>	.76	2.05	18.7	2.35
28	2.4	e.75	e.28	e.90	1.68	2.25	e.23	.66	e.65	.83	40	10.2
29	2.4	e.70	e.90	e.55	1.37	1.84	e.21	-	e.55	.66	9.6	<u>12.2</u>
30	3.25	e.60	<u>e1.5</u>	e.50	1.30	.76	e.20	-----	e.45	.92	5.5	6.6
31	3.9	e.55	-----	e.75	-----	1.47	e.19	-----	<u>e.40</u>	-----	5.2	-----
Total	63.77	136.44	11.99	54.59	128.28	108.33	93.95	33.26	272.25	190.43	489.17	121.28
Mean:												
mgd	2.06	4.40	0.400	1.76	4.28	3.49	3.03	1.19	8.78	6.35	15.8	4.04
cfs	3.19	6.81	0.619	2.72	6.62	5.40	4.69	1.84	13.6	9.82	24.4	6.25
Ac-ft	196	419	37	168	394	332	288	102	836	584	1,500	372
Calendar year 1953:	Max 91			Min 0.10		Mean(mgd) 2.76		Mean(cfs) 4.27		Ac-ft 3,100		
Fiscal year 1953-54:	Max 70			Min 0.10		Mean(mgd) 4.67		Mean(cfs) 7.23		Ac-ft 5,230		

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 nearby 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 southeast of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1954 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.--31 years (1922-29, 1930-54), 13.1 mgd (20.3 cfs).

Extremes.--1922-54: Maximum daily discharge, 78 mgd (121 cfs) May 4, 1954; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Flow regulated by gates and spillways. Spreckels ditch diverts water from all streams between Nuaailua and Kailua Streams, above Koolau ditch east of 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*3.4	22	1.20	4.2	3.3	17.7	15.1	0.17	6.3	3.45	17.2	25
2	5.7	57	1.20	1.45	5.8	24	4.7	.17	30.5	16.3	26.5	19
3	15.4	27	2.65	.28	7.9	38	3.2	.17	40	34.5	45	16
4	25	20.5	4.3	.26	3.2	22.5	2.5	.20	46	17.7	78	14
5	7.3	14.3	1.92	2.6	21	34	64	.23	65	6.9	26	13
6	5.3	15.3	.92	3.2	4.9	45	15.7	.26	28	4.7	50	12
7	4.2	19.8	.46	1.26	4.0	28.5	10.6	.20	30.5	3.6	23.5	33
8	3.75	9.6	3.0	.26	7.1	18.1	11.9	.20	30	2.9	25	27
9	3.35	13.3	.84	.26	17.3	22.5	6.9	.20	34	2.3	16.9	23.5
10	2.8	8.5	3.2	.26	8.0	13.6	4.6	.20	48	1.75	12.9	22
11	2.4	7.5	.87	.51	15.7	11.3	3.6	1.83	*30.5	1.36	10.4	13.3
12	3.5	13.7	.23	3.95	4.6	10.0	3.85	20.5	33	1.20	11.3	11.3
13	2.15	25.5	.23	1.12	2.9	7.3	4.9	2.25	18.9	1.36	13.8	9.9
14	12.7	20.5	.30	.38	2.15	6.0	10.4	.38	13.6	1.58	16.4	12.4
15	7.8	13.2	.17	.34	2.65	4.9	7.1	.26	11.0	2.05	13.6	8.0
16	3.9	8.8	.17	52	7.7	4.2	3.35	.26	8.8	3.9	11.7	6.9
17	3.1	7.1	.17	26	45	3.5	2.5	.26	10.5	60	31	8.4
18	4.0	6.4	.17	5.1	11.7	3.6	2.05	.23	23.5	61	50	13.7
19	6.4	6.6	.17	1.36	39	3.2	1.65	.26	15.3	19.2	70	9.7
20	4.6	5.1	.29	.56	19.4	2.4	1.36	1.30	7.8	9.6	65	17.6
21	3.5	4.2	.45	.42	8.3	*16.2	1.20	1.95	9.8	6.4	30	16.5
22	6.1	13.6	.20	1.00	5.5	17.3	.98	1.50	9.0	5.3	35	9.4
23	4.6	12.2	.20	1.00	4.6	4.7	.56	2.8	8.0	4.6	40	9.0
24	3.9	14.8	.20	.38	33	3.2	.46	2.2	5.8	3.5	35	20.5
25	3.5	12.5	.23	.34	62	2.4	.38	20.5	4.2	2.8	26	16.8
26	7.5	6.4	.23	.45	22.5	1.95	.30	26	3.9	*27	28	10.0
27	14.7	4.0	.26	13.1	10.4	16.8	.23	9.9	4.6	12.0	36	13.4
28	14.3	2.9	.30	2.5	8.5	10.8	.20	3.35	3.85	5.5	50	27
29	14.5	2.3	5.7	.92	6.4	9.4	.20	-	2.85	4.2	30	29.5
30	18.5	1.65	12.7	3.15	6.2	4.0	.20	-----	2.05	5.9	22	22
31	19.0	1.36	-----	3.1	-----	5.9	.20	-----	1.75	-----	23	-----
Total	236.65	397.61	42.93	131.09	400.70	410.95	182.77	96.73	587.00	332.55	969.2	489.8
Mean:												
mgd	7.63	12.8	1.43	4.23	13.4	13.3	5.90	3.45	18.9	11.1	31.3	16.3
cfs	11.8	19.9	2.21	6.54	20.7	20.6	9.13	5.34	29.2	17.2	48.4	25.2
Ac-ft	726	1,220	132	402	1,230	1,260	561	297	1,800	1,020	2,970	1,500
Calendar year 1953 . Max	62			Min	0.10	Mean(mgd)	8.18	Mean(cfs)	12.7	Ac-ft	9,160	
Fiscal year 1953-54 : Max	78			Min	0.17	Mean(mgd)	11.7	Mean(cfs)	18.1	Ac-ft	13,120	

* Discharge measurement made on this day.

Note.--No gage-height record May 18 to June 7; discharge estimated on basis of records for nearby streams.

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 Puhokamoa Stream, 3.5 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Records available.--April 1932 to June 1954.

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 than present datum.

Average discharge.--22 years, 78.7 mgd (122 cfs).

Extremes.--1932-54: 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 except those for period of no gage-height record, which are fair. Flow regulated by floodgates. Water used for domestic supply and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	33	101	26.5	23	26.5	72	69	18.1	84	32.5	60	160
2	35.5	150	26.5	16.8	34	109	39	18.1	135	80	170	140
3	125	153	26	15.6	39	147	34	16.8	170	152	*130	130
4	139	106	29.5	14.5	26.5	103	31	16.8	160	84	140	90
5	64	76	25	15.6	97	140	152	16.8	160	44	160	85
6	52	67	23.5	12.4	34	169	100	16.8	162	39	150	85
7	42	70	22	12.7	28	134	58	15.6	120	35.5	160	160
8	39	52	25	13.4	32	89	56	15.6	119	32.5	160	150
9	35.5	72	22	12.9	58	108	46	14.5	130	31	110	140
10	32.5	52	23.5	12.7	35	76	39	14.3	148	29.5	85	120
11	31	46	22	16.8	66	63	35.5	17.6	168	28	75	90
12	35.5	59	20.5	28.5	31	52	35.5	100	139	27	75	75
13	29.5	100	19.4	25	26.5	48	34	26.5	121	28	100	70
14	84	77	19.4	15.6	25	44	45	19.4	80	27	100	75
15	42	52	18.1	15.6	28	41	35.5	16.8	67	26	85	55
16	32.5	44	18.1	147	37.5	37	31	15.6	59	30	85	54
17	29.5	41	18.1	121	144	35.5	28	15.6	55	120	160	54
18	29.5	37	16.8	37	67	34	26.5	14.3	121	140	160	70
19	57	37	16.8	26.5	120	32.5	26.5	14.5	57	130	135	60
20	37	35.5	16.8	23.5	93	31	25	19.4	52	75	140	90
21	31	32.5	18.1	20.5	50	72	25	22	48	55	150	82
22	39	57	16.8	19.4	41	72	25	16.8	48	48	145	60
23	35.5	40	*15.6	25	39	35.5	23.5	24	52	44	140	55
24	34	53	14.5	19.4	120	31	22	33	48	38	140	75
25	32.5	57	15.6	18.1	170	29.5	33.5	143	41	37	160	63
26	44	35.5	15.6	20.5	111	29.5	28	128	37	120	160	52
27	63	32.5	14.5	80	63	83	22	92	42	55	140	71
28	76	31	15.6	28	52	106	20.5	44	41	37	140	131
29	69	29.5	28	20.5	46	66	20.5	-	34	35	150	146
30	72	28	45	25	44	41	19.4	-	31	35	160	118
31	86	26.5	-	25	-	45	19.4	-	29.5	-	145	-
Total	1,587.0	1,850.0	636.8	907.5	1,784.0	2,175.5	1,205.3	925.9	2,758.5	1,695.0	4,010	2,786
Mean:												
mgd	51.2	59.7	21.2	29.3	59.5	70.2	38.9	33.1	89.0	56.5	129	92.9
cfs	79.2	92.4	32.8	45.3	92.1	109	60.2	51.2	138	87.4	200	144
Ac-ft	4,870	5,680	1,950	2,780	5,470	6,680	3,700	2,840	8,470	5,200	12,310	8,550
Calendar year 1953.	Max	190	Min	12.4	Mean(mgd)	49.7	Mean(cfs)	76.9	Ac-ft	55,670		
Fiscal year 1953-54.	Max	170	Min	12.4	Mean(mgd)	61.2	Mean(cfs)	94.7	Ac-ft	68,500		

* Discharge measurement made on this day.

Note.--No gage-height record Apr. 12 to June 23; discharge estimated on basis of records for station near Keanae.

Puohokamoa 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 1954. 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.--37 years (1917-54), 20.8 mgd (32.2 cfs).

Extremes.--Maximum discharge during year, 506 mgd (783 cfs) Apr. 18 (gage height, 4.32 ft); minimum daily, 0.58 mgd (0.90 cfs) Oct. 10.
1913-54: 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, those for period of no gage-height record, 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 tables, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

July 1 to June 16				June 17-30			
0.5	0.52	1.2	15.5	0.9	5.0		
.6	1.20	1.4	28	1.0	8.6		
.7	2.15	1.7	53	1.1	11.8		
.8	3.45	2.0	86	1.2	15.5		
.9	5.8	2.3	130	1.3	21		
1.0	8.8	2.7	205	1.4	28		
				1.6	44		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.85	13.1	2.15	e1.88	2.35	9.0	8.3	1.29	4.9	2.5	9.0	25
2	3.45	19.2	2.05	e1.05	2.85	17.1	3.45	1.29	27	8.0	15	15
3	4.4	28.5	2.5	e.76	4.0	29.5	2.7	1.20	83	26	45	10
4	9.5	10.0	2.25	e.90	12.4	25.5	108	1.20	125	6.0	23	7.0
6	6.0	10.2	1.95	e.97	3.3	52	10.9	1.47	22	4.0	75	7.0
7	4.2	13.4	1.75	e.64	2.5	17.3	7.5	1.05	28	3.0	22	21
8	3.6	6.6	1.95	e.64	3.4	11.4	8.8	.90	30.5	2.3	18	18
9	3.15	8.0	1.75	e.70	10.2	12.3	5.5	.83	37	2.1	10	12
10	2.7	5.8	2.15	e.58	4.2	8.4	4.0	4.0	78	3.0	7.2	11
11	2.6	*4.6	1.75	1.38	10.2	7.2	3.3	1.58	35	2.7	6.5	8.0
12	3.45	6.9	1.56	3.15	3.0	7.0	4.8	16.7	42	2.5	7.0	7.0
13	2.5	17.1	1.38	2.05	2.35	5.2	5.7	2.45	14.9	2.2	7.5	6.5
14	13.2	10.6	1.29	1.12	2.15	4.2	6.9	1.56	10.3	2.0	11	8.0
15	5.0	7.2	1.20	.83	2.25	3.8	5.1	1.20	8.4	2.2	7.5	6.3
16	3.15	5.8	1.20	72	4.7	3.3	3.3	1.05	6.6	2.7	6.5	5.0
17	2.6	4.4	1.20	25.5	48	3.15	2.7	.97	7.5	140	27	5.4
18	2.6	3.8	1.05	4.8	7.7	3.3	2.8	.83	15.8	200	60	8.1
19	5.5	3.8	1.05	2.5	42	3.0	2.35	.90	11.7	20	200	6.4
20	3.3	3.3	1.12	2.05	12.9	2.6	2.25	1.67	6.4	7.0	100	16.5
21	2.7	3.0	1.47	1.75	5.2	*16.8	2.15	2.25	6.2	5.5	17	11.6
22	3.8	8.3	1.05	1.65	3.8	12.9	2.05	1.32	*7.4	5.0	53	6.4
23	3.3	7.5	.83	1.95	3.3	3.8	1.95	4.2	6.0	4.5	53	*5.4
24	3.0	7.5	*.70	1.56	32	3.0	1.85	2.45	6.2	4.0	32	14.6
25	2.85	7.2	e.70	1.47	82	2.7	1.75	16.9	5.5	4.0	24	11.3
26	4.0	3.6	e.83	1.56	15.6	2.5	1.75	37.5	4.6	14	21	6.4
27	7.8	2.85	e.70	7.6	7.7	13.1	*1.65	7.7	3.9	6.0	50	8.4
28	7.7	2.7	e1.05	2.6	5.8	7.3	1.56	3.15	3.4	4.0	120	30
29	7.6	2.5	e2.3	1.65	4.7	7.0	1.56	-	3.1	4.0	25	37.5
30	9.3	2.25	e3.6	2.15	4.2	3.3	1.47	-----	2.8	4.5	15	18.6
*1	10.8	2.15	-----	2.25	-----	4.5	1.38	-----	2.3	-----	15	-----
Total	205.40	345.95	47.38	150.45	347.10	315.05	219.87	115.57	685.2	504.7	1,230.2	361.4
Mean:	mgd	6.63	11.2	1.58	4.85	11.6	10.2	7.09	4.13	22.1	16.8	39.7
	cfs	10.3	17.3	2.44	7.50	17.9	15.8	11.0	6.39	34.2	26.0	61.4
Ac-ft	630	1,060	145	462	1,070	967	675	355	2,100	1,550	3,780	1,110
Calendar year 1953.	Max	209	Min	0.58	Mean(mgd)	7.98	Mean(cfs)	12.3	Ac-ft	8,940		
Fiscal year 1953-54:	Max	200	Min	0.58	Mean(mgd)	12.4	Mean(cfs)	19.2	Ac-ft	13,900		

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 partial record and record for nearby stations.

Note.--No gage-height record Mar. 3 to June 16; discharge estimated on basis of recorded range in stage and record for nearby stations.

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 1954.

Gage.--Water-stage recorder and sharp-crested weir.

Average discharge.--35 years (1918-24, 1925-54), 5.68 mgd (8.79 cfs).

Extremes.--1917-54: Maximum daily discharge, 68 mgd (105 cfs) for one or more days in 1938, 1941-42, 1947-48, 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 Kolea and Waiakamoi Streams. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.56	2.9	0.39	0.28	0.25	1.22	2.15	0.25	1.56	0.56	1.23	4.4
2	.56	4.5	.39	.17	.28	2.7	.79	.22	8.1	1.33	2.55	2.55
3	4.4	5.9	.39	.14	.25	5.7	.68	.22	14.3	7.1	*19.4	2.1
4	12.3	2.8	.39	.14	.22	2.2	.62	.22	10.2	1.57	38	1.80
5	1.00	1.89	.39	.20	1.83	4.2	25.5	.22	30	.74	4.2	1.61
6	.74	1.80	.34	.20	.51	8.5	.91	.28	4.3	.56	23	1.54
7	.62	1.99	.28	.20	.34	4.0	.80	.22	2.75	.51	5.4	3.55
8	.56	1.46	.39	.17	.34	2.35	1.00	.22	2.95	.45	9.6	3.3
9	.55	1.80	.34	.20	.61	2.8	.74	.22	4.0	.45	3.55	1.99
10	.51	1.31	.39	.17	.50	1.80	.56	.20	12.5	.39	2.45	1.61
11	.45	*1.08	.34	.34	.95	1.46	.56	.22	5.3	.39	1.99	1.31
12	.62	1.36	.28	1.76	.39	1.15	.51	2.2	6.2	.34	1.89	1.31
13	.45	2.85	.25	.94	.28	.93	.92	.68	3.0	.34	2.3	1.15
14	1.94	2.7	.22	.22	.25	.79	2.95	.34	2.1	.34	1.94	2.25
15	.79	1.46	.22	.22	.25	.74	1.41	.25	1.61	.28	1.31	1.23
16	.56	1.15	.22	11.1	.33	.62	.85	.22	1.31	.28	1.43	1.00
17	.51	1.00	.22	5.2	2.75	.56	.74	.20	1.75	27.5	19.9	.85
18	.51	.93	.22	1.68	.65	.62	.68	.20	2.75	33	27.5	1.32
19	1.16	.85	.20	1.00	5.7	.51	.62	.20	3.35	1.08	39	1.00
20	.62	.79	.20	.51	1.43	.45	.56	.34	1.46	.56	34.5	1.91
21	.51	.68	.22	.28	.51	2.6	.56	.90	1.31	.45	4.7	1.69
22	.62	.93	.22	.25	.39	1.63	.51	.37	1.15	.39	6.1	1.00
23	.56	.84	.20	.39	.34	.62	.51	2.15	*1.08	.39	6.0	.85
24	.51	1.01	.20	.22	3.25	.45	.45	1.37	.85	.34	6.9	1.81
25	.51	.85	*.17	.22	19.3	.45	.39	5.1	.79	.44	3.9	1.87
26	.56	.56	.17	.39	2.5	.39	.45	12.2	.68	2.4	4.1	1.00
27	.74	.51	.14	1.66	1.08	2.2	.39	2.4	.62	.82	5.8	1.00
28	1.39	.51	.14	.56	.74	1.08	.34	1.23	.56	.34	11.6	2.3
29	2.25	.45	.20	.22	.68	.79	.28	-	.51	.34	5.1	6.1
30	1.38	.39	.34	.25	.68	.56	.28	-----	.51	.39	3.0	1.94
31	2.5	.39	-----	.28	-----	1.10	.25	-----	.39	-----	3.3	-----
Total	40.95	88.14	8.06	29.56	47.78	55.17	47.96	32.84	127.94	84.07	303.64	57.34
Mean:	1.32	2.84	0.269	0.954	1.59	1.78	1.55	1.17	4.13	2.80	9.79	1.91
mgd	2.04	4.39	0.416	1.48	2.46	2.75	2.40	1.81	6.39	4.33	15.1	2.96
cfs	126	270	25	91	147	169	147	101	393	258	932	176
Ac-ft												
Calendar year 1953.	Max	51	Min	0.14	Mean(mgd)	1.58	Mean(cfs)	2.44	Ac-ft	1,760		
Fiscal year 1953-54:	Max	45	Min	0.14	Mean(mgd)	2.53	Mean(cfs)	3.91	Ac-ft	2,840		

* Discharge measurement made on this day.

