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Compilation of Records of Surface Waters of Hawaii, July 1950 to June 1960

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1739



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Prepared under the direction of E. L. HENDRICKS, Chief, Surface Water Branch

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UNITED STATES DEPARTMENT OF THE INTERIOR

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PREFACE

This report contains summaries of streamflow records in Hawaii. It was prepared by the United States Geological Survey in the Water Resources Division, L. B. Leopold, chief, under the general direction of E. L. Hendricks, chief, Surface Water Branch, and F. J. Flynn, chief, Reports Section.

The data were compiled under the supervision of H. S. Leak, district engineer, Honolulu.

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COMPILATION OF RECORDS OF SURFACE WATERS OF HAWAII, 1950-60

PURPOSE AND SCOPE

This report presents monthly and yearly summaries of streamflow data collected by the Geological Survey during the period July 1, 1950, to June 30, 1960. Included with these data are some records furnished by other Federal, State and private agencies. The report is a condensation of the detailed streamflow information presented in the annual series of reports known as "Surface Water Supply of Hawaii" for each of the years 1951 through 1960. It is a continuation of Water Supply Paper 1319, which compiled all records through June 1950. This report includes corrections of errors which have been found in the earlier reports. Also included are some records collected prior to July 1, 1950, that were omitted from Water Supply Paper 1319.

The Geological Survey collected the records mainly in cooperation with State, municipal, and other Federal agencies, and published them in detail in the series of annual reports known as "Surface Water Supply of Hawaii." Some records furnished by other agencies have been included in the annual reports and in the present report; such records are identified in the station description.

The data presented consist of records of discharge of streams summarized on a monthly and yearly basis. Results of miscellaneous discharge measurements and stage records have been excluded. Included are maps of the Hawaiian Islands showing the location of each station (pls. 1-5). The report is generally similar in the type of data it contains and form of presentation to other summary reports on the surface-water supply of the United States; moreover, it conforms in style with the earlier compilation report (WSP 1319), so that the entire record for any station up to June 30, 1960, is available in one or two volumes.

All records compiled for this summary report were examined for major errors. A few revisions were made and the revised figures, noted as such, are included. Some previously unpublished information is included, as well as a few estimates of discharge that were made to fill short gaps in an otherwise complete period of record.

DESCRIPTION OF DATA

The gaging-station records are arranged in downstream order. The order used in this report is the same as that adopted for use in the annual series of reports on surface-water supply beginning with the fiscal year 1951. 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. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indentation in the listing of gaging stations in the table of contents represents one rank. This downstream order and system of indentation show which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

As an added means of identification, each station was assigned a number which is shown on the appropriate index map and which is a part of the station name in the heading of the description in the text. The numbers are assigned in the same downstream order used in this report. The numbers are not consecutive because gaps are left to allow for new stations that may be established.

The data presented for most of the gaging stations comprise a description of the station, three tables of monthly discharge, and a yearly summary table. The station description gives the name of the island, the station number and name, the location, drainage area, records available, types and datums of gages, average discharge, extremes of discharge, general remarks concerning the data, and a credit statement if records were furnished by another agency.

The location of the gaging station and the drainage area are obtained from the best available maps. When more than one site was used during fiscal years 1951-60 and the difference in drainage areas is significant, the area for the latest site is shown first followed by the areas for other sites in chronological order. In some instances drainage area figures have not been obtained because of the lack of suitable maps or because the boundaries cannot be defined or the effective drainage area determined.

The paragraph "Records available" lists all periods for which there are published records generally equivalent to those at the present site. If equivalent records have been published under another station name, the fact is also noted.

The gage described first is the present gage or the one used most recently. Information is then given in chronological order for all gages used earlier, giving changes in location, type of gage, or datum. The location or datum of all earlier gages is given with reference to the present or most recently used gage. The datum of the gage is the elevation of the zero of the gage above mean sea level. Where information as to datum is not available, the altitude of the gage is given.

The average discharge for a station is the average of all complete fiscal years and is published only if there are five or more complete fiscal years of record. The years used to determine the average are not necessarily consecutive. The average discharge is not published for some stations because of extensive changes in diversion or storage, or other water development, that have occurred upstream.

In general, the momentary maximum and minimum discharges and stages for the entire period of record are published in the "Extremes" paragraph. These are qualified if necessary according to the type of gage used and the completeness of the record. Maximum and minimum discharges at nonrecording gaging stations are qualified as "observed" unless determined from a graph drawn through actual gage heights which approximates the actual hydrograph.

Under "Remarks" information is given on factors which affect the basin runoff characteristics. These include upstream regulation, diversion, and utilization--a history of changes in these items during the period 1951-60 is given when known. Also, references are made to the records of storage or diversion upstream.

When discharge records are furnished by another agency, credit is given under "Cooperation."

The streamflow data summarized in this report generally are contained in three monthly tables and one yearly table. The first monthly table is a tabulation of monthly and

yearly mean discharges in cubic feet per second and the second monthly table is a tabulation of the same data converted to million gallons a day. The figures in the first and second tables represent discharge passing the station; they are unadjusted for storage or diversion upstream unless otherwise specified under "Remarks" for the individual station. Each monthly figure is the mean flow for the entire month; generally no record for part of a month is tabulated. Likewise, each yearly figure is the mean flow for a full year, and no figure is shown for a partial year. The months are arranged on a fiscal-year basis.

The third monthly table is a tabulation of monthly and yearly discharge in million gallons.

The fourth table contains a yearly summary of the streamflow data. The column headed "WSP" lists the number of the water-supply paper in which the figures of daily and monthly discharge are published. If a part of the record has been revised and the revision published, then reference is made to both the original report and the one containing the revised record; if the daily discharge record for the entire year has been republished to include the revisions, then only the later report is listed. However, there is no reference in this column for revisions published for the first time in this report, as the corresponding revised figures of daily discharge will be published in a water-supply paper which will contain daily records for the period 1961-65. For some stations the fourth table is omitted; however, the report containing records for any particular year can generally be found by referring to the table given on page 4.

In the fourth table the momentary maximum discharge for each fiscal year and the date of its occurrence is given if known. For nonrecording gage records, momentary maximums were obtained from graphs drawn through the gage readings. The momentary maximum discharge, however obtained, is not qualified in any way if it is believed to be representative of the absolute maximum for the fiscal year.

The minimum daily discharge for each fiscal year is listed if known. Other data listed in this table are the annual mean and total discharge for both the fiscal year and the calendar year. The figures listed for the fiscal year are the same as those given in the yearly columns of the preceding tables.

Canal, ditch, or diversion records, or records of springs are given in a single monthly table of million gallons.

Revised figures of discharge for fiscal years 1951-60 are not so indicated if they have been published in an annual report, but are noted as "revised" if they have not been published in an annual report. Revised daily figures which have not been published in annual reports will be published in the water-supply paper containing records for fiscal years 1961-65. Figures that represent corrections of typographical or computational errors where no figures of daily discharge have been revised or changed are indicated as "corrected" in this report. Estimates of discharge made to complete months or years for this report are noted as estimates and as "not previously published."

Revisions or corrections of records published in WSP 1319 are included in this report.

PUBLICATIONS

This report is one of a series of 20 volumes of water-supply papers (WSP) as numbered below. The "Part" numbers and the areas covered are the same as those used for the annual series of reports on surface-water supply of the United States since 1951.

Numbers of water-supply papers for 1960 series of compilation reports

WSP	Part	Area
1721	1-A	North Atlantic slope basins, Maine to Connecticut.
1722	1-B	North Atlantic slope basins, New York to York River.
1723	2-A	South Atlantic slope basins, James River to Savannah River.
1724	2-B	South Atlantic slope and eastern Gulf of Mexico basins, Ogeechee River to Pearl River.
1725	3-A	Ohio River basin except Cumberland and Tennessee River basins.
1726	3-B	Cumberland and Tennessee River basins.
1727	4	St. Lawrence River basin.
1728	5	Hudson Bay and upper Mississippi River basins.
1729	6-A	Missouri River basin above Sioux City, Iowa.
1730	6-B	Missouri River basin below Sioux City, Iowa.
1731	7	Lower Mississippi River basin.
1732	8	Western Gulf of Mexico basins.
1733	9	Colorado River basin.
1734	10	The Great Basin.
1735	11	Pacific slope basins in California.
1736	12	Pacific slope basins in Washington and upper Columbia River basin.
1737	13	Snake River basin.
1738	14	Pacific slope basins in Oregon and lower Columbia River basin.
1739	-	Hawaii.
1740	-	Alaska.

Records prior to September 30, 1950, were summarized in a series of water-supply papers as listed below. Each of these volumes contains a list of the annual reports from which data prior to 1951 were summarized.

Numbers of water-supply papers for 1950 series of compilation reports.

WSP	Part	WSP	Part	WSP	Part
1301	1-A	1308	5	1315-A	11-B
1302	1-B	1309	6-A	1315-B	11-A
1303	2-A	1310	6-B	1316	12
1304	2-B	1311	7	1317	13
1305	3-A	1312	8	1318	14
1306	3-B	1313	9	1319	Hawaii
1307	4	1314	10	1372	Alaska

This report is summarized from the following nine reports which contain records of daily discharge for each of the fiscal years from 1951 to 1960.

Annual water-supply papers, Hawaii, 1951-60

Fiscal year	WSP	Fiscal year	WSP
1951	1219	1956	1449
1952	1249	1957	1569
1953	1289	1958	1639
1954	1349	1959	1719
1955	1399	1960	

In addition to the customary records of discharge collected during the systematic operation of gaging stations there is much additional hydrologic information available, both published and unpublished.

Information about floods is contained in WSP 1137-C, "Flood of August 1950 in the Waimea Area, Kauai, Hawaii"; WSP 1530, "Summary of Floods in the United States During 1956" (floods of January 25, 1956, on Kauai Island, Hawaii); WSP 1660-B "Summary of Floods in the United States During 1958" (floods of March 5, 1959, in Honolulu, Hawaii).

Records for many stations have been analyzed by an electronic computer to give: the number of days in each year that the discharge was between selected limits (duration tables); the lowest and highest mean discharges for selected numbers of consecutive days in each year; and other statistical summaries.

Data on low flow or peak flows or both are available for many sites other than gaging stations.

Specific information on unpublished data available can be obtained by writing directly to the district engineer for the State in which the site or gaging station is located.

HYDROLOGIC CONDITIONS

Streamflow, a residual of precipitation after other demands have been met, varies considerably from year to year and from place to place. Figure 1 shows yearly discharge for three gaging stations in Hawaii.

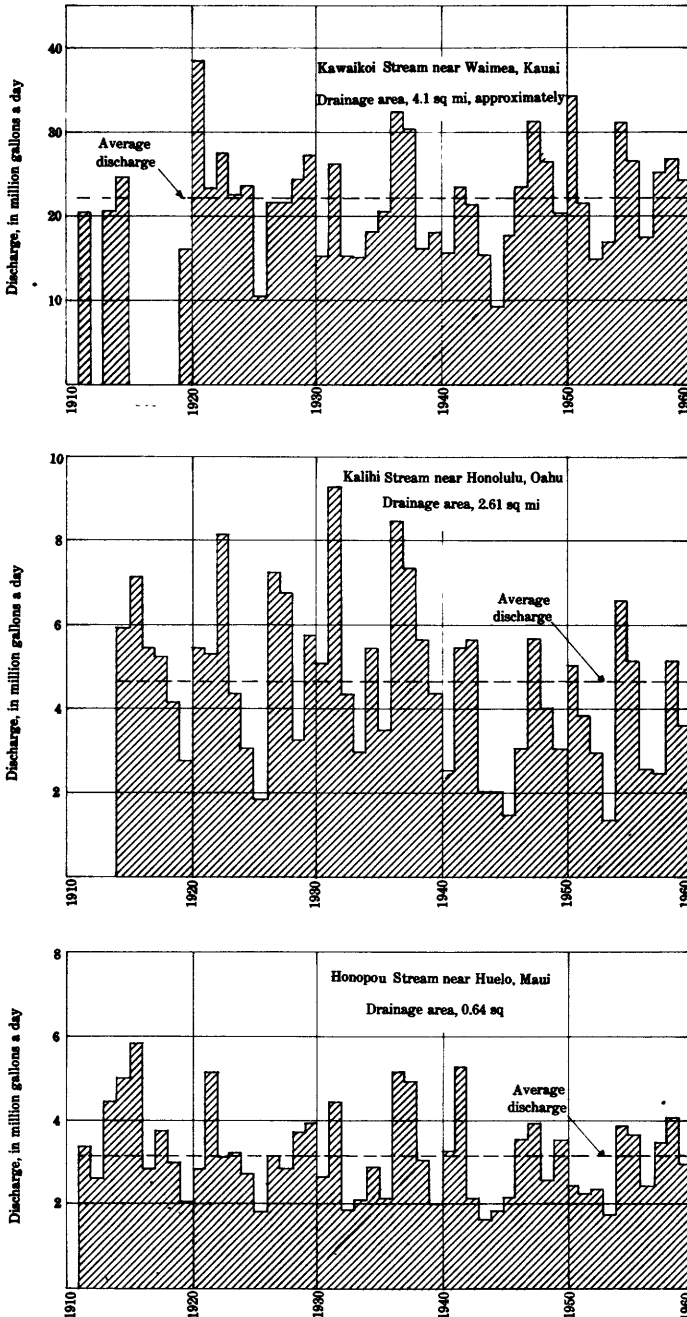


Figure 1.—Yearly discharge at three representative gaging stations.

ISLAND OF KAUAI

100. Kawaikoi Stream near Waimea

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

Drainage area.--4.1 sq mi, approximately.

Records available.--April 1909 to December 1916, July 1919 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

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

Average discharge.--44 years (1911-12, 1913-15, 1919-60), 22.1 mgd (34.2 cfs).

Extremes.--1909-16, 1919-60: Maximum discharge, 6,900 mgd (10,700 cfs) Dec. 18, 1916 (gage height, 15.2 ft); minimum, 0.74 mgd (1.14 cfs) Sept. 21, 22, 1953.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	13.1	195	13.4	8.06	25.4	42.9	94.2	31.4	152	44.6	5.52	3.57	52.9
1952	6.08	30.5	24.3	34.7	31.1	75.5	38.5	14.7	51.8	39.5	35.4	16.7	33.4
1953	14.8	6.24	5.26	43.8	29.1	22.3	10.9	42.4	61.6	18.6	15.4	6.47	23.1
1954	5.62	3.26	1.84	5.43	31.9	34.8	21.4	48.7	54.5	41.6	43.3	26.0	26.3
1955	66.4	17.6	9.64	19.2	35.6	129	75.0	106	53.8	35.3	19.5	13.5	48.1
1956	21.4	27.9	16.1	14.5	61.9	37.8	54.2	166	34.8	29.1	18.4	21.8	41.3
1957	13.5	11.2	4.12	29.7	23.7	39.1	60.8	66.1	12.6	51.8	12.4	6.89	27.4
1958	18.4	40.8	13.7	6.64	57.1	158	43.6	33.7	27.9	17.9	26.1	20.9	38.8
1959	64.7	71.0	37.3	53.8	28.2	39.5	47.5	51.4	11.0	58.3	31.4	5.76	41.6
1960	23.1	77.7	19.3	5.88	61.7	50.7	19.2	53.1	56.5	48.9	17.9	15.1	37.4

Monthly and yearly mean discharge, in million gallons a day													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	8.49	126	8.69	5.21	16.4	27.7	60.9	20.3	98.1	28.8	3.57	2.31	34.2
1952	3.93	19.7	15.7	22.4	20.1	48.8	24.9	9.53	33.5	25.5	22.9	10.8	21.6
1953	9.57	4.03	3.40	28.3	18.8	14.4	7.03	27.4	39.8	12.0	9.94	4.18	14.9
1954	3.63	2.11	1.19	3.51	20.6	22.5	13.8	31.5	35.2	26.9	28.0	16.8	17.0
1955	42.9	11.4	6.23	12.4	23.0	83.2	48.5	68.6	34.8	22.8	12.6	8.75	31.1
1956	13.8	18.0	10.4	9.37	40.0	24.4	35.0	107	22.5	18.8	11.9	14.1	26.7
1957	8.75	7.24	2.66	19.2	15.3	25.3	39.3	42.7	8.16	33.5	8.00	4.45	17.7
1958	11.9	25.4	8.87	4.29	36.9	102	28.2	21.8	18.0	11.6	16.9	13.5	25.1
1959	41.8	45.9	24.1	34.8	18.2	25.5	30.7	33.2	7.13	37.7	20.3	3.72	26.9
1960	14.9	50.2	12.5	3.80	39.9	32.8	12.4	34.3	37.8	31.6	11.6	9.75	24.2

Monthly and yearly discharge, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	263	3,900	261	161	491	859	1,890	567	3,040	864	111	69.3	12,480
1952	122	611	470	695	604	1,510	773	276	1,040	766	708	323	7,900
1953	297	125	102	878	565	446	218	767	1,230	360	308	125	5,420
1954	112	65.6	35.8	109	617	697	429	883	1,090	808	869	505	6,220
1955	1,330	352	187	386	691	2,580	1,500	1,920	1,080	684	389	262	11,360
1956	427	558	312	290	1,200	757	1,090	3,090	698	564	370	422	9,780
1957	271	224	79.6	586	460	785	1,220	1,200	253	1,000	248	134	8,470
1958	368	819	266	133	1,110	3,170	874	610	558	349	524	405	9,190
1959	1,300	1,420	723	1,080	547	790	952	929	221	1,130	629	112	9,830
1960	460	1,560	374	118	1,200	1,020	363	995	1,170	948	361	293	8,880

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1950	-	-	-	-	-	-	-	-	-	-	30.1	46.6	10,890
1951	1219	5,160	7,980	Aug. 15, 1950	1.57	2.43	34.2	52.9	12,480	28.9	44.7	10,550	
1952	1249	3,440	5,320	Dec. 16, 1951	1.22	1.89	21.6	33.4	7,900	17.2	26.6	6,300	
1953	1289	1,170	1,810	Feb. 13, 1953	1.23	1.90	14.9	23.1	5,420	12.7	19.6	4,640	
1954	1349	2,050	3,170	Feb. 22, 1954	.74	1.14	17.0	26.3	6,220	27.7	42.9	10,110	
1955	1399	4,080	6,310	Feb. 6, 1955	2.3	3.6	31.1	48.1	11,360	25.7	39.8	9,380	
1956	1449	2,650	4,100	Nov. 11, 1955	3.0	4.6	26.7	41.3	9,780	23.6	36.5	8,650	
1957	1569	1,330	2,060	Jan. 29, 1957	1.40	2.17	17.7	27.4	6,470	27.2	42.1	9,920	
1958	1569	2,750	4,250	Dec. 1, 1957	1.40	2.17	25.1	38.8	9,190	25.1	38.8	9,180	
1959	1639	1,270	1,960	Aug. 8, 1958	2.7	4.2	26.9	41.6	9,830	23.8	36.8	8,700	
1960	1719	4,660	7,210	Aug. 6, 1959	2.04	3.16	24.2	37.4	8,880	-	-	-	

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

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

Drainage area.--1.6 sq mi, approximately.

Records available.--June 1920 to October 1926, October 1936 to June 1960. 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.--29 years (1920-26, 1937-60), 5.21 mgd (8.06 cfs).

Extremes.--1920-26, 1936-60. Maximum discharge, 1,250 mgd (1,930 cfs) Aug. 15, 1950 (gage height, 7.23 ft), from rating curve extended above 21 mgd; minimum, 0.08 mgd (0.12 cfs) Sept. 21, 1953 (revised).

Remarks.--No diversion above station.

Revisions.--Some periods for the fiscal year 1941 were revised in WSP 1719, the resulting records as summarized herewith supersede those published in WSP 1319.

Month	Million gallons	Maximum	Minimum	Mean		Acre-feet
				Mgd	Cfs	
April 1941.....	17.87	2.1	0.21	0.596	0.922	55
May.....	164.66	28	.16	5.31	8.22	505
Fiscal year 1941.....	994.76	91	.16	2.73	4.22	3,050
Calendar year 1941.....	995.03	53	.16	2.73	4.22	3,050

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.84	48.6	2.34	1.41	3.68	8.09	14.5	9.95	53.8	11.0	2.15	0.925	13.3
1952	.989	4.67	7.01	9.53	7.83	22.9	13.4	3.11	14.7	7.78	7.18	3.42	8.59
1953	2.55	.767	.817	8.43	5.71	4.32	2.58	8.63	13.7	3.03	2.29	.848	4.46
1954	.755	.323	.256	.927	6.65	6.95	8.37	8.83	11.0	10.1	8.65	4.49	5.59
1955	11.4	2.74	1.53	3.16	10.5	35.1	16.7	17.0	13.3	7.61	3.82	2.82	10.5
1956	3.90	6.37	2.34	2.92	22.6	12.6	18.3	46.7	8.46	6.34	3.79	5.21	11.5
1957	2.18	1.76	1.04	11.7	5.85	9.92	16.2	19.3	2.83	9.28	2.91	1.07	6.93
1958	2.68	6.79	2.44	1.30	10.5	46.4	7.36	6.45	6.31	2.12	4.94	2.20	8.56
1959	12.4	15.2	5.40	14.3	6.68	10.3	12.4	12.9	2.20	10.6	5.68	.849	9.08
1960	4.27	15.9	4.61	1.03	13.3	17.5	6.44	17.8	15.3	10.6	4.30	2.94	9.47

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.19	31.4	1.51	0.913	2.38	5.23	9.38	6.43	34.8	7.14	1.39	0.598	8.61
1952	.639	3.02	4.53	6.16	5.06	14.8	8.68	2.01	9.49	5.03	4.64	2.21	5.55
1953	1.65	.496	.528	5.45	3.69	2.79	1.67	5.58	8.66	1.96	1.48	.548	2.88
1954	.488	.209	.185	.599	4.30	4.49	5.41	5.71	7.12	6.51	5.59	2.90	3.61
1955	7.39	1.77	.986	2.04	6.77	22.7	10.8	11.0	8.59	4.92	2.47	1.82	6.77
1956	2.52	4.12	1.51	1.89	14.6	8.17	11.8	30.2	5.47	4.10	2.45	3.37	7.41
1957	1.41	1.14	.672	7.54	3.78	6.41	10.5	12.5	1.83	6.00	1.88	.690	5.48
1958	1.73	4.39	1.58	.840	6.78	30.0	4.76	4.17	4.08	1.37	3.19	1.42	4.40
1959	8.00	9.82	3.49	9.26	4.32	6.63	8.03	8.34	1.42	6.83	3.67	.549	5.87
1960	2.76	10.3	2.98	.668	8.59	11.3	4.16	11.5	9.87	6.83	2.78	1.90	6.12

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	36.8	973	45.2	28.3	71.3	162	291	180	1,080	214	45.1	17.9	3,140
1952	19.8	93.7	136	191	152	459	269	58.2	294	151	144	66.3	2,030
1953	51.0	15.4	15.8	189	111	86.5	51.7	156	275	58.8	45.8	16.4	1,050
1954	35.1	6.49	4.94	18.6	129	139	168	160	221	195	173	87.0	1,320
1955	229	54.8	29.6	63.1	203	705	335	308	266	147	76.6	54.6	2,470
1956	78.0	128	45.4	58.6	438	253	365	876	169	123	78.0	101	2,710
1957	43.8	35.3	20.2	234	113	199	325	351	56.8	180	58.2	20.7	1,640
1958	53.6	136	47.4	26.0	203	930	148	117	127	41.0	98.8	42.7	1,970
1959	248	304	105	287	130	206	249	235	44.0	205	114	16.5	2,140
1960	85.7	320	89.3	20.7	258	349	129	332	306	205	86.2	56.9	2,240

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	1219	1,250	-	1,930	Aug. 15, 1950	0.47	0.73	8.61	13.3	3,140	6.76	10.5	2,470
1952	1249	795	-	1,230	Dec. 16, 1951	.35	.54	5.55	8.59	1,030	7.88	12.2	2,880
1953	1289	475	-	735	Mar. 4, 1953	.22	.34	2.88	4.46	1,050	2.51	3.88	917
1954	1349	408	-	631	Feb. 22, 1954	.08	.12	3.61	5.59	1,320	6.27	9.70	2,290
1955	1399	440	-	681	Feb. 6, 1955	.24	.37	6.77	10.5	2,470	16.00	19.28	2,190
1956	1449	475	-	735	Feb. 17, 1956	.53	.82	7.41	11.5	2,710	6.43	9.95	2,360
1957	1569	510	-	789	Oct. 23, 1956	.31	.48	4.48	6.93	1,640	6.54	10.1	2,390
1958	1569	1,120	-	1,750	Dec. 1, 1957	.29	.45	5.40	8.36	1,870	5.08	7.86	1,850
1959	1639	363	-	562	Dec. 29, 1958	.28	.43	5.87	9.08	2,140	5.44	8.42	1,980
1960	1719	706	-	1,090	Aug. 6, 1959	.36	.56	6.12	9.47	2,240	-	-	-

† Corrected.

140. Kokee ditch near Waimea

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

Records available.--September 1926 to June 1960.

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

Average discharge.--33 years (1927-60), 15.9 mgd (24.6 cfs).

Extremes.--1926-60: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow occasionally.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	304	375	374	242	298	389	346	391	424	388	224	124	3,880
1952	158	355	356	428	374	437	430	354	703	697	625	386	5,300
1953	298	182	138	528	503	418	282	459	774	365	292	148	4,370
1954	125	78.9	48.3	113	424	324	399	497	610	565	779	605	4,570
1955	812	436	240	342	259	449	649	631	732	726	510	327	6,110
1956	446	567	376	362	498	450	472	601	774	684	490	507	6,230
1957	307	203	138	496	414	397	514	476	535	737	349	192	4,760
1958	326	470	237	146	337	510	511	494	475	431	486	293	4,720
1959	806	770	601	590	556	595	520	712	444	642	579	169	6,980
1960	365	575	339	153	504	642	442	580	763	748	465	303	5,880

160. Waimea River at altitude 890 ft, near Waimea

Location.--Lat 22°04'45", long 159°39'15", on right bank, in Waimea Canyon, 0.5 mile up-stream from 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 1960. 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, water-stage recorder at datum 1.55 ft lower.

Average discharge.--32 years (1925-48, 1951-60), 32.0 mgd (49.5 cfs).

Extremes.--1916, 1917-18, 1925-60: Maximum discharge, 18,100 mgd (28,000 cfs) Aug. 17, 1950 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 400 mgd on basis of slope-area measurement at gage height 11.45 ft; minimum, 5.2 mgd (8.0 cfs) Nov. 4, 1927.