Waikamoi 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 1954.

Gage.--Water-stage recorder. Datum of gage is 1,293.59 ft above mean sea level, datum of 1929.

Average discharge.--32 years, 16.0 mgd (24.8 cfs).

Extremes.--Maximum discharge during year, 600 mgd (928 cfs) Apr. 18 (gage height, 5.10 ft), from rating curve extended as explained below; minimum, 0.10 mgd (0.16 cfs) Oct. 10.

1922-54: 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 Oct. 10, 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.05	0.9	1.00	2.1	27
.5	.14	1.1	1.70	2.5	52
.6	.27	1.3	3.2	3.0	102
.7	.45	1.5	6.3	3.5	175
.8	.70	1.8	14.4	4.0	274

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	5.9	0.80	0.92	1.47	4.9	6.3	0.37	2.8	1.55	6.3	17.4
2	2.05	105	.78	.54	1.62	11.8	3.85	.37	14.6	5.5	10.4	11.0
3	10.2	21.5	.98	.30	2.3	15.8	2.85	.35	33.5	18.6	31.5	7.6
4	51.5	8.8	1.71	.22	1.52	9.1	2.45	.33	51	8.6	105	6.1
5	7.6	5.8	1.58	.22	5.2	17.2	180	*.34	122	4.3	18.0	5.2
6	5.1	6.2	.92	.25	1.63	36	11.8	.50	23.5	3.2	51	5.3
7	4.0	*10.7	.64	.17	1.37	11.5	6.3	.33	33.5	2.45	16.5	15.1
8	3.3	5.2	.78	.17	1.63	8.1	8.2	.28	26.5	1.54	14.5	13.8
9	2.1	5.2	.80	.19	*7.5	8.3	5.4	.25	34	1.30	8.0	9.6
10	1.75	4.3	1.18	.13	4.0	6.3	4.3	.22	59	1.95	5.4	8.8
11	1.46	3.7	1.12	.35	8.9	5.1	3.6	.24	27	1.80	4.9	6.0
12	2.1	4.3	.67	1.12	3.55	4.4	3.75	5.9	28	1.58	5.4	5.1
13	1.43	8.3	.45	.70	2.4	4.3	4.8	.30	9.7	1.03	5.9	4.5
14	7.0	6.3	.37	.37	1.24	3.75	5.4	.60	6.5	.84	8.4	5.2
15	3.7	4.9	.32	.25	1.22	2.45	4.7	.37	5.4	1.03	5.6	3.7
16	2.05	3.7	.32	58	1.38	2.1	3.3	.30	4.5	1.46	4.9	2.75
17	1.54	2.45	.30	26	49	1.85	2.85	.27	4.9	118	19.2	2.95
18	1.50	2.1	.37	3.95	6.5	1.80	2.4	.22	11.3	166	42	4.1
19	2.6	2.05	.25	2.3	34	1.74	1.43	.21	7.9	13.6	133	3.45
20	2.05	1.85	.27	1.79	11.7	1.58	1.25	.56	4.7	5.8	81	6.7
21	1.58	1.50	.37	.88	5.1	8.4	1.09	.93	5.7	4.5	13.3	7.8
22	2.0	3.55	.27	.67	3.85	10.1	1.33	1.02	6.2	4.0	38	4.7
23	1.85	5.0	.21	.75	3.3	3.7	.97	3.45	4.7	3.6	38	4.1
24	1.54	4.8	*.18	.67	21.5	2.1	.72	1.33	4.9	3.05	26	*10.3
25	1.40	4.8	.17	.56	61	2.4	.64	11.8	4.3	3.05	18.3	8.2
26	1.63	2.8	.21	.56	12.3	2.1	.67	28	3.45	9.9	15.1	5.1
27	3.8	1.70	.19	1.78	5.8	10.1	.52	6.1	3.05	4.8	37	5.6
28	4.4	1.43	.28	1.50	4.9	6.8	.50	2.45	2.55	2.4	92	21
29	4.3	1.29	.29	.74	4.3	7.4	.45	-	2.4	2.45	19.4	23.5
30	4.7	1.00	1.40	.77	3.75	4.0	.43	-----	2.0	2.85	11.2	13.9
31	5.7	.86	-----	.93	-----	3.7	.41	-----	1.16	-----	9.6	-----
Total	127.93	246.78	17.88	107.75	273.93	218.65	272.66	70.09	550.71	400.73	892.8	250.55
Mean:												
mgd	4.13	7.96	0.596	3.48	9.13	7.05	8.80	2.50	17.8	13.4	28.8	8.35
cfs	6.39	12.3	0.922	5.38	14.1	10.9	13.6	3.87	27.5	20.7	44.6	12.9
Ac-ft	393	757	55	331	841	671	837	215	1,690	1,230	2,740	769
Calendar year 1953.	Max	224	Min	0.13	Mean(mgd)	6.27	Mean(cfs)	9.70	Ac-ft	7,030		
Fiscal year 1953-54:	Max	180	Min	0.13	Mean(mgd)	9.40	Mean(cfs)	14.5	Ac-ft	10,530		

Peak discharge (base, 900 mgd).--No peak above base.
* 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 Wailoa 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 1954.

Gage.--Water-stage recorder. Datum of gage is 1,248.38 ft above mean sea level, datum of 1929. Prior to June 18, 1914, staff gage at site 300 ft downstream at different datum.

Average discharge.--43 years (1911-54), 4.79 mgd (7.41 cfs).

Extremes.--Maximum discharge during year, 207 mgd (320 cfs) Mar. 3 (gage height, 3.06 ft); minimum, 0.26 mgd (0.40 cfs) Oct. 10, 1910-54: Maximum discharge, 1,600 mgd (2,480 cfs) Nov. 18, 1930 (gage height, 6.90 ft), from rating curve extended above 130 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.17	0.9	2.3
.5	.39	1.1	4.6
.6	.70	1.3	9.7
.7	1.07	1.5	18.5
.8	1.58	1.8	38

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.85	6.7	0.70	0.51	0.77	4.1	2.65	0.48	4.4	0.99	4.1	6.9
2	1.41	28	*.67	.37	.88	5.3	1.17	.45	8.5	3.95	5.1	3.55
3	9.1	6.9	.74	.35	.88	10.1	1.05	.42	15.5	12.4	17.6	3.8
4	11.2	4.2	.81	.32	.77	4.4	1.03	.42	8.7	3.3	22	3.0
5	2.0	2.9	.70	.39	11.3	9.5	7.2	*.45	26.5	1.38	*5.8	2.6
6	1.58	3.3	.61	.35	1.48	13.1	1.58	.45	3.7	1.12	24	2.5
7	1.22	3.35	.54	.30	1.00	6.8	1.73	.37	3.5	.96	7.0	7.1
8	1.07	2.15	.67	.35	1.56	3.55	1.62	.35	4.5	.88	11.3	5.8
9	.96	3.45	.58	.37	2.9	6.0	1.48	.35	5.6	.81	3.55	4.2
10	.88	2.0	.81	.32	1.72	3.0	1.03	.32	14.8	.77	2.5	3.2
11	.85	1.65	.58	.84	2.25	2.4	.96	.96	6.1	.70	2.15	2.3
12	1.30	2.6	.48	2.4	1.03	2.0	1.00	6.8	8.3	.70	2.15	2.25
13	.85	6.8	.45	.88	.92	1.72	1.43	.81	3.55	.74	3.4	2.0
14	4.5	4.9	.45	.45	.85	1.43	4.7	.51	2.5	.77	2.5	3.6
15	1.68	2.3	.42	.45	.85	1.22	1.74	.45	2.1	.74	1.58	1.80
16	1.00	1.87	.42	12.2	1.34	a1.1	1.07	.39	1.58	.72	1.95	1.48
17	.88	1.48	.42	4.9	5.3	a1.0	.96	.37	2.75	11.0	19.9	1.32
18	.85	1.32	.39	1.24	1.57	a1.1	.88	.35	3.7	12.1	27	2.3
19	2.65	1.32	.39	.85	10.4	a1.0	.85	.37	4.5	1.83	24	1.98
20	1.17	1.12	.45	.70	2.95	a.90	.81	1.30	1.65	1.22	33.5	4.0
21	.96	1.00	.45	.64	1.48	a6.5	.77	1.76	1.38	1.00	4.2	2.8
22	1.77	2.25	.37	.61	1.17	a2.5	.70	5.0	1.22	.96	8.0	1.65
23	1.32	1.42	.35	.74	1.07	1.07	.67	4.0	*1.55	.88	10.1	1.53
24	1.12	3.0	*.32	.58	9.3	.96	.64	2.1	1.03	.77	8.7	3.7
25	1.17	1.65	.32	.58	24.5	.88	.64	6.0	.92	1.18	4.5	3.3
26	1.59	1.00	.35	.74	4.0	.85	.67	13.1	1.06	8.6	5.7	1.58
27	2.55	.88	.32	2.35	2.1	4.9	.58	2.2	.96	2.1	7.2	2.5
28	3.75	.88	.39	.85	1.65	2.1	.54	1.17	.81	1.07	10.8	4.2
29	4.2	.85	.77	.61	1.43	1.84	.51	-	.85	1.00	5.4	10.6
30	3.95	.77	.92	.85	1.38	1.07	.51	-----	.74	1.58	3.8	3.7
31	6.1	.70	-----	.81	-----	3.6	4.8	-----	.67	-----	4.8	-----
Total	74.48	102.71	15.84	37.90	98.80	105.99	41.63	51.70	143.42	76.22	294.28	101.24
Mean:												
mgd	2.40	3.31	0.528	1.22	3.29	3.42	1.34	1.85	4.63	2.54	9.49	3.37
cfs	3.71	5.12	0.817	1.89	5.09	5.29	2.07	2.86	7.16	3.93	14.7	5.21
Ac-ft	229	315	49	116	303	325	128	159	440	234	903	311
Calendar year 1953:	Max	56	Min	0.26	Mean(mgd)	2.43	Mean(cfs)	3.76	Ac-ft	2,720		
Fiscal year 1953-54:	Max	33.5	Min	0.30	Mean(mgd)	3.13	Mean(cfs)	4.84	Ac-ft	3,510		

Peak discharge (base, 250 mgd).--No peak above base.

* Discharge measurement made on this day.

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

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 1954.

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.--32 years (1922-54), 4.55 mgd (7.04 cfs).

Extremes.--Maximum discharge during year, 143 mgd (221 cfs) Mar. 5 (gage height, 2.63 ft); minimum, 0.25 mgd (0.39 cfs) Oct. 7, 10.

1921-54: 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; minimum, 0.22 mgd (0.34 cfs) June 1, 1945.

Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	0.8	9.0
.3	.63	.9	12.5
.4	1.34	1.0	16.5
.5	2.45	1.2	26.5
.6	4.1	1.4	37
.7	6.3		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.80	6.3	0.63	0.50	0.68	3.85	3.1	0.42	2.95	0.87	3.55	8.4
2	1.09	28	.63	.36	.87	5.4	1.25	.39	9.3	4.6	4.6	3.9
3	9.2	7.1	.74	.35	1.01	11.2	1.17	.39	16.1	12.2	15.8	4.0
4	12.5	4.2	.80	.30	.74	4.7	1.09	.36	9.8	3.45	26.5	3.1
5	2.05	2.45	.74	.36	9.8	8.9	8.1	.39	26.5	1.53	*5.7	2.45
6	1.53	2.75	.58	.33	1.53	14.3	1.63	.46	3.55	1.17	20.5	2.3
7	1.17	2.9	.54	.27	1.01	6.4	1.53	.36	3.6	1.01	6.7	7.1
8	1.09	1.84	.58	.32	1.33	3.4	1.63	.33	5.1	.87	8.9	6.7
9	.94	2.7	.54	.36	3.25	5.2	1.34	.33	6.2	.80	3.4	4.8
10	.80	1.73	.68	.30	1.51	2.75	1.09	.30	16.4	.74	2.2	4.0
11	.80	1.53	.54	.68	2.45	2.2	.94	.44	6.6	.63	1.84	2.6
12	1.17	*2.25	.50	2.05	1.09	1.73	1.20	6.4	8.2	.58	1.84	2.2
13	.80	6.1	.46	.87	.80	1.53	1.57	.74	3.4	.68	3.25	1.95
14	4.6	4.0	.46	.50	.74	1.25	5.7	.46	2.2	.74	2.5	3.2
15	1.63	2.2	.42	.39	.74	1.17	2.0	.39	1.73	.74	1.63	1.84
16	1.09	1.73	.42	12.6	1.11	1.01	1.17	.36	1.43	.58	1.68	1.63
17	.87	1.53	.42	5.8	6.8	.87	1.09	.33	2.45	15.6	17.5	1.43
18	.80	1.25	.39	1.38	1.85	1.01	.94	.33	4.1	15.9	23	2.25
19	2.15	1.25	.39	.80	10.6	.87	.80	.33	5.2	1.86	26	2.05
20	1.17	1.09	.42	.63	2.95	.74	.74	.89	1.63	1.17	33.5	4.2
21	1.01	.94	.46	.58	1.53	6.2	.68	1.49	1.34	.94	4.3	3.15
22	1.50	2.4	.39	.54	1.17	*3.05	.68	3.7	1.17	.87	7.3	1.84
23	1.17	1.57	.36	.63	1.09	1.17	.63	5.7	1.39	.74	11.8	1.63
24	1.09	2.7	.33	.50	9.6	1.01	.54	1.92	1.09	.63	9.5	3.85
25	1.09	1.75	.33	.50	23.5	.87	.54	6.2	.87	.73	5.0	3.6
26	1.43	1.09	.36	.54	4.4	.80	.58	10.7	1.01	8.7	5.7	1.84
27	2.45	.87	.33	2.3	1.95	5.1	.50	2.3	.94	2.1	7.0	2.4
28	3.35	.87	*.44	.80	1.53	2.2	.50	1.25	.74	1.01	12.0	5.6
29	3.75	.80	.78	.54	1.25	2.05	.46	-	.74	.87	6.0	11.1
30	3.9	.74	.92	.74	1.25	1.17	.42	-----	.63	1.63	4.1	4.0
31	5.7	.68	-----	.68	-----	3.1	.42	-----	.58	-----	4.8	-----
Total	72.69	97.31	15.58	37.48	96.93	105.20	44.03	47.66	146.94	83.94	288.09	109.11
Mean:												
mgd	2.34	3.14	0.519	1.21	3.23	3.39	1.42	1.70	4.74	2.80	9.29	3.64
cfs	3.62	4.86	0.803	1.87	5.00	5.25	2.20	2.63	7.33	4.33	14.4	5.63
Ac-ft	223	299	48	115	297	323	135	146	451	258	884	355
Calendar year 1953: Max	50	50	Min	0.27	Mean(mgd)	2.34	Mean(cfs)	3.62	Ac-ft	2,620		
Fiscal year 1953-54: Max	33.5	Min	0.27	Mean(mgd)	3.14	Mean(cfs)	4.86	Ac-ft	3,510			

Peak discharge (base, 250 mgd).--No peak above base.

* Discharge measurement made on this day.

Opooula Stream near Huelo

Location.--Lat 20°52'15", long 156°12'30", on left bank 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 1954. December 1910 to June 1915, at site half a mile downstream; records not equivalent.

Gage.--Water-stage recorder and concrete control.

Average discharge.--23 years (1931-54), 1.72 mgd (2.66 cfs).

Extremes.--Maximum discharge during year, 262 mgd (405 cfs) Mar. 2 (gage height, 4.44 ft), from rating curve extended as explained below; minimum daily, 0.10 mgd (0.16 cfs) Sept. 24, 25, 27, Oct. 7.
1930-54: 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.6	0.05	2.2	5.7
1.7	.23	2.3	8.2
1.8	.65	2.4	11.2
1.9	1.32	2.5	14.7
2.0	2.35	2.6	18.8
2.1	3.75	2.8	30

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.25	2.35	0.22	0.20	0.26	1.5	1.86	0.19	2.05	0.44	1.91	2.65
2	.34	10.0	.21	.13	.34	2.55	.60	.19	4.8	2.95	2.35	1.18
3	3.35	2.7	.25	.12	.40	3.65	.55	.18	9.2	5.8	7.3	1.06
4	4.0	1.39	.28	.11	.28	1.97	.45	.18	4.3	1.49	5.9	.94
5	.65	.91	.26	.14	3.7	3.85	1.90	.19	13.2	.60	2.15	.81
6	.50	.99	.21	.12	.60	5.2	.60	.19	1.61	.50	7.6	.90
7	.32	1.18	.18	.10	.40	2.7	.69	.18	1.18	.36	2.1	3.1
8	.32	.81	.20	.13	.55	1.41	.75	.18	2.05	.32	3.85	2.05
9	.28	1.36	.18	.15	1.3	2.35	.60	.18	2.5	.28	1.25	1.30
10	.25	.70	.22	.12	*.60	1.10	.40	.18	9.0	.28	.81	.87
11	.23	.50	.18	.27	1.1	.87	.32	.19	3.35	.25	.70	.70
12	.50	*.93	.16	.90	.45	.70	.36	1.93	3.25	.23	.75	.81
13	.25	2.55	.15	.34	.32	.55	.62	.54	1.39	.25	1.42	.60
14	2.35	1.87	.15	.20	.29	.50	3.75	.23	.81	.28	.92	1.75
15	.75	.75	.13	.15	.28	.45	1.06	.19	.75	.28	.55	.75
16	.36	.65	.13	5.0	.45	.36	.55	.18	.60	.23	.78	.55
17	.28	.55	.13	2.0	3.0	.32	.45	.18	1.68	2.7	10.5	.50
18	.28	.45	.12	.55	.70	.40	.40	.18	2.15	3.2	10.9	.79
19	.84	.43	.12	.30	4.0	.32	.36	.18	3.2	.55	7.0	.60
20	.45	.37	.13	.23	1.2	.28	.32	.56	.81	.32	25.5	1.75
21	.32	.30	.14	.21	.60	2.4	.28	1.25	.70	.28	1.61	1.34
22	.64	.85	.12	.19	.45	1.26	.28	3.4	.55	.28	1.97	.65
23	.50	.50	.11	.22	.42	.50	.25	3.75	.85	.23	3.05	.55
24	.36	.95	.10	.18	3.5	.36	.25	1.67	*.55	.23	3.85	1.31
25	.36	.60	.10	.18	9.0	.32	.23	3.1	.40	.33	1.73	1.52
26	.55	.40	.11	.20	1.6	.28	.28	6.1	.32	2.5	1.91	.60
27	.87	.31	.10	.90	.75	2.7	.21	1.71	.32	.94	2.35	.85
28	1.61	.30	.15	.30	.57	1.18	.21	.65	.28	.32	3.85	*1.34
29	2.15	.27	.28	.21	.48	.81	.19	-	.28	.32	2.05	3.5
30	1.18	.25	.32	.28	.47	.50	.19	-----	.28	.81	1.10	1.39
31	2.7	.23	-----	.26	-----	1.41	.19	-----	.25	-----	1.79	-----
Total	27.79	36.30	5.14	14.29	38.06	42.75	19.15	27.33	72.66	27.55	119.50	36.51
Means												
mgd	0.896	1.17	0.171	0.461	1.27	1.38	0.618	0.976	2.34	0.918	3.85	1.22
cfs	1.39	1.81	0.265	0.713	1.96	2.14	0.956	1.51	3.62	1.42	5.96	1.89
Ac-ft	85	111	16	44	117	131	59	84	223	85	367	112
Calendar year 1953:	Max 28			Min 0.10		Mean(mgd) 0.962		Mean(cfs) 1.49		Ac-ft 1,080		
Fiscal year 1953-54:	Max 25.5			Min 0.10		Mean(mgd) 1.28		Mean(cfs) 1.98		Ac-ft 1,430		

Peak discharge (base, 130 mgd).--Mar. 2 (12 p.m.) 262 mgd (405 cfs), 4.44 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 16 to Dec. 1; discharge estimated on basis of records for nearby streams.

Naililihaele 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 1954. 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.--33 years (1920-24, 1925-54), 24.1 mgd (37.3 cfs).

Extremes.--Maximum discharge during year, 1,230 mgd (1,900 cfs) Feb. 26 (gage height, 5.84 ft), from rating curve extended as explained below; minimum, 1.50 mgd (2.32 cfs) Oct. 7, 8, 10.

1910-18, 1919-54: 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 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.8	1.50	2.3	14.6	2.8	50
1.9	2.9	2.4	19.0	3.0	73
2.0	5.0	2.5	24	3.3	120
2.1	7.7	2.6	31	3.6	181
2.2	10.8	2.7	39.5	3.9	280

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.5	22.5	4.2	2.6	3.95	16.5	14.5	2.9	6.8	6.3	16.8	44
2	6.0	168	3.95	2.05	4.6	26.5	7.7	2.75	39	20.5	22	22.5
3	34.5	33.5	4.4	1.92	5.8	54	6.9	2.75	87	53	74	20.5
4	64	19.7	4.4	1.78	4.4	20	6.4	2.6	69	18.6	194	16.8
5	11.6	13.8	3.95	2.05	33.5	34	60	2.75	153	8.9	31	14.2
6	8.9	14.9	3.55	1.92	7.4	82	12.0	3.1	21.5	7.4	126	13.5
7	7.4	15.5	3.3	1.64	5.5	26.5	9.8	2.6	23	6.6	*31	33
8	6.9	11.2	3.55	1.78	6.5	18.1	10.2	2.35	32.5	6.1	35.5	31.5
9	6.1	13.6	3.3	1.92	14.5	23	8.6	2.2	36.5	5.5	17.7	22
10	5.5	10.2	3.55	1.64	*7.8	15.0	7.4	2.2	96	5.0	13.8	20.5
11	5.3	8.9	3.1	2.75	12.0	12.7	6.6	2.95	38.5	4.8	11.9	14.2
12	6.9	*11.0	2.75	6.8	6.1	11.2	7.8	22.5	50	4.6	11.9	13.1
13	5.0	22.5	2.6	3.75	5.0	9.9	9.2	4.3	19.8	4.8	15.3	11.6
14	21	15.0	2.5	2.5	4.6	8.9	24.5	2.75	14.2	4.8	15.6	15.1
15	9.2	10.5	2.5	2.05	4.6	8.0	12.3	2.5	12.3	4.8	10.5	10.5
16	6.1	9.2	2.5	66	7.7	7.2	7.7	2.35	10.5	4.7	10.5	9.2
17	5.3	8.3	2.5	27.5	47	6.9	6.9	2.2	15.0	127	75	8.9
18	4.8	7.4	2.35	7.9	10.1	7.2	8.1	2.05	21.5	149	120	11.4
19	8.3	7.2	2.35	4.8	65	6.6	5.8	2.05	27	14.2	185	10.5
20	6.1	6.6	2.35	3.95	16.5	5.5	5.3	3.85	11.2	9.2	215	21
21	5.3	5.8	2.5	3.55	9.2	29	5.0	5.7	10.2	8.0	27.5	16.7
22	7.5	9.7	2.2	3.3	7.7	17.0	4.6	14.9	9.6	7.2	55	10.5
23	6.4	8.6	2.05	3.55	6.9	7.7	4.4	22	10.2	6.6	73	9.6
24	5.5	11.5	2.05	3.1	45	6.6	4.2	7.8	*8.3	5.8	60	17.3
25	5.3	9.6	1.92	2.75	132	5.8	3.95	21.5	7.4	5.8	33.5	16.6
26	7.2	6.4	2.05	3.1	22.5	5.5	4.4	73	7.4	29.5	29.5	10.2
27	10.8	5.5	1.92	8.2	11.9	29	3.75	11.8	6.9	11.6	53	11.8
28	12.7	5.3	*2.35	4.5	9.9	14.2	3.55	6.9	6.1	6.9	93	28.5
29	13.8	4.8	3.0	3.1	8.9	12.3	3.3	-	5.8	6.4	33	62
30	13.8	4.4	4.0	3.75	8.3	8.0	3.1	-----	5.3	10.8	23	22
31	20.5	4.2	-----	3.95	-----	12.9	2.9	-----	5.0	-----	24	-----
Total	343.2	505.3	87.69	190.15	532.85	547.7	286.85	237.30	876.5	562.2	1,735.0	569.2
Mean:	mgd	11.1	16.3	2.92	6.13	17.8	17.7	9.25	8.48	18.7	56.0	19.0
	cfs	17.2	25.2	4.52	9.48	27.5	27.4	14.3	13.1	43.8	28.9	29.4
	Ac-ft	1,050	1,550	269	584	1,640	1,680	880	728	2,690	1,730	1,750
Calendar year 1953:	Max	328	Min	1.64	Mean(mgd)	12.6	Mean(cfs)	19.5	Ac-ft	14,080		
Fiscal year 1953-54:	Max	215	Min	1.64	Mean(mgd)	17.7	Mean(cfs)	27.4	Ac-ft	19,870		

Peak discharge (base, 1,250 mgd).--No peak above base.

* Discharge measurement made on this day.

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 1954. July 1912 to May 1913 at site 1 mile downstream; records not equivalent.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,252.99 ft above mean sea level, datum of 1929. Prior to Dec. 31, 1911, staff gage 400 ft downstream at different datum. June 17 to Sept. 30, 1913, staff gage at present site and datum.

Average discharge.--35 years (1919-54), 18.6 mgd (28.8 cfs).

Extremes.--Maximum discharge during year, 750 mgd (1,160 cfs) Feb. 26 (gage height, 6.00 ft); minimum, 0.55 mgd (0.85 cfs) Oct. 7, 8, 9, 10.
1910-11, 1913-18, 1919-54: Maximum discharge, 4,920 mgd (7,610 cfs) Dec. 17, 1946 (gage height, 9.27 ft), from rating curve extended above 650 mgd; 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 1953-54 (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		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3		1.72	1.00	1.50	5.6	6.4	1.30	3.25	2.85	7.5	23.5
2	*2.6	10.6	1.61	.79	1.72	13.7	4.1	1.30	14.5	6.5	10.9	14.1
3	9.6	27	1.83	.72	2.3	22.5	3.4	1.30	46	23	32.5	10.9
4	35	10.0	1.83	.65	1.83	9.5	3.1	1.20	57	9.1	127	9.0
5	6.7	6.7	1.72	.72	7.0	17.5	168	1.20	147	4.5	24.5	7.4
6	4.3	5.9	1.50	.72	2.55	52	15.1	1.30	28	3.4	72	7.0
7	3.4	7.7	1.40	.60	1.94	15.0	7.4	1.10	33	3.1	22	16.5
8	3.1	5.2	1.40	.65	1.94	9.2	7.0	1.00	34	2.85	17.1	18.9
9	2.7	5.6	1.50	.65	6.6	9.5	5.6	1.00	42	2.55	9.7	12.1
10	2.45	4.7	1.50	.60	3.6	7.0	4.7	.93	76	2.45	7.2	11.8
11	2.3	3.75	1.20	.79	6.4	6.1	3.95	1.10	34	2.3	6.1	8.2
12	2.7	4.3	1.20	1.40	3.1	5.2	3.75	8.0	36.5	2.2	6.3	7.0
13	2.3	*7.7	1.10	1.10	2.2	4.5	5.0	2.2	12.8	2.3	7.4	5.9
14	8.9	5.2	1.00	.79	1.83	3.95	8.8	1.40	8.4	2.2	9.7	6.7
15	5.0	4.3	1.00	.72	1.83	3.6	8.0	1.20	7.0	2.05	6.3	5.2
16	3.0	3.75	.93	44	1.83	3.1	4.3	1.00	5.9	1.83	5.4	4.7
17	2.45	3.1	.93	24.5	49	3.0	3.6	1.00	5.9	131	24.5	4.5
18	2.3	3.0	.86	4.3	7.6	3.0	3.1	.93	14.5	194	46	5.4
19	3.0	3.0	.86	2.45	41	3.0	3.0	.86	15.8	18.7	149	5.0
20	3.1	2.55	.86	1.72	14.8	2.55	2.7	1.20	7.0	8.2	116	11.4
21	2.45	2.45	.93	1.50	5.4	12.7	2.45	1.61	8.3	5.6	21	10.1
22	3.0	2.85	.86	1.30	3.75	11.6	2.45	1.18	8.0	4.7	45	5.6
23	2.85	3.4	.79	1.30	3.1	*4.1	2.2	7.9	*6.5	3.95	55	4.8
24	2.45	4.1	.79	1.20	25.5	3.1	2.05	2.45	6.1	3.6	39.5	8.9
25	2.45	4.3	*.72	1.10	79	2.85	1.94	9.6	4.5	3.25	24	9.5
26	3.1	2.85	.72	1.10	15.0	2.55	2.05	47	3.95	7.1	17.1	6.1
27	4.7	2.45	.79	1.83	7.0	17.8	1.83	9.0	3.6	5.5	37	6.1
28	6.5	2.3	.93	1.61	5.2	11.6	1.72	3.75	3.1	3.25	96	25.5
29	6.7	2.05	.86	1.10	4.3	11.5	1.61	-	3.0	3.0	26	39.5
30	5.0	1.83	1.50	1.20	3.95	5.4	1.50	2.85	5.2	15.4	15.4	15.2
31	6.3	1.83	1.40	1.40	4.6	1.40	1.40	2.55	2.55	13.7	13.7	13.7
Total	152.70	256.46	34.44	103.51	312.77	287.30	292.20	113.01	680.80	470.23	1,097.2	329.5
Mean:	mgd	4.93	8.27	1.15	3.34	10.4	9.27	4.04	22.0	15.7	35.4	11.0
	cfs	7.63	12.8	1.78	5.17	16.1	14.3	14.6	6.25	34.0	54.8	17.0
Ac-ft	469	787	106	318	960	882	897	347	2,090	1,440	3,370	1,010
Calendar year 1953: Max	255		Min	0.60	Mean(mgd)	7.12	Mean(cfs)	11.0	Ac-ft	7,970		
Fiscal year 1953-54: Max	194		Min	0.60	Mean(mgd)	11.3	Mean(cfs)	17.5	Ac-ft	12,680		

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

* Discharge measurement made on this day.

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

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 1954.

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.--42 years (1911-15, 1916-54), 7.72 mgd (11.9 cfs).

Extremes.--Maximum discharge during year, 480 mgd (743 cfs) Feb. 26 (gage height, 3.10 ft), from rating curve extended above 100 mgd by logarithmic plotting; minimum, 0.43 mgd (0.67 cfs) Oct. 10, 15, 29.
1910-54: 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. Water used for irrigation in central Maui.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.28	0.46	0.9	14.2
.5	.59	1.0	19.0
.4	1.39	1.1	24.5
.5	2.7	1.2	31
.6	4.5	1.4	47
.7	7.5	1.6	67
.8	10.7		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.49	3.1	1.10	0.59	0.53	3.0	3.7	1.29	2.25	2.55	3.9	12.9
2	1.72	22.5	1.10	.53	.59	4.6	2.55	1.29	4.1	4.6	5.0	8.8
3	4.2	6.9	1.19	.53	.59	8.6	2.4	1.29	12.6	9.8	9.2	8.3
4	7.6	4.1	1.10	.48	.53	4.5	2.4	1.19	9.6	4.3	36	7.2
5	2.55	3.2	1.10	.53	3.25	6.1	10.6	1.29	34	3.0	10.3	6.1
6	2.1	3.35	1.02	.53	1.02	14.3	3.9	1.29	6.8	2.85	25.5	5.8
7	1.84	3.35	1.02	.48	.65	7.2	3.2	1.10	5.8	2.55	11.0	8.6
8	1.72	2.85	1.02	.53	.72	5.2	2.85	1.10	*8.2	2.4	10.1	*9.0
9	1.60	3.35	1.02	.53	1.34	5.8	2.55	1.02	9.4	2.25	7.2	7.6
10	1.49	2.55	1.02	.48	.91	*4.8	2.4	1.02	19.2	2.1	5.8	6.8
11	1.49	2.4	.94	.65	1.33	4.3	2.25	1.10	11.9	2.1	5.2	5.2
12	1.72	2.55	.86	.94	.72	3.9	2.5	3.3	12.6	1.97	5.2	5.0
13	1.49	3.6	.86	.65	.65	3.5	3.1	1.19	7.8	1.97	5.8	4.5
14	3.5	2.7	*.79	.48	.59	3.2	8.0	1.02	6.1	1.84	5.2	5.1
15	2.1	2.25	.79	.48	.65	3.0	4.2	.94	5.2	1.72	4.3	4.1
16	1.49	2.1	.79	3.8	.89	2.85	2.85	.94	4.8	1.72	4.3	3.7
17	1.39	1.84	.79	3.25	4.9	2.55	2.55	.86	5.1	13.8	13.5	3.35
18	1.29	1.84	.72	1.02	1.29	2.85	2.4	.86	6.6	25.5	16.6	3.7
19	1.49	1.84	.72	.72	7.3	2.55	2.25	.86	8.1	6.7	37	3.35
20	1.29	1.72	.72	.59	3.35	2.25	2.1	1.19	4.8	3.9	59	4.7
21	1.19	1.60	.72	.59	1.60	5.1	1.97	1.29	5.0	3.0	15.4	4.3
22	1.49	1.97	.65	.59	1.29	4.2	*2.1	6.8	4.5	2.7	15.4	3.35
23	1.29	1.84	.65	.65	1.10	2.55	1.97	6.1	4.5	2.4	18.7	3.2
24	1.19	2.1	.65	.53	5.6	2.25	1.84	1.99	3.7	2.25	17.8	3.9
25	1.19	1.84	.59	.48	17.5	2.1	1.84	2.9	3.35	2.25	12.1	4.5
26	1.29	1.49	.65	.53	5.1	1.84	2.1	35.5	3.35	4.3	11.1	3.2
27	1.49	1.39	.65	*.65	3.0	7.8	1.72	3.7	3.0	2.8	12.5	3.35
28	1.97	1.29	.79	.53	2.25	5.8	1.60	2.4	2.85	2.1	21	6.6
29	*1.49	1.29	.72	.48	2.4	4.1	1.49	-	2.7	2.4	12.9	14.8
30	1.97	1.19	.72	.53	2.1	3.0	1.49	-----	2.55	4.1	10.7	6.6
31	2.9	1.19	-----	.53	-----	3.25	1.39	-----	2.4	-----	10.1	-----
Total	61.02	95.26	25.46	23.88	74.04	137.04	88.26	84.82	222.85	125.92	439.8	177.60
Mean:												
mgd	1.97	3.07	0.849	0.770	2.47	4.42	2.85	3.03	7.19	4.20	14.2	5.92
cfs	3.05	4.75	1.31	1.19	3.82	6.84	4.41	4.69	11.1	6.50	22.0	9.16
Ac-ft	187	292	76	73	227	421	271	260	684	386	1,350	545
Calendar year 1953. Max	93				Min 0.48	Mean(mgd)	2.83	Mean(cfs)	4.38	Ac-ft	3,170	
Fiscal year 1953-54: Max	59				Min 0.48	Mean(mgd)	4.26	Mean(cfs)	6.59	Ac-ft	4,770	

Peak discharge (base, 300 mgd).--Feb. 26 (3 p.m.) 480 mgd (743 cfs), 3.10 ft.
* Discharge measurement made on this day.