Remarks.--Kokee ditch diverts water above station for irrigation near Kekaha.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	18.6	-	-	-	-	-	-	-	460	127	21.0	17.6	-
1952	15.8	35.3	48.6	64.1	50.3	263	135	28.8	81.8	44.1	40.5	20.1	69.5
1953	22.4	15.8	15.0	50.3	31.4	26.8	21.4	53.4	89.3	22.9	20.1	14.3	31.9
1954	13.9	13.7	13.8	14.7	39.1	48.6	44.3	84.9	121	84.5	46.1	24.4	45.5
1955	74.9	16.4	14.0	22.4	87.6	232	132	193	92.1	37.8	21.7	20.7	78.3
1956	23.2	25.5	19.2	18.1	154	75.5	105	334	40.5	36.2	22.7	23.1	71.8
1957	20.4	20.7	17.6	54.9	52.8	104	173	181	30.5	54.5	21.2	18.6	61.7
1958	24.4	48.0	20.6	15.6	82.5	246	56.0	46.7	53.2	21.7	28.0	25.7	56.2
1959	58.6	75.2	30.9	71.3	33.4	63.0	104	63.7	18.9	37.0	32.5	15.6	50.4
1960	24.9	145	33.1	15.0	86.2	71.6	26.5	90.0	102	49.2	21.7	21.5	57.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	12.0	-	-	-	-	-	-	-	297	82.2	13.6	11.4	-
1952	10.2	22.8	31.4	41.4	32.5	170	87.2	18.6	52.9	28.5	26.2	12.0	44.9
1953	14.5	10.2	9.71	32.5	20.3	17.3	13.8	34.5	57.7	14.8	13.0	9.22	20.6
1954	8.99	8.83	8.89	9.50	25.3	31.4	28.6	54.9	78.0	54.6	29.8	15.8	29.4
1955	48.4	10.6	9.04	14.5	56.6	150	85.6	125	59.5	24.4	14.0	13.4	50.6
1956	15.0	16.5	12.4	11.7	99.5	48.8	67.7	216	26.2	23.4	14.7	14.9	46.4
1957	13.2	13.4	11.4	35.5	34.1	67.0	112	117	19.7	35.2	13.7	12.0	39.9
1958	15.8	31.0	15.3	10.1	53.3	159	37.5	30.2	34.4	14.0	18.1	16.6	36.3
1959	37.9	48.6	20.0	46.1	21.6	40.7	67.5	41.2	12.2	25.9	21.0	10.1	32.6
1960	16.1	93.9	21.4	9.69	55.7	46.3	17.1	58.2	65.8	31.8	14.0	13.9	36.9

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	372	-	-	-	-	-	-	-	9,220	2,470	422	343	-
1952	316	707	941	1,280	975	5,260	2,700	539	1,640	855	813	390	16,420
1953	450	316	291	1,010	610	537	427	966	1,790	444	404	276	7,520
1954	279	274	287	294	760	973	885	1,540	2,420	1,640	923	475	10,730
1955	1,500	327	271	449	1,700	4,660	2,650	3,490	1,840	732	434	402	18,460
1956	466	512	371	362	2,980	1,510	2,100	6,250	812	703	455	447	16,970
1957	409	415	342	1,100	1,020	2,080	3,480	3,260	612	1,050	426	360	14,550
1958	486	961	398	514	1,600	4,920	1,160	845	1,070	421	560	498	13,240
1959	1,170	1,510	600	1,430	647	1,260	2,090	1,150	377	716	652	302	11,900
1960	500	2,910	641	300	1,670	1,440	529	1,690	2,040	955	435	416	13,530

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year					
		Momentary maximum discharge					Minimum day		Mean			Million gallons	Mean		Million gallons		
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Mgd	Cfs						
1951	1219	18,100	28,000	Aug. 17, 1950		-	-	-	-	-	-	-	-	-	-		
1952	1249	9,900	15,300	Dec. 16, 1951		6.4	9.9	44.9	69.5	16,420	27.7	42.9	10,150	-	-		
1953	1289	1,180	1,830	Feb. 13, 1953		8.7	13.5	20.6	31.9	7,520	19.6	30.3	7,150	-	-		
1954	1349	2,810	4,350	Feb. 22, 1954		7.7	11.9	29.4	45.5	10,730	46.0	71.2	16,790	-	-		
1955	1399	7,800	12,100	Feb. 6, 1955		7.5	11.6	50.6	78.3	18,460	43.2	66.8	15,750	-	-		
1956	1449	7,440	11,500	Nov. 11, 1955		8.8	13.6	46.4	71.8	16,970	44.1	68.2	16,150	-	-		
1957	1499	2,590	4,020	Oct. 23, 1956		9.1	14.1	39.9	61.7	14,550	49.0	75.8	17,870	-	-		
1958	1569	3,770	5,830	Dec. 1, 1957		8.5	13.2	36.3	56.2	13,240	30.6	47.3	11,170	-	-		
1959	1639	2,280	3,530	Dec. 29, 1958		9.5	14.7	32.6	50.4	11,900	34.9	54.0	12,750	-	-		
1960	1719	11,600	17,900	Aug. 6, 1959		9.05	14.0	36.9	57.1	13,530	-	-	-	-	-		

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

Location.--Lat 22°06'40", long 159°34'00", on left bank 3 miles upstream from left branch, 6.5 miles east of Kokee Ranger Station, and 12.7 miles northeast of Waimea.

Drainage area.--3.33 sq mi.

Records available.--July 1919 to July 1932. June 1954 to June 1960.

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

Average discharge.--19 years (1919-32, 1954-60), 17.4 mgd (26.9 cfs).

Extremes.--1919-32, 1954-60: Maximum discharge, 4,210 mgd (6,510 cfs) Oct. 23, 1956 (gage height, 5.88 ft), from rating curve extended above 350 mgd; minimum, 0.6 mgd (0.9 cfs) May 21, 22, 1929.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1955	37.0	18.1	8.18	14.3	42.4	100	40.8	54.5	28.3	32.2	16.7	15.2	33.9
1956	22.1	31.7	9.19	14.9	86.0	52.5	60.7	265	22.7	15.4	16.6	21.2	50.4
1957	7.32	10.1	3.47	55.7	19.6	25.4	80.0	58.0	6.96	33.3	5.45	4.75	25.7
1958	14.6	36.7	13.5	4.69	34.5	170	20.9	15.0	11.1	8.01	13.5	9.84	29.7
1959	36.2	44.9	24.1	42.2	19.6	22.0	28.3	27.7	4.95	25.1	18.4	5.18	25.1
1960	19.8	60.5	12.0	3.56	27.2	41.0	21.7	38.7	32.0	32.2	28.0	14.2	27.5

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1955	23.9	11.7	5.29	9.27	27.4	64.6	26.4	35.2	18.3	20.8	10.8	9.82	21.9
1956	14.3	20.5	5.94	9.65	55.6	33.9	39.2	171	14.7	9.96	10.7	13.7	32.6
1957	4.73	6.51	2.24	36.0	12.7	16.4	51.7	37.5	4.50	21.5	3.52	3.07	16.6
1958	9.44	23.7	8.59	3.03	22.3	110	13.5	9.72	7.18	5.18	8.61	6.23	19.2
1959	24.7	29.0	15.6	27.3	12.7	14.2	18.3	17.9	3.20	16.2	11.9	3.35	16.2
1960	12.8	39.1	7.78	2.17	17.6	26.5	14.0	25.0	20.7	20.8	18.1	9.15	17.8

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1955	742	362	159	287	821	2,000	820	985	588	623	335	295	8,000
1956	443	634	178	299	1,670	1,050	1,220	4,960	455	299	332	411	11,950
1957	147	202	67.2	1,120	382	507	1,600	1,050	140	644	109	92.2	6,060
1958	293	736	258	94.1	670	3,420	419	272	222	155	267	187	6,990
1959	765	899	487	846	382	439	567	501	99.1	485	370	100	5,920
1960	396	1,210	233	67.3	527	821	436	725	642	625	560	275	6,520

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs			
1955	1719	1,200	1,860	Feb. 6, 1955	1.42	2.20	21.9	33.9	8,000	21.6	33.4	7,900		
1956	1719	3,490	5,400	Nov. 11, 1955	1.32	2.04	32.6	50.4	11,950	27.6	42.7	10,100		
1957	1719	4,210	6,510	Oct. 23, 1956	.93	1.44	16.6	25.7	6,060	25.0	38.7	9,110		
1958	1719	3,810	5,890	Dec. 1, 1957	1.30	2.01	19.2	29.7	6,990	14.6	22.6	5,320		
1959	1719	1,040	1,610	Jan. 17, 1959	1.19	1.84	16.2	25.1	5,920	14.7	22.7	5,380		
1960	1719	4,110	6,360	Aug. 6, 1959	.88	1.36	17.8	27.5	6,520	-	-	-		

220. Kekaha ditch at camp 1, near Waimea

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

Records available.--November 1907 to June 1960.

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.--47 years (1910-15, 1916-17, 1918-24, 1925-60), 36.7 mgd (56.8 cfs).

Extremes.--1907-60: 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.--Kekaha ditch diverts water from Waimea River 1 mile downstream from Waialae Stream. Flow regulated by headgates. Water used for irrigation of cane lands 7 miles downstream.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1,090	545	379	1,040	1,020	1,070	976	976	642	1,200	1,170	934	11,040
1952	1,060	1,340	1,090	1,180	1,200	857	472	1,150	1,370	1,410	1,400	1,260	13,790
1953	1,130	920	914	996	1,150	1,060	1,030	930	1,000	970	980	953	11,930
1954	804	766	682	756	1,080	1,140	1,070	1,050	1,180	1,070	1,360	1,370	12,290
1955	1,430	1,250	988	1,060	826	1,070	1,430	1,340	1,520	1,420	1,340	1,110	14,790
1956	1,230	1,440	1,100	1,190	1,080	1,240	927	724	1,380	1,400	1,410	1,380	14,500
1957	1,180	1,070	953	1,210	1,050	857	1,030	754	1,080	1,170	1,020	832	12,210
1958	1,040	1,280	992	901	974	1,330	1,290	1,040	1,080	1,060	1,090	988	13,160
1959	1,440	1,330	1,240	1,130	1,210	1,090	1,080	1,180	1,080	1,140	1,220	849	13,970
1960	1,050	999	956	778	1,070	1,170	1,140	1,070	988	1,230	1,160	1,010	12,620

280. 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 December 1955. January 1956 to June 1960 (annual maximum).

Gage.--Crest-stage gage. Altitude of gage is 490 ft (by barometer). Prior to January 1956, water stage recorder at same site and datum. Prior to May 7, 1926, at datum 3.85 ft higher.

Average discharge.--29 years (1925-47, 1948-55), 49.9 mgd (77.2 cfs).

Extremes.--1921-60: 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.--Kokee and Kekaha ditches divert practically all flow below medium stages for irrigation near Waimea and Kekaha.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	9.10	12.80	60.3	2.60	22.3	54.3	229	147	947	156	1.75	0.712	246
1952	2.63	42.4	125	190	100	484	248	14.8	179	40.2	33.9	21.4	125
1953	18.4	1.90	2.03	67.0	45.5	24.6	11.6	52.1	131	9.67	7.77	3.74	31.3
1954	0	.29	.48	1.11	56.0	69.8	66.1	184	244	150	63.7	30.6	70.6
1955	183	24.0	.986	35.3	212	432	212	268	156	69.2	14.4	16.4	135
1956	28.6	38.2	11.1	19.2	436	241	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	5.88	830	39.0	1.68	14.4	35.1	148	95.3	612	101	1.13	0.460	159
1952	1.70	27.4	81.1	123	64.8	513	160	9.57	116	28.0	21.9	13.8	80.6
1953	11.9	1.23	1.31	43.3	29.4	15.9	7.52	33.7	84.4	6.25	5.02	2.42	20.2
1954	0	.19	.31	.72	36.2	45.1	42.7	119	158	96.9	41.2	13.3	45.6
1955	118	15.5	.637	22.8	137	279	137	173	101	44.7	9.31	10.6	87.2
1956	18.5	24.7	7.20	12.4	282	156	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	182	25,720	1,170	52.0	431	1,090	4,590	2,670	18,970	3,020	34.9	13.8	57,940
1952	52.6	850	2,430	3,800	1,940	9,700	4,970	278	3,600	781	678	414	29,500
1953	369	38.2	39.2	1,840	883	492	233	943	2,620	188	156	72.7	7,370
1954	0	5.8	9.3	22.3	1,080	1,400	1,320	3,320	4,900	2,910	1,280	400	16,850
1955	3,670	482	19.1	706	4,120	8,630	4,260	4,850	3,140	1,340	289	319	31,630
1956	575	766	216	385	8,450	4,830	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Mean		
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	131	203	47,700
1951	1219	20,000	30,900	Aug. 17, 1950	0	0	159	246	57,940	132	204	48,070	
1952	1249	15,000	23,000	Dec. 16, 1951	0	0	80.6	125	29,500	37.9	58.6	13,860	
1953	1289	5,160	7,980	Mar. 4, 1953	0	0	20.2	31.3	7,370	18.4	28.5	6,730	
1954	1349	6,800	10,500	Feb. 28, 1954	0	0	45.6	70.6	16,850	87.0	135	31,770	
1955	1399	7,400	11,400	Feb. 6, 1955	0	0	87.2	135	31,630	80.6	125	29,420	
1956	-	10,700	16,000	Nov. 11, 1955	-	-	-	-	-	-	-	-	-
1957	-	(a)	-	Oct. 23, 1956	-	-	-	-	-	-	-	-	-
1958	-	8,830	15,600	Dec. 1, 1957	-	-	-	-	-	-	-	-	-
1959	-	4,350	6,740	Dec. 29, 1958	-	-	-	-	-	-	-	-	-
1960	-	11,200	17,300	Aug. 6, 1959	-	-	-	-	-	-	-	-	-

a Stage 19.0 ft, discharge not determined.

291. Waimea ditch below wasteway, near Waimea

Location--Lat 21°59'05", long 159°39'55", on left bank at tunnel No. 4 outlet, below wasteway, 1.3 miles below intake and 2 miles north of Waimea.

Records available--February to June 1960.

Gage--Water-stage recorder and Parshall flume.

Extremes--1960: Maximum daily discharge, 8.02 mgd (12.4 cfs) June 22, 28, 29; no flow Mar. 16-21.

Remarks--Flow can be regulated by means of two wasteway gates between station and intake.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	-	-	-	-	-	-	33.8	129	106	104	-

310. Waimea River near Waimea

Location--Lat 21°38'55", 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 1960.

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

Average discharge--23 years (1911-18, 1944-60), 86.7 mgd (134 cfs).

Extremes--1910-19, 1943-60: Maximum discharge, 24,000 mgd (37,100 cfs) Feb. 7, 1949

(gage height, 19.3 ft); no flow occasionally when all water was being diverted upstream.

Remarks--Several ditches divert most of low flow for irrigation of sugarcane.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	4.50	1,450	71.0	8.29	31.6	71.8	252	153	1,110	183	11.1	5.89	283
1952	6.37	43.8	111	155	108	555	274	30.0	218	47.3	38.1	23.7	136
1953	24.1	5.17	4.63	83.6	58.3	32.6	17.9	60.8	144	12.4	11.4	6.07	38.4
1954	2.52	2.31	2.83	3.81	58.5	76.1	77.5	178	241	153	59.9	27.4	72.9
1955	125	23.8	4.52	18.9	234	412	255	282	156	71.6	17.5	17.2	134
1956	31.9	46.4	21.0	26.6	542	313	435	996	123	44.4	22.3	33.4	217
1957	12.5	11.1	5.42	142	120	255	540	362	26.0	76.1	12.7	6.30	130
1958	19.5	73.8	20.7	3.40	121	668	58.8	69.3	80.1	14.8	27.9	15.8	98.7
1959	93.8	136	50.0	136	44.7	96.9	214	105	4.92	78.9	33.3	2.71	83.2
1960	35.3	272	25.1	4.44	142	136	42.9	183	221	70.1	44.3	23.8	100

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.91	939	45.9	5.36	20.4	46.4	163	99.1	719	118	7.18	3.81	183
1952	4.12	28.3	71.7	100	69.8	359	177	19.4	141	30.6	24.6	15.3	87.6
1953	15.6	3.54	2.99	54.0	37.7	21.1	11.6	39.3	92.8	8.01	7.39	3.92	24.8
1954	1.63	1.49	1.83	2.46	37.8	49.2	50.1	115	156	99.0	38.7	17.7	47.1
1955	80.7	15.4	2.92	12.2	151	266	165	182	101	46.3	11.3	11.1	86.8
1956	20.6	30.0	13.6	17.2	350	202	281	644	79.5	28.7	14.4	21.6	140
1957	8.10	7.16	3.50	92.1	77.6	165	349	234	16.8	49.2	8.22	4.07	83.9
1958	12.6	47.7	13.4	2.20	78.4	432	38.0	44.8	51.8	9.58	18.0	10.2	63.8
1959	60.6	87.7	32.3	88.2	28.9	62.6	138	68.1	3.18	51.0	21.5	1.75	53.8
1960	22.8	176	16.2	2.87	92.1	87.6	27.7	118	143	45.3	28.6	15.4	64.6

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	90.2	29,120	1,580	166	612	1,440	5,060	2,770	22,290	3,530	223	114	66,800
1952	128	878	2,150	3,120	2,100	11,130	5,490	563	4,370	918	762	480	32,070
1953	484	104	89.6	1,670	1,130	655	359	1,100	2,880	240	229	118	9,060
1954	50.7	46.3	54.8	76.2	1,130	1,530	1,550	3,210	4,950	2,970	1,200	531	17,800
1955	2,500	478	87.8	379	4,520	8,250	5,130	5,100	3,150	1,390	350	333	31,670
1956	639	931	408	533	10,490	6,280	8,730	18,680	2,460	860	448	650	51,110
1957	251	222	105	2,860	2,330	5,120	10,810	6,550	520	1,480	255	122	30,620
1958	390	1,480	403	68.1	2,350	13,410	1,180	1,250	1,610	288	558	305	23,290
1959	1,880	2,720	969	2,730	866	1,940	4,280	1,910	985	1,530	656	52.5	19,640
1960	707	5,450	487	88.9	2,760	2,710	860	3,410	4,450	1,360	887	461	23,630

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Mean				Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	-	-	141	218
1951	1619	22,000	34,000	Aug. 17, 1950	0.70	1.08	183	283	66,800	147	227	53,490	
1952	1249	18,000	27,900	Dec. 16, 1951	.81	1.25	87.6	136	32,070	45.6	70.6	16,700	
1953	1289	4,500	6,960	Mar. 4, 1953	.70	1.08	24.8	38.4	9,060	21.4	33.1	7,810	
1954	1349	6,900	10,700	Feb. 28, 1954	.44	.66	47.1	72.9	17,200	83.7	130	30,550	
1955	1399	7,850	12,100	Nov. 28, 1954	.59	.60	86.8	134	31,670	95.4	148	34,730	
1956	1449	17,100	26,500	Nov. 11, 1955	1.00	1.55	140	217	51,110	117	181	42,720	
1957	1569	10,500	16,200	Oct. 23, 1956	1.14	1.76	83.9	130	30,620	104	161	37,840	
1958	1569	14,900	23,100	Dec. 1, 1957	.34	.53	63.8	98.7	23,290	44.6	69.0	16,300	
1959	1639	4,690	7,250	Dec. 29, 1958	.70	1.08	53.8	83.2	19,640	56.8	87.9	20,740	
1960	1719	15,700	24,300	Aug. 6, 1959	.38	.59	64.6	100	23,630	-	-	-	

360. Makaweli River near Waimea

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

Drainage area--25.0 sq mi.

Records available--July 1943 to June 1960.

Gage--Water-stage recorder. Altitude of gage is 29 ft, revised (by hand levels from estuary at confluence with Waimea River). July 27, 1943, to June 15, 1959, at datum 1.0 ft higher.

Average discharge--16 years (1944-60), 51.4 mgd (79.5 cfs).

Extremes--1943-60: Maximum discharge, 8,800 mgd (13,600 cfs) Jan. 19, 1952 (gage height, 11.19 ft), from rating curve extended above 1,300 mgd on basis of slope-area measurement at gage height 9.46 ft; minimum recorded, 2.05 mgd (3.15 cfs) July 19, 1951.

Remarks--Olokele ditch diverts all low water from Olokele River about 9 miles above station for irrigation near Makaweli.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	25.5	328	35.7	18.9	15.3	19.8	114	145	495	58.9	17.8	9.62	107
1952	20.1	41.5	69.8	105	108	258	218	35.1	235	55.5	41.8	69.0	105
1953	67.5	21.8	29.7	47.7	94.8	53.2	30.2	31.7	56.0	20.0	23.2	19.5	41.3
1954	14.2	15.0	12.0	12.7	47.7	55.1	43.5	88.0	99.2	67.1	42.4	54.2	45.6
1955	89.4	55.5	20.6	26.3	124	226	119	104	71.2	74.1	46.1	37.3	82.9
1956	64.2	76.6	25.7	40.5	407	217	268	774	133	39.3	65.0	63.7	178
1957	30.2	27.5	16.7	120	59.1	125	362	500	25.7	63.1	19.5	17.2	96.1
1958	30.8	77.5	26.3	12.3	55.7	444	33.6	30.2	34.3	29.2	18.4	21.4	68.4
1959	69.2	110	55.7	96.5	51.5	54.3	95.6	45.6	10.6	40.8	38.4	15.6	58.0
1960	48.4	155	26.9	11.8	44.1	54.5	112	74.7	109	70.1	79.7	45.3	69.5

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	16.5	212	23.1	12.2	9.86	12.8	73.6	93.5	320	36.8	11.5	6.22	69.3
1952	13.0	26.8	45.1	68.0	68.3	167	141	22.7	152	35.9	27.0	44.6	88.1
1953	43.6	14.1	19.2	30.8	61.3	34.4	19.5	20.5	36.2	12.9	15.0	12.6	28.7
1954	9.17	9.71	7.75	8.22	30.8	35.6	28.1	56.9	64.1	43.4	27.4	35.0	29.5
1955	57.8	35.9	13.3	17.0	80.2	146	77.1	67.4	46.0	47.9	29.8	23.1	53.6
1956	41.5	49.5	16.6	26.2	263	140	173	500	85.9	25.4	42.0	41.2	115
1957	19.5	17.8	10.8	77.6	38.2	80.6	234	194	18.6	48.0	12.6	11.1	62.1
1958	19.9	50.1	17.0	7.92	36.0	287	21.7	19.5	22.2	18.9	11.9	13.8	44.2
1959	44.7	76.9	36.0	62.4	33.3	35.1	61.8	29.5	6.85	26.4	24.8	10.1	37.5
1960	31.3	99.9	17.4	7.61	28.5	35.2	72.4	48.3	70.4	45.3	51.5	29.3	44.9

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	512	6,580	693	377	296	396	2,280	2,620	9,910	1,100	356	186	25,310
1952	403	851	1,350	2,110	2,050	5,170	4,380	659	4,710	1,080	858	1,340	24,920
1953	1,350	437	576	953	1,840	1,070	605	573	1,120	388	464	378	9,750
1954	284	301	233	255	925	1,100	870	1,590	1,990	1,300	850	1,050	10,750
1955	1,790	1,110	399	528	2,410	4,540	2,390	1,890	1,430	1,440	923	723	19,570
1956	1,290	1,530	498	811	7,880	4,340	5,360	14,510	2,660	761	1,300	1,240	42,180
1957	606	553	324	2,400	1,140	2,500	7,260	5,420	515	1,230	391	333	22,670
1958	616	1,550	509	246	1,080	8,690	672	546	690	566	368	412	16,740
1959	1,390	2,360	1,080	1,930	1,000	1,080	1,920	826	712	791	770	304	13,690
1960	969	3,100	521	235	854	1,090	2,250	1,400	2,180	1,360	1,600	879	16,440

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons	
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	1219	8,300	12,800	Mar. 4, 1951	3.7	5.7	69.3	107	25,310	53.2	82.3	19,430	
1952	1249	8,800	13,800	Jan. 19, 1952	3.8	4.3	69.1	105	24,920	52.2	81.2	19,230	
1953	1289	2,180	3,370	Nov. 18, 1952	5.8	9.0	26.7	41.3	9,750	18.2	28.2	6,630	
1954	1349	3,780	5,850	Feb. 28, 1953	5.0	7.7	29.5	45.6	10,750	50.5	78.1	18,430	
1955	1399	3,050	4,720	Nov. 28, 1954	4.4	6.8	53.6	82.9	19,570	68.9	107	25,140	
1956	1449	7,450	11,500	Nov. 11, 1955	5.5	8.5	115	178	42,180	91.2	141	33,350	
1957	1569	7,840	12,100	Oct. 23, 1956	7.5	11.6	62.1	98.1	22,670	76.8	119	28,040	
1958	1569	6,670	13,400	Dec. 1, 1957	6.5	10.1	44.2	68.4	16,140	33.2	51.4	12,120	
1959	1639	2,520	3,900	Jan. 17, 1959	4.6	7.1	37.5	58.0	13,690	31.7	49.0	11,590	
1960	1719	7,500	11,600	Aug. 6, 1959	4.5	7.0	44.9	69.5	16,440	-	-	-	

490. Hanapepe River below Manuahi Stream, near Eleele

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

Drainage area.--18.8 sq mi.

Records available.--May 1917 to January 1921, December 1926 to June 1960. 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.--36 years (1917-20, 1927-60), 53.9 mgd (83.4 cfs).

Extremes.--1917-21, 1926-60: Maximum discharge, 10,400 mgd (16,100 cfs) Dec. 17, 1949 (gage height, 11.74 ft); minimum, 3.3 mgd (5.1 cfs) May 21, 1954.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	34.7	181	43.0	18.4	17.0	14.4	111	125	365	35.3	13.4	12.4	81.1
1952	20.0	59.7	107	134	186	221	235	35.9	237	48.9	40.4	94.1	117
1953	96.5	19.8	37.3	30.0	84.6	45.8	30.9	35.4	39.3	16.1	22.3	19.3	39.8
1954	13.6	18.4	11.8	11.5	50.4	52.9	37.6	68.2	58.6	57.7	21.0	58.0	38.1
1955	96.4	92.4	25.1	27.5	95.5	178	93.0	53.7	30.9	51.7	47.5	30.9	68.9
1956	57.1	76.9	25.8	51.4	347	115	135	512	108	26.0	73.5	69.2	131
1957	26.6	25.2	15.9	116	57.6	54.2	243	249	21.2	49.7	25.1	17.9	74.1
1958	58.5	106	31.7	14.7	42.2	277	25.8	18.6	18.3	23.4	13.1	21.0	55.1
1959	94.5	143	66.4	93.9	54.5	35.0	49.7	28.5	8.83	55.4	33.6	12.2	56.6
1960	44.7	118	21.7	13.3	26.1	40.1	106	35.4	74.9	56.8	56.2	40.1	55.3

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	22.4	117	27.8	11.9	11.0	9.30	71.8	80.6	236	22.8	8.68	8.04	52.4
1952	12.9	38.6	69.1	86.9	107	143	152	23.2	153	31.6	26.1	60.8	75.8
1953	62.4	12.8	24.1	19.4	54.7	29.6	20.0	22.9	25.4	10.4	14.4	12.5	25.7
1954	8.77	11.9	7.61	7.43	32.6	34.2	24.3	44.1	37.9	37.3	13.6	37.5	24.6
1955	62.3	59.7	16.2	17.8	61.7	115	60.1	34.7	20.0	33.4	30.7	20.0	44.5
1956	36.9	49.7	16.7	33.2	224	74.1	87.2	331	69.5	16.8	47.4	44.7	84.7
1957	17.2	16.3	10.3	74.7	37.2	35.0	157	161	15.7	32.1	16.2	11.6	47.9
1958	24.9	68.3	20.5	9.53	27.3	17.9	16.7	12.0	11.8	15.1	8.45	13.6	34.3
1959	61.1	92.4	42.9	60.7	35.2	22.6	32.1	18.4	5.71	35.8	21.7	7.89	36.6
1960	28.9	76.5	14.0	8.60	16.9	25.9	68.8	22.9	48.4	36.7	36.3	25.9	34.3

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	695	3,620	836	369	331	288	2,230	2,260	7,330	684	269	241	19,150
1952	401	1,200	2,070	2,700	3,220	4,440	4,720	674	4,740	947	809	1,820	27,740
1953	1,930	397	722	601	1,640	919	621	642	787	311	447	374	9,390
1954	272	369	228	230	978	1,060	752	1,230	1,180	1,120	422	1,130	8,970
1955	1,930	1,850	485	553	1,850	3,550	1,860	971	621	1,000	951	600	16,220
1956	1,140	1,540	500	1,030	6,730	2,300	2,700	9,590	2,500	503	1,470	1,340	30,990
1957	534	504	310	2,320	1,120	1,090	4,860	4,520	426	964	502	346	17,500
1958	773	2,120	614	295	1,280	5,550	519	335	366	453	262	409	12,520
1959	1,890	2,860	1,290	1,880	1,060	701	994	516	177	1,080	673	237	13,360
1960	895	2,370	421	267	507	802	2,130	664	1,500	1,100	1,120	776	12,550

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Mean				Million gallons		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	1219	5,890	9,110	Aug. 16, 1950	6.2	9.6	52.4	81.1	19,150	74.1	115	27,040	
1952	1249	6,740	10,400	Jan. 19, 1952	6.5	10.1	75.8	117	27,740	54.4	84.2	19,920	
1953	1289	2,260	3,500	Nov. 18, 1952	6.4	9.9	25.7	39.8	9,390	17.3	26.8	6,320	
1954	1349	2,440	3,780	Feb. 28, 1954	3.4	5.3	24.6	38.1	8,970	44.0	68.1	16,050	
1955	1399	3,830	5,930	Aug. 5, Nov. 28	4.9	7.8	44.5	68.9	16,220	52.7	81.5	19,240	
1956	1449	6,360	9,840	Feb. 16, 1956	5.3	8.2	84.7	131	30,990	64.6	100	23,630	
1957	1569	4,900	7,580	Oct. 23, Jan. 17	9.1	14.1	47.9	74.1	17,500	59.7	92.4	21,790	
1958	1569	5,560	8,600	Dec. 1, 1957	7.2	11.1	34.3	53.1	12,520	33.0	51.1	12,020	
1959	1639	2,250	3,480	Oct. 23, 1958	4.9	7.6	36.6	56.6	13,360	24.5	37.9	8,940	
1960	1719	4,490	6,950	Aug. 6, 1959	6.40	9.90	34.3	53.1	12,550	-	-	-	

600. South Fork Wailua River near Lihue

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

Drainage area.--22.4 sq mi.

Records available.--December 1911 to June 1960. Published as "above Waiehu Falls" 1912-13. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 230 ft (by barometer). Prior to Nov. 18, 1918, at site 0.3 mile upstream at different datum. Nov. 18, 1918, to June 23, 1958, at site 10 ft downstream at datum 2.48 ft higher.

Average discharge.--44 years (1912-18, 1919-20, 1921-24, 1925-57, 1958-60), 75.3 mgd (117 cfs).

Extremes.--1911-60: Maximum discharge, 30,200 mgd (46,700 cfs) Nov. 12, 1955 (gage height, 11.52 ft), from rating curve extended above 4,200 mgd by logarithmic plotting; minimum, 1.09 mgd (1.69 cfs) Sept. 21, 1953.

Remarks.--Several ditches divert about 20 mgd for irrigation of cane lands above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.10	179	13.1	7.01	5.76	7.72	89.9	94.5	422	112	6.79	3.30	79.4
1952	4.84	33.4	64.2	172	254	336	336	96.4	152	58.6	27.5	64.8	134
1953	87.1	7.67	38.5	32.6	130	80.5	64.5	42.9	105	6.51	7.35	5.34	50.6
1954	3.28	6.99	2.58	2.58	18.3	31.9	35.3	106	143	39.5	15.1	65.3	39.7
1955	176	169	41.3	54.3	136	241	132	218	49.4	87.5	58.5	15.1	113
1956	35.0	92.4	12.0	31.3	545	227	382	481	187	58.9	64.8	60.7	178
1957	15.4	49.8	17.0	175	158	159	395	359	10.1	15.8	25.7	2.83	114
1958	-	-	-	-	-	-	-	-	-	-	-	-	-
1959	130	243	60.3	148	71.8	62.8	94.7	33.4	7.80	75.4	31.4	4.53	80.9
1960	13.3	227	43.8	5.93	73.2	89.4	145	27.1	244	76.7	103	21.5	90.0

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	3.94	116	8.45	4.53	3.72	4.99	58.1	61.1	273	72.2	4.39	2.13	61.3
1952	3.13	21.8	41.5	111	164	217	184	82.3	98.1	58.5	17.8	41.9	86.3
1953	58.3	4.98	23.8	21.1	84.0	52.0	41.7	27.7	87.7	4.21	4.75	3.45	32.7
1954	2.12	4.52	1.67	1.67	11.8	20.6	22.8	68.7	92.3	25.5	9.79	42.2	25.0
1955	114	109	28.6	35.1	88.2	156	85.2	141	31.9	43.6	37.8	9.78	72.9
1956	22.6	59.7	7.77	20.2	352	147	247	311	108	38.1	41.9	39.2	115
1957	9.94	32.2	11.0	113	101	103	255	232	6.52	10.2	16.6	1.83	73.6
1958	-	-	-	-	-	-	-	-	-	-	-	-	-
1959	84.0	157	39.0	95.8	46.4	40.6	61.2	21.8	5.04	48.7	20.3	2.93	52.3
1960	8.59	147	28.3	3.83	47.3	57.8	93.8	17.5	158	49.8	66.5	13.9	58.2

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	122	3,800	253	140	112	155	1,800	1,710	8,480	2,170	138	64.0	18,740
1952	87.1	670	1,240	3,440	4,910	6,730	6,740	1,810	3,040	1,090	580	1,260	31,580
1953	1,750	154	709	655	2,520	1,610	1,290	777	2,100	126	147	104	11,940
1954	65.8	140	50.2	51.9	355	639	707	1,920	2,880	765	303	1,270	9,130
1955	3,530	3,360	797	1,090	2,650	4,840	2,640	3,950	989	1,310	1,170	293	26,880
1956	702	1,850	233	625	10,560	4,560	7,670	9,010	3,340	1,140	1,300	1,180	42,170
1957	308	998	331	3,520	3,040	3,190	7,910	6,490	202	305	516	55.0	26,880
1958	-	-	-	-	-	-	-	-	-	-	-	-	-
1959	2,610	4,880	1,170	2,960	1,390	1,260	1,900	605	156	1,460	630	67.9	19,090
1960	266	4,560	849	119	1,420	1,790	2,910	507	4,910	1,490	2,080	417	21,300

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons	Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	-	-	60.6	93.8	22,130
1951	1219	22,500	34,800	Aug. 16, 1950	1.27	1.98	51.3	79.4	18,740	86.2	133	51,450	21,890	31,450
1952	1249	11,000	17,000	Jan. 19, 1952	1.24	1.92	86.3	134	31,580	59.8	92.5	21,890	21,890	31,450
1953	1289	2,150	3,330	Jan. 1, 1953	1.88	2.91	32.7	50.8	11,940	16.0	24.8	5,850	5,850	8,580
1954	1349	7,700	11,900	Feb. 28, 1954	1.13	1.75	25.0	38.7	9,130	68.0	102	23,090	23,090	31,450
1955	1399	6,020	9,310	Nov. 28, 1954	3.3	5.1	72.9	113	26,820	79.1	122	26,880	26,880	31,450
1956	1449	30,200	46,700	Nov. 12, 1955	2.75	4.25	115	178	42,170	95.7	148	35,030	35,030	42,170
1957	1569	12,500	19,300	Jan. 17, 1957	1.7	2.6	73.6	114	26,860	-	-	-	-	-
1958	1569	6,550	10,100	Dec. 1, 1957	-	-	-	-	-	-	-	-	-	-
1959	1639	6,640	10,300	Oct. 23, 1958	2.1	3.2	52.3	80.9	19,090	37.9	58.6	13,840	13,840	19,090
1960	1719	9,020	14,000	Aug. 6, 1959	1.42	2.20	58.2	90.0	21,300	-	-	-	-	-

610. North Wailua ditch near Lihue

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

Records available.--July 1932 to June 1960. 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.--28 years (1932-60), 12.1 mgd (18.7 cfs).

Extremes.--1932-60: Maximum daily discharge, 38 mgd (59 cfs) Dec. 21, 1933, Apr. 24, 1934; no flow at times.

Remarks.--Ditch diverts water from North Fork Wailua River for power and irrigation in vicinity of Lihue.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	436	413	380	374	346	362	420	329	358	337	350	339	4,440
1952	424	453	374	390	325	206	157	318	291	379	416	316	4,050
1953	321	405	382	412	328	380	385	347	381	356	420	436	4,550
1954	420	441	354	374	414	466	330	359	336	371	426	333	4,620
1955	361	297	293	314	326	300	300	302	306	396	361	341	3,920
1956	349	354	286	361	226	287	251	265	312	299	348	344	3,680
1957	372	353	325	338	277	344	339	299	371	411	405	349	4,180
1958	397	391	366	358	396	355	344	317	343	354	380	405	4,410
1959	465	435	417	432	407	405	413	351	372	391	404	354	4,850
1960	433	372	398	350	360	584	349	320	341	400	379	358	4,440

620. Stable storm ditch near Lihue

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

Records available.--December 1936 to June 1960.

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

Average discharge.--23 years (1937-60), 7.46 mgd (11.5 cfs).

Extremes.--1936-60: Maximum daily discharge, 46 mgd (71 cfs) Apr. 3, 1948; no flow at times each year.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	373	444	700	747	691	373	326	393	1.50	0.19	537	628	5,210
1952	713	361	357	216	50	97	2.49	108	1.33	124	250	95.4	2,150
1953	191	349	201	191	3.96	32.6	160	154	1.56	312	688	750	3,030
1954	373	679	589	638	678	294	174	297	242	673	688	1.77	5,690
1955	63.8	4.81	80.5	326	354	3.25	1.82	5.54	4.07	68.4	136	316	1,360
1956	317	.52	278	188	5.98	.05	3.36	3.98	2.26	53.8	106	318	1,380
1957	446	262	318	200	1.99	1.01	4.14	1.23	198	513	687	592	3,220
1958	362	3.58	488	622	276	3.53	161	4.54	.15	9.75	15.6	676	2,620
1959	420	79.7	.93	253	.97	371	3.08	1.10	615	422	628	650	3,440
1960	392	108	290	629	51.6	197	143	357	95.9	82.4	270	530	3,150

630. 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, approximately.

Records available.--September 1914 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

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

Average discharge.--44 years (1915-18, 1919-60), 47.0 mgd (72.7 cfs).

Extremes.--1914-60: Maximum discharge, 8,550 mgd (13,200 cfs) Nov. 12, 1955 (gage height, 13.53 ft), from rating curve extended above 500 mgd on basis of slope-area measurement at 10.65 ft; minimum, 0.22 mgd (0.34 cfs) Oct. 27, 1953.

Remarks.--Since 1925 Hanalei tunnel has diverted water from Hanalei River basin into North Fork Waialua River above station, and North Waialua and Stable storm ditches have diverted water above station for irrigation in vicinity of Lihue.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	22.7	90.4	13.6	2.66	6.51	20.9	46.1	46.3	183	47.0	8.32	1.01	40.8
1952	6.41	64.7	65.6	97.2	109	156	143	40.5	115	34.3	23.5	65.9	77.1
1953	55.1	4.18	27.5	35.7	70.9	35.4	24.0	31.1	78.1	7.58	13.0	7.57	32.5
1954	3.64	11.5	3.09	2.03	21.4	55.2	28.8	52.5	67.0	28.2	24.9	91.9	32.3
1955	110	92.4	43.3	28.3	48.1	115	93.6	133	37.1	55.7	60.2	21.8	69.8
1956	41.2	84.0	13.5	25.1	184	83.7	139	184	78.4	38.4	56.9	35.4	80.1
1957	12.0	29.7	7.04	69.6	57.7	55.5	123	124	3.16	43.9	20.4	2.00	45.2
1958	47.7	120	40.1	6.00	60.5	128	15.6	12.6	16.2	12.4	26.0	6.87	41.3
1959	97.5	103	66.8	80.5	78.6	43.2	67.0	47.3	6.00	44.3	32.6	3.79	56.0
1960	41.2	92.4	26.3	10.6	76.1	70.4	97.2	49.8	114	72.5	74.0	23.4	62.5

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	14.7	58.4	8.78	1.72	4.21	13.5	29.8	29.9	118	30.4	5.38	0.651	26.4
1952	4.14	41.8	42.4	62.8	70.4	101	92.3	26.2	74.5	22.2	15.2	42.6	49.8
1953	35.6	2.70	17.8	23.1	45.8	22.9	15.5	20.1	50.5	4.90	8.39	4.89	21.0
1954	2.35	7.45	2.00	1.31	13.8	35.7	18.6	33.9	43.3	18.2	16.1	59.4	20.9
1955	71.3	59.7	28.0	18.3	31.1	74.4	60.5	86.1	24.0	34.0	38.9	14.1	45.1
1956	26.6	54.3	8.75	16.2	119	54.1	90.0	119	50.7	24.8	36.8	23.5	51.8
1957	7.73	19.2	4.55	45.0	37.3	35.9	79.5	79.9	2.04	28.4	13.2	1.29	29.2
1958	30.8	77.6	25.9	3.88	39.1	83.0	10.1	8.14	10.5	8.00	16.8	4.44	26.7
1959	63.0	66.4	43.2	52.0	50.8	27.9	43.3	30.6	3.88	28.6	21.1	2.45	36.2
1960	26.6	59.7	17.0	6.87	49.2	45.5	62.8	32.2	73.9	46.9	47.8	15.1	40.4

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	456	1,810	264	53.4	126	419	925	838	3,650	913	167	19.5	9,640
1952	128	1,500	1,270	1,950	2,110	3,120	2,860	759	2,310	667	471	1,280	18,220
1953	1,100	83.7	554	715	1,380	710	479	564	1,560	147	260	147	7,680
1954	73.0	231	60.1	40.6	413	1,110	576	951	1,340	546	499	1,780	7,620
1955	2,210	1,850	839	566	932	2,310	1,870	2,410	745	1,080	1,210	424	16,450
1956	826	1,680	262	503	3,580	1,680	2,790	3,460	1,570	744	1,140	704	18,940
1957	240	594	137	1,590	1,170	1,110	2,460	2,460	63.1	852	411	38.8	10,660
1958	956	2,310	776	120	1,170	2,570	314	228	324	240	519	133	9,760
1959	1,950	2,060	1,300	1,610	1,520	866	1,340	858	120	857	654	73.4	13,210
1960	824	1,850	510	213	1,460	1,410	1,950	932	2,290	1,410	1,480	452	14,800

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day				Mean		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	29.9	46.3	10,930
1951	1219	5,940	9,190	Aug. 16, 1950	0.27	0.42	26.4	40.8	9,640	44.9	69.5	16,390
1952	1249	3,880	6,000	Jan. 19, 1952	.27	.42	49.8	77.1	18,220	35.2	54.4	12,870
1953	1289	1,200	1,860	Mar. 4, 1953	.48	.74	21.0	32.5	7,680	13.9	21.5	5,080
1954	1349	3,770	5,830	Jan. 1, 1954	.25	.39	20.9	32.3	7,620	39.4	61.0	14,400
1955	1399	3,990	6,170	Aug. 5, 1954	1.12	1.73	45.1	69.8	16,450	44.6	69.0	16,270
1956	1449	8,550	13,200	Nov. 12, 1955	.75	1.16	51.8	80.1	18,940	41.0	63.4	15,000
1957	1569	2,950	4,560	Jan. 29, 1957	.26	.40	29.2	45.2	10,660	38.6	59.7	14,070
1958	1569	2,220	3,430	Dec. 1, 1957	.38	.59	26.7	41.3	9,760	30.3	46.9	11,060
1959	1639	1,800	2,790	Oct. 23, 1958	.38	.59	36.2	56.0	13,210	27.9	43.2	10,190
1960	1719	4,520	6,990	Aug. 6, 1959	.56	.87	40.4	62.5	14,800	-	-	-

640. 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 October 1955.

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.--1912-55: Maximum daily discharge, 25.6 mgd (39.6 cfs) Aug. 8, 1918; no flow at times.

Remarks.--Ditch diverted water from North Fork Waialua River for domestic use and irrigation of cane lands prior to 1941 and for domestic use only thereafter.

Monthly and yearly diversion, in million gallons, of Kanaha ditch near Lihue

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	19.4	12.5	25.4	27.6	26.7	34.1	18.5	10.1	13.2	6.35	3.27	6.15	203
1952	14.2	48.9	24.1	15.2	19.1	15.4	7.27	4.43	11.0	2.07	1.50	.24	163
1953	36	.26		9.59	15.9	14.6	13.1	29.7	9.47	28.3	29.2		196
1954	19.4	26.5	27.3	23.4	22.8	24.6	34.8	17.3	34.4	32.0	13.0	22.0	310
1955	20.1	11.5	9.70	9.77	8.55	32.7	10.1	7.63	3.44	24.8	11.1	22.9	179
1956	31.3	28.0	13.5	3.58	-	-	-	-	-	-	-	-	-

680. East Branch of North Fork Wailua River near Lihue

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

Drainage area.--6.2 sq mi, approximately.

Records available.--July 1912 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

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

Average discharge.--45 years (1913-14, 1915-18, 1919-60), 30.8 mgd (47.7 cfs).

Extremes.--1912-60: Maximum gage height, 14.7 ft Nov. 12, 1955, from floodmarks (discharge not determined); minimum discharge, 4.4 mgd (6.8 cfs) July 3, 13, 1926.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	23.7	58.6	24.9	20.1	19.5	23.8	41.9	41.0	162	49.4	21.4	16.7	42.1
1952	19.2	37.0	32.3	71.5	68.1	90.2	106	44.6	83.4	42.1	39.0	50.9	57.2
1953	42.9	26.8	27.7	35.3	53.7	34.8	28.9	42.5	56.9	20.6	19.3	17.8	33.9
1954	14.7	17.5	11.8	12.4	28.6	33.7	27.2	49.7	65.0	33.7	31.3	41.5	30.5
1955	65.1	65.1	35.7	34.2	48.6	96.2	80.0	125	40.5	47.5	43.8	29.4	58.9
1956	39.0	58.5	35.7	37.4	114	56.5	131	127	57.9	38.2	53.2	41.3	65.6
1957	26.0	48.9	35.4	82.3	65.1	61.3	114	117	22.4	46.4	33.9	16.4	55.5
1958	25.8	46.7	28.9	18.1	45.6	121	32.3	19.2	20.9	16.9	26.6	18.4	35.3
1959	58.2	70.9	31.1	80.5	44.7	41.6	41.8	47.0	21.5	44.4	33.0	15.8	44.3
1960	22.1	74.7	30.5	17.9	56.2	46.0	44.3	38.8	93.0	50.3	35.9	25.2	44.6

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	15.3	37.9	16.1	13.0	12.6	15.4	27.1	26.5	105	31.9	13.8	10.8	27.2
1952	12.4	23.9	20.9	46.2	44.0	58.3	68.6	28.8	53.9	27.2	25.2	32.9	37.0
1953	27.7	17.3	17.9	22.8	34.7	22.5	18.7	27.5	36.8	13.3	12.5	11.5	21.9
1954	9.52	11.3	7.65	8.02	18.5	21.8	17.6	32.1	42.0	21.8	20.2	26.8	19.7
1955	42.1	42.1	23.1	22.1	31.4	62.2	51.7	80.6	26.2	30.7	28.3	19.0	38.1
1956	25.2	37.8	23.1	24.2	73.5	36.5	84.5	82.1	37.4	24.7	34.4	26.7	42.4
1957	16.8	31.6	22.9	53.2	42.1	39.8	74.0	75.8	14.5	30.0	21.9	10.6	35.9
1958	16.7	30.2	18.7	11.7	29.5	7.9	20.9	12.4	13.5	10.8	17.2	11.9	22.8
1959	37.6	45.8	20.1	52.0	28.9	28.9	27.0	30.4	13.9	28.7	21.3	10.2	28.6
1960	14.3	48.3	19.7	11.6	36.3	29.7	28.6	25.1	60.1	32.5	23.2	16.3	28.8

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	476	1,170	484	404	377	478	840	743	3,250	956	428	325	9,930
1952	383	742	627	1,430	1,320	1,810	2,130	835	1,670	816	782	986	13,530
1953	859	536	537	706	1,040	699	580	770	1,140	399	388	344	8,000
1954	295	349	229	249	555	676	545	898	1,300	654	626	804	7,180
1955	1,310	1,310	692	684	941	1,930	1,600	2,260	812	921	876	569	13,900
1956	760	1,170	694	752	2,210	1,130	2,620	2,360	1,160	742	1,060	802	15,500
1957	520	979	686	1,650	1,260	1,230	2,290	2,120	450	900	679	318	13,080
1958	516	936	560	362	886	2,420	648	348	418	327	534	357	8,310
1959	1,170	1,420	602	1,610	867	834	856	852	432	860	660	305	10,450
1960	444	1,500	590	358	1,090	921	886	727	1,860	974	718	488	10,560

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	26.0	40.2	9,490	
1951	1219	1,740	2,690	Mar. 11, 1951	8.3	12.8	27.2	42.1	9,950	35.2	54.5	12,850	
1952	1249	2,060	3,190	Jan. 19, 1952	9.0	13.9	37.0	57.2	13,530	31.7	49.0	11,600	
1953	1289	434	671	Mar. 4, 1953	8.8	13.6	21.9	33.9	8,000	16.4	25.4	5,970	
1954	1349	1,270	1,960	(a)	6.3	9.6	19.7	30.5	7,180	32.0	49.5	11,690	
1955	1399	1,860	2,880	Feb. 6, 1955	11.8	18.3	38.1	58.9	13,900	37.7	58.3	13,770	
1956	1569	(b)	(b)	Nov. 12, 1955	13	20	42.4	65.6	15,500	41.2	63.7	15,090	
1957	1569	1,930	2,990	Feb. 13, 1957	8.7	13.5	35.9	55.5	13,080	34.1	52.8	12,440	
1958	1569	1,350	2,060	Dec. 1, 1957	7.8	12.1	22.8	35.3	8,310	25.0	38.7	9,140	
1959	1639	1,900	2,940	Feb. 11, 1959	8.3	12.8	28.6	44.3	10,450	24.2	37.4	8,850	
1960	1719	4,650	7,190	Aug. 6, 1959	8.60	13.3	28.8	44.6	10,560	-	-	-	

a Feb. 22, Feb. 28, 1954; Feb. 28 not previously published.

b Not determined.

690. Wailua ditch near Kapaa

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

Records available.--November 1936 to June 1960. 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 ft length of ditch on basis of levels by Lihue Plantation Co.).

Average discharge.--23 years (1937-60), 10.6 mgd (16.4 cfs).

Extremes.--1936-60: Maximum daily discharge, 41 mgd (63 cfs) June 4, 1937; no flow at times.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	548	400	612	450	334	216	272	300	15.5	23.6	209	305	3,690
1952	318	387	297	162	8.70	53.5	10.8	216	194	405	430	294	2,780
1953	462	531	506	199	18.4	41.2	137	122	22.7	243	433	426	3,140
1954	408	445	337	316	332	225	178	326	216	358	260	228	3,610
1955	194	114	254	314	140	.18	24.7	8.94	12.3	155	220	372	1,810
1956	599	690	550	365	27.5	15.3	8.10	15.1	8.19	81.4	175	398	2,930
1957	494	373	214	92.6	101	12.6	5.14	10.8	159	363	528	384	2,740
1958	583	519	601	706	413	17.9	283	11.7	38.8	75.4	142	468	3,860
1959	462	179	242	239	49.5	74.0	52.3	54.3	240	294	417	428	2,730
1960	532	265	421	487	26.2	68.9	396	308	126	166	200	314	3,310

710. North Fork Wailua River near Kapaa

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

Drainage area.--18.7 sq mi.

Records available.--July 1952 to June 1960.

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

Average discharge.--8 years (1952-60), 74.0 mgd (114 cfs).

Extremes.--1952-60: Maximum discharge, 34,400 mgd (53,200 cfs) Nov. 12, 1955 (gage height, 19.88 ft in gage well, 20.8 ft from floodmarks), from rating curve extended above 930 mgd on basis of slope-area measurement at gage height, 19.88 ft; minimum, 1.37 mgd (2.12 cfs) Oct. 28, 1953.

Remarks.--Low flow largely diverted into several ditches above station. Hanalei tunnel diverts water from Hanalei River basin into North Fork Wailua River above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	95.6	11.5	46.1	72.7	152	80.6	81.0	90.2	164	27.2	15.6	10.4	68.9
1954	5.21	9.44	3.17	2.54	30.0	81.2	54.5	95.3	173	58.6	57.9	136	58.6
1955	203	210	80.0	58.0	125	249	200	330	114	106	109	43.5	151
1956	53.5	111	36.1	63.1	391	192	529	395	166	107	121	76.7	186
1957	28.6	70.4	35.1	207	167	176	370	334	35.7	115	115	5.80	137
1958	44.6	183	59.4	6.13	104	316	49.5	39.9	43.0	30.8	54.8	8.93	78.8
1959	161	223	119	193	151	102	135	119	23.4	91.9	54.8	8.51	115
1960	44.7	196	56.0	24.0	162	138	147	93.6	279	126	112	46.1	119

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	61.8	7.41	29.8	47.0	98.0	52.1	39.4	58.3	106	17.6	10.1	6.75	44.5
1954	3.37	6.10	2.05	1.64	19.4	52.5	35.2	61.6	112	37.9	37.4	87.6	37.9
1955	131	136	51.7	37.5	80.6	161	129	213	73.6	68.7	70.6	28.1	97.9
1956	34.6	71.5	23.5	40.8	253	124	342	255	107	69.3	78.5	49.6	120
1957	18.5	45.5	22.7	134	108	114	239	216	23.1	74.2	74.4	3.75	88.8
1958	28.8	118	38.4	3.96	67.3	204	32.0	25.8	27.8	19.9	35.4	5.77	50.9
1959	104	144	77.2	125	97.8	66.2	87.5	77.0	15.1	59.4	35.4	5.50	74.6
1960	28.9	127	36.2	15.5	105	89.2	94.8	60.5	160	81.6	72.3	29.8	77.0

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	1,920	230	893	1,460	2,940	1,610	1,220	1,630	3,280	528	314	202	16,230
1954	104	189	61.5	51.0	582	1,630	1,090	1,730	3,480	1,140	1,160	2,630	13,850
1955	4,050	4,220	1,550	1,160	2,420	4,980	4,010	5,960	2,280	2,060	2,190	843	35,720
1956	1,070	2,220	698	1,260	7,590	3,830	10,590	7,400	3,310	2,080	2,430	1,490	43,970
1957	574	1,410	680	4,150	3,250	3,540	7,410	6,080	715	2,230	2,310	112	32,440
1958	893	3,640	1,150	123	2,020	6,320	991	722	962	598	1,100	173	18,590
1959	3,220	4,470	2,320	3,870	2,940	2,050	2,710	2,160	467	1,780	1,100	165	27,250
1960	897	3,930	1,080	481	3,160	2,760	2,940	1,750	5,580	2,450	2,240	893	28,160

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30							Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million Gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs
1953	1289	1,470	2,270	Mar. 4, 1953	3.1	4.8	44.5	68.9	16,230	26.8	41.5	9,790
1954	1349	2,710	4,190	Feb. 28, 1954	1.45	2.24	37.9	58.6	13,850	81.1	125	29,610
1955	1399	4,840	7,490	Feb. 6, 1955	4.5	7.0	97.9	151	35,720	93.2	144	34,010
1956	1449	34,400	53,200	Nov. 12, 1955	4.9	7.6	120	166	43,970	112	173	40,800
1957	1569	4,350	6,730	Jan. 30, 1957	3.5	5.4	88.8	137	32,440	90.3	140	32,980
1958	1569	3,700	5,720	Dec. 1, 1957	3.05	4.72	50.9	78.8	18,590	63.8	98.7	23,320
1959	1639	3,580	5,540	Oct. 23, 1958	3.7	5.7	74.6	115	27,250	56.7	87.7	20,690
1960	1719	11,600	18,300	Aug. 6, 1959	3.05	4.72	77.0	119	28,160	-	-	-

770. Makaleha ditch near Kealia

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

Records available.--December 1936 to June 1960. July 1925 to November 1936 in files of East Kauai Water Co.