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 1954.

Gage--Water-stage recorder and concrete control. Prior to June 19, 1914, staff gage at same site and datum.

Average discharge--42 years (1911-15, 1916-54), 4.70 mgd (7.27 cfs).

Extremes--Maximum discharge during year, 172 mgd (266 cfs) Feb. 26 (gage height, 3.78 ft), from rating curve extended above 90 mgd by broad-crested weir formula; minimum daily, 0.68 mgd (1.05 cfs) Oct. 14.

1911-54: 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 except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Revisions (fiscal years)--WSP 755: 1931-32.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.2	0.34	1.6	4.2
1.3	.80	1.8	8.7
1.4	1.50	2.1	19.4
1.5	2.7	2.4	34.5

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.71	2.95	1.34	0.82	0.74	3.0	3.5	1.50	2.35	1.93	2.85	6.2
2	1.82	13.2	1.34	.76	.80	3.95	2.55	1.42	3.55	2.95	3.6	4.6
3	2.9	5.1	1.34	.75	.74	5.8	2.4	1.42	9.7	6.1	6.4	4.4
4	4.6	3.7	1.34	.70	.80	3.9	2.3	1.42	5.4	3.0	13.2	4.0
5	2.3	3.0	1.26	.75	2.6	4.9	3.95	1.42	13.2	2.3	5.8	3.7
6	1.93	3.0	1.19	.75	1.26	8.8	2.7	1.42	5.0	2.15	10.3	3.55
7	1.82	3.0	1.19	.70	1.05	5.6	2.55	1.34	4.2	2.05	6.0	4.6
8	1.71	2.55	1.19	.75	1.05	4.6	2.4	1.26	4.8	1.93	5.9	4.8
9	1.60	3.0	1.19	.75	1.26	4.8	2.15	1.26	4.8	1.82	4.4	4.2
10	1.60	2.4	1.19	.70	1.33	*3.9	2.05	1.26	11.4	1.82	3.9	3.7
11	1.60	2.3	1.12	.82	1.42	3.7	2.05	1.26	6.7	1.71	3.55	3.4
12	1.82	2.4	1.12	1.0	1.19	3.25	2.15	1.84	6.3	1.71	3.4	3.25
13	1.60	3.05	1.05	.80	1.12	3.1	2.5	1.42	4.8	1.71	3.55	3.0
14	2.7	2.55	1.05	.68	1.05	2.85	6.5	1.26	3.9	1.60	3.1	3.65
15	1.93	2.3	.98	.70	1.05	2.55	3.45	1.26	3.55	1.60	2.85	3.0
16	1.71	2.15	.98	2.0	1.22	2.4	2.55	1.19	3.25	1.60	3.0	2.7
17	1.60	2.05	.98	1.9	2.15	2.3	2.4	1.19	3.55	3.15	10.6	2.55
18	1.50	1.93	.92	1.0	1.50	2.4	2.3	1.12	4.1	4.3	15.0	2.55
19	1.71	1.93	.92	.85	3.8	2.15	2.15	1.12	4.7	2.05	18.0	2.4
20	1.50	1.82	.92	.76	2.35	2.05	2.05	1.34	3.25	1.82	29.5	3.15
21	1.50	1.71	.92	.76	1.71	3.4	2.05	1.42	3.0	1.71	8.8	3.0
22	1.60	1.93	.86	.76	1.60	3.05	1.93	1.28	2.7	*1.60	7.2	2.4
23	1.50	1.82	.86	.80	1.80	2.3	1.93	7.2	2.85	1.60	7.6	2.4
24	1.42	1.93	.80	.72	3.8	2.15	1.82	2.5	2.4	1.60	9.0	2.55
25	1.42	1.82	.80	.69	11.4	2.05	1.82	2.55	2.3	1.67	6.0	3.1
26	1.50	1.60	.80	.74	4.3	1.93	1.93	14.4	2.15	2.55	5.8	2.55
27	1.60	1.50	.86	*.80	3.1	4.9	1.71	3.45	2.15	2.05	5.7	2.4
28	1.93	1.50	1.0	.74	2.7	4.2	1.60	2.55	2.05	1.71	8.3	3.0
29	*2.3	1.50	.90	.69	2.4	3.1	1.60	-	1.93	1.90	5.6	7.0
30	1.93	1.42	.90	.74	2.3	2.7	1.50	-----	1.93	2.7	5.0	3.7
31	2.7	1.42	-----	.74	-----	3.05	1.50	-----	1.92	-----	5.0	-----
Total	59.06	82.53	31.31	26.12	63.39	108.83	74.04	62.07	133.78	66.39	228.90	105.50
Mean:	1.91	2.66	1.04	0.845	2.11	3.51	2.39	2.22	4.32	2.21	7.38	3.52
mgd	2.96	4.12	1.61	1.30	3.26	5.43	3.70	3.43	6.68	3.42	11.4	5.45
cfs	181	253	96	80	195	334	227	190	411	204	702	324
Ac-ft												
Calendar year 1953.	Max	39	Min	0.68	Mean(mgd)	2.20	Mean(cfs)	3.40	Ac-ft	2,460		
Fiscal year 1953-54.	Max	29.5	Min	0.68	Mean(mgd)	2.85	Mean(cfs)	4.41	Ac-ft	3,200		

Peak discharge (base, 150 mgd)--Feb. 26 (3 p.m.) 172 mgd (266 cfs), 3.78 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 28 to Oct. 26; discharge estimated on basis of records for nearby streams.

Honopou Stream near Huelo

Location.--Lat 20°53'20", long 156°15'05", on left bank just upstream from Wailea 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 1954.

Gage.--Water-stage recorder and concrete 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.--41 years (1911-14, 1916-54), 3.04 mgd (4.70 cfs).

Extremes.--Maximum discharge during year, 220 mgd (340 cfs) Feb. 26 (gage height, 3.21 ft), from rating curve extended above 70 mgd as explained below; minimum, 0.11 mgd (0.17 cfs) Oct. 24, 25, 29.

1910-54: Maximum discharge, 3,690 mgd (5,710 cfs) Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by model studies of station site; minimum, 0.01 mgd (0.02 cfs) for several days in 1933, 1934.

Remarks.--Records good. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 1219: 1913-50(M). WSP 1249: 1948-50(P).

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.03	0.9	5.0
.5	.48	1.1	8.6
.6	1.26	1.4	15.7
.7	2.3	1.7	25
.8	3.55	2.0	37

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.68	1.56	0.42	0.20	0.20	1.46	1.85	0.68	1.56	1.08	1.66	4.9
2	.68	9.1	.42	.20	.25	2.15	1.36	.68	2.15	1.83	1.99	3.85
3	1.79	2.45	.42	.20	.20	3.5	1.26	.60	5.7	3.95	3.3	3.85
4	2.45	1.66	.42	.15	.20	1.86	1.16	.60	3.05	1.66	9.2	3.4
5	.92	1.36	.42	.20	1.79	2.5	2.55	.68	9.7	1.26	4.4	3.05
6	.76	1.46	.36	.15	.48	5.3	1.46	.68	4.0	1.16	6.9	2.9
7	.68	1.46	.36	.15	.25	3.3	1.26	.60	3.4	1.08	4.7	3.85
8	.68	1.16	.36	.15	.25	2.7	1.26	.54	3.55	1.08	4.4	3.4
9	.68	1.51	.36	.20	.48	3.05	1.16	.54	3.4	1.00	3.3	3.05
10	.60	1.16	.36	.15	.34	2.3	1.08	.48	8.5	1.00	2.9	2.8
11	.60	1.08	.36	.25	.63	2.05	1.08	.54	4.9	.92	2.7	2.4
12	.76	1.08	.30	.36	.30	1.86	1.16	1.00	4.7	.84	2.55	2.3
13	.60	1.58	.30	.25	.30	1.76	1.30	.60	3.85	.92	2.55	2.2
14	1.80	*1.08	.30	.15	.25	*1.56	4.7	.48	3.3	.84	2.2	2.4
15	1.00	.92	.30	.15	.25	1.46	1.92	.48	3.05	.76	1.86	1.96
16	.68	.84	.30	1.29	.44	1.36	1.46	.48	2.7	.76	1.86	1.76
17	.60	.84	.30	.91	1.51	1.26	1.26	.42	2.8	1.96	6.7	1.66
18	.54	.76	.25	.36	.60	1.36	1.26	.42	3.3	2.5	8.7	1.66
19	.60	.76	.30	.20	2.45	1.16	1.16	.42	3.15	1.16	12.2	1.56
20	.54	.68	.30	.15	1.19	1.08	1.16	.54	2.3	1.00	25	1.99
21	.54	.68	.30	.20	.68	2.1	1.08	.68	2.05	.92	8.2	1.76
22	.60	.76	.30	.20	.54	1.74	1.08	2.25	1.86	.92	6.5	*1.46
23	.54	.76	.25	.20	.54	1.08	1.08	4.7	1.96	.92	6.4	1.36
24	.54	.76	.25	.15	2.15	1.00	1.00	1.22	1.66	.84	7.3	1.46
25	.54	.76	.25	.11	7.0	.92	1.00	1.58	1.56	.84	5.2	1.70
26	.54	.60	.25	.15	2.1	.84	1.00	14.3	1.56	1.46	4.9	1.26
27	.60	.54	.25	.15	1.46	3.6	.92	2.2	1.46	1.08	5.1	1.26
28	.92	.54	.30	.20	1.26	2.9	*.76	1.56	1.36	.84	6.2	1.66
29	1.08	.54	*.25	.11	1.16	1.66	.68	1.26	1.26	1.01	4.4	5.0
30	.92	.48	.25	.20	1.08	1.46	.68	1.16	1.16	1.87	4.1	1.96
31	1.47	.48	-----	.20	-----	1.54	.68	-----	1.08	-----	4.1	-----
Total	25.93	39.40	9.56	7.69	30.33	61.87	40.82	39.95	96.03	37.46	171.47	73.82
Mean:												
mgd	0.856	1.27	0.319	0.248	1.01	2.00	1.32	1.43	3.10	1.25	5.53	2.46
cfs	1.29	1.96	0.494	0.394	1.56	3.09	2.04	2.21	4.80	1.93	8.56	3.81
Ac-ft	80	121	29	24	93	190	125	123	295	115	526	227
Calendar year 1953: Max	31	Min	0.11	Mean(mgd)	1.15	Mean(cfs)	1.78	Ac-ft	1,290			
Fiscal year 1953-54: Max	25	Min	0.11	Mean(mgd)	1.74	Mean(cfs)	2.69	Ac-ft	1,950			

Peak discharge (base, 100 mgd).--Feb. 22 (11:30 p.m.) 170 mgd (263 cfs), 3.06 ft; Feb. 26 (2 p.m.) 220 mgd (340 cfs), 3.21 ft.

* Discharge measurement made on this day.

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Waioia 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 1954.

Gage.--Water-stage recorder.

Average discharge.--31 years (1923-54), 112 mgd (173 cfs).

Extremes.--1922-54: Maximum daily discharge, 195 mgd (302 cfs) for several days in March, April, May, and June 1954; no flow Jan. 24-27, 1923.

Remarks.--Records excellent. Waioia ditch receives water from Koolau ditch at Alo Stream and from all streams from Alo Stream west to Halehaku Stream at altitude of about 1,200 ft. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	59	164	47	41	47	110	138	33.5	108	63	128	195
2	64	180	47	27.5	53	146	82	33.5	*182	131	179	194
3	164	176	50	25	66	167	69	32	195	195	182	192
4	172	168	56	22	47	151	66	32	195	157	195	162
5	122	140	47	26	133	188	170	32	195	93	195	156
6	93	134	41	23.5	69	182	165	33.5	194	76	195	146
7	79	148	41	21	53	190	113	29	182	69	195	195
8	69	104	44	21	57	172	121	29	190	63	195	195
9	63	127	41	22	104	180	93	27.5	194	59	185	192
10	59	104	44	19.8	67	148	79	26	195	56	152	189
11	53	90	41	30	99	124	69	30	194	53	132	152
12	66	110	35	56	*59	108	71	146	194	53	132	140
13	53	162	33.5	42	50	97	66	50	192	53	156	128
14	153	153	32	26	44	88	132	35	160	50	172	146
15	91	108	32	23.5	47	79	104	30.5	140	53	140	112
16	63	90	30.5	154	54	72	72	29	116	54	130	101
17	56	79	29	161	176	69	63	27.5	123	162	195	101
18	56	72	27.5	74	108	69	59	26	185	195	195	128
19	92	76	27.5	47	148	66	56	26	146	180	195	112
20	66	66	27.5	41	137	59	53	37	112	128	195	148
21	56	59	30.5	36.5	93	102	50	51	106	93	195	159
22	72	89	27.5	33.5	76	147	47	33	110	82	195	112
23	66	91	26	41	67	79	47	109	106	79	195	97
24	59	107	25	32	159	66	44	73	97	66	195	161
25	59	107	25	29	194	59	53	167	79	64	195	149
26	76	69	25	35	176	56	51	163	76	165	195	108
27	136	58	23.5	97	124	132	41	147	76	*113	195	127
28	136	56	26	50	101	176	39.5	79	76	69	195	192
29	135	53	41	35	86	136	36	-	66	66	195	190
30	140	47	73	41	82	82	36.5	-----	59	86	195	191
31	153	47	-----	44	-----	82	35	-----	56	-----	195	-----
Total	2,781	3,234	1,096.0	1,377.3	2,776	3,592	2,323.0	1,567.0	4,299	2,826	5,588	4,570
Mean:												
mgd	89.7	104	36.5	44.4	92.5	116	74.9	56.0	139	94.2	180	152
cfs	139	161	56.5	68.7	143	179	116	86.8	215	146	279	235
Ac-ft	8,530	9,920	3,360	4,230	8,520	11,020	7,130	4,610	13,190	8,670	17,150	14,020
Calendar year 1953: Max	194			Min 19.8		Mean(mgd)	81.2	Mean(cfs)	126	Ac-ft	90,950	
Fiscal year 1953-54: Max	195			Min 19.8		Mean(mgd)	98.7	Mean(cfs)	153	Ac-ft	110,600	

* 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 1954.

Gage.--Water-stage recorder. Prior to May 15, 1921, at site 300 ft upstream at different datum.

Average discharge.--36 years, 26.8 mgd (41.5 cfs).

Extremes.--1918-54: 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 Walakamoi and Halehaku Streams 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 1953, to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	0.95	25.5	0.43	0.08	0.10	30	24	0.39	1.15	0.71	7.8	92	
2	.77	96	.39	.10	.10	71	1.48	.36	53	24	45	65	
3	33.5	88	.39	.10	.19	87	1.27	.28	87	82	53	26.5	
4	80	46	.36	.10	.10	66	1.20	.28	92	37.5	98	19.4	
5	6.2	9.6	.32	.08	46	69	61	.28	96	1.30	94	2.8	
6	1.20	4.6	.28	.08	1.24	98	37.5	.28	80	.98	96	3.25	
7	.98	17.7	.28	.08	.24	82	1.20	.26	69	.88	92	83	
8	.82	5.4	.28	.10	.15	26.5	1.41	.24	73	.77	92	69	
9	.77	12.8	.28	.10	27.5	41	1.09	.24	86	.71	38	42	
10	.71	2.65	.28	.15	.43	5.8	.98	.24	98	.66	4.8	30	
11	.66	1.27	.28	.21	35.5	3.0	.82	.24	98	.66	2.15	5.8	
12	.88	1.72	.28	.55	1.33	2.35	.77	31.5	92	.62	2.1	2.25	
13	.71	37	.24	.21	.19	1.76	.82	.66	58	.62	7.1	1.90	
14	19.1	*13.2	.21	.08	.13	1.48	20	.39	8.3	.62	32	7.5	
15	1.63	4.7	.19	.08	.10	1.20	11.4	.28	2.1	.58	1.90	1.99	
16	.98	3.0	.19	54	2.6	1.04	1.55	.28	1.63	.55	1.90	1.90	
17	.71	2.0	.19	62	82	.88	1.20	.28	2.6	50	79	1.76	
18	.66	.88	.19	1.50	22	.82	1.20	.26	50	96	98	1.83	
19	4.5	.88	.21	.26	55	.71	1.15	.26	34	53	101	1.55	
20	1.04	.82	.24	.15	57	.62	1.04	.28	5.4	1.04	103	30.5	
21	.77	.71	.24	.13	1.89	17.2	.98	1.02	1.83	.66	90	17.1	
22	.93	5.8	.24	.17	.77	33	.93	3.0	1.62	.62	96	1.20	
23	.98	9.5	.21	.17	.51	.93	.82	22	1.69	.62	98	1.15	
24	.88	4.4	.19	.19	59	.71	.77	2.4	1.34	.51	98	12.7	
25	.82	3.95	.19	.17	*92	.66	.66	38	1.20	.47	96	8.2	
26	.98	.66	.10	.21	48	.62	.66	52	1.15	29	90	1.20	
27	1.15	.58	.06	15.5	2.95	41	.62	29.5	1.09	*16.5	84	1.15	
28	4.2	.58	.06	.34	1.99	16.0	.58	1.72	.98	.66	101	59	
29	5.4	.55	.05	.10	1.48	6.3	.55	-	.95	.58	96	71	
30	2.9	.51	.06	.10	1.55	1.20	.47	-----	.77	.88	78	53	
31	24	.47	-----	.10	-----	1.80	.43	-----	.71	-----	66	-----	
Total	199.76	401.43	6.89	137.19	542.04	711.58	178.55	186.92	1,100.69	403.70	2,031.75	715.63	
Mean:	mgd	6.44	12.9	0.230	4.43	18.1	23.0	5.76	6.68	35.5	13.5	65.5	23.9
	cfs	9.96	20.0	0.355	6.85	28.0	35.6	8.91	10.3	54.9	20.9	101	37.0
Ac-ft		613	1,230	21	421	1,660	2,180	548	574	3,380	1,240	6,240	2,200
Calendar year 1953.	Max	98	Min	0.05	Mean(mgd)	10.6	Mean(cfs)	16.4	Ac-ft	11,910			
Fiscal year 1953-54:	Max	103	Min	0.05	Mean(mgd)	10.1	Mean(cfs)	28.0	Ac-ft	20,310			

* Discharge measurement made on this day.

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 Walloa ditch trail crossing in Honopou Gulch, 2.0 miles southwest of Huelo, 2.3 miles west of Kailua, and 5.0 miles east of Haku.

Records available.--January 1918 to June 1922, November 1936 to June 1954.

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

Average discharge.--21 years (1918-22, 1937-54), 2.42 mgd (3.74 cfs).

Extremes.--1918-22, 1936-54: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Walloa 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.02	0.15	0.02	0	a0	0.10	0.19	0.03	0.06	0.05	0.10	0.10
2	.02	<u>28</u>	.02	0	a0	.53	.08	.03	.18	.10	.23	.10
3	.45	7.3	.02	0	a0	2.35	.06	.03	8.1	5.1	7.5	.13
4	<u>7.2</u>	.71	.02	0	.02	.37	.05	.03	4.0	.22	31	.13
5	.10	.08	.02	0	.94	.48	<u>1.17</u>	.03	20	.10	4.6	.12
6	.04	.05	.01	0	.08	<u>12.2</u>	.20	.03	.21	.07	21	.12
7	.03	.05	.01	0	.04	.55	.08	.03	.38	.06	1.94	.12
8	.02	.05	.01	0	.03	.21	.05	.02	1.18	.05	1.60	.13
9	.02	.05	.01	0	.07	.19	.04	.02	4.0	.05	.21	.12
10	.02	.04	.01	0	.05	.13	<u>0.03</u>	.02	<u>21.5</u>	.05	.12	.12
11	.02	.03	.01	.01	1.46	.08	.03	.02	9.8	.05	.08	.10
12	.02	.03	.01	0	.06	.07	.03	.02	*7.9	.05	.07	.08
13	.02	.13	.01	0	.04	.05	.04	.06	.26	.05	.07	.08
14	.05	.08	.01	0	.03	.04	.41	.04	.15	.05	.10	.13
15	.05	.05	.01	0	.03	.04	.19	.03	.10	.04	.08	.10
16	.03	.03	.01	1.22	.04	.03	.08	.03	.08	.06	.07	.08
17	.02	.03	.01	<u>1.63</u>	2.95	.03	.07	.03	.11	6.4	11.1	.08
18	.02	<u>02</u>	.01	.06	.22	.04	.05	.02	.23	<u>15.9</u>	19.6	.07
19	.02	.02	.01	.02	6.0	.03	.05	.03	1.71	.21	32.5	.07
20	.02	.02	.01	.01	1.21	.03	.05	.03	.16	.08	<u>35.5</u>	.10
21	.02	.02	.01	a.01	.12	.14	.05	.04	.12	.06	5.7	.16
22	.02	.02	.01	a.01	.07	.27	.05	.14	.08	.05	11.0	.08
23	.02	.02	.01	a0	.05	.07	.04	4.4	.08	.05	20.5	.05
24	.02	.03	a.01	a0	2.2	.04	.04	.15	.08	.04	20.5	.05
25	<u>.01</u>	.02	a.01	a0	* <u>15.4</u>	.03	.04	.16	.07	.04	2.15	.07
26	.02	.02	a.02	a0	1.75	.03	.03	<u>12.6</u>	.07	.04	.10	.05
27	.02	.02	a.01	a0	.13	1.53	.03	.25	.06	.10	.10	.05
28	.03	.02	a.02	a0	.08	.26	.03	.08	.06	.06	.13	.19
29	.05	.02	a.01	a0	.06	.15	.03	-	.06	.07	.12	.19
30	.04	.02	0	a0	.05	.08	.03	-	.05	.10	.08	.25
31	.10	.02	-----	a0	-----	.08	.03	-----	.05	-----	.08	-----
Total	8.54	37.15	0.36	2.97	35.18	20.23	3.35	18.40	80.89	29.35	227.93	11.13
Mean:												
mgd	0.275	1.20	0.012	0.096	1.11	0.653	0.108	0.657	2.61	0.978	7.35	0.371
cfs	0.425	1.86	0.019	0.149	1.72	1.01	0.167	1.02	4.04	1.51	11.4	0.574
Ac-ft	26	114		9.1	102	62	10	56	248	90	699	34

Calendar year 1953. Max 28 Min 0 Mean(mgd) 0.663 Mean(cfs) 1.03 Ac-ft 742
 Fiscal year 1953-54: Max 35.5 Min 0 Mean(mgd) 1.30 Mean(cfs) 2.01 Ac-ft 1,450

* Discharge measurement made on this day.

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

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 1954. Published as "at Opana weir" 1910-27.

Gage.--Water-stage recorder and concrete control. Datum of gage is 598.0 ft above mean sea level, datum of 1929. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 miles downstream at different datum.

Average discharge.--40 years (1910-26, 1930-54), 28.6 mgd (44.3 cfs).

Extremes.--1910-27, 1930-54: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Records good except those for periods of no recorder record, which are fair. Lowrie ditch diverts water from all streams between Kailua and Halehaku Streams. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.1	16.6	4.5	2.2	2.2	15.4	27.5	5.0	20	8.8	10.1	50
2	4.9	51	4.3	1.71	2.45	33	10.4	4.8	38	12.1	23.5	26
3	12.8	50	4.3	1.60	2.45	39.5	10.5	4.5	51	45	30	20
4	48	29.5	4.3	1.49	1.96	23.5	16.6	4.3	55	28	55	19.6
5	12.7	16.6	4.2	1.60	21.5	31	41	4.3	57	12.4	52	25
6	15.6	20	3.9	1.60	8.8	52	*28	4.8	48	19.5	52	22
7	10.5	22.5	4.5	1.39	8.2	46	17.8	4.2	40	27	49	44
8	13.5	16.2	5.3	1.49	6.9	30	19.9	5.9	*47	10.3	52	48
9	12.3	15.6	4.2	1.83	4.3	26	11.9	3.7	51	8.8	34.5	25
10	7.2	13.7	4.0	1.49	3.25	*14.8	8.2	3.55	52	8.4	17.4	20
11	5.0	10.6	4.0	3.25	5.6	16.6	15.0	3.4	52	8.2	19.0	17.7
12	6.5	10.4	3.4	4.1	3.1	12.4	7.6	18.7	52	8.0	21.5	16.6
13	5.0	*23	3.1	3.9	2.35	9.1	7.4	11.3	41	7.8	18.6	11.4
14	10.8	16.9	2.95	2.35	2.1	8.0	32	4.2	16.6	7.8	25.5	24.5
15	8.8	11.9	2.7	1.96	1.96	8.3	23.5	9.0	15.7	7.4	16.8	16.6
16	5.4	13.6	2.7	30	2.45	15	11.8	3.95	21.5	6.9	11.2	15.4
17	4.8	14.5	2.7	43	*39	13	9.9	3.25	25.5	28	45	14.7
18	4.5	9.1	2.45	25	21	12	10.6	2.85	32.5	52	55	13.7
19	6.2	8.8	2.45	10	28.5	8.0	10.2	2.85	36	32	55	10.2
20	5.0	8.2	2.45	4.1	29	6.9	9.1	3.4	20	18	57	16.1
21	4.2	7.4	2.45	2.7	16.8	9.4	8.4	6.3	18.0	20	55	22.5
22	4.3	7.6	2.35	2.2	19	32	8.0	4.3	19.0	7.1	53	11.0
23	4.2	10.2	2.1	2.45	6.5	12	7.6	36	20	6.1	55	9.3
24	3.9	9.1	2.1	2.2	31	13	7.1	14	19.6	5.2	39	12.4
25	3.9	8.4	1.83	1.83	51	8.8	6.9	30	21.5	5.0	46	14.9
26	4.3	6.5	1.83	2.2	38	7.8	7.1	40	15.4	17.2	55	9.9
27	4.3	5.8	1.83	5.0	12.2	24	6.5	32	10.8	22	48	9.1
28	6.1	5.8	2.1	3.9	12.4	19	5.9	15	9.9	5.0	25.5	30.5
29	10.4	5.6	*1.83	2.6	9.0	21	5.8	-	9.1	5.1	6.5	36.5
30	7.4	5.0	2.2	2.35	16.6	22.5	5.4	-----	8.8	9.7	4.2	35.5
31	9.9	4.8	-----	2.35	-----	10.3	5.2	-----	8.0	-----	26.5	-----
Total	268.5	454.7	95.02	173.84	409.57	599.3	402.8	283.55	931.9	458.8	1,113.8	662.1
Mean:	8.66	14.7	3.10	5.61	13.7	19.3	13.0	10.1	30.1	15.3	35.9	22.1
mgd	13.4	22.7	4.80	8.68	21.2	29.9	20.1	15.6	46.8	23.7	55.5	34.2
cfs	824	1,400	285	533	1,260	1,840	1,240	870	2,960	1,410	3,420	2,030
Ac-ft												
Calendar year 1953.	Max 55			Min 1.39		Mean(mgd) 11.0		Mean(cfs) 17.0		Ac-ft 12,290		
Fiscal year 1953-54.	Max 57			Min 1.39		Mean(mgd) 16.0		Mean(cfs) 24.8		Ac-ft 17,970		

* Discharge measurement made on this day.

Note.--No recorder record Dec. 14-28, Feb. 23 to Mar. 8, Apr. 7-22; discharge computed from graph based on twice-daily gage readings (from East Maui Irrigation Co. long-distance recorder).

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 1954. Published as "at Peahi weir" January 1910 to June 1919 (corrected), as "at Manawal Gulch" July 1919 (corrected) to December 1928, and as "as 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, datum of 1929. Jan. 1, 1910, to Oct. 6, 1914, water-stage recorder at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, water-stage recorder at site 2.9 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, water-stage recorder at site 0.9 mile downstream at different datum.

Average discharge.--42 years (1910-28, 1930-54), 21.1 mgd (32.6 cfs).

Extremes.--1910-28, 1930-54: 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 except those for period of no gage-height record, which are fair. 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 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.19	0.26	0.26	0	0.02	0.05	2.4	0.26	1.84	0.51	0.20	22
2	.06	.53	.26	0	.02	4.0	.62	.26	26	.73	.37	11.3
3	.44	33.5	.28	0	.03	24	.44	.26	37.5	34	25	2.1
4	.45	1.58	.26	0	.03	.51	.40	.24	58	1.12	57	1.50
5	.70	.90	.26	0	4.4	16.8	35.5	.24	67	.62	30.5	1.15
6	.44	.80	.22	0	.32	60	.24	26	.51	.47	1.05	
7	.34	.80	.25	0	.20	8.2	.54	.22	9.0	.44	23	3.35
8	.30	.65	.28	0	.18	1.21	.44	.20	*21	.37	38	a24
9	.30	.58	.28	0	.18	.58	.37	.20	35.5	.30	3.6	a1.2
10	.28	.51	.18	0	.20	.35	.28	.20	52	.26	.65	a1.0
11	.24	.44	.05	0	.20	.28	.24	.20	54	.24	.44	a.90
12	.30	.48	.05	0	.18	.16	.22	.22	43	.22	.34	a.80
13	.26	1.92	.06	0	.16	.09	.26	.26	9.5	.22	.34	a.75
14	.44	.70	.05	0	.11	.07	3.55	.22	2.45	.20	.30	a1.1
15	.34	.51	.05	0	.03	.06	2.2	.22	2.1	.18	.22	a.75
16	.30	.44	.05	21	.04	.06	.75	.22	1.78	.16	.20	a.65
17	.34	.44	.05	28	*22	.06	.58	.22	2.6	26.5	25.5	a.62
18	.28	.37	.05	28	.39	.08	.51	.20	3.5	55	59	a.60
19	.34	.34	.05	.04	28	.05	.44	.09	9.4	2.35	63	a.55
20	.28	.34	.05	.04	14.6	.05	.44	.01	1.71	.37	64	a.62
21	.13	.30	.05	.04	.18	1.15	.40	.02	1.43	.28	39	a.58
22	.05	.34	.05	.04	.14	6.5	.35	.03	1.22	.24	33	.51
23	.05	.37	.05	.04	.12	.08	.30	7.8	1.36	.20	67	.51
24	.06	.44	.04	.04	18.9	.06	.30	1.64	1.05	.14	67	.58
25	.05	.34	.01	.03	59	.06	.30	9.6	.95	.16	42	.58
26	.10	.28	.01	.03	20.5	.17	.30	18.9	.90	1.33	21	.48
27	.05	.28	.01	.02	.16	.16	.30	14.9	.80	2.4	18.2	.44
28	.05	.28	.01	.01	.06	2.8	.28	2.35	.65	.12	67	6.5
29	.19	.26	0	.01	.06	1.47	.28	-	.65	.23	66	35.5
30	.20	.26	0	.02	.06	.70	.28	-----	.58	.37	41	3.15
31	.18	.28	-----	.02	-----	.68	.26	-----	.51	-----	11.8	-----
Total	52.28	101.99	3.28	77.38	170.49	138.43	60.03	59.42	473.98	129.75	911.66	124.82
Mean:												
mgd	1.69	3.29	0.109	2.50	5.68	4.47	1.94	2.12	15.3	4.32	29.4	4.16
cfs	2.61	5.09	0.169	3.97	8.79	6.92	3.00	3.28	23.7	6.68	45.5	6.44
Ac-ft	160	513	10	237	523	425	194	192	1,450	398	2,900	353
Calendar year 1953: Max	67			Min 0		Mean(mgd)	3.03	Mean(cfs)	4.69	Ac-ft	3,400	
Fiscal year 1953-54: Max	67			Min 0		Mean(mgd)	6.31	Mean(cfs)	9.76	Ac-ft	7,060	

* Discharge measurement made on this day.

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

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--July 1939 to August 1943, September 1947 to June 1954. Records for January 1913 to December 1914 (fragmentary), at site 1 mile upstream, not equivalent owing to difference in drainage area.

Gage--Water-stage recorder and concrete control.

Average discharge--9 years (1940-43, 1948-54), 11.3 mgd (17.5 cfs).

Extremes--Maximum discharge during year, 430 mgd (665 cfs) Mar. 1 (gage height, 6.04 ft), from rating curve extended above 46 mgd on basis of slope-area determination at gage height 8.35 ft; minimum, 1.95 mgd (3.02 cfs) Feb. 9-11.
1939-43, 1947-54: Maximum discharge, 1,990 mgd (3,080 cfs) Dec. 14, 1942 (gage height, 7.02 ft, control then in use), from rating curve extended above 55 mgd by test on model of station site; minimum, that of Feb. 9-11, 1954.

Remarks--Records good.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

2.7	1.45	3.4	19.0
2.8	2.55	3.7	36
2.9	4.0	4.0	59
3.1	8.2	4.5	116

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.0	10.1	3.2	3.55	3.95	8.2	12.7	2.2	18.7	2.8	19.3	8.8
2	3.65	28.5	3.2	2.7	2.8	5.7	4.5	2.2	25	7.8	19.4	6.4
3	9.0	8.5	3.55	2.55	2.8	21	3.8	2.2	19.2	17.1	37.5	6.4
4	37.5	6.4	3.2	2.45	2.7	10.4	3.8	2.2	24.5	9.5	28.5	5.5
5	7.8	10.2	3.2	2.55	21	14.4	10.9	2.3	40	4.2	16.3	5.5
6	6.4	22	3.05	2.7	8.9	12.9	4.3	2.2	7.3	3.5	*34	4.7
7	4.4	12.9	3.5	2.45	4.9	6.4	7.9	2.2	5.4	3.05	9.0	9.0
8	4.2	7.9	4.4	2.7	4.7	5.1	6.2	2.2	13.6	2.95	9.1	6.9
9	4.0	7.3	3.95	2.7	5.4	5.3	4.8	*2.05	11.0	2.8	6.0	5.5
10	3.65	6.1	4.0	2.45	4.7	4.5	3.65	1.95	16.0	2.7	4.7	4.5
11	3.35	4.7	3.05	6.3	9.0	6.2	3.35	2.15	7.0	2.55	4.4	4.4
12	6.1	14.1	2.95	5.2	3.35	5.5	3.05	12.8	7.0	2.55	4.2	4.7
13	3.65	16.5	2.8	3.2	*2.8	6.7	2.95	5.1	8.1	2.45	4.4	4.5
14	6.7	19.0	2.8	2.7	2.7	8.9	3.6	2.55	4.2	5.9	4.4	17.5
15	10.3	6.8	2.7	2.55	2.7	4.2	6.7	2.3	3.8	4.3	4.0	5.8
16	7.8	5.1	2.7	21	2.95	3.5	3.35	2.2	3.5	2.8	4.4	4.9
17	4.5	4.4	2.7	5.6	4.9	3.2	2.95	2.05	14.3	15.0	39.5	4.7
18	4.4	*4.2	2.55	3.45	3.05	3.5	2.8	2.05	22.5	32	63	4.5
19	4.2	4.4	2.55	3.35	6.8	3.65	2.8	2.05	8.4	6.5	59	4.2
20	3.65	5.0	2.55	2.7	4.2	2.95	2.7	2.2	7.9	3.65	51	5.1
21	3.65	4.0	2.55	2.55	2.95	18.5	2.7	3.85	14.4	3.05	18.9	5.1
22	6.5	12.3	2.7	2.55	4.9	28.5	2.55	3.05	7.3	3.05	9.2	4.2
23	4.2	10.2	2.55	2.55	4.0	5.3	2.55	13.8	7.6	2.95	14.3	5.6
24	3.65	9.7	2.55	2.45	17.5	4.0	2.55	7.7	4.5	3.1	15.5	12.3
25	3.65	6.6	2.55	2.3	53	3.5	2.45	14.3	3.65	4.1	7.5	18.5
26	13.1	4.5	2.7	4.4	8.4	3.35	2.55	4.6	4.7	4.4	10.6	5.3
27	5.5	3.8	2.55	3.95	4.5	29.5	2.45	2.95	4.0	5.6	11.4	4.5
28	6.4	4.2	2.7	2.8	4.4	*13.4	2.45	2.7	3.35	3.05	27.5	5.9
29	13.9	3.65	3.0	2.45	4.5	5.6	2.3	-	3.05	4.0	8.2	*18.1
30	6.1	3.5	*5.4	2.55	4.6	4.4	2.3	-----	2.95	10.3	6.8	7.1
31	7.2	3.35	-----	2.8	-----	4.2	2.3	-----	2.8	-----	17.7	-----
Total	213.10	269.90	91.65	114.20	213.05	262.45	123.95	110.10	325.70	177.70	569.7	210.1
Mean:												
mgd	6.87	8.71	3.06	3.68	7.10	8.47	4.00	3.93	10.5	5.92	18.4	7.00
cfs	10.6	13.5	4.73	5.69	11.0	13.1	6.19	6.08	16.2	9.16	28.5	10.8
Ac-ft	654	828	281	350	654	805	380	358	1,000	545	1,750	645
Calendar year 1953: Max	101		Min	2.3	Mean(mgd)	6.74	Mean(cfs)	10.4	Ac-ft	7,540		
Fiscal year 1953-54: Max	63		Min	1.95	Mean(mgd)	7.35	Mean(cfs)	11.4	Ac-ft	8,230		

Peak discharge (base, 400 mgd)--Mar. 1 (11 p.m.) 430 mgd (665 cfs), 6.04 ft.