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

Average discharge.--23 years (1937-60), 4.31 mgd (6.67 cfs).

Extremes.--1936-60: Maximum daily discharge, 19.2 mgd (29.7 cfs) Nov. 1, 1959; no flow at times.

Remarks.--Ditch diverts water from Makaleha Stream into Mimino Reservoir for irrigation of sugarcane.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	252	152	195	208	194	38.4	60.2	88.2	13.7	4.63	127	168	1,500
1952	212	226	191	75.6	10.1	23.8	25.9	64.9	43.3	56.0	98.9	159	1,190
1953	155	122	166	139	23.1	53.7	67.3	117	62.8	182	229	219	1,540
1954	223	230	82.8	157	229	184	154	151	74.9	199	216	173	2,070
1955	199	141	209	254	179	25.5	24.3	19.9	21.3	173	251	245	1,740
1956	297	327	232	225	39.4	29.6	53.0	39.4	11.1	190	340	322	2,110
1957	292	274	236	188	79.6	17.2	33.0	30.3	118	200	248	184	2,000
1958	252	292	194	207	194	22.5	113	47.6	24.3	43.5	42.8	205	1,640
1959	343	282	265	258	24.6	65.0	8.64	56.3	165	195	279	165	2,120
1960	244	96.9	245	172	44.8	2.30	190	165	162	305	307	227	2,160

790. Kapahū 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 1960.

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

Average discharge.--42 years (1917-20, 1921-60), 4.85 mgd (7.50 cfs).

Extremes.--1909-60: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	88.6	98.5	96.1	97.4	84.2	70.9	112	70.3	21.7	28.5	69.1	60.3	898
1952	87.0	118	60.6	59.3	.85	38.0	20.1	61.6	102	159	153	139	998
1953	146	154	101	50.5	6.78	30.3	49.4	44.0	46.6	124	126	97.4	956
1954	91.2	90.8	121	62.2	114	68.4	39.8	64.3	68.4	128	108	145	1,100
1955	65.2	71.8	93.9	118	45.4	63.8	52.6	40.2	114	159	121	94.6	1,040
1956	110	111	104	84.5	4.92	39.4	16.7	.79	12.0	56.4	103	120	763
1957	95.2	98.5	80.1	54.4	21.5	16.7	9.62	20.4	104	172	132	73.2	878
1958	126	140	127	95.8	78.9	24.0	147	57.6	28.9	25.6	39.8	78.8	972
1959	132	99.2	107	87.4	7.92	80.1	10.4	12.3	79.6	86.6	98.8	64.2	866
1960	95.3	116	75.7	88.8	62.2	52.8	96.7	84.4	41.8	102	140	83.1	1,040

800. Kapaa Stream at Kapahi ditch intake, near Kapaa

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

Drainage area.--3.3 sq mi, approximately.

Records available.--July 1936 to June 1960. Prior to July 1958 published as Kapaa River at Kapaa ditch intake, near Kapaa.

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

Average discharge.--24 years (1936-60), 13.3 mgd (20.6 cfs).

Extremes.--1936-60: Maximum discharge, 4,960 mgd (7,670 cfs) Jan. 25, 1956 (gage height, 5.34 ft), from rating curve extended above 330 mgd by logarithmic plotting; no flow at times.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.35	25.4	0.897	0.506	2.94	15.4	1.58	20.0	98.2	36.8	4.43	0.193	17.3
1952	0	8.65	7.06	42.5	39.9	56.2	56.0	19.2	29.1	11.2	10.2	10.2	24.3
1953	8.85	2.06	1.04	23.2	33.7	17.5	18.4	32.8	34.3	1.86	1.52	1.147	14.5
1954	0	.645	.003	1.61	5.66	11.2	5.52	22.3	27.2	9.61	6.76	12.9	8.53
1955	30.5	26.9	4.21	5.32	25.1	43.9	50.9	73.6	18.1	14.6	7.43	1.72	24.9
1956	3.26	8.40	7.15	22.6	80.6	42.9	114	87.4	28.8	15.8	8.48	5.38	35.1
1957	2.04	11.7	4.38	36.5	35.0	34.8	67.0	47.0	5.99	4.94	3.20	0	20.9
1958	3.31	12.1	6.47	.048	19.3	58.8	7.49	8.34	11.9	12.4	20.1	.032	13.3
1959	16.1	28.2	3.51	32.5	27.2	29.7	22.3	22.4	3.14	13.3	5.04	0	17.0
1960	1.47	38.5	5.20	.209	37.6	23.8	6.81	13.3	55.5	9.59	5.04	2.44	16.7

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.872	16.4	0.580	0.327	1.90	9.97	0.891	12.9	63.5	23.8	2.86	0.125	11.2
1952	0	5.59	4.56	27.5	25.8	36.3	36.2	12.4	18.8	7.23	6.58	6.58	15.7
1953	5.72	1.33	.670	15.0	21.8	11.3	11.9	21.2	22.2	1.20	.985	.095	9.40
1954	0	.417	.002	1.04	3.67	7.25	3.57	14.4	17.6	6.21	4.87	8.31	5.51
1955	19.7	17.4	2.72	3.44	16.2	28.4	32.9	47.6	11.7	9.42	4.80	1.11	16.1
1956	2.11	5.43	4.62	14.6	52.1	27.7	73.5	56.5	18.6	10.2	5.48	3.48	22.7
1957	1.32	7.56	2.83	23.6	22.6	22.5	43.3	30.4	3.87	10.9	2.07	0	13.5
1958	2.14	7.81	2.89	.031	12.5	37.9	4.84	5.39	7.68	8.03	13.0	.021	8.58
1959	10.4	18.2	2.27	21.0	17.6	19.2	14.4	14.5	2.03	8.60	3.26	0	11.0
1960	.950	24.9	3.36	.135	24.3	15.4	4.40	8.61	35.9	6.20	3.26	1.58	10.8

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	27.0	508	17.4	10.2	57.0	309	27.6	361	970	713	88.5	3.74	4,090
1952	0	173	137	853	773	1,130	1,120	360	584	217	204	197	5,750
1953	177	41.3	20.1	464	655	352	369	593	690	35.9	30.5	2.86	3,430
1954	0	12.9	.06	32.2	110	225	111	403	546	186	135	249	2,010
1955	611	539	81.6	107	487	882	1,020	1,330	362	282	149	33.3	5,880
1956	65.4	168	139	453	1,560	858	2,280	1,640	577	306	170	104	8,320
1957	40.8	234	84.8	730	677	696	1,340	1,852	120	95.7	64.1	0	4,930
1958	66.3	242	66.6	.95	376	1,170	150	151	238	241	404	.62	3,130
1959	322	565	68.0	650	527	593	448	407	63.0	258	101	0	4,000
1960	29.4	771	101	4.19	730	478	136	250	1,110	186	101	47.4	3,940

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs		Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	11.5	17.8	4,190
1951	1219	2,550	3,950	Mar. 21, 1951	0	0	11.2	17.3	4,090	12.1	17.1	26.5	6,230
1952	1249	2,550	3,950	Jan. 19, 1952	0	0	15.7	24.3	5,750	12.0	18.6	4.390	4,390
1953	1289	890	1,380	Nov. 5, 1952	0	0	9.40	14.5	3,430	5.76	8.91	2.100	2,100
1954	1549	850	1,320	Feb. 22, 1954	0	0	5.51	8.53	2,010	11.9	18.4	4.340	4,340
1955	1599	2,110	3,260	Feb. 5, 1955	0	0	16.1	24.9	5,880	17.6	27.2	6.420	6,420
1956	1449	4,960	7,670	Jan. 25, 1956	0	0	22.7	35.1	8,320	20.6	31.9	7.540	7,540
1957	1559	1,840	2,850	Jan. 18, 1957	0	0	13.5	20.9	4,930	12.1	17.7	4.410	4,410
1958	1569	1,270	1,960	Dec. 7, 1957	0	0	8.58	13.3	3,130	10.7	16.6	3.910	3,910
1959	1639	1,350	2,090	Oct. 23, 1958	0	0	11.0	17.0	4,000	9.29	14.4	3.390	3,390
1960	1719	3,160	4,890	Aug. 6, 1959	0	0	10.8	16.7	3,940	-	-	-	-

870. Anahola ditch wasteway near Kealia

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

Records available.--July 1936 to June 1960.

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

Average discharge.--24 years (1936-60), 3.35 mgd (5.18 cfs).

Extremes.--1936-60: Maximum daily discharge, 54 mgd (84 cfs) Nov. 12, 1955; no flow at times.

Remarks.--Water that passes station is returned to Anahola Stream below intake of Lower Anahola ditch.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.93	81.8	2.29	0.99	1.61	81.1	154	83.1	489	238	4.55	2.45	1,140
1952	1.46	7.36	50.6	163	266	252	260	103	291	45.3	43.2	2.42	1,490
1953	.72	.88	.68	132	281	53.8	58.7	141	284	4.54	.67	.27	958
1954	.16	.64	.02	.72	.15	51.6	8.06	78.6	146	15.6	112	96.3	510
1955	162	216	1.14	.84	141	358	265	292	235	150	77.9	14.8	1,910
1956	1.80	53.0	23.9	34.7	353	178	244	76.0	237	96.3	140	61.4	1,500
1957	5.94	42.4	3.31	265	257	255	295	233	8.88	45.1	9.95	7.08	1,430
1958	8.45	168	80.3	12.4	97.6	276	43.1	76.7	99.6	91.6	186	9.13	1,150
1959	148	292	113	149	195	174	146	95.4	30.6	69.6	51.4	9.61	1,470
1960	11.8	30.8	38.9	3.83	40.0	23.5	14.3	12.3	94.4	55.3	6.01	3.44	335

880. Anahola ditch above Kaneha Reservoir, near Kealia

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

Records available.--December 1921 to June 1960. 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 bench mark). Dec. 9, 1921, to June 2, 1934, at site 480 ft upstream at different datum.

Average discharge.--36 years (1922-25, 1927-60), 3.06 mgd (4.73 cfs).

Extremes.--1921-60: Maximum daily discharge, 40 mgd (62 cfs) Nov. 12, 1947; no flow at times.

Remarks.--Ditch diverts water from Anahola Stream to Kaneha Reservoir, where it is stored for irrigation. Flow sometimes diverted by Anahola ditch wasteway.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	110	123	121	55.7	111	88.3	51.7	87.3	5.56	26.3	62.7	35.1	878
1952	83.2	237	99.7	114	3.34	64.1	12.7	87.4	14.7	164	194	222	1,300
1953	189	94.9	113	111	2.29	103	91.6	97.3	69.7	118	103	84.4	1,180
1954	74.0	117	40.8	49.5	145	98.5	56.2	86.9	49.6	166	127	133	1,140
1955	162	89.4	130	185	72.7	3.61	11.0	84.4	2.79	41.8	91.7	99.8	974
1956	162	172	113	129	13.3	15.2	16.2	2.64	2.06	105	109	110	949
1957	116	157	91.9	69.9	27.1	3.16	4.03	9.86	73.9	162	98.5	37.2	851
1958	140	97.8	70.7	86.1	114	2.75	89.5	1.39	.97	.34	5.52	88.1	697
1959	158	20.7	75.0	89.4	8.07	24.6	2.32	37.8	53.3	90.0	95.2	39.9	694
1960	110	33.3	90.9	73.8	15.3	.19	1.00	85.3	48.2	130	137	88.4	813

890. Anahola Stream near Kealia

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

Drainage area.--5.5 sq mi, approximately.

Records available.--August to November 1910, December 1910 to November 1912 (fragmentary), December 1912 to June 1960. Monthly discharge only for some periods, published in WSP 1319. Prior to July 1958 published as Anahola River near Kealia.

Gage.--Water-stage recorder and concrete dam and orifice control. Datum of gage is 295.11 ft above mean sea level (Highway Department bench mark). 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.--46 years (1913-18, 1919-60), 14.0 mgd (21.7 cfs).

Extremes.--1910, 1912-60: Maximum discharge, about 12,700 mgd (19,800 cfs) Jan. 25, 1956 (gage height, 14.6 ft, from floodmark), from rating curve extended above 380 mgd; minimum, 1.28 mgd (1.98 cfs) Oct. 27, 1953.

Remarks.--Anahola ditch diverts water 3 miles above station for irrigation in vicinity of Kealia.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.22	24.0	6.75	4.19	3.56	15.0	13.3	18.7	87.0	26.9	7.25	3.64	18.1
1952	3.71	7.86	7.63	22.1	16.9	40.5	47.8	21.0	25.7	14.1	15.3	10.2	19.5
1953	10.9	6.34	5.35	18.6	56.1	12.3	30.0	23.4	45.6	11.0	6.90	5.17	17.6
1954	5.76	4.41	2.80	2.85	8.25	8.12	7.43	31.6	28.9	14.7	17.0	17.2	12.1
1955	29.1	22.6	8.05	12.4	40.5	37.1	39.0	55.4	22.0	13.9	12.7	6.62	24.8
1956	7.44	12.1	12.6	30.8	75.7	31.9	106	87.7	24.8	20.7	20.7	10.6	36.5
1957	7.02	26.9	7.92	39.0	42.7	44.6	82.0	50.6	10.3	22.0	9.05	3.19	28.8
1958	9.47	21.0	10.0	6.25	23.4	67.3	18.1	8.51	8.08	9.76	14.8	5.80	17.0
1959	40.5	50.1	13.5	41.2	20.7	25.5	16.9	14.6	5.58	21.7	10.9	4.08	22.3
1960	6.73	48.3	15.1	7.54	48.6	23.4	18.4	27.2	116	20.3	14.6	8.77	29.7

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	4.02	15.5	4.36	2.71	2.30	9.71	8.46	12.1	56.2	17.4	4.69	2.35	11.7
1952	2.40	5.08	4.93	14.3	10.9	26.2	30.9	13.6	16.6	9.12	8.90	6.59	12.6
1953	7.04	4.10	5.46	12.0	23.3	7.94	19.4	15.1	29.5	7.14	4.46	3.34	11.4
1954	2.43	2.85	1.81	1.84	5.33	5.25	4.80	20.4	18.7	9.51	11.0	11.1	7.83
1955	18.8	14.6	5.20	8.01	26.2	24.0	25.2	35.8	14.2	9.00	8.20	4.28	16.0
1956	4.81	7.80	8.12	19.9	48.9	20.6	68.3	56.7	16.0	13.4	13.4	6.82	23.6
1957	4.54	17.4	5.12	25.2	27.6	28.8	53.0	32.7	6.63	14.2	5.85	2.06	18.6
1958	6.12	13.6	6.48	4.04	15.1	43.5	11.7	5.50	5.22	6.51	9.59	3.75	11.0
1959	26.2	32.4	8.75	26.6	13.4	16.5	10.9	9.46	5.48	14.0	7.03	2.64	14.4
1960	4.35	31.2	9.77	4.87	31.4	15.1	11.9	17.6	75.2	13.1	9.41	5.67	19.2

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	125	480	131	84.1	69.1	301	262	339	1,740	521	145	70.4	4,270
1952	74.6	158	148	445	328	812	956	394	514	274	307	198	4,610
1953	218	127	104	373	699	246	601	424	914	214	138	100	4,160
1954	75.3	88.4	54.3	56.9	160	163	149	572	581	285	342	332	2,860
1955	582	452	156	248	787	744	782	1,000	442	270	254	128	5,640
1956	149	242	244	618	1,470	637	2,120	1,640	495	402	415	205	8,640
1957	141	539	153	782	829	893	1,640	917	206	426	181	61.8	6,770
1958	190	421	194	125	454	1,350	363	154	162	189	297	112	4,010
1959	813	1,000	262	824	401	612	339	265	108	421	218	79.0	5,240
1960	135	968	293	151	942	469	369	511	2,330	394	292	170	7,020

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1950	-	-	-	-	-	-	-	-	-	-	11.6	17.9	4,220	
1951	1219	2,300	3,560	Mar. 28, 1951	1.70	2.63	11.7	18.1	4,270	13.8	21.4	5,040		
1952	1249	3,120	4,830	Jan. 2, 1952	1.80	2.79	12.6	19.5	4,610	12.0	18.6	4,410		
1953	1289	3,450	5,340	Nov. 20, 1952	2.3	3.6	11.4	17.6	4,160	8.19	12.7	2,990		
1954	1349	2,800	4,330	Feb. 26, 1954	1.34	2.07	7.83	12.1	2,860	14.3	22.1	5,230		
1955	1399	1,380	2,140	Jan. 21, 1955	2.5	3.9	16.0	24.8	5,840	17.1	26.5	6,240		
1956	1449	12,700	19,600	Jan. 25, 1956	2.8	4.3	23.6	36.5	8,640	23.5	36.4	8,610		
1957	1569	3,340	5,170	Jan. 17, 1957	1.70	2.63	18.6	28.8	6,770	16.9	26.1	6,170		
1958	1569	1,430	2,210	Dec. 1, 1957	1.85	2.86	11.0	17.0	4,010	14.0	21.7	5,090		
1959	1659	1,400	2,170	Oct. 23, 1958	2.05	3.17	14.4	22.3	5,240	12.0	18.6	4,390		
1960	1719	5,180	8,010	Aug. 6, 1959	2.10	3.25	19.2	29.7	7,020	-	-	-		

910. 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 Stream, and 2.5 miles northwest of Kealia.
Records available--December 1936 to June 1960, 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 bench mark).

Average discharge--23 years (1937-60), 2.30 mgd (3.56 cfs).

Extremes--1936-60: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times.

Remarks--Ditch diverts water from Anahola Stream for irrigation of sugarcane. Flow regulated by gates and spillways.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	113	64.0	115	79.7	59.4	58.4	22.8	55.1	0.05	20.7	104	71.9	764
1952	70.8	88.1	43.0	49.3	0	26.7	07	99.0	19.6	46.6	31.8	3.34	479
1953	31.0	80.6	78.6	72.0	9.92	75.4	106	78.8	65.8	161	129	80.8	879
1954	67.8	80.2	51.8	58.7	99.9	84.7	89.0	81.6	88.6	165	58.5	73.6	999
1955	90.4	83.5	144	150	149	0	0	64.4	80.4	139	140	148	1,180
1956	108	103	98.2	102	.09	0	.02	0	0		.37	35.6	447
1957	31.9	51.1	33.0	47.3	12.9	.01	.19	11.9	61.3	85.6	87.1	75.9	498
1958	86.6	87.1	23.3	66.4	76.0	0	56.3	24.9	0	0	13.3	99.1	533
1959	64.3	20.6	123	71.2	19.8	82.6	0	23.7	115	92.3	67.7	68.1	748
1960	61.2	13.3	33.6	84.2	5.96	0	95.3	92.3	28.1	39.8	21.0	32.0	907

942. Ka Loko ditch near Kilauea

Location--Lat 22°10'35", long 159°23'00", on left bank 35 ft downstream from Molooa ditch, 408 ft upstream from Ka Loko Reservoir, and 3.5 miles southeast of Kilauea.
Records available--August 1932 to June 1960.

Gage--Water-stage recorder and Parshall flume. Altitude of gage is 759 ft (from topographic map).

Average discharge--27 years (1933-60), 3.36 mgd (5.20 cfs).

Extremes--1932-60: Maximum daily discharge, 83 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.11 mgd (0.17 cfs) Nov. 3, 4, 1959, Mar. 9, 1960.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	54.4	122	82.9	40.0	44.3	113	109	110	201	135	59.9	30.8	1,080
1952	35.4	75.9	61.3	141	165	253	126	114	165	139	104	104	1,462
1953	122	65.0	51.5	104	165	105	134	110	118	110	57.0	45.7	1,190
1954	34.0	41.2	25.9	22.0	57.7	59.6	44.9	112	153	65.5	117	135	689
1955	152	127	85.0	91.1	173	178	131	104	147	120	81.8	53.7	1,440
1956	57.9	90.2	94.1	98.6	187	84.5	120	69.9	58.6	77.7	82.5	89.5	1,100
1957	65.6	85.2	48.4	185	104	59.5	84.3	49.6	64.5	95.7	50.2	31.2	905
1958	57.5	120	83.9	79.0	124	156	131	84.9	80.5	59.6	108	54.3	1,070
1959	175	130	114	152	103	75.1	62.6	58.8	44.2	107	69.6	39.5	1,160
1960	58.0	116	92.5	52.4	145	115	98.4	110	103	129	141	87.8	1,250

950. Puu Ka Ele ditch near Kilauea

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

Records available--August 1932 to June 1960.

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

Average discharge--27 years (1933-60), 2.60 mgd (4.02 cfs).

Extremes--1932-60: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times.

Remarks--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.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	60.2	97.0	73.4	49.1	56.5	67.2	36.8	16.2	10.5	47.9	66.0	38.2	619
1952	45.1	80.4	75.1	147	134	53.5	2.68	82.0	134	116	114	125	1,100
1953	123	74.0	72.0	99.1	124	8.25	9.92	17.7	39.2	83.4	61.4	50.5	762
1954	44.2	48.5	33.4	37.1	64.6	57.1	29.9	58.4	97.0	78.2	98.1	97.3	744
1955	143	67.7	85.3	82.5	94.0	8.72	1.22	60.0	100	106	91.0	67.6	907
1956	71.7	75.8	88.2	82.0	20.3	2.80	13.5	.23	.63	74.8	162	121	717
1957	79.9	146	99.8	85.5	19.1	7.68	52.5	6.13	15.1	28.4	15.0	41.9	591
1958	65.3	129	85.5	50.2	79.3	7.03	82.2	13.8	2.63	12.4	17.4	22.7	575
1959	102	95.1	109	79.0	72.7	62.3	43.5	70.0	63.8	71.0	99.3	46.2	826
1960	61.6	123	98.7	57.3	96.2	36.4	93.9	84.5	134	103	108	80.8	1,080

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952. Ross ditch near Kilauea

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

Records available.--October 1956 to June 1960.

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

Extremes.--1956-60: Maximum daily discharge, 10.6 mgd (16.4 cfs) Jan. 18, 1957; no flow at times.

Remarks.--Ross ditch diverts water from Puu Ka Ele Stream for irrigation in vicinity of Kilauea. Flow regulated by headgates.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	218	245	198	204	124	156	103	57.3	-
1958	40.1	75.1	62.3	37.6	60.1	154	53.7	69.7	108	81.0	112	65.6	920
1959	103	141	87.2	69.7	89.9	84.2	41.7	37.6	25.6	47.7	54.0	31.2	814
1960	40.0	43.7	37.7	21.8	27.0	14.8	40.9	23.9	127	116	99.2	50.5	642

959. Kalihiwai ditch above wasteway, near Kilauea

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

Records available.--April to June 1960.

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

Extremes.--1960: Maximum daily discharge during period April to June, 11.5 mgd (17.8 cfs) June 28; minimum daily, 2.14 mgd (3.31 cfs) June 10, 11, 19.

Remarks.--Flow can be regulated above station by Kilauea Sugar Co. Water passing station is used for domestic water supply and irrigation of sugarcane.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	-	-	-	-	-	-	-	-	140	102	-

960. Kalihiwai ditch near Kilauea

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

Records available.--June 1934 to June 1960.

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

Average discharge.--26 years (1934-60), 2.49 mgd (3.85 cfs).

Extremes.--1934-60: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

Remarks.--Ditch diverts low-water flow from most branches of Pohakuhonu Stream at intakes, about 1 mile south of station. Diversion of flow to Kahiliilo Stream 0.1 mile above station regulated by gates.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	53.6	116	68.4	39.4	79.5	52.9	42.7	79.0	55.3	29.3	58.4	29.2	704
1952	41.0	135	101	146	132	55.1	22.6	72.0	111	112	123	132	1,180
1953	135	78.5	81.6	144	70.9	13.0	42.9	86.5	42.6	75.8	50.2	46.1	867
1954	38.3	37.4	19.6	22.0	48.2	4.88	24.6	90.0	40.2	60.1	112	62.9	560
1955	135	45.4	78.2	79.4	99.1	13.3	7.83	72.2	111	163	144	85.3	1,030
1956	119	167	105	84.5	44.5	23.3	49.0	8.06	93.7	119	159	121	1,090
1957	70.0	113	8.58	63.2	25.0	7.40	73.4	18.7	84.3	121	53.4	34.7	873
1958	61.9	155	60.2	40.2	59.1	5.38	88.7	38.2	38.4	46.6	69.1	53.4	716
1959	148	96.6	120	109	13.3	3.90	5.36	25.6	48.1	89.9	92.6	15.6	768
1960	62.4	59.0	64.9	30.9	65.1	4.92	24.4	50.5	99.4	44.0	53.0	78.2	657

970. Pohakuhonu Stream near Kilauea

Location.--Lat 22°10'55", long 159°25'35", on left bank 0.75 mile upstream from confluence with Halaulani Stream, 1.25 miles above stone dam, and 2.5 miles southwest of Kilauea.

Drainage area.--1.8 sq mi, approximately.

Records available.--October 1957 to June 1960.

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

Extremes.--1957-60: Maximum discharge, 1,750 mgd (2,710 cfs) Aug. 6, 1959 (gage height, 7.23 ft, from floodmark in well), from rating curve extended above 410 mgd on basis of slope-area measurement of peak flow; minimum, 0.80 mgd (1.24 cfs), June 27-28, 1959. Maximum stage known, 11.0 ft on Jan. 24, 1956, from floodmarks (discharge, 3,620 mgd (5,600 cfs), from slope-area measurement of peak flow).

Remarks.--Kalihiwai ditch diverts an average of about 3 mgd about 0.5 mile above station for domestic water supply and irrigation of sugarcane.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	4.30	21.4	3.54	5.48	2.48	2.52	4.66	2.37	-
1959	8.45	15.6	7.23	16.2	8.91	8.03	5.07	5.83	2.00	6.56	3.68	1.47	7.46
1960	2.65	17.6	7.01	2.61	14.4	4.86	7.41	9.73	32.2	12.3	6.14	3.81	10.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	2.78	13.8	2.29	3.54	1.60	1.63	3.01	1.53	-
1959	5.46	10.1	4.67	10.5	5.76	5.19	3.28	3.77	1.29	4.24	2.38	.951	4.82
1960	1.71	11.4	4.53	1.69	9.29	3.14	4.79	6.29	20.8	7.93	3.97	2.46	6.50

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	83.5	426	70.8	99.2	49.6	49.0	93.2	45.9	-
1959	169	312	140	326	173	161	102	106	39.9	127	73.7	28.5	1,760
1960	52.9	352	136	52.4	279	97.3	148	182	644	258	123	73.7	2,580

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day	Mean		Million gallons	Mean		Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd		Cfs	Mgd		Cfs	
1958	1569	420	650	Dec. 1, 1957	-	-	-	-	-	4.63	7.16	1,690	
1959	1639	765	1,180	Oct. 10, 1958	0.80	1.24	4.82	7.46	1,760	3.96	6.13	1,450	
1960	1719	1,750	2,710	Aug. 6, 1959	1.1	1.7	6.50	10.1	2,380	-	-	-	

975. Halaulani Stream at altitude 400 ft, near Kilauea

Location.--Lat 22°10'35", long 159°25'15", on left bank 0.5 mile upstream from confluence with Pohakuhonu, 1 mile above stone dam, and 2.5 miles southwest of Kilauea.

Drainage area.--1.1 sq mi, approximately.

Records available.--November 1957 to June 1960.

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

Extremes.--1957-60: Maximum discharge, 1,340 mgd (2,070 cfs) Aug. 6, 1959 (gage height, 8.30 ft), from rating curve extended above 130 mgd on basis of slope-area measurement of peak flow; minimum, 2.35 mgd (3.64 cfs) June 28, 1959.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	24.3	8.32	9.64	6.73	6.62	9.98	5.82	-
1959	17.3	21.3	11.6	17.8	12.5	12.8	9.45	9.13	5.31	11.7	8.80	4.27	11.9
1960	6.22	18.3	9.70	5.01	16.4	9.50	9.79	10.4	30.2	13.9	10.2	7.63	12.3

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	15.7	5.38	6.23	4.35	4.28	6.45	3.76	-
1959	11.2	13.7	7.49	11.5	8.06	8.26	6.11	5.90	3.43	7.54	5.69	2.76	7.66
1960	4.02	11.8	6.27	3.24	10.6	6.14	6.33	6.69	19.5	8.99	6.60	4.93	7.92

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	487	167	175	135	126	200	113	-
1959	346	424	225	356	242	256	190	165	108	226	176	82.7	2,790
1960	125	365	188	100	317	190	196	194	603	270	205	148	2,900

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30									Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1958	1569	422	653	Dec. 1, 1957	-	-	-	-	-	7.58	11.7	2,770	
1959	1639	446	690	Oct. 10, 1958	2.35	3.64	7.66	11.9	2,790	6.11	9.45	2,230	
1960	1718	1,340	2,070	Aug. 6, 1959	2.50	3.87	7.92	12.3	2,900	-	-	-	

995. Hanalei ditch near Kilauea

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

Records available--July 1956 to June 1960. July 1951 to June 1956 in files of Kilauea Sugar Co.

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

Extremes--1956-60: Maximum daily discharge, 19.3 mgd (29.9 cfs) Sept. 17, 1956; no flow at times.

Remarks--Flow regulated by gates and spillways. Hanalei ditch diverts water from Kalihiwai River, 2.2 miles southwest of station. Water used for irrigation of sugarcane in vicinity of Kilauea.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	0	8.85	233	26.8	0	0	0	0	0	0	92.6	198	559
1958	242	28.2	94.6	190	43.4	0	0	0	0	0	0	154	752
1959	78.7	0	0	71.6	0	0	0	0	175	180	176	209	890
1960	211	49.4	110	186	0	0	0	0	0	0	84.4	209	850

1000. 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 1960. 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--28 years (1932-60), 18.9 mgd (29.2 cfs).

Extremes--1932-60: Maximum daily discharge, 64 mgd (99 cfs) Apr. 11, 25, 26, 1942; no flow at times.

Remarks--Tunnel diverts water from Kaapoko Stream and Hanalei River and discharges into north branch of North Fork Waialua River; water is used for irrigation in vicinity of Lihue and Kapaa. Flow regulated by spillway and headgates.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	456	682	610	576	547	579	603	446	317	32.3	414	525	5,790
1952	600	737	538	636	527	487	62.5	8.46	9.15	7.42	6.90	6.60	3,630
1953	7.00	6.98	9.17	179	141	110	120	148	149	90.9	494	597	2,050
1954	573	583	461	480	552	547	117	79.4	473	598	698	784	5,950
1955	815	357	206	207	201	158	122	112	54.8	59.6	58.9	26.0	2,380
1956	19.5	38.8	9.53	11.3	33.8	8.37	15.1	16.6	9.36	6.37	7.33	10.2	186
1957	9.33	7.61	6.97	16.1	13.5	18.6	41.4	44.9	39.1	530	516	440	1,680
1958	707	895	635	516	656	101	17.5	16.3	16.7	12.4	8.18	522	4,103
1959	848	695	532	479	614	595	584	508	536	605	623	506	7,120
1960	664	197	152	502	592	743	657	408	328	317	648	484	5,690

1010. 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, approximately.

Records available.--January 1914 to January 1952, July 1952 to August 1955. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 625 ft (from topographic map). Prior to Jan. 15, 1915, at site 300 ft downstream at datum 6.0 ft lower and Jan. 15, 1915, to July 19, 1921, at present datum.

Average discharge.--40 years (1914-51, 1952-55), 50.8 mgd (78.6 cfs).

Extremes.--1914-56: Maximum discharge observed, 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 measurement at gage height 10.12 ft, but may have been greater on Nov. 12-13, 1955, when flood of undetermined magnitude destroyed station; minimum, 5.8 mgd (9.0 cfs) Apr. 28, May 1-3, 1926.

Remarks.--Since 1925 Hanalei tunnel has been diverting water from Hanalei River and its tributary Kaapoko Stream at points about 2 miles above station, for irrigation in vicinity of Lihue.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	35.7	135	34.3	19.6	33.6	42.9	84.5	97.9	325	100	31.6	16.1	80.0
1952	25.1	60.0	45.2	81.7	94.7	144	-	-	-	-	-	-	-
1953	89.9	56.8	70.6	82.9	92.8	64.4	48.7	79.1	123	46.1	38.1	22.9	68.4
1954	17.0	23.5	15.1	15.8	39.3	52.9	53.1	90.4	65.0	47.5	44.4	49.0	42.4
1955	76.4	93.6	61.0	59.4	84.5	169	133	178	76.7	99.0	103	68.7	99.8
1956	94.5	-	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	23.1	87.1	22.2	12.7	21.7	27.7	54.6	63.3	210	64.8	20.4	10.4	51.7
1952	16.2	38.8	29.2	52.8	61.2	93.2	-	-	-	-	-	-	-
1953	58.1	36.7	45.6	55.6	60.0	41.6	31.5	51.1	82.9	29.8	24.6	14.8	44.2
1954	11.0	15.2	9.73	10.2	25.4	34.2	34.3	58.4	42.0	30.7	28.7	31.7	27.4
1955	49.4	60.5	39.4	38.4	54.6	109	86.2	115	49.6	64.0	66.6	44.4	64.5
1956	61.1	-	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	715	2,700	667	395	652	858	1,690	1,770	6,520	1,940	631	314	18,850
1952	502	1,200	877	1,640	1,840	2,890	-	-	-	-	-	-	-
1953	1,800	1,140	1,370	1,660	1,800	1,290	978	1,430	2,570	895	763	444	16,140
1954	342	470	292	315	762	1,060	1,060	1,630	1,300	920	891	951	9,990
1955	1,530	1,880	1,180	1,190	1,640	3,380	2,670	3,210	1,540	1,920	2,070	1,330	23,540
1956	1,890	-	-	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30							Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1950	-	-	-	-	-	-	-	-	-	-	-	-
1951	1219	*3,060	*4,730	Mar. 28, 1951	6.6	10.2	51.7	80.0	18,850	51.3	79.4	18,720
1952	1249	9,200	14,200	Jan. 3, 1952	-	-	-	-	-	59.8	92.5	21,810
1953	1289	950	1,470	Mar. 4, 1953	8.8	13.6	44.2	68.4	16,140	28.3	43.8	10,320
1954	1349	4,880	7,550	Jan. 1, 1954	7.1	11.0	27.4	42.4	9,990	48.1	74.4	17,550
1955	1399	4,200	6,500	Feb. 6, 1955	17.3	26.8	64.5	99.8	23,540	-	-	-
1956	1449	-	-	-	-	-	-	-	-	-	-	-

* Revised.

1080. Wainiha River near Hanalei

Location.--Lat 22°08'10", 159°33'40", on left bank, at Puwainui Falls, 1.5 miles upstream from Wainiha powerplant intake and 6.0 miles southwest of Hanalei.

Drainage area.--10.2 sq mi.

Records available.--August 1952 to February 1956, October 1957 to June 1960. July 1914 to June 1916 at site half a mile downstream; records not equivalent. Gage-height records collected in this vicinity from April 1923 to December 1940 are contained in files of McBryde Sugar Co.

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

Extremes.--1952-60: Maximum discharge not determined; maximum gage height, about 14.1 ft, from floodmarks, Feb. 17, 1956; minimum, 22.5 mgd (34.8 cfs) Feb. 12, 1954.

Remarks.--No diversion above station. Water is used for power by McBryde Sugar Co.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	86.2	129	149	102	54.9	130	179	73.2	96.2	74.7	-
1954	68.4	69.0	52.3	53.7	116	116	94.8	141	135	120	122	128	101
1955	175	134	77.7	90.8	137	350	192	224	130	156	126	103	158
1956	130	169	77.4	92.1	286	169	240	-	-	-	-	-	-
1957	-	-	-	-	-	-	-	-	-	-	-	-	-
1958	-	-	-	-	135	365	107	74.4	81.5	73.8	96.4	82.8	-
1959	189	215	127	164	118	101	110	122	67.6	154	115	64.1	129
1960	110	203	103	60.0	123	172	147	155	170	178	127	104	138

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	55.7	83.5	96.6	65.9	35.5	84.1	116	47.3	62.2	48.3	-
1954	44.2	44.6	33.8	34.7	75.0	75.1	61.3	91.0	87.3	77.4	78.6	82.7	65.5
1955	112	86.3	50.2	58.7	88.9	228	124	145	83.8	101	81.4	65.3	102
1956	83.8	109	50.0	59.5	185	109	155	-	-	-	-	-	-
1957	-	-	-	-	-	-	-	-	-	-	-	-	-
1958	-	-	-	-	87.4	236	69.1	48.1	52.7	47.7	62.3	53.5	-
1959	122	139	81.8	106	76.1	65.6	70.8	78.9	43.7	99.8	74.1	41.4	83.4
1960	71.0	131	66.7	38.8	79.2	111	95.1	100	110	115	81.9	67.4	88.9

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	1,670	2,590	2,900	2,040	1,100	2,350	3,600	1,420	1,930	1,450	-
1954	1,370	1,380	1,020	1,080	2,250	2,330	1,900	2,550	2,710	2,320	2,440	2,490	23,830
1955	3,470	2,680	1,510	1,820	2,660	7,010	3,850	4,050	2,600	3,040	2,520	1,990	37,200
1956	2,600	3,370	1,500	1,840	5,540	3,380	4,790	-	-	-	-	-	-
1957	-	-	-	-	-	-	-	-	-	-	-	-	-
1958	-	-	-	-	2,620	7,330	2,140	1,350	1,630	1,430	1,930	1,600	-
1959	3,770	4,310	2,450	3,280	2,280	2,040	2,200	2,210	1,360	2,990	2,300	1,240	30,430
1960	2,200	4,050	2,000	1,200	2,380	3,430	2,950	2,910	3,410	3,460	2,540	2,020	32,550

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1953	1569	2,650	4,100	Mar. 4, 1953	-	-	-	-	-	58.3	90.4	21,280	
1954	1569	4,000	6,190	Feb. 22, 1954	23	36	65.3	101	23,830	91.9	142	33,550	
1955	1569	3,510	5,430	Dec. 22, 1954	26	40	102	158	37,200	99.4	154	36,280	
1956	1569	-	-	Feb. 17, 1956	-	-	-	-	-	-	-	-	
1957	-	-	-	-	-	-	-	-	-	-	-	-	
1958	1569	10,200	15,800	Dec. 1, 1957	-	-	-	-	-	77.3	120	28,210	
1959	1239	1,960	3,030	July 20, 1958	28	43	83.4	129	30,430	75.5	117	27,560	
1960	1719	13,000	20,100	Aug. 6, 1959	29.0	44.9	88.9	138	32,550	-	-	-	

ISLAND OF KAUAI

1170. 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, approximately.

Records available.--November 1931 to August 1955.

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

Average discharge.--23 years (1932-55), 4.61 mgd (7.13 cfs).

Extremes--1931-55: 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.--No diversion above station.

[illegible][illegible][illegible][illegible]

Location (revised).--Lat 21°31'09", long 157°56'53", on left bank 140 ft upstream from intake of Wahiawa Water Co.'s tunnel and the confluence of Right and Left Branches of North Fork Kaukonahua Stream, and 4.5 miles northeast of Wahiawa.

Records available.--May 1913 to July 1953, April to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Average discharge.--38 years (1913-24, 1926-53), 10.7 mgd (16.6 cfs).

Extremes.--1913-53, 1960: Maximum discharge, 3,550 mgd (5,490 cfs) Jan. 1, 1933 (gage height, 11.7 ft, from floodmarks), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.

Remarks.--No diversion above station.

Fiscal year	Monthly and yearly mean discharges, in cubic feet per second												
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	11.7	20.4	8.11	5.96	11.8	10.3	11.6	9.07	54.3	8.40	5.15	2.61	13.2
1952	4.19	15.3	7.15	10.4	20.0	23.2	18.7	7.80	13.6	12.9	9.4	28.9	15.9
1953	28.9	13.6	13.8	14.4	22.9	9.59	2.77	6.48	33.7	2.96	11.4	8.40	12.6
1954	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	-	-	-	-	-	-	-	-	-	-	25.2	14.1	-

Fiscal year	Monthly and yearly mean discharges, in million gallons a day												The year
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1951	7.57	13.2	5.24	2.56	7.61	6.65	7.50	5.86	35.1	5.49	3.33	1.69	8.54
1952	2.7	9.91	4.62	2.59	12.9	15.0	12.5	5.89	15.8	5.89	19.1	10.1	10.1
1953	18.7	8.78	8.92	9.28	14.8	6.20	1.79	5.48	8.85	1.91	7.37	5.43	8.15
1954	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	-	-	-	-	-	-	-	-	-	-	16.3	9.13	-

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	235	410	157	79.4	228	206	232	164	1,090	165	103	50.8	5,120
1952	84.0	307	139	208	386	465	576	146	612	250	183	580	3,740
1953	579	272	268	288	445	192	55.4	153	274	57.2	228	163	2,970
1954	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	-	-	-	-	-	-	-	-	-	-	504	274	-

[illegible]

2010. Right Branch of North Fork Kaukonahua Stream near Wahiawa

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

Drainage area.--1.2 sq mi, approximately.

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

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

Average discharge.--36 years (1913-24, 1926-32, 1934-53), 7.23 mgd (11.2 cfs).

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

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	4.89	17.9	5.93	2.65	7.88	7.30	7.46	8.79	50.6	8.54	4.77	1.78
1952	1.93	6.82	4.19	7.27	12.3	15.0	15.8	7.06	21.5	5.31	5.21	15.4
1953	16.6	8.99	8.14	7.77	14.8	4.87	2.04	6.33	9.44	2.57	7.40	3.90

Monthly and yearly mean discharge, in million gallons a day												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	3.16	11.6	3.83	1.71	5.09	4.72	4.82	5.68	32.7	5.52	3.08	1.15
1952	1.25	4.41	2.71	4.70	7.95	9.70	10.2	4.56	13.9	3.43	3.37	9.97
1953	10.7	5.81	5.26	5.02	9.57	3.15	1.32	4.09	6.10	1.66	4.78	2.52

Monthly and yearly discharge, in million gallons												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	98.0	360	115	52.9	153	146	149	159	1,010	166	95.4	34.5
1952	38.7	137	81.4	146	239	301	317	132	432	103	104	299
1953	332	180	158	156	287	97.6	40.8	115	189	49.9	148	75.5

Summary of yearly discharge												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge		Minimum day		Mean		Million gallons		Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons
1950	-	-	-	-	-	-	-	-	-	6.84	10.6	2,500
1951	1219	616	1,000	Mar. 26, 1951	0.34	0.53	6.97	10.8	2,540	7.01	10.8	2,560
1952	1249	811	1,410	Mar. 4, 1952	.29	.45	6.56	9.84	2,330	7.10	11.0	2,600
1953	1289	544	842	Mar. 29, 1953	.29	.45	5.01	7.75	1,830	-	-	-

2030. Mauka ditch near Wahiawa

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

Records available.--March 1947 to June 1960. Prior to July 1958, published as Kaukonahua ditch near Wahiawa.

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

Average discharge.--13 years, 3.15 mgd (4.87 cfs).

Extremes.--1947-60: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times.

Remarks.--Ditch diverts water from North Fork Kaukonahua Stream for domestic use.

Monthly and yearly diversion, in million gallons												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	15.1	21.7	10.9	5.66	3.31	5.79	8.53	6.25	31.0	4.47	2.66	49.5
1952	71.1	148	129	161	170	178	180	136	202	159	122	27.7
1953	2.31	2.32	.60	2.20	122	99.8	64.5	83.7	164	103	152	138
1954	132	155	59.2	59.1	54.6	89.0	40.7	26.6	49.5	44.3	128	177
1955	182	192	170	96.6	56.0	81.1	113	134	148	137	150	142
1956	151	163	112	106	91.0	66.4	89.7	102	86.8	94.4	105	107
1957	138	159	148	168	155	139	144	134	104	131	128	66.6
1958	121	160	126	93.7	105	72.5	68.4	38.0	44.5	61.3	109	124
1959	112	81.9	152	130	111	80.9	53.8	69.8	67.1	97.2	113	64.7
1960	91.4	118	104	94.2	82.1	95.8	139	107	156	167	183	153

2040. North Fork Kaukonahua Stream near Wahiawa

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

Drainage area.--4.86 sq mi.

Records available.--September 1946 to June 1960.

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

Average discharge.--13 years (1947-60), 21.2 mgd (32.8 cfs).

Extremes.--1946-60: Maximum discharge, 2,200 mgd (3,400 cfs) Nov. 28, 1954 (gage height, 15.55 ft), from rating curve extended above 190 mgd on basis of slope-area measurements at gage heights 8.39 and 15.55 ft; no flow several days in 1953.

Remarks.--Poamoho tunnel diverts water from Poamoho Stream into North Fork Kaukonahua Stream about a mile above station. Mauka ditch diverts water 2.6 miles above station for domestic use in Wahiawa.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	21.4	51.2	22.6	11.1	27.1	28.0	31.6	35.6	158	30.6	15.8	4.64	36.7
1952	4.70	22.1	9.48	22.7	37.1	43.5	40.1	12.1	67.5	15.6	12.2	60.7	29.1
1953	61.0	30.0	32.0	30.8	44.4	15.2	3.17	21.2	23.1	2.86	17.9	10.5	24.4
1954	9.04	15.2	3.30	2.86	7.12	13.8	10.8	13.5	13.7	11.8	20.6	30.3	12.7
1955	60.0	55.4	19.0	14.5	48.0	65.9	37.0	81.2	21.7	28.5	22.3	14.5	38.8
1956	38.1	50.7	10.6	10.9	35.3	30.8	22.9	152	65.4	22.4	58.6	54.8	45.6
1957	29.9	59.3	5.69	32.8	25.7	14.4	55.1	63.7	8.20	30.5	13.5	4.69	28.3
1958	25.1	47.3	10.7	4.22	28.0	69.9	17.2	5.09	46.0	6.54	13.2	15.5	24.3
1959	86.0	128	31.9	80.8	23.2	10.4	8.23	41.6	16.1	40.1	16.9	4.16	40.7
1960	11.5	27.5	24.1	5.91	9.86	10.3	67.6	11.2	30.9	54.8	74.6	28.6	29.9

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	13.8	33.1	14.6	7.18	17.5	18.1	20.4	23.0	102	19.8	10.2	3.00	23.7
1952	3.04	14.3	6.13	14.7	24.0	28.1	25.9	7.85	43.6	10.1	7.91	39.2	18.8
1953	39.4	19.4	20.7	19.9	28.7	9.83	2.05	13.7	14.9	1.85	11.6	6.79	15.8
1954	5.84	9.80	2.13	1.85	4.60	8.95	6.98	8.74	8.88	7.65	13.3	19.6	8.19
1955	38.8	35.8	12.3	9.39	31.0	42.6	23.9	52.5	14.0	18.4	14.4	9.34	25.1
1956	24.6	32.8	6.83	7.04	22.8	19.9	14.8	98.2	42.3	14.5	37.9	35.4	29.5
1957	16.7	38.3	3.68	21.2	16.6	9.30	35.6	†41.2	5.30	19.7	8.72	3.03	18.3
1958	15.2	30.6	6.91	2.73	18.1	45.2	11.1	3.29	29.7	4.23	8.56	9.99	15.7
1959	55.6	82.7	20.6	52.2	15.0	6.70	5.32	26.9	10.4	25.9	10.9	2.69	26.3
1960	7.42	17.6	15.6	3.82	6.37	6.66	43.7	7.22	20.0	35.4	48.2	18.5	19.3

† Corrected.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	429	1,030	439	223	525	561	631	644	3,170	593	317	89.9	8,650
1952	94.3	442	184	457	721	872	804	228	1,350	302	245	1,180	6,880
1953	1,220	600	621	617	861	305	63.6	383	462	55.4	360	204	5,750
1954	181	304	64.0	57.4	138	278	216	245	275	230	414	587	2,990
1955	1,200	1,110	368	281	929	1,320	742	1,470	435	552	448	280	9,140
1956	764	1,020	205	218	685	616	460	2,850	1,310	435	1,170	1,060	10,790
1957	580	1,190	110	656	497	288	1,100	1,150	164	590	270	91.0	6,680
1958	504	947	207	94.5	543	1,400	344	†92.0	821	127	265	300	5,730
1959	1,720	2,560	618	1,620	450	208	165	754	322	777	336	80.6	9,610
1960	230	552	469	118	191	207	1,360	209	621	1,060	1,500	555	7,070

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30											Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean		Million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	-	-	25.7	39.8	9,430	
1951	1219	1,580	2,440	Mar. 26, 1951	0.71	1.10	23.7	36.7	8,650	22.5	34.8	8,320			
	1289														
1952	1249	1,540	2,380	Mar. 4, 1952	.47	.73	18.8	29.1	6,880	22.8	35.3	8,330			
	1289														
1953	1289	1,070	1,660	Mar. 29, 1953	.22	.34	15.8	24.4	5,750	6.99	10.8	2,550			
1954	1349	1,100	1,700	Apr. 29, 1954	0	0	8.19	12.7	2,990	19.7	30.5	7,180			
1955	1399	2,200	3,400	Nov. 28, 1954	1.45	2.24	25.1	38.8	9,140	20.4	31.6	7,440			
	1569														
1956	1449	1,870	2,890	Feb. 25, 1956	.51	.79	29.5	45.6	10,790	29.0	44.9	10,610			
1957	1569	1,910	2,960	Feb. 4, 1957	.60	.93	18.3	28.3	6,690	19.3	29.9	7,050			
1958	1569	1,480	2,290	Mar. 5, 1958	.39	.60	15.7	24.3	5,730	25.3	39.1	9,220			
1959	1639	1,690	2,610	Oct. 23, 1958	.34	.53	26.3	40.7	9,610	11.5	17.8	4,200			
1960	1719	1,240	1,920	May 12, 1960	.27	.42	19.3	29.9	7,070	-	-	-			

2060. 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--1.93 sq mi.

Records available--May 1944 to June 1957.

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

Average discharge--13 years (1944-57), 7.17 mgd (11.1 cfs).

Extremes--1944-57: Maximum discharge, 1,560 mgd (2,410 cfs) Nov. 28, 1954 (gage height, 8.55 ft), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 1945, Nov. 14, 15, 1953.

Remarks--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	12.5	17.2	7.63	3.93	11.0	10.8	13.3	8.14	46.0	7.52	2.88	0.832	11.9
1952	2.07	13.1	5.62	11.5	14.5	17.9	13.2	6.44	21.0	10.1	7.94	12.1	11.3
1953	22.9	8.68	5.43	15.5	19.6	8.28	1.45	6.03	11.2	1.96	5.55	4.94	9.33
1954	6.10	7.72	2.31	1.07	2.74	7.32	3.37	4.24	5.93	6.31	8.82	12.7	5.72
1955	35.1	28.8	14.7	10.8	14.8	28.8	11.2	32.5	10.0	8.32	8.25	4.30	17.2
1956	12.4	20.7	9.18	5.82	8.77	9.56	6.95	30.9	14.7	8.06	16.1	26.5	14.1
1957	17.2	27.7	5.15	12.6	7.84	5.00	13.5	18.1	2.32	7.58	6.70	3.13	10.6

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	8.08	11.1	4.93	2.54	7.13	7.00	8.59	5.28	29.7	4.86	1.86	0.538	7.69
1952	1.34	8.47	3.63	7.46	9.37	11.6	8.51	4.16	13.8	6.52	5.13	7.84	7.32
1953	14.8	5.61	3.51	10.0	12.7	5.35	9.99	3.90	7.27	1.27	3.59	3.19	6.03
1954	3.94	4.99	1.49	6.94	1.77	4.73	2.18	2.74	3.83	4.08	5.70	8.21	3.70
1955	22.7	18.6	9.49	6.95	9.55	18.6	7.21	21.0	6.48	5.38	5.33	2.78	11.1
1956	8.04	13.4	5.93	3.76	5.67	6.18	4.49	20.0	9.47	5.21	10.4	17.1	9.09
1957	11.1	17.9	3.33	8.13	5.07	3.23	8.75	11.7	1.50	4.90	4.33	2.02	6.82

† Corrected.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	251	345	148	78.9	214	217	266	147	921	146	57.6	16.1	2,810
1952	41.6	263	109	231	281	360	264	121	420	196	159	235	2,680
1953	457	174	105	310	380	166	29.1	109	225	38.2	111	95.8	2,200
1954	122	155	44.6	21.5	55.0	146	87.4	76.8	119	122	177	246	1,350
1955	702	577	285	215	286	577	224	587	201	161	165	83.3	4,060
1956	249	417	178	116	170	192	139	580	294	156	323	513	3,330
1957	344	556	99.9	252	152	100	271	327	46.4	147	134	60.6	2,490

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	-	-	8.64	13.4
1951	1219	765	1,180	Mar. 26, 1951	0.15	0.23	7.69	11.9	2,810	7.78	12.0	2,940	
1952	1249	647	1,000	Mar. 4, 1952	.03	.05	7.32	11.3	2,680	8.16	12.6	2,990	
1953	1289	413	639	Mar. 11, 1953	.09	.14	6.03	9.33	2,200	3.16	4.89	1,150	
1954	1349	472	730	Apr. 29, 1954	.01	.02	3.70	5.72	1,350	9.46	14.6	3,450	
1955	1399	1,560	2,410	Nov. 28, 1954	.43	.66	11.1	17.2	4,060	7.51	11.6	2,740	
1956	1449	844	1,310	Dec. 31, 1955	.36	.56	9.09	14.1	3,330	9.58	14.8	3,510	
1957	1569	1,060	1,640	Aug. 8, 1956	.14	.22	6.82	10.6	2,490	-	-	-	

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

Location--Lat 21°29'32", long 157°59'55", on right bank of South Fork Kaukonahua Stream at dam on East Pump Reservoir, 2 miles southeast of Wahiawa and about 7.5 miles north of Waipahu.