* 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 1954.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 950 ft (by barometer).

Average discharge.--36 years (1916-20, 1922-54), 25.0 mgd (38.7 cfs).

Extremes.--Maximum discharge during year, 605 mgd (936 cfs) Mar. 1 (gage height, 5.08 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 6.9 mgd (10.7 cfs) Feb. 9-11, 18, 19.

1913-20, 1922-54: 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.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.8	5.2	2.5	34.5
1.9	7.3	2.9	67
2.2	17.1	3.5	147

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.7	30	9.5	8.7	15.3	21	32	7.3	17.5	7.6	11.9	26
2	11.2	113	9.3	8.4	9.9	28	16.3	7.3	68	13.5	13.7	12.6
3	62	30.5	11.8	8.1	9.3	46	9.0	7.3	60	17.0	47	27
4	83	17.7	10.7	8.1	8.4	28.5	9.3	7.3	65	9.8	76	22.5
5	15.2	16.3	9.8	8.7	95	35	73	7.6	76	8.1	17.5	14.8
6	13.1	23.5	9.3	8.7	15.4	65	10.7	7.3	16.3	7.9	60	18.4
7	*10.7	58	9.8	8.1	9.5	23	10.4	7.1	19.3	7.6	13.5	42
8	10.7	21	9.5	8.7	12.1	14.0	9.5	7.1	45	7.6	10.7	16.6
9	10.4	25	19.6	11.0	16.6	18.2	9.0	7.1	31.5	7.6	9.3	13.4
10	9.5	13.6	12.4	8.4	16.0	12.5	8.4	6.9	64	7.3	8.4	11.0
11	9.3	11.3	9.3	12.8	24	15.5	8.1	*7.9	18.8	7.3	8.1	11.0
12	17.8	23	9.0	14.8	8.7	11.2	7.9	33.5	33	7.3	8.1	15.3
13	9.8	29	9.0	9.5	8.1	12.4	7.9	12.3	14.3	7.3	8.1	12.0
14	53	15.8	8.7	8.4	7.9	12.3	8.4	7.6	9.5	7.6	8.1	34
15	18.0	11.3	8.7	8.7	8.4	9.0	9.0	7.3	9.3	7.3	7.9	16.1
16	12.6	10.7	8.7	73	26.5	8.1	7.9	7.3	8.7	7.3	8.1	26
17	10.1	10.1	8.7	13.5	22	7.9	7.9	7.1	22.5	83	22	14.8
18	13.2	10.1	8.7	11.3	9.8	8.4	7.9	7.1	27	60	57	14.0
19	19.8	*11.0	8.7	10.4	32.5	7.9	7.9	7.1	9.5	11.6	76	14.1
20	11.9	16.7	8.7	8.4	11.1	7.9	7.9	11.0	15.1	8.7	79	23
21	10.1	10.4	8.7	8.1	8.4	17.7	7.6	12.0	12.4	8.1	16.6	14.4
22	20	14.4	8.7	9.0	8.1	42	7.6	11.9	10.1	8.1	38	11.0
23	10.4	22	8.7	10.7	7.9	9.8	7.3	26.5	18.9	7.9	24.5	32
24	9.8	36	8.7	8.4	46	8.4	7.3	10.2	9.3	7.9	28	32
25	10.7	14.9	8.7	8.1	139	7.9	7.3	26.5	8.4	7.6	15.9	45
26	27.5	10.7	8.7	12.1	15.8	7.9	7.3	9.4	8.7	8.3	24	12.3
27	15.6	9.8	10.1	9.3	10.1	42	7.3	7.9	8.4	9.3	91	13.0
28	38.5	11.1	11.8	8.1	10.2	19.2	7.3	7.3	8.1	7.6	51	22
29	50	10.1	10.4	7.9	14.5	9.8	7.3	-	7.9	27	14.6	29.5
30	19.5	9.5	9.3	10.8	10.1	*8.4	7.3	-----	7.9	16.6	23	*20
31	18.9	9.5	-----	11.5	-----	23	7.3	-----	7.6	-----	61	-----
Total	643.0	656.0	293.7	361.5	636.6	587.9	349.3	292.2	738.0	409.8	936.0	615.8
Mean:												
mgd	20.7	21.2	9.79	11.7	21.2	19.0	11.3	10.4	23.8	13.7	30.2	20.5
cfs	32.0	32.8	15.1	18.1	32.8	29.4	17.5	16.1	36.8	21.2	46.7	31.7
Ac-ft	1,970	2,010	901	1,110	1,950	1,800	1,070	897	2,260	1,260	2,970	1,890
Calendar year 1953:	Max 173	Min 7.9	Mean(mgd) 17.4	Mean(cfs) 26.9	Ac-ft 19,520							
Fiscal year 1953-54:	Max 139	Min 6.9	Mean(mgd) 17.9	Mean(cfs) 27.7	Ac-ft 19,990							

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

* Discharge measurement made on this day.

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 southeast of Lahaina.

Records available.--August 1911 to June 1954.

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.--36 years (1917-20, 1921-54), 4.89 mgd (7.57 cfs).

Extremes.--1911-54: 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 for irrigation and power. Regulated by headgates.

Cooperation.--Records of daily discharges furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	5.6	2.25	1.84	1.94	2.05	3.1	2.1	2.25	2.45	3.1	9.0
2	2.3	9.6	2.2	1.84	1.85	3.7	2.95	2.1	4.2	2.55	3.1	7.6
3	2.8	9.2	2.3	1.78	1.73	5.0	2.9	2.1	7.4	2.65	4.8	7.1
4	8.8	7.6	2.2	1.78	1.66	4.7	3.0	2.05	8.4	2.45	9.1	7.2
5	2.9	5.6	2.2	1.90	3.0	4.5	3.4	2.7	9.1	2.4	8.2	6.1
6	4.1	4.7	2.1	1.82	2.55	8.5	4.4	2.2	8.4	2.35	8.7	5.2
7	3.5	5.3	2.15	1.72	2.05	6.5	4.6	1.99	8.6	2.3	7.0	6.0
8	3.15	5.6	2.1	1.77	2.3	4.8	4.3	1.99	9.0	2.2	5.4	5.5
9	2.9	4.9	2.15	1.90	2.55	4.0	3.7	2.0	8.9	2.15	4.4	5.1
10	2.05	4.2	2.1	1.74	2.45	2.25	3.25	2.0	9.2	2.15	3.85	4.4
11	2.5	3.7	2.0	1.80	3.9	3.0	3.05	2.0	8.7	2.1	3.5	3.9
12	3.4	4.3	2.0	1.92	2.25	2.8	2.9	2.65	8.4	2.05	3.5	3.8
13	2.6	5.0	2.0	1.83	2.0	2.75	2.75	2.5	6.4	1.99	3.0	3.55
14	5.6	4.3	1.96	1.75	1.92	2.75	2.65	2.15	5.0	1.99	2.85	4.4
15	4.4	3.7	1.91	1.77	1.90	2.45	2.6	1.99	5.0	1.99	2.75	4.3
16	3.5	3.25	1.91	5.3	2.5	2.3	2.5	1.94	3.9	1.99	2.65	3.7
17	5.1	3.15	1.90	2.85	2.75	2.25	2.4	1.87	4.8	5.2	2.7	3.55
18	2.95	3.0	1.88	2.25	1.91	5.0	2.45	1.88	8.9	5.9	3.35	3.35
19	2.95	2.85	1.97	2.05	3.2	3.85	5.0	1.86	6.9	4.1	8.7	3.2
20	2.8	2.9	1.99	1.94	2.35	3.8	3.15	2.05	5.6	3.2	8.9	3.75
21	2.65	2.65	1.90	1.89	1.97	3.45	2.85	2.0	4.8	2.8	8.3	3.3
22	2.7	2.7	1.86	1.85	1.86	6.0	2.7	2.35	4.4	2.9	7.1	3.05
23	2.5	2.7	1.80	1.80	1.80	4.1	2.5	2.45	5.0	2.7	7.4	4.2
24	2.35	4.7	1.83	1.75	3.3	3.1	2.4	2.2	3.8	2.45	6.9	4.7
25	2.35	3.1	1.80	1.76	8.0	2.95	2.3	5.3	3.45	2.3	5.6	6.8
26	3.55	2.7	1.80	1.96	6.9	2.75	2.3	3.3	3.25	2.4	5.6	5.0
27	3.15	2.5	1.81	1.79	4.5	6.2	2.25	2.6	3.05	2.35	6.8	4.1
28	4.5	2.6	1.94	1.71	3.65	8.4	2.15	2.25	2.95	2.25	9.6	6.0
29	5.7	2.45	1.86	1.67	3.3	5.6	2.15	-	2.7	8.2	9.0	5.8
30	5.6	2.35	1.86	1.75	2.95	4.2	2.15	-----	2.65	5.7	8.1	5.0
31	5.1	2.3	-----	1.85	-----	3.5	2.1	-----	2.55	-----	8.0	-----
Total	108.75	129.20	59.73	61.31	84.99	127.20	92.90	64.57	177.65	88.21	181.95	148.65
Mean:												
mgd	3.51	4.17	1.99	1.98	2.83	4.10	3.00	2.31	5.73	2.94	5.87	4.96
cfs	5.43	6.45	3.08	3.06	4.38	6.34	4.64	3.57	8.87	4.55	9.08	7.67
Ac-ft	334	396	183	188	261	390	285	198	545	271	558	456
Calendar year 1953:	Max 9.6			Min 1.66		Mean(mgd) 3.15		Mean(cfs) 4.87		Ac-ft 3,530		
Fiscal year 1953-54:	Max 9.6			Min 1.66		Mean(mgd) 3.63		Mean(cfs) 5.62		Ac-ft 4,060		

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 1954.

Gage.--Water-stage recorder and combined Parshall flume and concrete weir. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--23 years (1931-54), 7.16 mgd (11.1 cfs).

Extremes.--Maximum discharge during year, 62 mgd (96 cfs) Nov. 16 (gage height, 3.47 ft); minimum, 0.29 mgd (0.45 cfs) Feb. 24, May 2.

1930-54: 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. Large part of flow comes from three tunnels. Water is used for fluming sugarcane.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.15	1.0	5.2
.2	.45	1.5	9.7
.3	.80	2.0	15.1
.5	1.76		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.6	2.15	2.05	2.5	1.12	6.7	3.8	2.15	12.3	2.45	0.35	11.2
2	3.45	10.5	1.93	1.88	1.07	6.7	3.25	1.99	12.9	2.3	.32	10.7
3	3.45	8.7	1.76	1.61	1.16	9.7	3.25	1.88	12.4	2.15	.80	10.7
4	3.45	7.7	1.61	1.40	1.19	8.7	3.2	1.76	12.9	2.35	.64	10.2
5	3.3	6.4	1.50	1.25	2.4	9.6	6.9	1.66	11.8	1.99	.86	9.7
6	3.05	6.9	1.40	1.12	2.15	12.8	5.9	1.56	11.2	1.82	.58	9.2
7	2.85	8.2	1.25	.98	2.3	12.9	5.2	1.45	10.2	1.66	.54	9.2
8	2.7	7.7	1.20	.89	1.99	*13.4	4.8	1.35	9.7	1.56	.58	9.7
9	2.6	7.2	1.22	.76	1.95	15.4	4.4	*1.30	9.2	1.40	.87	9.7
10	2.45	6.7	1.61	.69	1.95	12.9	4.1	1.25	9.7	1.35	.80	9.7
11	2.3	6.4	1.07	.62	1.99	12.4	4.0	1.16	9.7	1.20	.69	9.2
12	2.15	6.4	.98	.73	1.71	11.8	4.0	1.02	9.7	1.16	.62	8.7
13	1.99	6.4	.94	.73	1.66	11.2	3.95	.98	8.7	1.07	.62	8.7
14	1.82	5.8	.80	.54	1.61	10.7	3.8	.84	8.2	*1.02	.62	8.2
15	1.71	5.4	.73	.50	1.56	10.2	3.75	.80	7.7	.84	.62	7.7
16	1.56	5.1	.69	.73	6.7	9.2	3.65	.76	7.2	.80	.65	7.2
17	1.45	4.8	.72	.76	14.8	8.2	3.45	.65	6.7	.78	.81	*7.2
18	1.40	4.6	.73	.58	9.7	7.7	3.3	.58	6.4	3.75	2.5	6.7
19	1.35	4.2	.65	.58	10.1	7.2	3.3	.50	6.0	1.25	11.6	6.7
20	1.25	4.0	.87	.47	9.2	6.4	3.2	.43	5.5	1.02	9.7	7.2
21	1.16	3.9	1.17	.97	9.2	6.0	3.05	.37	5.0	.94	7.7	7.2
22	1.28	3.6	.73	1.90	9.2	5.5	2.9	.37	4.7	.80	6.7	6.7
23	1.50	3.3	.62	1.99	9.2	5.0	2.7	.35	4.4	.84	5.8	6.7
24	1.20	3.6	.54	1.58	8.7	4.6	2.6	.37	4.1	.78	6.4	6.4
25	1.02	*3.4	.50	1.45	8.7	4.2	4.1	10.9	3.9	.65	7.2	6.4
26	1.27	3.25	.54	1.56	8.7	4.0	3.2	12.3	3.6	.62	7.7	6.0
27	1.45	2.9	.69	*1.69	8.2	3.95	2.85	11.8	3.4	.54	8.2	5.9
28	1.25	2.65	.69	1.82	7.7	3.75	2.65	10.2	3.2	.47	9.7	6.7
29	1.35	2.55	.73	1.45	7.2	3.6	2.6	-	2.9	.43	11.8	6.4
30	1.93	2.4	2.95	1.40	7.2	3.4	2.45	-----	2.7	.40	10.7	6.0
31	2.15	2.3	-----	1.25	-----	3.85	2.3	-----	2.55	-----	10.7	-----
Total	63.44	159.10	32.87	36.36	160.87	249.65	112.60	70.73	228.55	38.37	127.37	241.9
Mean:												
mgd	2.05	5.13	1.10	1.17	5.36	8.05	3.63	2.53	7.37	1.28	4.11	8.06
cfs	3.17	7.94	1.70	1.81	8.29	12.5	5.62	3.91	11.4	1.98	6.36	12.5
Ac-ft	195	488	101	112	494	766	346	217	701	118	391	742

Calendar year 1953. Max 46 Min 0.12 Mean(mgd) 5.08 Mean(cfs) 7.86 Ac-ft 5,690
 Fiscal year 1953-54: Max 14.8 Min 0.32 Mean(mgd) 4.17 Mean(cfs) 6.45 Ac-ft 4,670

Peak discharge (base, 50 mgd).--Nov. 16 (10:30 p.m.) 62 mgd (96 cfs), 3.47 ft; Feb. 26 (1:30 p.m.) 56 mgd (87 cfs), 3.33 ft.
 * Discharge measurement made on this day.

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 1954.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--23 years (1929-40, 1941-47, 1948-54), 171 mgd (265 cfs).