Drainage area--4.04 sq mi.

Records available--July 1957 to June 1960.

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

Extremes--1957-60: Maximum discharge, 1,270 mgd (1,960 cfs) Feb. 21, 1959 (gage height, 6.40 ft); minimum, 0.46 mgd (0.71 cfs) June 19, 1959.

Flood of Feb. 25, 1956, is the highest known since 1946 and reached a stage of 8.85 ft and was effected by backwater from Wahiawa Reservoir.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	13.5	38.7	5.76	2.15	14.8	35.1	14.0	3.98	23.2	4.24	9.93	12.7	15.0
1959	55.7	81.1	22.3	48.0	12.5	6.99	5.89	30.3	16.7	30.8	7.52	2.27	26.8
1960	6.73	19.2	13.2	4.97	10.3	7.88	23.2	13.5	19.2	28.5	26.6	19.8	16.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	8.72	25.0	3.72	1.39	9.57	22.7	9.08	2.57	15.0	2.74	6.42	8.22	9.69
1959	36.0	52.4	14.4	31.0	8.08	4.52	3.61	19.6	10.8	19.9	4.86	1.47	17.3
1960	4.35	12.4	8.53	3.21	6.67	5.09	15.0	8.74	12.4	18.4	17.2	12.8	10.4

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	270	776	112	43.1	287	703	282	72.0	465	82.1	199	247	3,540
1959	1,120	1,630	432	961	242	140	118	549	335	598	151	44.0	6,320
1960	135	384	256	99.6	200	158	464	253	383	553	534	385	3,800

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million Gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1958	1639	1,060	1,640	Nov. 21, 1957	0.67	1.04	9.69	15.0	3,540	16.1	24.9	5,870	
1959	1639	1,270	1,960	Feb. 21, 1959	.51	.79	17.3	26.8	6,320	8.29	12.8	3,030	
1960	1719	724	1,120	Aug. 6, 1959	.80	1.24	10.4	16.1	3,800	-	-	-	

2085. Right Branch of South Fork Kaukonahua Stream near Wahiawa

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

Drainage area--0.86 sq mi.

Records available--August 1957 to June 1960.

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

Extremes--1957-60: Maximum discharge, 498 mgd (771 cfs) Mar. 5, 1958 (gage height, 5.34 ft), from rating curve extended above 110 mgd by logarithmic plotting; no flow at times.

Remarks--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	5.79	2.09	4.05	7.10	2.23	0.682	7.40	0.043	0.045	0.039	-
1959	3.71	7.61	3.98	3.95	.870	.330	.921	4.24	1.35	1.51	.328	.032	2.40
1960	.571	1.43	.054	.037	.016	.037	.286	.056	.630	.040	.062	.958	.350

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	3.74	1.35	2.62	4.59	1.44	0.441	4.78	0.028	0.029	0.025	-
1959	2.40	4.92	2.57	2.55	.562	.213	.595	2.74	.874	.978	.212	.021	1.55
1960	.369	.924	.035	.024	.010	.024	.185	.036	.407	.026	.040	.619	.226

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	112	41.9	78.6	142	44.6	12.3	148	0.84	0.90	0.75	-
1959	74.3	152	77.1	79.0	16.9	6.60	18.4	76.8	27.1	29.4	6.56	.84	565
1960	11.4	28.6	1.04	.73	.29	.73	5.72	1.04	12.6	.77	1.24	18.6	82.8

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1958	1639	498	771	Mar. 5, 1958	0	0	-	-	-	1.68	2.60	613	
1959	1639	208	322	Feb. 21, 1959	0	0	1.55	2.40	565	.552	.854	201	
1960	1719	30.1	46.6	Aug. 25, 1959	0	0	.226	.350	82.8	-	-	-	

2090. South Pork 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--5.26 sq mi.

Records available--October 1946 to July 1958.

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

Average discharge--11 years (1947-58), 16.0 mgd (24.8 cfs).

Extremes--1946-58: Maximum discharge, 2,840 mgd (4,390 cfs) Nov. 28, 1954 (gage height, 18.16 ft), from rating curve extended above 100 mgd; maximum gage height, 22.55 ft Feb. 25, 1956; minimum discharge, 0.27 mgd (0.42 cfs) Apr. 11-15, 26, 28, 1954.

Remarks--Ku Tree Reservoir (capacity, 293,000,000 gal) and Koolau Reservoir (capacity, 43,000,000 gal) located on tributary, divert small quantity of water 0.1 mile below Canon Dam for domestic use, fire protection, and as a standby in case of emergency. Excess of water spills back into stream.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	28.5	35.9	17.6	11.5	15.4	21.4	29.7	19.6	102	20.0	8.45	4.02	26.1
1952	2.66	22.0	10.4	22.4	29.1	30.3	24.9	12.9	42.5	21.4	14.1	19.6	21.0
1953	36.1	13.5	11.6	24.1	30.8	20.4	3.73	10.6	22.4	7.25	7.67	9.73	16.6
1954	10.0	9.45	2.20	1.43	3.65	10.4	6.76	5.96	9.10	9.33	12.3	26.0	8.86
1955	75.5	47.3	24.4	19.5	52.1	69.6	25.5	72.1	29.6	21.0	18.9	12.7	39.8
1956	27.1	41.0	18.3	14.9	19.6	27.7	17.9	79.1	30.0	15.6	21.7	57.6	30.6
1957	27.2	51.7	9.78	26.0	13.7	16.7	44.6	50.3	8.94	17.3	13.2	5.09	23.7
1958	15.3	59.1	12.3	4.25	18.7	48.3	17.2	5.06	41.3	4.32	10.6	13.2	21.0

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	16.4	21.9	11.4	7.41	9.96	13.8	19.2	12.7	65.7	12.9	5.45	2.60	16.9
1952	1.72	14.2	6.70	14.5	16.8	19.6	16.1	8.36	27.5	13.8	9.11	12.7	13.6
1953	23.3	8.72	7.50	15.6	19.9	13.2	2.41	6.86	14.5	4.69	4.96	6.29	10.7
1954	6.48	6.11	1.42	.922	2.36	6.70	4.37	3.85	5.88	6.03	7.94	16.8	5.74
1955	48.8	30.6	15.8	12.6	33.7	45.0	16.5	46.6	19.1	13.6	12.2	8.18	25.1
1956	17.5	26.5	11.8	9.61	12.7	17.9	11.6	51.1	19.4	10.1	14.0	37.2	19.8
1957	17.6	33.4	6.32	16.8	8.86	10.8	28.8	32.5	5.78	11.2	8.56	3.29	15.3
1958	9.91	38.2	7.92	2.75	12.1	31.2	11.1	3.27	26.7	2.79	6.83	8.53	13.6

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	570	679	342	230	299	426	594	354	2,040	388	169	78.0	6,170
1952	53.2	439	201	449	565	609	498	243	852	414	283	381	4,990
1953	724	270	225	484	598	408	74.8	192	450	141	154	189	3,910
1954	201	189	42.5	28.6	70.8	208	135	108	182	181	246	503	2,090
1955	1,510	950	476	390	1,010	1,390	512	1,300	593	408	377	246	9,160
1956	543	822	353	298	382	556	358	1,480	600	302	434	1,120	7,250
1957	546	1,040	190	520	266	335	893	909	179	336	265	98.7	5,580
1958	307	1,180	237	85.2	362	967	345	91.5	828	83.8	212	256	4,950

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons	gallons
1950	-	-	-	-	-	-	-	-	-	-	-	18.7	28.9
1951	1219	(a)	(a)	(b)	0.80	1.24	16.9	26.1	6,170	16.3	25.2	5,940	5,940
1952	1249	560	866	Mar. 4, 1952	.56	.87	13.6	21.0	4,990	14.7	22.7	5,380	5,380
1953	1289	590	913	Mar. 11, 1953	.75	1.16	10.7	16.6	5,910	5.31	8.22	1,940	1,940
1954	1349	680	1,050	Apr. 29, 1954	.27	.42	5.74	8.88	2,090	19.4	30.0	7,080	7,080
1955	1399	2,840	4,390	Nov. 28, 1954	1.30	2.01	25.1	38.8	9,160	17.5	27.1	6,390	6,390
1956	1449	(a)	(a)	Feb. 25, 1956	1.37	2.12	19.8	30.6	7,250	19.6	30.3	7,190	7,190
1957	1569	1,650	2,550	Aug. 8, 1956	.96	1.49	15.3	23.7	5,580	16.0	24.8	5,820	5,820
1958	1569	(a)	(a)	Mar. 5, 1958	.90	1.39	13.6	21.0	4,950	-	-	-	-

a Not determined.

b Probably Mar. 26, 1951.

2109. Poamoho tunnel near Wahiawa

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

Records available.--July 1958 to June 1960.

Gage.--Water-stage recorder and 7-foot concrete flume. Altitude of gage is 1,120 ft (from topographic map).

Extremes.--1958-60: Maximum daily discharge, 116 mgd (179 cfs) Aug. 8, 1958; no flow at times.

Remarks.--Water from Poamoho Stream basin is diverted by Paomoho tunnel to Kaukonahua Stream basin.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1959	329	451	109	163	113	40.7	42.3	166	60.6	158	23.4	2.52	1,660
1960	16.7	123	18.6	3.23	2.12	15.9	339	40.0	114	163	308	23.7	1,190

2110. Poamoho Stream near Wahiawa

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

Drainage area.--1.79 sq mi.

Records available.--January 1947 to June 1960.

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

Average discharge.--13 years, 2.57 mgd (3.98 cfs).

Extremes.--1947-60: Maximum discharge, 1,000 mgd (1,550 cfs) Oct. 23, 1958 (gage height, 6.06 ft), from rating curve extended above 48 mgd by test on model of station site; no flow at times.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.69	9.52	3.84	1.70	2.83	3.76	5.17	5.46	41.9	8.53	3.64	1.02	7.57
1952	.794	3.36	2.20	5.31	3.61	3.73	11.2	5.86	15.3	4.38	2.96	6.79	5.46
1953	7.60	4.83	3.90	4.83	8.96	3.85	1.38	4.33	4.16	1.54	2.85	1.50	4.15
1954	.733	1.98	.781	.854	.865	2.26	.224	1.96	.105	1.04	.658	.105	.958
1955	6.99	8.56	3.42	3.26	4.52	17.3	9.95	22.7	7.21	6.03	6.00	2.72	6.15
1956	1.02	1.42	2.23	1.92	.947	.248	.032	4.64	.272	4.29	11.0	10.2	3.17
1957	4.89	6.87	1.89	6.31	2.82	.235	.193	1.12	.144	.107	.082	.150	2.09
1958	.046	.025	1.19	1.54	4.52	1.33	1.81	.890	2.14	.432	.886	2.96	1.48
1959	2.34	2.88	.011	5.89	.480	1.38	1.02	.359	.054	.962	3.31	1.07	1.67
1960	2.00	2.14	2.99	1.32	2.35	2.38	.582	1.89	5.46	3.40	.772	4.73	2.49

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.74	6.15	2.48	1.10	1.83	2.43	3.34	3.53	27.1	5.51	2.35	0.662	4.89
1952	.513	2.17	1.42	3.43	2.33	2.41	7.25	3.79	9.90	2.83	1.91	4.39	3.53
1953	4.91	3.12	2.52	3.12	5.79	2.49	.891	2.80	2.69	.997	1.84	.967	2.68
1954	.474	1.28	.505	.552	.559	1.46	.145	1.27	.068	.669	.425	.068	.619
1955	4.52	5.53	2.21	2.11	2.91	11.2	6.43	14.7	4.66	3.90	3.88	1.76	5.27
1956	.659	.918	1.44	1.24	.612	.160	.021	3.00	.176	2.77	7.09	6.62	2.05
1957	3.16	4.44	1.22	4.08	1.82	.152	.125	.723	.093	.069	.053	.097	1.35
1958	.030	.017	.772	.995	2.92	.862	1.17	.575	1.38	.279	.574	1.91	.954
1959	1.51	1.86	.007	3.81	.310	.891	.659	.232	.035	.622	2.11	.690	1.08
1960	1.29	1.38	1.93	.853	1.52	1.54	.376	1.22	3.53	2.20	.499	3.06	1.61

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	53.9	191	74.4	34.0	54.9	75.2	104	98.9	840	165	72.9	19.9	1,780
1952	15.9	67.1	42.5	106	69.9	74.6	225	110	307	84.8	59.2	132	1,290
1953	152	96.8	75.7	96.7	174	77.1	27.6	78.5	83.5	29.9	56.9	29.0	978
1954	14.7	39.6	15.2	17.1	16.8	45.3	4.48	35.6	2.12	20.1	13.2	2.05	226
1955	140	172	66.4	65.3	87.5	346	199	412	144	117	120	52.7	1,920
1956	20.4	28.4	43.1	38.5	18.4	4.95	.66	86.9	5.47	83.2	220	199	749
1957	97.8	138	36.5	126	54.6	4.72	3.88	20.2	2.89	2.07	1.63	2.92	491
1958	.93	.52	23.2	30.8	87.5	26.7	36.2	16.1	42.7	8.37	17.8	57.4	348
1959	47.0	57.5	.20	118	9.30	27.6	20.4	6.49	1.08	18.7	65.3	20.7	392
1960	40.1	42.8	57.9	26.4	45.6	47.7	11.6	35.4	110	66.0	15.5	91.8	591

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	3.36	5.20	1,230	
1951	1219	550	851	Mar. 26, 1951	0.02	0.03	4.89	7.57	1,780	4.60	7.12	1,680	
1952	1249	580	897	Mar. 4, 1952	.01	.02	3.53	5.46	1,290	4.34	6.71	1,590	
1953	1289	90	139	Nov. 19, 1952	.11	.17	2.68	4.15	978	1.24	1.92	454	
1954	1349	272	421	May 31, 1954	0	0	6.19	.958	226	2.62	4.05	955	
1955	1399	860	1,330	Nov. 28, 1954	.01	.02	5.27	8.15	1,920	3.29	5.09	1,200	
1956	1499	650	1,010	Feb. 25, 1956	0	0	2.05	3.17	749	2.88	4.46	1,050	
1957	1569	360	557	Feb. 4, 1957	.01	.02	1.35	2.09	491	.557	.862	203	
1958	1569	360	557	Mar. 5, 1958	.01	.02	.954	1.48	348	1.20	1.86	438	
1959	1639	1,000	1,550	Oct. 23, 1958	0	0	1.08	1.67	392	1.08	1.67	393	
1960	1719	330	511	May 14, 1960	0	0	1.61	2.49	591	-	-	-	

ISLAND OF OAHU

2116. Makaha Stream near Makaha

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

Drainage area.--8.13 sq mi

Records available.--July 1959 to June 1960.

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

Extremes.--Maximum discharge, 182 mgd (189 cfs) Feb. 22, 1960 (gage height, 3.27 ft), from rating curve extended above 32 mgd by logarithmic plotting; minimum, 0.01 mgd (0.02 cfs) Oct. 24, 1959.

Remarks.--A 1½-inch pipe 1,200 ft above station occasionally diverts water for use in siphoning water from a well.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	0.065	1.40	0.178	0.080	0.543	0.214	0.628	2.24	5.42	1.35	0.644	0.188	1.08

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	0.042	0.904	0.115	0.029	0.351	0.138	0.408	1.45	3.60	0.870	0.416	0.120	0.695

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	1.30	28.0	3.46	0.89	10.6	4.28	12.6	42.1	109	26.1	12.9	3.61	255

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year			
		Momentary maximum discharge			Minimum day			Mean		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Million gallons
1960	1719	122	189	Feb. 22, 1960	0.01	0.02	0.695	1.08	255	-	-

2128. Kipapa Stream near Wahiawa

Location.--Lat 21°28'15", long 157°57'50", on left bank 1,700 ft downstream from Forest Reserve Boundary, 4.9 miles southeast of Wahiawa Post Office, and 6.3 miles northeast of Waipahu.

Drainage area.--4.29 sq mi.

Records available.--January 1957 to June 1960.

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

Extremes.--1957-60: Maximum discharge, 1,520 mgd (2,350 cfs) Dec. 6, 1957 (gage height, 9.57 ft), from rating curve extended above 190 mgd on basis of slope-area measurement at gage height 7.96 ft; no flow for many days.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	-	-	22.7	12.7	0.667	7.88	3.67	0.521	-
1958	4.04	10.8	2.01	0.858	12.3	24.4	5.35	2.20	18.6	1.76	5.76	2.51	7.61
1959	24.9	87.4	8.39	37.1	3.78	2.99	3.13	8.12	4.07	10.1	4.85	1.85	12.2
1960	1.48	8.90	5.26	1.67	5.80	3.78	8.43	9.28	17.8	17.8	19.0	6.10	6.73

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	-	-	14.7	8.23	0.431	5.09	2.37	0.337	-
1958	2.61	6.96	1.30	0.540	7.95	15.8	3.46	1.42	12.0	1.10	3.72	1.62	4.92
1959	16.1	24.2	5.42	24.0	2.43	1.93	2.02	5.25	2.63	6.81	2.94	1.00	7.86
1960	0.959	5.75	3.40	1.08	3.62	2.44	5.45	6.00	11.5	11.2	12.3	3.94	5.64

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	-	-	456	231	13.4	163	73.4	10.1	-
1958	80.8	216	39.1	16.7	238	489	107	39.7	372	33.1	115	48.4	1,790
1959	498	751	163	745	72.8	59.9	62.6	147	81.6	195	91.2	3.06	2,870
1960	29.7	178	102	33.6	109	75.6	169	174	358	336	380	118	2,060

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year			
		Momentary maximum discharge			Minimum day			Mean		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Million gallons
1957	1569	-	-	-	-	-	-	-	-	5.52	8.54
1958	1569	1,520	2,390	Dec. 6, 1957	0.08	0.12	4.92	7.61	1,790	8.23	3,000
1959	1639	1,480	2,290	Oct. 23, 1958	0	0	7.86	12.2	2,870	3.04	1,110
1960	1719	1,130	1,750	Apr. 16, 1960	0	0	5.64	8.73	2,060	-	-

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.

Records available.--June 1951 to March 1952 (fragmentary), April 1952 to October 1959.

Average discharge.--7 years (1952-59), 25.7 mgd (39.8 cfs).

Extremes.--1951-59: Maximum discharge, 8,790 mgd (13,600 cfs) Nov. 28, 1954 (gage height, 14.82 ft), from rating curve extended above 470 mgd on basis of slope-area measurement at peak stage; minimum recorded, 6.4 mgd (9.9 cfs) Sept. 28-30, 1953.

Remarks.--Flow is regulated by plantation operation.

[illegible][illegible][illegible][illegible]

2140. Pearl Harbor Springs at Waiawa, near Pearl City

Location.--Lat 21°23'35", long 157°59'10", on right bank at rear of Oahu Sugar Co.'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 1960.

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

Average discharge.--26 years (1931-34, 1937-60), 11.9 mgd (18.4 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-60: 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.--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.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	395	380	374	362	386	439	448	369	420	457	469	397	4,900
1952	467	453	438	446	463	475	474	445	473	427	408	383	5,350
1953	396	384	368	399	425	425	451	395	438	401	361	342	4,790
1954	334	335	302	343	309	361	396	323	390	303	313	288	4,000
1955	309	304	266	276	300	434	456	418	496	461	386	427	4,650
1956	434	422	383	400	406	404	465	454	464	414	371	361	4,980
1957	293	303	301	323	321	406	363	360	362	347	370	298	4,050
1958	277	307	266	281	282	358	308	323	386	394	393	246	3,820
1959	254	338	276	308	350	317	381	358	362	318	326	308	3,900
1960	287	285	257	249	270	250	265	252	272	277	285	239	3,190

2150. Morikone pond outlet at Pearl City

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

Records available.--August 1951 to July 1960.

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

Average discharge.--8 years (1952-60), 1.00 mgd (1.55 cfs).

Extremes.--1951-60: Maximum daily discharge, 2.1 mgd (3.2 cfs) Jan. 12, 1956; no flow on Aug. 31, 1952, June 30, July 2, 1960.

Remarks.--Surface runoff from floods not included in figures of discharge given below.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	28.2	31.2	37.8	32.5	38.6	26.9	26.4	19.0	20.1	21.5	-
1953	18.9	26.8	17.0	23.8	27.8	27.2	19.0	16.3	15.9	17.8	15.0	15.8	241
1954	13.0	19.2	16.3	21.9	21.9	19.1	23.2	22.2	28.0	26.9	26.2	20.8	259
1955	18.4	23.7	22.3	17.4	18.1	27.8	23.1	24.5	37.6	31.6	27.7	23.2	295
1956	19.6	21.6	24.0	32.7	34.4	37.2	45.5	41.7	40.1	39.6	40.0	39.7	416
1957	45.4	45.5	36.2	38.5	44.7	38.7	46.0	43.6	41.0	30.0	31.9	30.7	472
1958	23.1	20.1	22.6	24.9	37.7	47.4	41.0	47.9	50.0	30.8	45.3	26.4	417
1959	29.7	27.3	24.8	33.8	33.7	28.5	33.6	27.0	26.0	36.6	31.5	37.0	370
1960	39.6	44.1	46.1	42.0	37.7	37.8	36.3	39.1	40.8	39.8	26.2	21.4	453

2160. Waiawa Stream near Pearl City

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

Drainage area.--26.4 sq mi.

Records available.--June 1952 to June 1960.

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

Average discharge.--8 years, 15.9 mgd (24.6 cfs).

Extremes.--1952-60: Maximum discharge, 10,900 mgd (16,900 cfs) Nov. 28, 1954 (gage height, 19.27 ft), from rating curve extended above 700 mgs on basis of slope-area measurement at gage height 17.1 ft; minimum, 1.67 mgd (2.58 cfs) June 8, 1957.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	25.8	7.06	6.08	24.8	41.0	9.14	8.90	10.3	12.2	5.55	8.88	4.35	13.7
1954	4.29	6.31	3.96	4.07	4.08	9.05	12.5	8.14	11.7	8.56	10.9	13.1	8.06
1955	50.3	23.4	8.09	14.3	139	89.0	24.4	207	29.2	9.65	9.78	5.26	49.7
1956	7.86	28.8	6.00	5.15	17.5	51.2	39.3	112	17.8	9.89	16.1	29.4	28.2
1957	13.6	30.9	7.25	16.9	18.3	22.6	87.4	32.6	5.26	7.43	8.71	3.99	21.4
1958	4.98	11.7	5.80	5.25	20.1	43.8	9.50	6.17	142	6.00	7.71	7.47	22.9
1959	80.3	111	11.6	109	5.94	8.37	8.51	22.0	7.64	27.1	7.72	4.12	33.9
1960	4.67	13.9	6.45	4.33	12.3	5.15	13.3	21.2	27.1	43.0	68.5	12.0	19.3

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	16.7	4.56	3.93	16.0	26.5	5.91	5.75	6.66	7.91	3.59	5.74	2.81	8.86
1954	2.77	4.08	2.56	2.63	2.64	5.85	8.11	5.26	7.57	5.53	7.06	8.44	5.21
1955	32.5	15.1	5.23	9.64	90.1	57.5	15.8	134	18.9	6.24	6.32	3.40	32.1
1956	5.08	18.6	3.88	3.33	11.3	33.1	25.4	72.7	11.5	6.39	10.4	19.0	18.2
1957	8.82	20.0	4.69	10.9	11.8	14.6	56.5	21.1	3.40	4.80	5.63	2.59	13.8
1958	3.22	7.56	3.75	5.39	13.0	28.3	6.14	3.99	91.3	3.88	4.98	4.93	14.8
1959	51.9	71.5	7.47	70.5	3.84	5.41	5.50	14.2	4.94	17.5	4.99	2.66	21.9
1960	3.02	8.99	4.17	2.80	7.94	3.33	8.57	13.7	17.5	27.8	44.3	7.78	12.5

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	518	141	118	497	796	183	178	186	245	108	178	84.3	3,230
1954	85.8	127	76.8	81.6	79.2	181	252	147	235	166	219	253	1,900
1955	1,010	468	157	299	2,700	1,780	491	3,760	585	187	196	102	11,740
1956	158	576	116	103	340	1,030	788	2,110	357	192	323	571	6,660
1957	273	619	141	339	355	452	1,750	590	106	144	175	77.5	5,020
1958	99.8	234	113	105	391	877	190	112	2,850	116	154	145	5,390
1959	1,610	2,220	224	2,190	115	168	171	399	153	525	155	79.7	8,010
1960	93.7	279	125	86.7	238	103	266	397	542	833	1,370	233	4,570

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum days		Mean		Million gallons	Mean		Million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1952	1249	-	-	-	-	-	-	-	-	-	-	-	-	-	
1953	1249	1,160	1,790	Nov. 19, 1952	2.3	3.6	8.86	13.7	3,230	4.46	6.82	1,610	-	-	
1954	1349	970	1,500	Jan. 1, 1954	2.3	3.6	5.21	8.06	1,900	21.1	32.6	7,690	-	-	
1955	1399	10,900	16,900	Nov. 28, 1954	2.85	4.41	32.1	49.7	11,740	20.9	32.3	7,640	-	-	
1956	1449	8,700	13,500	Feb. 25, 1956	3.0	4.6	18.2	28.2	6,660	17.8	27.5	6,520	-	-	
1957	1569	3,930	6,080	Jan. 21, 1957	2.4	3.7	13.8	21.4	5,020	12.8	19.8	4,660	-	-	
1958	1569	5,050	7,810	Mar. 5, 1958	2.7	4.2	14.8	22.9	5,390	27.6	42.7	10,090	-	-	
1959	1639	4,730	7,320	Oct. 23, 1958	2.4	3.7	21.9	33.9	8,010	6.60	10.2	2,410	-	-	
1960	1719	7,450	11,500	May 14, 1960	2.5	3.9	12.5	19.3	4,570	-	-	-	-	-	

2185. Pearl Harbor Springs at Kaluaoopu, near Pearl City

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

Records available.--August 1931 to May 1937, February 1952 to June 1953. Records for November 1943 to October 1947, published in WSP 1015, 1045, 1065, 1095, and 1125, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 0.50 (revised) below mean sea level.

Extremes.--Not determined.

Remarks.--Hawaiian Electric Co.'s pump diverts water when needed by Oahu Sugar Co. for irrigation of sugarcane. Surface runoff caused by floods not included in figures of discharges given herein.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	54.2	-	32.6	-	-
1953	134	-	-	44.4	51.6	48.1	40.1	14.6	42.6	39.0	33.6	21.4	-

2190. Hawaiian Electric Co. tunnel at Wai'au, near Pearl City

Location.--Lat 21°23'30", long 157°57'55" (revised), on right bank of ditch of 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 1960.

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.

Average discharge.--10 years (1940-41, 1944-45, 1952-60), 10.5 mgd (16.2 cfs).

Extremes.--1939-45, 1952-60: 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.--Flow regulated by valves. Water used for cooling condensers of powerplant, and afterwards for irrigation of sugarcane.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	293	307	328	323	311	355	349	267	320	307	315	331	3,810
1954	329	297	280	261	254	290	263	252	337	308	308	310	3,490
1955	317	301	258	254	266	290	279	259	307	310	333	291	3,460
1956	296	286	328	332	310	333	339	332	360	342	353	342	3,950
1957	374	368	322	333	323	333	357	370	335	302	324	327	4,070
1958	324	288	253	289	304	377	316	292	289	277	292	316	3,620
1959	390	392	354	365	363	361	372	341	370	362	358	326	4,350
1960	333	339	318	313	307	322	312	286	317	298	306	283	3,730

2230. Waimalu Stream near Aiea

Location.--Lat 21°23'35", long 157°57'00", 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.--6.07 sq mi.

Records available.--January 1952 to June 1960.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 0.1 ft above mean sea level based on tide level. Prior to Jan. 30, 1957, water-stage recorder at same site at datum 3.5 ft higher.

Average discharge.--8 years, 4.78 mgd (7.40 cfs).

Extremes.--1952-60: Maximum discharge, 2,790 mgd (4,310 cfs) May 14, 1960 (gage height, 9.49 ft, from floodmark in well), from rating curve extended above 380 mgd on basis of slope-area measurement of peak flow; no flow Sept. 25, 28-30, Oct. 1, 1958.

Remarks.--Small quantities of water diverted for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	8.91	2.32	1.24	7.10	7.60	1.17	5.07	9.35	11.2	1.28	4.73	5.17	-
1954	1.02	1.22	.930	.758	.526	1.56	2.48	.555	1.72	1.05	3.50	1.06	3.64
1955	17.8	5.51	1.90	5.01	28.3	29.7	6.62	50.9	7.33	2.27	1.66	.888	12.9
1956	2.38	10.6	1.51	1.62	1.93	25.7	13.7	46.6	5.72	5.85	6.30	5.35	10.5
1957	1.72	8.39	1.50	5.59	3.31	5.97	30.5	7.86	1.41	2.27	1.54	1.26	5.97
1958	1.76	2.92	1.51	.899	8.90	14.9	4.22	2.96	41.5	.743	1.96	1.18	7.02
1959	20.7	34.3	1.90	37.0	.746	1.93	4.53	7.57	1.66	13.3	2.35	.832	10.8
1960	.671	4.02	4.27	.970	2.92	1.30	3.50	4.24	10.8	12.9	33.1	1.92	6.76

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	5.76	1.50	0.803	4.59	4.91	0.753	3.28	6.04	7.26	0.827	3.08	3.34	-
1954	.657	.789	.601	.490	.340	1.01	1.60	1.76	1.11	.681	2.26	1.688	2.35
1955	11.5	3.56	1.23	3.24	18.3	19.2	4.28	32.9	4.74	1.47	1.07	.574	8.55
1956	1.54	6.84	.979	1.05	1.25	16.6	8.84	30.1	3.70	3.78	4.07	3.46	6.77
1957	1.11	5.42	.969	3.61	2.14	3.86	19.7	5.08	.911	1.47	.995	.813	3.86
1958	1.14	1.69	.976	.581	5.75	9.66	2.73	1.91	26.8	.480	1.27	.765	4.54
1959	13.4	22.2	1.23	23.9	.482	1.25	2.80	4.89	1.07	8.62	1.52	.538	6.88
1960	.563	2.60	2.76	.627	1.89	.859	2.28	2.74	7.00	8.35	21.4	1.24	4.37

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	179	46.4	24.1	142	147	23.3	102	175	225	24.8	94.8	100	-
1954	20.4	24.5	18.0	15.2	10.2	31.3	49.6	49.3	34.4	20.4	70.0	20.6	858
1955	358	110	37.0	100	550	596	133	922	41.2	42.0	67.7	78.6	408
1956	47.7	212	29.4	32.5	37.4	515	274	872	115	113	122	104	2,480
1957	34.4	168	29.1	112	64.4	120	610	142	28.2	44.2	30.8	24.4	1,410
1958	35.3	56.7	29.3	18.0	175	299	84.6	53.4	830	14.4	39.3	23.0	1,660
1959	436	437	36.3	740	14.4	38.8	86.9	137	33.3	259	47.1	16.1	2,510
1960	17.5	80.6	82.8	19.4	56.6	26.0	70.0	79.5	217	250	663	37.2	1,600

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1952	1249	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	1289	694	1,070	Jan. 13, 1953	0.21	0.32	2.35	3.64	858	1.14	1.76	-	-	416	-
1954	1349	280	402	Jan. 1, 1954	.17	.26	1.12	1.73	408	5.59	8.65	-	-	2,040	-
1955	1399	1,900	2,940	Nov. 28, 1954	.31	.48	8.35	12.9	3,050	5.94	9.19	-	-	2,170	-
1956	1449	1,300	2,010	Feb. 25, 1956	.31	.48	6.77	10.5	2,480	5.82	9.00	-	-	2,130	-
1957	1569	(a)	(a)	Jan. 21, 1957	.27	.42	3.86	5.97	1,410	4.09	6.33	-	-	1,490	-
1958	1569	1,620	2,510	Mar. 6, 1958	.19	.29	4.54	7.02	1,660	8.16	12.6	-	-	2,980	-
1959	1839	2,460	3,610	Oct. 24, 1958	0	0	6.88	10.6	2,510	2.36	3.65	-	-	862	-
1960	1719	2,790	4,320	May 14, 1960	.26	.40	4.37	6.76	1,600	-	-	-	-	-	-

a Not determined.

2240. Pearl Harbor Springs at Kalauao, near Aiea

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

Records available.--March 1931 to June 1960.

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

Average discharge.--29 years, 15.9 mgd (24.6 cfs), unadjusted for pumpage.

Extremes.--1931-60: Maximum daily discharge, 25 mgd (39 cfs) Feb. 17-26, 1938, Feb. 23, 24, 1955; minimum daily, 7.2 mgd (11.1 cfs) Aug. 25, Sept. 2, 1947.

Remarks.--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.

Monthly and yearly discharge, in million gallons												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	468	490	462	468	472	545	537	492	642	618	560	6,270
1952	512	469	521	551	621	627	686	565	593	555	497	6,660
1953	461	445	421	491	545	538	514	435	529	443	412	5,600
1954	353	342	296	396	401	457	523	461	525	432	411	4,950
1955	424	372	344	378	376	598	604	544	666	570	516	5,870
1956	505	477	466	516	547	614	669	653	629	583	528	6,660
1957	438	446	420	481	552	630	596	576	504	495	434	5,940
1958	384	377	351	478	447	568	475	516	509	590	612	5,810
1959	509	512	425	455	498	492	580	511	482	450	418	5,730
1960	337	438	279	285	391	329	397	411	459	436	445	4,600

2245. Kalauao Stream at Moanalua Road at Aiea

Location.--Lat 21°23'07", long 157°56'22", on left bank of stream at Moanalua Road Bridge, 0.4 mile northwest of Aiea Post Office and 2.3 miles southeast of Pearl City Post Office.

Drainage area.--2.59 sq mi.

Records available.--July 1957 to June 1960.

Gage.--Water-stage recorder and concrete control. Datum of gage is 12.75 ft above mean sea level, datum of 1929. July 22, 1953, to June 19, 1957, at site 0.1 mile downstream. Records not equivalent due to spring inflow.

Extremes.--1953-60: Maximum discharge, 1,160 mgd (1,790 cfs) May 14, 1960 (gage height, 6.29 ft), from rating curve extended above 60 mgd on basis of slope-area measurement at peak flow.

1957-60: Minimum daily discharge, 0.02 mgd (0.03 cfs) Sept. 28, 1959.

Remarks.--Some return of irrigation water.

Monthly and yearly mean discharge, in cubic feet per second												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1958	0.432	0.707	0.251	0.240	3.22	4.22	1.48	1.59	13.3	0.509	0.439	0.229
1959	5.17	9.90	.545	12.0	.190	.480	1.39	1.12	.345	2.35	.461	.176
1960	.195	1.01	.653	.136	.545	.136	.839	.859	3.05	2.86	9.02	.362

Monthly and yearly mean discharge, in million gallons a day												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1958	0.279	0.457	0.162	0.155	2.08	2.73	0.959	1.03	8.60	0.329	0.284	0.148
1959	3.34	6.40	.352	7.77	.123	.300	.896	.725	.223	1.52	.298	.114
1960	.126	.650	.422	.088	.352	.088	.542	.555	1.97	1.85	5.83	.234

Monthly and yearly discharge, in million gallons												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1958	8.64	14.2	4.86	4.90	22.5	84.8	29.7	29.0	267	9.86	8.81	4.45
1959	103	198	10.6	241	3.68	9.29	27.8	20.3	6.92	45.4	9.25	3.41
1960	3.91	20.2	12.6	2.73	10.6	2.72	16.8	16.1	61.1	55.6	181	7.03

Summary of yearly discharge												
Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day				Mean		Million
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons
1958	1569	760	1,180	Mar. 5, 1958	0.08	0.12	1.45	2.24	529	2.51	3.88	914
1959	1639	750	1,160	Oct. 23, 1958	.10	.16	1.86	2.88	779	.454	.702	166
1960	1719	1,160	1,790	May 14, 1960	.02	.03	1.07	1.66	770	-	-	-

2250. Kalauao Stream at Aiea

Location.--Lat 21°22'59", long 157°56'28", on left bank of stream 600 ft upstream from Kamehameha Highway Bridge, 0.4 mile northwest of Aiea Post Office, 0.7 mile west of Aiea Sugar Mill and 2.3 miles east of Pearl City.

Drainage area.--2.61 sq mi.

Records available.--July 1953 to June 1957.

Gage.--Water-stage recorder and concrete control. Datum of gage is 4.00 ft above mean sea level, datum of 1929.

Extremes.--1953-57: Maximum discharge, 1,050 mgd (1,620 cfs) Nov. 28, 1954 (gage height, 7.29 ft), from rating curve extended above 240 mgd; minimum daily, 0.22 mgd (0.34 cfs) May 9, 1957.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	1.23	1.03	0.965	0.919	1.79	2.52	1.66	2.65	3.31	2.75	2.04	-
1955	11.9	3.28	1.46	2.26	11.9	15.3	5.00	25.4	6.34	2.01	2.18	1.76	7.29
1956	2.40	3.82	1.89	1.27	2.31	10.5	8.42	25.4	3.93	4.27	4.19	5.55	6.08
1957	2.54	4.60	1.43	3.79	3.95	3.76	15.2	4.38	1.45	2.14	1.64	1.32	3.87

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	0.793	0.665	0.624	0.594	1.16	1.63	1.07	1.71	2.14	1.78	1.32	-
1955	7.67	2.12	.943	1.46	7.66	9.89	3.23	16.4	4.10	1.30	1.41	1.14	4.71
1956	1.55	2.47	1.22	.819	1.49	6.78	5.44	16.4	2.54	2.76	2.71	3.59	3.93
1957	1.64	2.97	.923	2.45	2.55	2.43	9.82	2.83	.940	1.38	1.06	.850	2.50

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	24.6	20.0	19.3	17.8	36.1	50.7	30.0	52.9	64.3	55.1	39.5	-
1955	238	65.6	28.3	45.4	230	306	100	460	127	39.1	43.6	34.1	1,720
1956	48.0	76.6	26.6	25.4	44.8	210	169	475	78.6	82.8	83.9	108	1,440
1957	50.8	92.0	27.7	76.0	76.5	75.3	304	79.2	29.1	41.5	33.0	25.5	911

Summary of discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1954	1359	al62	251	May 31, 1954	-	-	-	-	-	3.30	5.11	1,210	
1955	1399	1,050	1,620	Nov. 28, 1954	0.51	0.79	4.71	7.29	1,720	3.41	5.28	1,250	
1956	1449	590	913	Feb. 25, 1956	.64	.99	3.93	6.08	1,440	3.81	5.89	1,400	
1957	1569	390	603	Dec. 6, 1956	.22	.34	2.50	3.87	911	-	-	-	

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2260. North Halawa Stream near Aiea

Location.--Lat 21°23'45", long 157°53'35" (revised), on left bank 2.7 miles above confluence with South Halawa Stream and 2.7 (revised) miles northeast of Aiea Post Office.

Drainage area.--3.45 sq mi.

Records available.--August 1929 to June 1933, July 1953 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 320 ft (from topographic map).

Average discharge.--9 years (1931-33, 1953-60), 4.53 mgd (7.01 cfs).

Extremes.--1929-33, 1953-60: Maximum discharge, 4,300 mgd (6,650 cfs) Feb. 28, 1932 (gage height, 13.36 ft), from rating curve extended above 270 mgd; no flow at times.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	0	1.39	0	0	0	1.44	2.54	1.44	3.06	3.14	4.30	1.73	1.59
1955	23.1	6.37	1.69	4.01	22.3	22.0	6.33	32.3	9.04	.854	.842	.012	10.6
1956	1.59	5.62	.752	0	2.91	13.6	8.23	31.4	5.38	4.86	5.96	6.90	7.16
1957	2.55	6.93	.292	4.16	4.04	2.34	14.5	5.15	0	1.64	1.58	0	3.59
1958	1.83	1.40	.196	0	6.11	6.53	1.67	2.04	25.5	1.37	2.18	.275	3.99
1959	15.5	21.0	4.18	16.2	1.30	1.70	2.66	2.83	.603	7.81	1.01	0	6.31
1960	0	2.83	1.51	.026	1.58	.084	3.14	3.25	9.96	10.8	26.8	1.70	5.17

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	0	0.896	0	0	0	0.931	1.64	0.932	1.98	2.03	2.78	1.12	1.03
1955	14.9	4.12	1.09	2.59	14.4	14.2	4.09	20.9	5.84	.552	.544	.008	6.84
1956	1.03	3.63	.486	0	1.88	8.79	5.32	20.3	3.48	3.14	3.85	4.46	4.63
1957	1.65	4.48	.189	2.69	2.61	1.51	9.25	3.33	0	1.06	1.02	0	2.32
1958	1.118	.907	.127	0	3.95	4.22	1.08	1.32	16.5	.885	1.41	.178	2.58
1959	10.0	13.6	2.70	10.5	.841	1.10	1.72	1.83	.390	5.05	.656	0	4.08
1960	0	1.83	.975	.017	1.02	.054	2.03	2.10	6.44	6.97	17.3	1.10	3.34

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	0	27.8	0	0	0	28.9	50.9	26.1	61.5	60.9	86.3	33.6	376
1955	461	128	32.6	80.4	431	440	127	585	181	16.6	16.9	.24	2,500
1956	32.1	113	14.6	0	56.4	272	165	587	108	94.2	119	134	1,700
1957	51.2	139	5.67	83.5	78.3	46.8	287	93.3	0	31.7	31.7	0	848
1958	3.65	28.1	3.80	0	118	131	33.4	37.1	511	26.5	43.8	5.34	942
1959	310	423	81.0	327	25.2	34.0	53.2	51.2	12.1	151	20.3	0	1,490
1960	0	56.7	29.2	.53	30.7	1.67	63.0	60.8	199	209	538	33.0	1,220

Summary of yearly discharge

		Fiscal year ending June 30										Calendar year			
Year	WSP	Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1954	1449	530	820	Apr. 29, 1954	0	0	1.03	1.59	376	5.18	8.01	1,890			
1955	1449	1,730	2,680	Nov. 28, 1954	0	0	6.84	10.6	2,500	3.87	5.99	1,410			
1956	1449	892	1,380	Feb. 25, 1956	0	0	4.63	7.16	1,700	4.40	6.81	1,610			
1957	1563	410	634	Dec. 6, 1956	0	0	2.32	3.59	848	1.99	3.08	728			
1958	1568	1,280	1,980	Mar. 5, 1958	0	0	2.58	3.99	942	5.09	7.88	1,860			
1959	1633	1,160	1,790	Oct. 23, 1958	0	0	4.08	6.31	1,490	1.12	1.73	407			
1960	1719	1,970	3,050	May 14, 1960	0	0	3.34	5.17	1,220	-	-	-			

2270. Halawa Stream near Aiea

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

Drainage area.--8.78 sq mi.

Records available.--April 1953 to June 1960.

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

Average discharge.--7 years (1953-60), 7.51 mgd (11.6 cfs).

Extremes.--1953-60: Maximum discharge, 2,400 mgd (3,710 cfs) May 14, 1960 (gage height, 10.8 ft); no flow at times.

Remarks.--At times, the Oahu Sugar Co. installs flashboards on the control diverting the entire flow for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	-	-	-	-	-	-	-	-	7.55	4.55	-
1954	4.89	3.78	3.53	4.58	4.60	3.48	6.96	3.00	4.16	6.05	6.08	3.37	4.55
1955	24.6	6.44	4.90	2.51	36.8	39.5	12.7	72.9	19.3	4.38	5.83	5.01	18.9
1956	5.28	10.7	4.69	3.62	5.59	28.0	14.9	62.4	12.4	10.2	9.92	11.3	14.7
1957	4.83	10.4	3.33	6.85	7.74	10.9	41.8	8.59	3.37	4.89	5.77	4.04	9.42
1958	5.23	6.54	5.66	6.76	10.2	15.2	4.01	8.00	71.5	1.45	1.92	4.27	11.8
1959	29.7	34.8	3.65	24.6	2.00	2.80	4.80	6.19	3.20	13.6	3.37	2.37	11.0
1960	3.42	6.98	4.63	4.46	4.87	3.25	6.68	6.82	16.9	16.1	52.3	4.35	11.0

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	-	-	-	-	-	-	-	-	4.88	2.94	-
1954	3.16	2.44	2.28	2.96	2.97	2.25	4.50	1.94	2.69	3.91	3.93	2.18	2.94
1955	15.9	4.16	3.17	1.62	23.8	25.5	8.22	47.1	12.5	2.83	3.77	3.24	12.2
1956	3.41	6.90	3.03	2.34	3.61	18.1	9.60	40.3	8.02	6.61	6.41	7.29	9.51
1957	3.12	6.73	2.15	4.43	5.00	7.04	27.0	5.55	2.18	3.16	3.73	2.61	6.09
1958	3.38	4.23	3.66	4.37	6.59	9.83	2.59	5.17	46.2	.937	1.24	2.76	7.64
1959	19.2	22.5	2.36	15.9	1.29	1.81	3.10	4.00	2.07	8.78	2.18	1.53	7.13
1960	2.21	4.51	2.99	2.88	3.15	2.10	4.32	4.41	10.9	10.4	33.8	2.81	7.08

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	-	-	-	-	-	-	-	-	151	88.2	-
1954	98.1	75.8	68.3	91.7	89.2	69.9	140	54.2	83.5	117	122	65.3	1,080
1955	493	129	9.52	50.1	714	490	255	1,320	388	85.0	117	97.2	4,450
1956	106	214	90.9	72.5	108	562	297	1,170	248	198	199	219	3,480
1957	96.9	209	64.4	137	150	218	835	165	67.6	94.7	116	78.2	2,220
1958	105	131	110	135	198	305	80.1	145	1,430	28.1	38.4	82.9	2,790
1959	598	699	70.8	493	38.6	56.0	96.1	112	84.2	285	67.5	45.8	2,800
1960	68.4	140	89.7	89.4	94.6	65.0	134	126	337	312	1,050	84.4	2,590

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1953	1399	-	-	-	-	-	-	-	-	-	-	-	-
1954	1399	368	569	Jan. 1, 1954	0.49	0	2.94	4.55	1,080	7.58	11.7	2,770	
1955	1399, 1449	1,880	2,910	Nov. 28, 1954	0	0	12.2	18.9	4,450	9.35	14.5	3,420	
1956	1449	1,130	1,750	Feb. 25, 1956	1.39	2.15	9.51	14.7	3,480	8.76	13.6	3,210	
1957	1569	760	1,180	Jan. 21, 1957	1.10	1.16	6.09	9.42	2,220	6.39	9.89	2,330	
1958	1569	2,300	3,560	Mar. 5, 1958	3.58	5.59	7.64	11.8	2,790	10.3	15.9	5,760	
1959	1639	1,480	2,290	Oct. 23, 1958	3.30	4.46	7.13	11.0	2,600	3.28	5.07	1,200	
1960	1719	2,400	3,710	May 14, 1960	1.57	1.88	7.08	11.0	2,590	-	-	-	

2280. Moanalua Stream near Honolulu

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

Drainage area--2.73 sq mi.

Records available--June 1926 to June 1960.

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

Average discharge--34 years, 2.07 mgd (3.20 cfs).

Extremes--1926-60: Maximum discharge, 2,960 mgd (4,580 cfs) Nov. 18, 1930 (gage height, 11.58 ft), from rating curve extended above 80 mgd by test on model of station site; no flow at times.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0	1.89	0.443	0.053	2.80	5.82	1.72	1.69	34.5	2.20	0.053	0	4.33
1952	0	.333	0	2.32	1.92	8.36	6.59	3.33	8.36	.057	1.22	.401	2.75
1953	2.83	.757	0.073	4.49	3.90	.288	.430	.904	.798	.062	1.132	0	1.23
1954	0	0	0	0	0	0	.326	.107	.365	.309	1.05	.460	.220
1955	7.86	2.82	.025	.956	7.44	10.8	5.67	26.5	5.37	.938	.128	0	5.40
1956	.110	2.83	0	0	.288	14.1	4.16	17.9	2.80	2.43	2.23	2.97	4.12
1957	.166	3.50	.002	1.45	2.35	1.35	10.8	2.52	0	.104	.582	0	1.89
1958	0	.108	0	.008	0	5.31	.489	1.69	22.7	.275	.054	0	2.89
1959	10.1	19.6	1.59	18.1	.113	0	.795	1.04	.053	4.84	.187	0	4.77
1960	0	1.37	.418	0	.468	0	1.07	.900	5.20	4.80	20.0	.378	2.91

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0	1.22	0.286	0.034	1.81	3.76	1.11	1.22	22.3	1.42	0.034	0	2.80
1952	0	.215	0	1.50	1.24	5.40	4.26	2.15	5.40	.037	.787	.259	1.78
1953	1.83	.489	.047	2.90	2.52	.166	.278	.584	.516	.040	.085	0	.793
1954	0	0	0	0	0	0	.211	.069	.236	.200	.681	.297	.142
1955	5.08	1.82	.016	.618	4.81	6.95	2.37	17.1	3.47	.606	.083	0	3.49
1956	.071	1.83	0	0	.186	9.14	2.69	11.6	1.81	1.57	1.44	1.92	2.66
1957	.107	2.13	.001	.935	1.52	.872	6.95	1.63	0	.067	.376	0	1.22
1958	0	.070	0	.005	2.33	3.43	.316	1.09	14.7	.178	.035	0	1.87
1959	6.52	12.7	1.03	11.7	.073	0	.514	.670	.034	3.13	.121	0	3.08
1960	0	.885	.270	0	.301	0	.691	.582	3.36	3.10	12.9	.244	1.58

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0	37.8	8.57	1.05	54.4	116	34.5	34.2	692	42.6	1.06	0	1,020
1952	0	6.66	0	46.6	37.3	167	132	62.3	167	1.12	24.4	7.77	852
1953	56.7	15.2	1.41	90.0	75.7	5.78	8.61	16.4	16.0	1.21	2.65	0	290
1954	0	0	0	0	0	0	6.54	1.93	7.33	5.99	21.1	8.91	51.8
1955	157	56.4	.49	19.2	144	216	73.3	479	108	18.2	2.58	0	1,270
1956	2.19	56.8	0	0	5.57	283	83.4	336	56.0	47.0	44.7	57.5	972
1957	3.33	66.0	.02	29.0	45.7	27.0	215	45.6	0	2.02	11.6	0	445
1958	0	2.16	.14	0	71.7	106	9.81	30.6	456	5.33	1.09	0	683
1959	202	390	31.0	363	2.20	0	15.9	18.8	1.05	83.8	5.76	0	1,120
1960	0	27.4	8.09	0	9.03	0	21.4	16.9	104	82.9	401	7.31	688

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum discharge			Mean			Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	1.85	2.55	601
1951	1219	1,290	2,000	Dec. 3, 1950	0	0	2.80	4.33	1,020	2.31	4.50	1,080	
1952	1249	1,460	Mar. 26, 1952	0	0	1.78	2.75	852	1.75	2.71	639		
1953	1289	170	263	Nov. 1952	0	0	.793	1.23	290	1.123	1.90	44.9	
1954	1349	91	141	May 31, 1954	0	0	.142	.220	51.8	1.77	2.74	645	
1955	1399	695	1,080	Feb. 23, 1955	0	0	3.49	5.40	1,270	2.82	4.36	1,030	
1956	1449	670	1,040	Feb. 25, 1956	0	0	2.68	4.12	972	2.17	3.36	796	
1957	1589	385	596	Nov. 30, 1956	0	0	1.22	1.89	445	1.25	1.93	454	
1958	1569	980	1,520	Mar. 5, 1958	0	0	1.87	2.89	683	4.09	6.33	1,490	
1959	1639	1,940	3,000	Oct. 23, 1958	0	0	3.08	4.77	1,120	.487	.754	178	
1960	1719	1,230	1,900	May 14, 1960	0	0	1.88	2.91	688	-	-	-	

2290. Kalihi Stream near Honolulu

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

Drainage area.--2.61 sq mi.

Records available.--September 1913 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

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

Average discharge.--46 years (1914-60), 4.63 mgd (7.16 cfs).

Extremes.--1913-60: Maximum discharge, about 8,000 mgd (about 12,400 cfs), revised, Nov. 18, 1930 (gage height, 13.81 ft), from rating curve extended above 200 mgd on basis of indirect measurements at gage heights 8.9 and 11.27 ft; minimum, 0.06 mgd (0.09 cfs) Oct. 22, 1933.

Remarks.--Water for domestic use diverted from stream above station.

Revisions.--Some periods for the fiscal years 1921-24, 1926-28, 1930-32, 1935, 1937-39, 1943, 1948-50 were revised in WSP 1719; the resulting records as summarized herewith supersede those published in WSP 1319.