Extremes.--Maximum discharge during year, 3,330 mgd (5,150 cfs) Aug. 2 (gage height, 12.75 ft); minimum, 0.21 mgd (0.32 cfs) Feb. 15-19. 1928-54: 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. 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 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.1	0.15	2.5	34.5
1.2	.58	3.0	60
1.3	1.30	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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.5	39	9.2	78	13.5	52	152	5.8	365	10.7	2.3	165
2	22.5	1,310	8.3	25.5	12.3	54	52	5.4	452	9.7	1.70	165
3	28	376	7.6	17.4	29.5	160	49	4.9	396	9.2	2.2	128
4	44	175	7.4	13.5	74	102	49	3.9	444	16.0	3.0	90
5	44	110	7.2	11.7	247	171	194	3.75	183	15.0	11.2	72
6	29.5	242	6.6	10.4	69	463	142	3.2	119	11.7	8.7	57
7	23.5	643	5.6	9.0	60	336	76	2.55	76	15.9	5.2	60
8	19.8	166	6.0	7.2	42	347	66	2.1	57	11.5	2.7	171
9	17.7	110	7.1	6.2	34.5	245	49	*1.60	49	9.0	2.0	175
10	15.0	72	55	5.2	30	175	39	1.21	76	7.2	1.30	137
11	12.3	54	18.2	5.2	37	119	32	.64	112	6.0	2.35	94
12	11.7	49	10.7	6.4	28	86	44	.42	66	4.4	4.2	76
13	11.2	54	8.5	14.7	21.5	69	30	1.05	49	3.75	2.1	76
14	11.0	42	7.2	8.7	19.8	*54	25.5	.70	46	3.75	1.30	57
15	12.6	32	5.8	6.6	17.4	46	25.5	.23	52	*3.35	.76	46
16	10.7	28	5.2	9.4	61	42	27.5	.52	39	2.7	.58	39
17	9.0	24.5	5.8	11.7	1,140	34.5	20.5	.25	35.5	2.45	1.74	*37
18	9.4	22	14.1	10.2	236	32	17.7	.42	57	41	18.3	43
19	14.7	21	9.4	9.9	236	29.5	15.9	.29	44	18.0	186	72
20	21	18.4	7.2	8.3	260	26.5	13.5	.42	32	9.9	217	69
21	14.7	16.2	9.4	10.2	146	23.5	12.0	.47	27	7.6	68	69
22	12.6	14.7	6.8	21.5	138	21	11.2	1.17	25	6.2	78	49
23	19.8	13.5	5.0	57	86	19.4	9.7	3.6	22.5	5.8	57	42
24	19.8	*18.0	3.9	30	66	17.4	9.0	3.45	21	10.2	97	60
25	15.0	22	3.2	19.8	60	15.6	20.5	446	19.8	12.6	248	37
26	17.4	19.0	3.6	19.4	86	16.2	38	583	17.4	8.7	165	34.5
27	30	16.5	4.1	*21.5	54	25	15.9	668	15.0	6.2	137	32
28	21.5	13.8	4.9	34.5	44	61	11.5	345	14.1	4.2	142	96
29	17.4	12.0	5.8	21	39	32	9.4	-	12.6	3.45	341	79
30	32.5	11.0	58	17.7	49	30	8.1	-----	10.7	2.8	185	57
31	60	9.4	-----	16.2	-----	77	7.2	-----	10.7	-----	180	-----
Total	651.8	3,754.0	316.4	544.0	3,436.5	2,981.6	1,272.6	2,090.04	2,945.3	278.95	2,132.63	2,384.5
Mean:	mgd	21.0	121	10.5	17.5	115	96.2	41.1	74.6	9.30	68.8	79.5
	cfs	32.5	187	16.2	27.1	178	149	63.6	115	14.4	108	123
Ac-ft	2,000	11,520	971	1,670	10,550	9,150	3,910	6,410	9,040	856	6,540	7,320
Calendar year 1953:	Max	2,700	Min	1.5	Mean(mgd)	98.5	Mean(cfs)	152	Ac-ft	110,100		
Fiscal year 1953-54:	Max	1,310	Min	0.23	Mean(mgd)	62.4	Mean(cfs)	96.5	Ac-ft	69,940		

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

* Discharge measurement made on this day.

Kapehu ditch near Hilo

Location.--Lat 19°43'40", long 155°11'00", 0.9 mile downstream from intake, 3 miles west of Piihonua, and 6 miles west of Hilo.

Records available.--March 1938 to June 1941, July 1942 to June 1948, July 1953 to June 1954.

Gage.--Water-stage recorder and De Fabritis flume. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--10 years (1938-41, 1942-48, 1953-54), 1.52 mgd (2.35 cfs).

Extremes.--1938-41, 1942-48, 1953-54: Maximum daily discharge, 6.5 mgd (10.1 cfs) Apr. 9, 1938; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts water from Kapehu Stream 0.6 mile northwest of station for domestic use in Hilo.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.45	2.5	2.05	2.1	1.58	2.3	2.7	2.1	2.45	2.1	1.40	0.15
2	2.55	3.65	2.0	1.89	1.58	2.3	2.65	2.05	2.4	2.2	1.40	.11
3	2.65	2.8	2.0	1.81	1.97	2.45	2.65	2.0	2.4	2.1	1.44	.11
4	2.85	2.6	2.0	1.73	2.1	2.35	2.65	1.89	2.35	2.6	1.65	.08
5	2.65	2.55	1.97	1.73	2.3	2.55	2.95	1.73	1.65	2.35	1.37	.08
6	2.6	2.65	1.93	1.62	2.3	2.65	2.85	1.69	1.51	2.3	1.69	.06
7	2.6	2.6	1.89	1.41	2.3	*2.65	2.8	1.65	1.81	2.55	1.54	.09
8	2.55	2.4	1.89	1.37	2.25	2.55	2.8	1.58	2.65	2.3	1.44	.13
9	2.5	2.4	2.05	1.37	2.15	2.7	2.75	1.54	3.0	2.15	1.40	.16
10	2.45	2.35	2.3	1.34	2.05	2.85	2.75	*1.44	3.25	1.97	1.37	.13
11	2.4	2.35	2.0	1.37	2.15	2.5	2.75	1.37	2.8	1.85	1.51	.10
12	2.4	2.35	1.89	1.51	1.97	2.35	2.75	1.34	2.5	1.77	1.37	.10
13	2.35	2.4	1.85	1.73	1.89	2.35	2.7	1.40	2.45	1.73	1.30	.07
14	2.4	2.35	1.77	1.48	1.89	2.35	2.7	1.34	2.45	1.65	1.27	.05
15	2.35	2.35	1.73	1.40	1.81	2.35	2.7	1.30	2.45	1.62	1.22	.04
16	2.15	2.3	1.69	1.54	2.2	2.35	2.7	1.27	2.35	1.54	1.22	.04
17	2.1	2.3	1.73	1.73	2.75	2.3	2.65	1.22	2.4	1.65	.77	.04
18	2.15	2.3	1.77	1.48	2.25	2.3	2.6	1.19	2.55	2.7	*.92	.05
19	2.25	2.3	1.65	1.58	2.35	2.3	2.55	1.16	2.45	2.25	1.51	.05
20	2.3	2.3	1.62	1.40	2.3	2.3	2.55	1.16	2.35	1.97	.04	.05
21	2.2	2.3	1.62	1.69	2.25	2.35	2.5	1.22	2.3	1.81	.02	.04
22	2.15	2.3	1.58	1.85	2.25	2.35	2.45	1.28	2.3	1.73	.02	.04
23	2.3	2.3	1.51	2.15	2.2	2.35	2.35	1.62	2.3	2.0	.02	.03
24	2.3	*2.3	1.48	1.93	2.2	2.3	2.3	1.60	2.3	2.1	.05	.03
25	2.15	2.35	1.48	1.85	2.25	2.3	2.5	2.25	2.3	1.85	.20	.03
26	2.25	2.3	1.48	1.89	2.3	2.35	2.55	2.5	2.25	1.65	.13	.04
27	2.3	2.3	1.48	1.93	2.25	2.45	2.5	2.6	2.3	1.54	.10	.04
28	2.25	2.25	1.54	1.89	2.2	2.45	2.45	2.3	2.35	1.48	.18	.05
29	2.2	2.2	1.48	*1.73	2.2	2.4	2.3	-	2.3	1.40	.40	.05
30	2.45	2.15	1.98	1.73	2.25	2.35	2.25	-----	1.97	1.40	.13	.05
31	2.6	2.1	-----	1.65	-----	2.6	2.2	-----	2.05	-----	.15	-----
Total	73.65	74.65	53.41	51.88	64.49	75.05	80.55	45.79	72.94	58.31	27.83	2.09
Mean:												
mgd	2.38	2.41	1.78	1.67	2.15	2.42	2.60	1.64	2.35	1.94	.898	0.70
cfs	3.68	3.73	2.75	2.58	3.33	3.74	4.02	2.54	3.64	3.00	1.39	1.08
Ac-ft	226	229	164	159	198	230	247	141	224	179	85	6.4

Calendar year 1953: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
 Fiscal year 1953-54: Max 3.65 Min 0.02 Mean(mgd) 1.86 Mean(cfs) 2.88 Ac-ft 2,090

* Discharge measurement made on this day.

Note.--No gage-height record May 24 to June 23; discharge estimated on basis of recorded range in stage and records for nearby stations.

Waiilikahi 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 1954. Prior to July 1941, published as Waimanulii Stream near Waimanu.

Gage.--Water-stage recorder. Altitude of gage is 2,740 ft (by barometer).

Average discharge.--15 years, 6.35 mgd (9.82 cfs).

Extremes.--Maximum discharge during year, 239 mgd (370 cfs) Nov. 16 (gage height, 3.86 ft), from rating curve extended above 25 mgd as explained below; minimum, 0.21 mgd (0.32 cfs) Feb. 13-20, 26-28.

1939-54: 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 for period of no gage-height record, which are poor.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

0.37	0.21	1.0	5.1
.4	.28	1.4	11.5
.5	.70	1.8	23.5
.6	1.30	2.2	42
.7	2.15	2.6	69
.8	3.05	3.0	110

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.7	25	1.30	2.7	1.30	14.5	3.2	0.35	0.35	1.78	6.6	13.1
2	17.3	15	1.30	1.37	1.45	6.6	1.61	.31	2.5	4.8	9.7	15.5
3	13.4	15	1.23	1.03	3.95	19.2	1.37	.28	5.7	22.5	14.6	31.5
4	15.3	13	1.37	.91	13.6	12.0	.95	.28	19.2	6.3	7.4	10.3
5	10.3	10	1.61	2.2	9.0	40	74	.28	47	2.2	5.2	6.0
6	3.15	6.5	1.30	1.45	2.4	28.5	10.5	.31	7.6	1.37	13.0	5.0
7	2.3	16	1.16	1.03	2.2	6.1	4.3	.26	10.5	1.09	5.5	4.1
8	1.95	7.0	1.03	.91	6.6	6.1	2.45	.26	7.3	.97	2.75	8.8
9	2.15	16	2.5	.85	5.6	4.2	3.35	.26	13.6	.91	1.69	15.5
10	1.77	10	3.25	.80	6.2	3.15	2.2	.23	16.6	1.38	1.53	22
11	1.93	5.0	1.61	2.8	10.2	5.4	1.69	.23	9.1	1.45	1.16	9.0
12	19	22	1.23	17.8	2.3	*4.8	1.30	.23	7.6	.97	1.03	12.1
13	3.5	24	1.09	7.6	1.77	2.65	1.09	*.23	2.35	8.5	1.87	16.3
14	24	8.0	1.03	2.6	3.7	2.05	1.03	.21	1.53	3.75	3.45	4.6
15	15	4.0	.97	1.69	2.2	1.69	1.03	.21	1.23	1.45	2.35	2.6
16	7.0	3.0	.97	10.0	18.5	1.45	.91	.21	1.09	1.03	1.86	2.15
17	3.3	2.5	.97	5.9	52	1.90	.80	.21	1.14	13.6	12.6	2.4
18	3.2	2.6	.91	2.05	3.55	1.16	.75	.21	5.3	38.5	16.1	2.3
19	15	2.1	.91	1.86	3.6	1.09	.70	.21	1.69	*3.9	68	3.2
20	6.0	2.0	.97	1.45	4.5	1.03	.65	.23	1.53	1.86	21.5	7.0
21	3.2	2.5	2.65	1.30	11.6	.97	.60	.28	8.4	1.30	3.05	*3.5
22	18	2.7	1.45	1.37	10.0	.97	.55	.26	5.4	1.31	5.9	2.15
23	15	6.0	1.09	2.6	3.85	.91	.51	1.53	5.6	1.86	6.4	6.6
24	7.0	15	.91	*1.95	3.45	.91	.47	.70	3.2	1.09	4.9	5.1
25	7.0	7.0	.80	1.53	8.8	.85	.60	.39	1.77	.91	2.6	5.0
26	20	3.5	1.77	1.44	12.7	.80	.75	.26	1.37	.97	2.15	5.6
27	13	2.3	4.1	4.3	4.4	5.7	.85	.21	6.2	.91	2.05	3.05
28	9.0	1.7	3.0	3.35	3.6	5.5	.60	.26	1.87	.75	10.5	3.9
29	8.8	*1.6	1.84	1.53	11.1	2.75	.51	-	1.16	.65	18.6	2.3
30	15	1.45	2.5	1.16	19.1	1.53	.43	-----	.97	1.10	3.25	5.3
31	16	1.37	-----	1.23	-----	4.8	.39	-----	.85	-----	4.6	-----
Total	308.25	253.82	46.82	88.76	243.02	188.66	128.68	8.89	199.70	129.16	261.89	235.95
mgd	9.94	8.19	1.56	2.86	8.10	6.09	4.15	0.318	6.44	4.31	8.45	7.86
cfs	15.4	12.7	2.41	4.43	12.5	9.42	6.42	0.492	9.96	6.67	13.1	12.2
Ac-ft	946	779	144	272	746	579	395	27	613	396	804	724

Calendar year 1953. Max 62 Min 0.28 Mean(mgd) 5.23 Mean(cfs) 8.09 Ac-ft 5,850
 Fiscal year 1953-54: Max 74 Min 0.21 Mean(mgd) 5.74 Mean(cfs) 8.88 Ac-ft 6,420

Peak discharge (base, 150 mgd).--Nov. 16 (10:30 p.m.) 239 mgd (370 cfs), 3.86 ft; Jan. 5 (8 a.m.) 228 mgd (353 cfs), 3.82 ft; Mar. 5 (6 a.m.) 170 mgd (263 cfs), 3.46 ft; May 19 (4 a.m.) 156 mgd (241 cfs), 3.34 ft.

* Discharge measurement made on this day.

Note.--No gage-height record July 12 to Aug. 29; discharge estimated on basis of recorded range in stage and record for stations on nearby streams.

Awini ditch at East Honokaneiki Gulch, near Niulii

Location.--Lat 20°09'55", long 155°43'10", at flume across East Honokaneiki Gulch, 4.5 miles southeast of Niulii.

Records available.--October 1927 to June 1949, July 1950 to June 1954.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--24 years (1928-38, 1939-49, 1950-54), 12.0 mgd (18.6 cfs).

Extremes.--1927-49, 1950-54: Maximum daily discharge, 33 mgd (51 cfs) Jan. 8, 1935, Aug. 10, 1938; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	22.5	25	6.0	4.6	3.7	23.5	16.5	2.75	1.42	5.0	22.5	19.7
2	22.5	26.5	9.9	3.45	3.75	20.5	9.6	2.7	5.1	9.0	24	24
3	22.5	25	5.6	2.75	11.5	24	7.4	2.6	6.7	24	24	26.5
4	22.5	23.5	5.5	2.55	15.7	23.5	15.5	2.45	23.5	15	22.5	22.5
5	22.5	22.5	5.7	3.95	21	24	23.5	2.4	22.5	10	18.5	19.8
6	20.5	20.5	5.2	4.6	11.1	24	13.9	2.95	10.9	8.0	21	16.0
7	14.5	23.5	4.6	3.1	9.0	17.4	10.7	2.35	11.9	7.0	21.5	15.2
8	11.9	20.5	4.3	2.4	12.5	18.2	11.5	2.2	9.6	5.8	13.8	20.5
9	10.1	22.5	6.2	2.15	18.6	*17.3	20.5	2.1	17.9	5.0	10.1	23.5
10	9.0	22.5	15.2	1.95	17.7	17.4	13.8	2.0	23.5	4.5	9.0	25
11	7.4	17.1	7.4	2.95	21	16.2	11.3	*1.86	22.5	5.0	7.4	23.5
12	22.5	23	5.2	19.5	12.0	18.6	9.0	1.77	21.5	4.3	6.9	22.5
13	14.9	24	4.5	18.2	7.4	13.8	7.4	1.82	15.3	5.0	8.9	24
14	25	21.5	4.0	9.8	12.8	11.3	6.9	1.68	10.1	14	14.6	19.0
15	24	17.4	3.65	6.0	9.6	9.6	6.9	1.64	8.4	7.5	10.7	13.8
16	21.5	15.5	3.5	18.3	9.2	9.0	6.0	1.59	7.0	*4.3	9.0	11.9
17	17.1	12.5	3.4	19.2	20	7.9	5.5	1.54	6.0	8.7	14.5	12.5
18	12.5	11.9	3.05	9.0	8.0	6.9	5.1	1.46	20	24	23.5	*14.0
19	16.8	10.7	2.95	6.4	6.8	6.4	4.8	1.42	10	16.4	26.5	19.0
20	18.8	10.1	2.95	5.0	14.2	6.0	4.6	1.68	8.5	10.7	22.5	18.7
21	13.0	10.1	3.65	4.3	19.1	5.7	4.3	1.86	14	7.9	13.8	19.8
22	23.5	10.5	3.65	*4.0	22.5	5.5	4.1	1.59	23	9.1	14.5	13.8
23	23.5	13.2	3.05	6.1	17.5	5.2	3.9	3.45	17	12.0	13.8	14.5
24	21.5	21.5	2.7	5.8	15.4	4.9	3.7	3.05	12	7.9	15.7	21.5
25	20.5	21	2.4	4.6	16.8	4.7	4.0	2.2	7.5	6.0	11.3	16.7
26	23.5	*17.2	3.05	3.65	22.5	4.5	4.3	1.86	6.3	5.2	10.1	20.5
27	24	13.8	6.7	8.6	19.8	10.1	4.3	1.64	12	4.7	9.0	15.5
28	23.5	10.1	6.4	11.4	16.2	21.5	3.7	1.42	9.0	4.2	19.5	20.5
29	21.5	8.4	4.6	5.7	18.2	18.6	3.3	-	7.0	3.85	24	13.2
30	25	7.4	3.85	3.85	24	11.3	3.1	-----	5.5	7.5	14.2	18.2
31	24	9.9	-----	3.55	-----	12.6	2.95	-----	5.0	-----	13.2	-----
Total	602.5	535.8	142.85	207.20	435.55	420.1	252.05	58.03	380.12	261.55	490.5	567.8
Mean:												
mgd	19.4	17.3	4.76	6.68	14.5	13.6	8.13	2.07	12.3	8.72	15.8	18.9
cfs	30.0	26.8	7.36	10.3	22.4	21.0	12.6	3.20	19.0	13.5	24.4	29.2
Ac-ft	1,850	1,640	438	636	1,340	1,290	774	178	1,170	803	1,510	1,740
Calendar year 1953.	Max 28	Min 1.32	Mean(mgd) 11.5	Mean(cfs) 17.8	Ac-ft 12,820							
Fiscal year 1953-54:	Max 26.5	Min 1.42	Mean(mgd) 11.9	Mean(cfs) 18.4	Ac-ft 13,370							

* Discharge measurement made on this day.

Note.--No gage-height record Mar. 16 to Apr. 16; discharge estimated on basis of records for Kohala ditch at Pololu.

Keheha 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 1954.

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--26 years (1928-54), 7.60 mgd (11.8 cfs).

Extremes--1917-19, 1928-54: Maximum daily discharge, 54 mgd (84 cfs) Mar. 23, 1919; no flow at times.

Remarks--Records good except those for period of doubtful gage-height record, which are fair. Intake on Honokanenui Stream about 2 miles above station, at altitude of about 4,200 ft. Kahua Ranch diverts small quantity of water from ditch 2 miles above station for watering stock. Since December 1953, Kohala ditch has been diverting a small quantity of water 1,000 ft below Kahua Ranch diversion for irrigation. Water used for irrigation in vicinity of Hawi.

Revisions (fiscal years)--WSP 740: 1930.

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.9	23	0.67	0.82	0.98	24.5	1.13	0.10	0.19	0.98	5.0	29
2	18.8	40	.67	.05	1.30	21.5	.53	.10	.29	.82	3.4	37.5
3	27	31.5	.82	0	3.45	27.5	.29	.10	.19	10.6	6.7	37.5
4	18.4	14.3	1.50	0	11.1	21	5.4	.05	7.4	6.1	11.4	20
5	10.3	8.9	1.65	0	24	27.5	38	0	42	2.5	6.7	10.3
6	4.7	5.3	1.13	0	4.4	32.5	25.5	.19	35	1.13	8.8	9.4
7	2.9	13.4	.82	0	1.30	25	12.6	.19	42	.53	9.8	14.9
8	2.25	9.2	.67	0	4.3	22	4.7	.10	23	.19	4.2	30
9	2.25	17.2	.53	0	11.8	18.4	4.2	.10	26	.19	2.25	23
10	1.85	14.2	7.3	0	9.9	9.6	3.4	.10	25.5	a.19	1.65	20.5
11	1.50	5.8	3.15	0	23.5	7.7	2.7	.10	21.5	a.53	.98	10.9
12	13.5	9.7	1.50	6.3	3.95	6.7	2.05	.10	11.0	a7.0	.67	9.5
13	6.9	19.5	.98	10.5	1.30	*3.95	1.65	.10	6.1	a 11	.53	17.1
14	37.5	8.0	.67	3.95	3.75	2.7	1.13	.05	3.4	a.12	.40	5.5
15	23.5	4.2	.53	2.9	3.15	2.05	.67	0	2.9	a.19	.40	2.05
16	9.5	2.9	.40	22.5	5.2	1.13	.19	0	1.65	a.40	.29	.98
17	4.2	2.05	.29	18.7	35.5	.19	.19	0	1.32	a2.8	.53	.67
18	3.4	1.85	.19	5.8	10.8	.19	.19	0	15.1	a37	6.1	4.7
19	10.6	1.85	.19	3.95	16.9	.19	.19	0	5.0	a6.9	34.5	8.8
20	11.9	2.05	.05	2.7	15.5	.19	.19	0	3.95	*a3.4	27.5	15.0
21	6.1	2.05	0	1.85	10.2	.05	.10	0	13.9	1.13	7.4	6.5
22	24	1.65	.19	1.30	14.5	0	.10	.05	23	.40	21.5	*2.7
23	25	1.65	.19	1.61	5.5	.10	.10	.05	23	1.13	22	4.2
24	12.4	18.7	.05	.67	5.8	.10	0	.19	11.7	.40	17.1	10.1
25	10.3	16.1	0	.19	8.8	.05	0	.10	5.3	.19	9.2	4.7
26	20.5	6.4	0	.05	18.2	0	.10	.10	3.15	.10	7.0	7.0
27	26.5	3.95	.29	.22	10.3	8.5	.19	0	3.7	.10	5.5	8.5
28	22	2.05	.82	3.15	6.1	14.4	.10	.10	2.7	.05	17.9	12.7
29	11.1	1.50	.53	.82	7.8	10.0	.10	-	1.65	0	29.5	2.9
30	21.5	*1.13	.53	.19	20.5	4.7	.10	-----	1.13	.05	8.0	7.9
31	17.5	.82	-----	1.16	-----	2.05	.10	-----	.82	-----	8.3	-----
Total	421.75	290.90	26.31	89.38	299.78	294.44	105.89	1.97	363.54	98.12	285.20	373.65
Mean:												
mgd	13.6	9.38	0.877	2.88	9.99	9.50	3.42	0.070	11.7	3.27	9.20	12.5
cfs	21.0	14.5	1.36	4.46	15.5	14.7	5.29	0.108	18.1	5.06	14.2	19.3
Ac-ft	1,290	893	81	274	920	904	325	6.0	1,120	301	875	1,150
Calendar year 1953. Max	40			Min 0		Mean(mgd)	6.57	Mean(cfs)	10.2	Ac-ft	7,350	
Fiscal year 1953-54: Max	42			Min 0		Mean(mgd)	7.26	Mean(cfs)	11.2	Ac-ft	8,140	

* Discharge measurement made on this day.

a Doubtful gage-height record; discharge estimated on basis of records for nearby stations.

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 1954.

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

Average discharge.--7 years, 4.75 mgd (7.35 cfs).

Extremes.--Maximum discharge during year, 220 mgd (340 cfs) Jan. 5 (gage height, 4.10 ft), from rating curve extended above 11 mgd; minimum, 1.20 mgd (1.86 cfs) Feb. 13 to Mar. 3.

1947-54: Maximum discharge, 545 mgd (843 cfs) Jan. 11, 1949 (gage height, 5.47 ft), from rating curve extended above 10 mgd; minimum, 1.04 mgd (1.61 cfs) Nov. 6-10, 1950, Feb. 12, 1951.

Remarks.--Records good except those above 50 mgd, which are fair.

Revisions (fiscal years).--WSP 1155: 1948(M).

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.2	0.88	2.0	13.2
1.3	1.52	2.3	24
1.4	2.4	2.7	46
1.5	3.4	3.1	80
1.7	6.4		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.9	18.1	2.2	2.5	1.70	10.2	2.8	1.39	1.20	2.4	4.0	9.6
2	15.9	14.6	2.2	2.05	1.70	5.3	2.2	1.39	1.33	3.15	6.8	13.8
3	10.0	15.0	2.15	1.78	1.96	11.8	2.15	1.39	1.61	10.8	8.8	19.8
4	10.0	11.1	2.15	1.70	5.4	8.6	6.2	1.39	9.6	6.6	6.2	8.8
5	8.8	8.6	2.15	2.05	6.9	18.1	7.1	1.33	16.4	2.9	5.6	5.4
6	3.7	5.3	2.05	1.96	2.6	14.6	9.2	1.33	8.4	2.3	5.6	5.3
7	2.8	10.0	1.96	1.78	2.15	6.4	4.2	1.33	10.8	2.05	4.9	4.8
8	2.6	6.0	1.96	1.78	6.3	5.2	2.8	1.33	6.1	1.87	3.1	6.1
9	2.6	10.0	2.3	1.70	5.8	4.1	2.6	1.26	9.3	1.78	2.4	11.4
10	2.3	8.3	2.4	1.61	3.2	3.3	2.4	1.26	9.8	1.78	2.6	15.8
11	3.9	4.4	2.15	2.7	4.4	*3.45	2.2	1.26	8.6	1.70	2.15	8.8
12	12.2	14.0	2.05	9.8	2.4	3.2	2.15	1.26	3.95	1.70	1.96	9.2
13	4.0	15.6	1.96	4.5	2.05	2.5	1.96	1.20	2.8	2.7	1.87	12.4
14	17.6	7.7	1.96	2.8	2.7	2.3	1.87	1.20	2.4	3.1	2.05	5.9
15	12.7	4.8	1.87	2.4	3.1	2.15	1.78	*1.20	2.2	2.05	2.15	3.4
16	6.9	4.4	1.87	5.7	2.4	1.96	1.78	1.20	2.05	1.78	1.96	2.9
17	3.8	3.7	1.87	3.95	28	1.96	1.61	1.20	2.15	7.6	4.9	3.1
18	3.8	3.8	1.78	2.5	3.15	1.87	1.61	1.20	5.0	26	11.4	3.65
19	9.4	5.1	1.78	2.2	3.25	1.78	1.52	1.20	2.8	4.0	28.5	4.5
20	5.1	3.0	1.78	1.96	3.8	1.78	1.52	1.26	2.2	2.5	15.6	5.8
21	4.0	3.55	2.2	1.87	6.0	1.78	1.52	1.20	5.0	*2.05	3.3	4.3
22	11.3	3.8	1.96	1.87	6.6	1.70	1.52	1.20	5.8	1.96	7.7	3.1
23	10.9	4.9	1.78	2.15	3.2	1.70	1.52	1.26	4.6	2.15	5.9	*5.6
24	5.9	11.1	1.70	2.15	3.95	1.70	1.46	1.20	3.4	1.87	4.4	5.6
25	5.9	6.3	1.70	1.96	4.9	1.61	1.70	1.20	2.5	1.70	3.1	4.4
26	13.4	3.8	1.96	*1.75	10.8	1.61	1.61	1.20	2.2	1.70	2.7	5.9
27	12.0	3.2	2.4	5.0	4.4	1.87	1.52	1.20	4.8	1.61	2.6	4.7
28	10.3	*2.6	2.2	2.6	3.7	3.2	1.52	1.20	2.6	1.52	5.2	4.5
29	9.8	2.4	1.87	1.96	6.2	3.3	1.46	-	2.15	1.52	11.1	3.2
30	15.1	2.3	2.45	1.78	14.1	2.4	1.46	-----	1.96	1.61	5.0	4.1
31	14.8	2.2	-----	1.70	-----	2.4	1.39	-----	1.87	-----	5.5	-----
Total	260.4	217.65	60.81	79.19	156.81	133.82	140.23	35.24	145.57	106.45	177.04	205.85
Mean:												
mgd	8.40	7.02	2.03	2.55	5.23	4.32	4.52	1.26	4.70	3.55	5.71	6.86
cfs	13.0	10.9	3.14	3.95	8.09	6.68	6.99	1.95	7.27	5.49	8.83	10.6
Ac-ft	799	668	187	243	481	411	430	108	447	327	543	632
Calendar year 1953: Max	28											
Fiscal year 1953-54: Max	71											
Calendar year 1953: Min	1.14											
Fiscal year 1953-54: Min	1.20											
Mean(mgd)	4.19											
Mean(cfs)	6.48											
Ac-ft	4,690											
Ac-ft	5,280											

Peak discharge (base, 100 mgd)--Jan. 5 (7 a.m.) 220 mgd (340 cfs), 4.10 ft.

* 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 1954.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,450 ft (from topographic map).

Average discharge.--7 years, 5.83 mgd (9.02 cfs).

Extremes.--Maximum discharge during year, 191 mgd (296 cfs) Jan. 5 (gage height, 3.88 ft), from rating curve extended above 14 mgd; minimum, 0.70 mgd (1.08 cfs) Mar. 1, 3.
1947-54: Maximum discharge, 615 mgd (952 cfs) Jan. 11, 1949 (gage height, 5.53 ft), from rating curve extended above 14 mgd by logarithmic plotting; minimum, 0.69 mgd (1.07 cfs) Feb. 3, 1953.

Remarks.--Records good. Diversions above station for domestic use.

Rating table, fiscal year 1953-54 (gage height, in feet, and discharge, in million gallons a day)

1.4	0.60	2.2	14.5
1.5	1.15	2.4	24
1.6	2.0	2.6	36.5
1.7	3.05	2.8	52
1.8	4.5	3.0	71
1.9	6.4	3.2	92
2.0	8.6		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.1	29.5	1.82	2.5	1.22	14.3	2.7	1.03	0.70	2.05	4.2	13.4
2	20	24	1.74	1.66	1.36	6.0	1.82	1.03	.80	2.95	8.4	19.9
3	15.1	27	1.74	1.43	1.50	15.7	1.66	.96	.97	13.6	11.2	31.5
4	12.6	14.9	1.74	1.36	6.3	11.2	6.8	.96	10.2	8.0	7.2	12.2
5	12.9	13.5	1.74	1.66	10.9	28.5	8.4	.96	24	2.85	6.2	6.1
6	3.7	6.0	1.66	1.58	2.7	22	13.0	.96	11.4	2.1	6.5	6.0
7	2.7	13.3	1.58	1.43	1.82	7.4	5.0	.90	16.8	1.66	5.9	5.0
8	2.3	8.6	1.50	1.36	6.2	6.0	2.95	.90	7.8	1.50	2.95	6.8
9	2.4	11.9	1.74	1.36	7.6	4.0	2.5	.90	11.4	1.43	2.1	14.9
10	2.1	13.1	2.2	1.29	3.3	3.3	2.4	.85	13.1	1.43	2.3	23
11	2.35	5.2	1.74	2.2	5.2	*3.35	2.1	.85	11.4	1.36	1.66	11.4
12	19.1	17.1	1.58	10.6	2.4	3.6	1.74	.85	4.2	1.29	1.43	11.5
13	3.85	27	1.50	6.0	1.66	2.5	1.66	.85	2.6	2.5	1.36	18.1
14	27	10.3	1.50	2.95	2.4	2.2	1.50	.80	2.0	3.0	1.50	6.9
15	21.5	6.0	1.36	2.3	2.95	2.0	1.50	*.80	2.0	1.74	1.66	3.55
16	8.9	5.0	1.36	5.9	2.3	1.74	1.43	.80	1.66	1.43	1.50	2.85
17	4.3	3.7	1.43	5.2	37.5	1.66	1.36	.75	1.74	13.2	5.0	2.85
18	3.55	3.85	1.36	2.5	3.4	1.50	1.29	.75	5.7	34.5	15.0	3.4
19	12.1	3.2	1.36	2.3	3.1	1.50	1.29	.75	2.6	4.7	43	4.6
20	7.6	2.85	1.29	2.0	4.1	1.50	1.22	.80	1.82	2.4	19.9	6.7
21	3.75	3.3	1.82	1.66	6.8	1.43	1.22	.75	5.6	*1.66	3.65	4.6
22	14.3	3.1	1.58	1.58	6.3	1.36	1.22	.75	6.8	1.66	8.9	3.05
23	17.0	5.7	1.43	2.0	3.1	1.36	1.22	.80	5.3	1.82	6.8	*6.8
24	7.9	13.3	1.29	2.0	3.75	1.36	1.15	.75	3.6	1.50	4.7	6.4
25	6.9	11.8	1.29	1.74	4.8	1.29	1.36	.75	2.3	1.36	2.95	4.7
26	17.6	4.2	1.50	*1.36	15.0	1.29	1.29	.75	1.82	1.29	2.4	6.6
27	19.7	3.3	1.82	2.65	4.9	1.70	1.29	.75	5.1	1.22	2.3	5.3
28	18.2	*2.5	1.82	2.6	3.7	3.35	1.22	.75	2.5	1.15	4.9	4.7
29	10.5	2.3	1.58	1.58	7.2	3.45	1.10	-	1.74	1.10	14.5	2.95
30	26.5	2.2	1.80	1.36	20.5	2.3	1.03	-	1.50	1.15	5.5	4.1
31	24	2.0	-----	1.29	-----	2.05	1.03	-----	1.43	-----	6.4	-----
Total	363.70	299.70	47.87	77.40	185.96	157.89	151.05	23.50	170.58	117.60	211.96	259.85
Mean:												
mgd	11.7	9.67	1.60	2.50	6.20	5.09	4.87	0.839	5.50	3.92	6.84	8.66
cfs	18.1	15.0	2.48	3.87	9.59	7.88	7.54	1.30	8.51	6.07	10.6	13.4
Ac-ft	1,120	920	147	258	571	465	464	72	523	361	650	797
Calendar year 1953:	Max 37.5		Min 1.22		Mean(mgd) 5.06		Mean(cfs) 7.83		Ac-ft 5,670			
Fiscal year 1953-54:	Max 84		Min 0.70		Mean(mgd) 5.66		Mean(cfs) 8.76		Ac-ft 6,350			

Peak discharge (base, 100 mgd).--Jan. 5 (8 a.m.) 191 mgd (296 cfs), 3.88 ft.

* 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 1953 to June 1954

Date	Stream	Tributary to	Locality	Discharge	
				Cubic feet per second	Million gallons a day
June 25	Kapehu ditch...	Wailuku River	Hilo Forest Reserve.....	6.24	4.03
24	Unnamed branch of Kokele-kele.	Kokelekele Stream.	10 ft above Kapehu ditch trail in Hilo Forest Reserve.	1.16	.75
24	Kokelekele.....	Kalohewahewa Stream.	150 ft above Kapehu ditch trail in Hilo Forest Reserve	3.59	2.32
25	Kalohewahewa...	Wailuku River	500 ft above Kapehu ditch intake, Hilo Forest Reserve.	22.4	14.5
24	Kapehu.....	....do.....	1,000 ft above confluence with Kipi Stream, near Hilo.	8.45	5.46
24	Kipi.....	Kapehu Stream.	500 ft above confluence with Kapehu Stream, near Hilo.	7.57	4.89
24	Kapehu.....	Wailuku River	100 ft below confluence with Kipi Stream, near Hilo.	17.0	11.0
25	Awehi.....	Waiiau Stream	300 ft above Awehi Dam, Hilo Forest Reserve.	10.6	6.85
25	Waiiau.....	Wailuku River	500 ft from Iron Bridge, at Hilo.	17.5	11.3
Apr. 23	Kehena ditch diversion.	East Branch Honokanenui Stream.	Head of Honokane valley, Kohala Mountains, near Kohala.	2.48	1.60
June 22	....do.....	....do.....	....do.....	6.14	3.97
Aug. 27	East Branch Honokanenui.	Honokanenui Stream.	Above Awini ditch dropoff, near Pololu.	22.0	14.2

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