Month	Mean		Million gallons	Momentary maximum		Minimum day		
	Mgd	Cfs		Discharge		Date	Mgd	Cfs
				Mgd	Cfs			
Fiscal year 1920-21....	-	-	-	4,100	6,340	Jan. 16, 1921	-	-
Fiscal year 1921-22....	-	-	-	1,240	1,920	Oct. 3, 1921	-	-
September 1922.....	8.78	13.6	263	-	-	-	-	-
Calendar year 1922.....	4.97	7.69	1,810	-	-	-	-	-
January 1923.....	42.5	68.5	1,320	-	-	-	-	-
Fiscal year 1922-23....	9.11	14.1	3,320	3,920	6,070	Jan. 19, 1923	0.9	1.4
December 1923.....	12.4	19.4	383	-	-	-	-	-
Calendar year 1923....	8.71	13.5	3,180	-	-	-	-	-
Fiscal year 1923-24....	4.43	6.85	1,620	3,770	5,830	Dec. 30, 1923	.1	.2
Fiscal year 1925-26....	-	-	-	972	1,500	Nov. 4, 1925	-	-
March 1927.....	11.8	18.3	366	-	-	-	-	-
Fiscal year 1926-27....	7.28	11.3	2,660	1,560	2,410	May 16, 1927	.5	.8
November 1927.....	22.7	35.1	680	-	-	-	-	-
Calendar year 1927....	10.4	16.1	3,810	-	-	-	-	-
Fiscal year 1927-28....	5.79	10.5	2,480	3,810	5,890	Nov. 18, 1927	1.1	1.7
Fiscal year 1929-30....	-	-	-	1,690	2,610	Apr. 11, 1930	-	-
Fiscal year 1930-31....	-	-	-	8,000	12,400	Nov. 18, 1930	-	-
Fiscal year 1932-33....	-	-	-	4,210	6,510	Feb. 13, 1932	-	-
February 1935.....	14.5	22.4	407	-	-	-	-	-
Fiscal year 1934-35....	6.58	8.63	2,040	2,570	3,980	Feb. 27, 1935	1.13	1.8
Calendar year 1935....	4.83	7.47	1,770	-	-	-	-	-
January 1937.....	16.2	25.1	504	-	-	-	-	-
April.....	5.35	8.28	160	-	-	-	-	-
Fiscal year 1936-37....	8.54	13.2	3,120	2,550	3,950	Jan. 1, 1937	1.37	2.1
Calendar year 1937....	7.86	12.2	7,870	-	-	-	-	-
Fiscal year 1937-38....	-	-	-	926	1,430	Sept. 28, 1937	-	-
Fiscal year 1938-39....	-	-	-	1,800	2,790	Feb. 28, 1939	-	-
Fiscal year 1942-43....	-	-	-	972	1,500	Jan. 13, 1943	-	-
Fiscal year 1947-48....	-	-	-	930	1,440	Nov. 14, 1947	-	-
Fiscal year 1948-49....	-	-	-	1,640	2,540	Jan. 16, 1949	-	-
Fiscal year 1949-50....	-	-	-	1,850	2,860	May 16, 1950	-	-

Monthly and yearly mean discharge, in cubic feet per second, of Kalihi Stream near Honolulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.84	7.18	2.34	1.30	6.30	11.9	6.36	3.82	40.5	7.44	2.34	1.09	7.77
1952	.724	2.20	1.30	5.21	5.20	12.7	11.9	8.05	11.0	3.40	4.61	4.49	5.91
1953	9.67	4.07	2.01	9.31	10.1	3.42	2.74	3.61	4.19	2.07	2.31	1.20	4.58
1954	.723	1.35	.419	.357	.461	2.07	2.03	3.57	4.78	1.73	3.59	4.38	2.12
1955	16.7	9.96	3.50	3.28	9.56	15.1	7.44	35.6	10.6	5.32	3.91	2.26	10.1
1956	2.27	6.73	2.23	1.30	3.06	15.5	11.6	22.7	7.78	7.28	8.01	7.27	7.95
1957	3.51	3.87	3.09	3.00	3.25	2.14	16.1	6.89	2.04	2.20	1.08	.662	3.96
1958	1.72	2.69	1.73	1.04	4.69	5.60	3.00	2.51	14.7	1.86	3.03	2.46	3.78
1959	14.0	26.8	7.75	13.8	4.01	3.48	3.98	3.81	2.15	9.58	3.54	1.27	7.91
1960	1.20	4.97	3.30	1.18	3.36	1.34	3.73	2.35	10.6	10.4	20.7	3.22	5.55

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.19	4.64	1.51	0.837	4.07	7.67	4.11	2.47	26.2	4.81	1.51	0.707	5.02
1952	.468	1.42	.840	3.37	3.36	8.24	7.69	5.20	7.09	2.20	2.98	2.90	3.82
1953	6.25	2.63	1.30	6.02	6.56	2.21	1.77	2.33	2.71	1.54	1.49	.776	2.96
1954	.467	.872	.271	.231	.298	1.34	1.31	2.31	3.09	1.12	2.32	2.83	1.37
1955	10.8	6.44	2.26	2.12	6.18	9.76	4.81	23.0	6.84	3.44	2.53	1.46	6.54
1956	1.47	4.35	1.44	.840	1.98	10.0	7.51	14.7	5.03	4.71	5.18	4.70	5.14
1957	2.14	2.50	2.00	1.94	2.10	1.38	10.4	4.45	1.32	1.42	.700	.428	2.56
1958	1.11	1.74	1.12	.674	3.03	3.62	1.94	1.62	9.50	1.20	1.96	1.59	2.44
1959	9.07	17.3	5.01	8.93	2.59	2.25	2.57	2.46	1.39	6.19	2.29	.823	5.11
1960	.773	3.21	2.13	.765	2.17	.869	2.41	1.52	6.87	6.69	13.4	2.08	3.59

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	36.8	144	45.2	26.0	122	238	127	69.2	813	144	46.8	21.2	1,830
1952	14.5	43.9	25.2	105	101	255	238	151	220	65.9	92.5	87.0	1,400
1953	194	81.6	39.0	186	197	68.6	54.8	65.1	84.1	40.3	46.2	23.3	1,080
1954	14.5	27.0	8.13	7.15	8.93	41.5	40.7	64.6	95.7	33.7	72.1	85.0	499
1955	334	200	67.9	65.6	185	302	149	644	212	103	78.3	43.8	2,380
1956	45.5	135	43.2	26.0	59.6	311	233	427	156	141	161	141	1,880
1957	68.2	77.5	60.0	60.1	63.0	42.9	322	124	41.0	42.6	21.7	12.8	934
1958	34.6	54.0	33.6	20.9	90.8	112	60.2	45.5	295	35.9	60.6	47.6	891
1959	281	536	150	277	77.6	69.6	79.6	68.8	43.2	186	70.9	24.7	1,870
1960	24.0	99.4	63.9	23.7	65.1	27.0	74.6	44.2	213	201	417	62.3	1,320

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons	
1950	-	-	-	-	-	-	-	-	-	-	-	6.58	1,550
1951	1219	2,320	3,590	Mar. 26, 1951	0.44	0.68	5.02	7.77	1,830	4.25	6.89	7.49	1,770
1952	1249	1,270	1,960	Mar. 26, 1952	.31	.48	3.82	5.91	1,400	4.43	6.85	1,620	
1953	1289	161	249	July 15, 1952	.37	.57	2.96	4.58	1,080	1.15	1.78	421	
1954	1549	152	235	May 31, 1954	.14	.22	1.37	2.12	499	4.24	6.56	1,550	
1955	1399	1,210	1,870	Feb. 23, 1955	.79	1.22	6.54	10.1	2,380	5.07	7.84	1,850	
1956	1449	870	1,350	Jan. 24, 1956	.52	.80	5.14	7.95	1,880	4.45	6.89	1,630	
1957	1569	264	408	Jan. 21, 1957	.38	.59	2.56	3.96	934	2.50	3.87	910	
1958	1569	324	501	Mar. 5, 1958	.52	.80	2.44	3.78	891	5.30	8.20	1,940	
1959	1639	802	1,240	Oct. 23, 1958	.38	.59	5.11	7.91	1,870	2.13	3.30	776	
1960	1719	2,820	4,360	May 13, 1960	.32	.50	3.59	5.55	1,320	-	-	-	

2320. 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--3.35 sq mi.

Records available--October 1913 to June 1960.

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--43 years (1914-16, 1917-20, 1922-60), 4.90 mgd (7.58 cfs).

Extremes--1913-60: 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--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.

Correction--WSP 1319: Average discharge, 33 years (1914-16, 1917-20, 1922-50), 5.09 mgd (7.88 cfs).

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	3.19	4.36	2.88	2.14	4.30	9.62	6.93	5.07	39.1	18.1	8.22	4.46	9.08
1952	3.06	3.81	2.58	4.18	4.92	9.84	13.9	8.68	14.7	6.28	5.37	5.23	6.89
1953	6.19	4.05	2.94	5.28	7.55	15.2	4.47	3.43	5.58	2.89	2.83	1.92	5.14
1954	1.46	1.75	1.05	719	744	1.33	1.17	1.92	3.73	2.65	2.63	2.88	1.84
1955	10.7	12.7	6.08	4.72	8.94	13.9	9.90	44.3	15.4	11.0	7.91	5.69	12.4
1956	3.23	4.30	3.16	2.44	2.88	11.2	16.2	28.0	9.50	7.10	7.35	7.38	8.49
1957	4.52	6.50	3.47	6.48	5.83	5.01	14.0	13.0	3.53	3.00	2.94	1.64	5.80
1958	1.56	2.37	1.33	1.00	3.81	7.29	4.12	3.00	16.7	4.18	3.71	3.19	4.38
1959	6.65	18.6	7.27	10.6	6.28	4.73	4.69	4.36	3.02	7.83	5.14	1.87	6.61
1960	1.36	5.14	3.11	1.64	2.24	2.24	4.39	2.48	5.71	8.42	23.5	5.01	5.46

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.06	2.82	1.86	1.38	2.78	6.22	4.48	3.28	25.5	11.7	5.31	2.88	5.87
1952	1.98	2.46	1.67	2.70	3.18	6.36	8.99	5.61	9.48	4.06	5.47	3.58	4.45
1953	4.00	2.62	1.90	3.41	4.88	9.81	2.89	2.22	2.96	1.86	1.63	1.24	3.32
1954	946	1.13	680	465	481	858	756	1.24	2.41	1.71	1.70	1.86	1.19
1955	6.89	8.24	3.93	3.05	5.78	8.96	6.40	28.6	9.97	7.10	5.11	3.68	8.01
1956	2.09	2.78	2.04	1.58	1.86	7.22	10.5	18.1	6.14	4.59	4.74	4.77	5.49
1957	2.92	4.20	2.24	4.19	3.77	3.24	9.06	8.40	2.28	1.94	1.90	1.06	3.75
1958	1.01	1.53	859	847	2.46	4.71	2.66	1.94	10.8	2.70	2.40	2.06	2.83
1959	4.30	12.0	4.70	6.82	4.06	3.06	3.03	2.82	1.95	5.06	2.03	1.21	4.27
1960	.88	3.32	2.01	1.06	1.45	1.45	2.84	1.60	3.69	5.44	15.2	3.24	3.53

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	64.0	87.5	55.8	42.9	83.5	193	139	91.9	784	350	165	86.4	2,140
1952	61.2	76.4	50.0	83.8	95.3	197	279	163	294	122	108	101	1,630
1953	124	81.2	56.9	106	147	304	89.7	62.1	91.8	55.7	56.7	37.3	1,210
1954	29.3	35.0	20.4	14.4	14.4	26.6	23.4	34.8	74.6	51.4	52.8	55.8	433
1955	214	255	118	94.6	173	278	198	801	309	213	158	110	2,920
1956	64.8	86.2	61.3	49.0	56.0	224	327	524	190	138	147	143	2,010
1957	90.6	130	72.1	130	100	287	235	170.8	58.2	59.0	31.7	1.270	
1958	31.3	47.4	25.8	20.0	73.7	146	82.4	54.2	335	80.8	74.5	51.8	1,030
1959	133	371	141	211	122	94.8	93.8	78.8	60.3	152	63.0	36.3	1,560
1960	27.4	103	60.2	32.8	43.6	45.1	88.1	46.5	114	163	471	97.1	1,290

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	
1950	-	-	-	-	-	-	-	-	-	3.57	5.52	1,330
1951	1219	870	1,350	Mar. 28, 1951	0.97	1.50	5.87	9.08	2,140	5.97	9.24	2,180
1952	1249	811	1,250	Mar. 4, 1952	1.11	1.72	4.45	6.89	1,650	5.15	7.97	1,890
1953	1289	78	121	Nov. 19, 1952	0.83	1.28	3.32	5.14	1,210	1.46	2.28	533
1954	1349	64	99	May 31, 1954	0.31	0.48	1.19	1.84	453	3.90	6.05	1,430
1955	1399	652	1,010	Feb. 23, 1955	1.54	2.38	8.01	12.4	2,920	6.39	9.89	2,330
1956	1449	652	1,010	Jan. 25, 1956	1.13	1.75	5.49	8.49	2,010	5.74	8.88	2,100
1957	1569	234	362	Oct. 14, 1956	.76	1.18	3.75	5.80	1,370	2.96	4.58	1,080
1958	1569	476	736	Mar. 5, 1958	.47	.73	2.83	4.38	1,030	4.83	7.47	1,760
1959	1659	350	511	Apr. 9, 1959	.94	1.45	4.27	6.61	1,560	2.18	3.37	796
1960	1719	1,790	2,770	May 13, 1960	.61	.94	3.53	5.46	1,290	-	-	-

2390. 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 4.2 miles northeast of Honolulu Post Office.

Drainage area.--1.06 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1960.

Gage.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft above mean sea level (Honolulu Board of Water Supply bench mark). Prior to May 20, 1914, staff gage at site 200 ft upstream at different datum. May 20, 1914, to Jan. 16, 1921, water-stage recorder at site 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.--41 years (1913-20, 1926-60), 3.17 mgd (4.90 cfs).

Extremes.--1913-21, 1925-60: Maximum gage height, 10.4 ft Jan. 16, 1921, from flood-marks, 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.--Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnels in drainage area.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	3.26	4.08	3.08	2.74	6.05	6.13	4.87	3.36	13.4	5.94	4.39	3.19	5.04
1952	3.06	5.01	3.40	4.38	4.44	6.37	6.19	4.98	4.81	4.27	5.42	5.40	4.81
1953	8.43	5.09	3.90	6.25	7.89	5.40	5.59	3.81	4.27	2.88	3.78	2.72	5.18
1954	3.05	4.12	1.87	1.87	2.09	3.33	1.79	3.42	3.53	2.63	4.02	3.98	2.97
1955	11.0	8.53	5.09	5.51	8.39	11.1	6.05	15.6	7.77	7.67	5.96	5.06	8.11
1956	5.55	7.15	5.09	3.84	4.05	6.48	5.06	7.18	4.87	5.82	6.82	7.36	5.77
1957	5.72	6.50	4.13	6.71	5.35	4.22	8.25	5.55	3.37	4.16	4.44	2.54	5.07
1958	3.61	5.20	3.33	2.71	7.15	6.28	3.64	2.65	9.41	3.71	4.64	3.76	4.69
1959	12.4	13.6	6.39	9.21	4.98	5.21	4.55	4.39	3.23	7.30	4.29	2.54	6.53
1960	2.62	4.45	4.15	3.22	4.33	2.84	2.81	3.06	5.89	5.68	9.99	3.74	4.40

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.11	2.64	1.99	1.77	3.91	3.96	3.02	2.17	8.69	3.84	2.84	2.06	3.26
1952	1.98	3.24	2.20	2.83	2.87	4.12	4.00	3.22	3.11	2.76	3.50	3.49	3.11
1953	5.45	3.29	2.52	5.33	5.10	3.49	3.61	2.46	2.76	1.86	2.44	1.76	3.35
1954	1.97	2.66	1.21	1.21	1.35	2.15	1.16	2.21	2.28	1.70	2.60	2.57	1.92
1955	7.08	5.51	3.29	3.56	5.42	7.18	3.91	10.1	5.02	4.96	3.85	3.27	5.24
1956	3.59	4.62	3.29	2.48	2.62	4.19	3.27	4.64	3.15	3.76	4.41	4.76	3.73
1957	3.70	4.07	2.67	4.34	3.46	2.73	5.33	3.59	2.18	2.69	2.87	1.64	3.28
1958	2.33	3.36	2.15	1.75	4.62	4.06	2.35	1.71	6.08	2.40	3.00	2.43	3.03
1959	7.99	8.76	4.13	5.95	3.22	3.37	2.94	2.84	2.09	4.72	2.77	1.64	4.22
1960	1.69	2.89	2.68	2.08	2.80	1.83	1.82	1.98	3.81	3.67	6.46	2.42	2.85

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	55.3	81.8	59.7	54.8	117	123	93.5	60.7	269	115	88.0	61.8	1,190
1952	61.4	100	65.9	87.6	86.1	128	124	93.3	96.4	83.0	108	105	1,140
1953	169	102	75.7	165	153	108	112	68.8	85.4	55.8	75.5	52.9	1,220
1954	61.1	82.5	36.3	37.5	40.6	66.7	36.0	62.0	70.8	50.9	80.7	77.2	702
1955	219	171	98.7	110	163	222	121	284	155	149	119	98.1	1,910
1956	111	143	98.8	76.8	78.7	130	101	135	97.8	113	137	143	1,370
1957	115	126	80.2	135	104	84.7	165	100	67.6	80.8	89.1	49.2	1,200
1958	72.1	104	64.6	54.2	139	126	72.9	47.8	189	72.0	93.0	72.9	1,110
1959	248	271	124	185	96.7	105	91.2	79.4	64.8	142	85.7	49.2	1,540
1960	52.5	89.2	80.5	64.5	85.9	56.9	56.3	57.4	118	110	200	72.6	1,040

Summary of yearly discharge

Summary of yearly discharge														
Year	WSP	Fiscal year ending June 30									Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1950	-	-	-	-	-	-	-	-	-	-	2.90	4.49	1,060	
1951	1219	565	874	Mar. 26, 1951	1.04	1.61	3.26	5.04	1,190	3.34	5.17	1,220		
1952	1249	272	421	Jan. 19, 1952	1.50	2.32	3.11	4.81	1,140	3.78	5.65	1,380		
1953	1269	425	658	Jan. 12, 1953	1.36	2.10	3.35	5.18	1,220	2.12	3.28	775		
1954	1349	225	348	May 30, 1954	.77	1.19	1.92	2.97	702	3.73	5.77	1,360		
1955	1399	525	812	Nov. 28, 1954	2.2	3.4	5.24	8.11	1,910	4.29	6.64	1,570		
1956	1449	350	542	Aug. 2, 1955	1.74	2.69	3.73	5.77	1,370	3.74	5.79	1,370		
1957	1563	398	611	Oct. 14, 1956	1.44	2.23	3.28	5.07	1,200	3.05	4.72	1,110		
1958	1569	650	1,010	Mar. 5, 1958	1.36	2.10	3.03	4.69	1,110	4.32	6.68	1,860		
1959	1639	275	425	July 3, 1958	1.15	1.78	4.22	6.53	1,540	2.57	3.98	940		
1960	1719	776	1,200	May 12, 1960	.98	1.52	2.85	4.40	1,040	-	-	-		

2400. West Branch Manoa Stream near Honolulu

Location--Lat 21°19'55" (revised), long 157°48'10" (revised), on left bank 100 ft upstream from highway bridge and 4.2 miles northeast of Honolulu Post Office.

Drainage area--1.14 sq mi.

Records available--May 1913 to January 1921, August 1925 to June 1960.

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

Average discharge--41 years (1913-20, 1926-60), 2.46 mgd (3.81 cfs).

Extremes--1913-21, 1925-60: Maximum gage height, 10.4 ft Jan. 16, 1921, from flood-marks, 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) at times in 1913, 1915, 1926.

Remarks--Small quantity of water is diverted above station occasionally for irrigation.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.15	2.91	1.64	1.27	5.76	4.13	3.61	1.95	13.3	3.23	1.35	0.554	3.34
1952	.624	3.05	1.51	2.44	4.02	6.05	5.14	3.05	4.39	2.23	2.74	4.36	3.28
1953	6.33	2.12	1.20	5.42	5.42	3.00	1.90	1.54	2.83	.904	1.83	1.18	2.82
1954	1.55	2.65	.404	3.395	.622	2.04	.656	1.79	2.54	.969	1.76	2.99	1.53
1955	9.98	6.51	2.21	1.89	5.04	9.52	3.37	13.5	4.73	4.36	2.55	2.04	5.43
1956	2.96	5.31	2.96	1.52	1.89	5.31	3.53	6.90	3.00	2.44	4.44	6.64	3.90
1957	2.49	4.77	1.27	5.77	3.34	1.67	6.71	3.62	.771	1.55	2.18	.429	2.91
1958	1.59	5.68	1.25	.678	3.51	4.27	1.59	.746	7.72	.897	1.98	2.07	2.54
1959	7.23	11.6	2.66	5.17	1.62	1.25	1.67	2.04	1.72	5.72	1.84	.775	3.65
1960	.815	3.19	1.86	.683	1.70	1.48	2.79	1.86	3.47	4.62	10.6	1.66	2.92

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.39	1.88	1.06	0.816	2.43	2.67	2.33	1.26	8.59	2.09	0.874	0.358	2.16
1952	.403	1.97	.781	1.59	2.60	3.90	3.32	1.87	2.84	1.44	1.77	2.82	2.12
1953	4.09	1.37	.776	3.50	3.50	1.94	1.23	.994	1.83	.584	1.18	.763	1.82
1954	1.00	1.71	.261	.255	.402	1.32	.424	1.16	1.64	.626	1.14	1.93	.969
1955	6.45	4.21	1.43	1.22	3.26	6.15	2.18	8.70	3.06	2.82	1.65	1.32	3.51
1956	1.91	3.43	1.91	.985	1.22	3.43	2.28	4.46	1.94	1.58	2.67	4.29	2.52
1957	1.61	3.08	.820	3.73	2.16	1.08	4.34	2.47	.498	1.00	1.41	.277	1.88
1958	1.03	2.51	.810	.458	2.27	2.76	1.03	.482	4.99	.580	1.28	1.34	1.84
1959	4.67	7.61	1.73	3.34	1.05	.808	1.08	1.32	1.11	3.70	1.19	.501	2.36
1960	.527	2.06	1.20	.571	1.10	.959	1.81	1.20	2.24	2.98	6.86	1.08	1.89

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	43.1	56.3	31.7	25.4	73.0	82.7	72.3	35.4	266	62.7	27.1	10.7	788
1952	12.5	61.1	23.4	49.0	78.1	121	103	57.1	98.1	43.3	36.8	84.5	776
1953	127	42.3	23.3	108	105	60.0	38.2	27.8	56.7	17.5	36.8	22.9	685
1954	51.0	53.1	7.82	7.92	12.1	40.8	13.2	32.5	50.9	18.8	35.3	37.8	561
1955	200	131	43.0	37.9	97.7	191	67.6	243	95.0	84.7	51.0	39.7	1,280
1956	59.3	106	57.4	30.5	36.7	106	70.7	129	60.1	47.5	88.8	129	921
1957	49.8	95.4	24.6	116	64.7	33.5	134	69.2	15.4	30.1	43.7	8.30	685
1958	51.9	77.8	24.3	13.6	68.2	85.6	32.0	13.5	155	17.4	39.6	40.1	599
1959	145	236	51.8	104	31.4	25.1	33.4	37.0	34.4	111	36.8	18.0	861
1960	16.3	63.9	36.1	17.7	33.0	29.7	56.0	34.8	69.6	89.5	213	32.3	692

Summary of yearly discharge

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	1219	550	651	Mar. 26, 1951	0.20	0.31	2.16	3.34	788	2.24	3.47	819	
1952	1249	515	797	Dec. 31, 1951	.18	.26	8.12	3.28	776	2.45	3.73	896	
1953	1289	225	348	Nov. 19, 1952	.19	.29	1.82	2.82	665	.966	1.49	352	
1954	1349	140	217	Feb. 22, 1954	.07	.11	.969	1.53	361	2.49	3.85	909	
1955	1399	635	962	Feb. 23, 1955	.19	.29	3.51	5.43	1,280	2.68	4.15	977	
1956	1449	370	572	Aug. 2, 1955	.19	.29	2.52	3.90	921	2.48	3.84	909	
1957	1569	350	542	Nov. 30, 1956	.13	.20	1.88	2.91	685	1.65	2.55	602	
1958	1569	480	743	Mar. 5, 1958	.15	.23	1.64	2.54	599	2.44	3.78	891	
1959	1639	332	514	Apr. 9, 1959	.24	.37	2.36	3.65	861	1.27	1.96	464	
1960	1719	820	1,270	May 12, 1960	.19	.29	1.89	2.92	692	-	-	-	

2440, Pukele Stream near Honolulu

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

Drainage area--1.18 sq mi.

Records available--June 1926 to June 1960. Records for April to December 1912, published in WSP 336 have been found to be unreliable and should not be used.

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

Average discharge--34 years (1926-60), 1.26 mgd (1.95 cfs).

Extremes--1926-60: Maximum discharge, 1,680 mgd (2,600 cfs) Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 62 mgd by test on model of station site; minimum, 0.05 mgd (0.08 cfs) Oct. 31, 1929.

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

WSP	Fiscal year	Date	Discharge		Gage height (feet)
			Mgd	Cfs	
795,1319	1935	Feb. 27, 1935	249	385	4.48
835,1319	1937	Oct. 28, 1936	289	447	4.68
865,1319	1938	Apr. 9, 1938	295	456	4.71
885,1319	1939	Oct. 15, 1938	263	407	4.55
905,1319	1940	Oct. 22, 1939	263	407	4.55
965,1319	1942	Mar. 11, 1942	316	489	4.81
1125,1819	1948	Jan. 24, 1948	105	162	3.46

Remarks--A 2-inch pipe diverts water.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.622	1.12	0.552	0.402	2.15	3.79	2.38	1.47	14.0	2.23	0.767	0.390	2.51
1952	0.240	0.859	0.373	0.953	1.22	2.31	2.74	1.44	1.10	1.02	1.61	1.02	1.22
1953	2.41	0.955	0.610	2.66	2.72	1.70	2.83	7.13	1.45	5.77	1.09	1.472	1.55
1954	3.28	0.733	0.368	3.32	2.48	1.763	2.680	1.01	1.84	7.55	0.05	1.08	1.751
1955	4.53	2.74	1.20	1.28	5.66	5.96	2.60	9.59	4.92	3.66	1.04	1.725	3.45
1956	0.733	1.51	0.699	0.422	0.706	4.32	1.49	2.34	1.30	2.21	2.27	2.66	1.72
1957	1.17	2.03	0.868	2.14	1.66	1.32	2.39	2.09	0.633	1.62	1.14	0.419	1.62
1958	0.493	1.51	0.866	0.421	2.91	2.99	3.55	1.03	8.87	1.04	1.72	0.730	2.01
1959	3.78	7.89	1.94	2.38	7.60	8.20	1.42	1.50	7.52	3.37	1.21	0.483	2.17
1960	0.333	1.30	0.499	0.325	0.532	0.410	0.807	1.23	3.03	2.66	6.37	1.702	1.50

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.402	0.727	0.357	0.260	1.39	2.45	1.54	0.948	9.04	1.44	0.496	0.252	1.62
1952	0.155	0.555	0.241	0.616	0.856	1.49	1.77	0.926	0.713	0.454	1.04	0.658	0.781
1953	1.56	0.617	0.394	1.85	1.76	1.10	1.83	4.61	0.939	0.473	0.765	0.305	0.989
1954	2.212	0.474	0.251	2.08	1.60	0.493	0.362	0.684	1.19	1.488	0.680	0.701	0.492
1955	2.92	1.77	0.778	0.828	3.66	3.85	1.68	6.20	3.18	1.01	0.670	0.469	2.23
1956	0.474	0.974	0.446	0.273	0.456	2.77	0.964	1.51	0.841	1.43	1.47	1.72	1.11
1957	0.768	1.81	0.561	1.38	1.07	0.854	2.84	1.35	0.409	1.05	0.758	0.271	1.05
1958	0.254	0.979	0.553	0.272	1.68	1.93	1.06	0.665	5.73	0.672	1.11	0.472	1.30
1959	2.45	5.10	0.895	1.54	0.491	0.530	0.816	0.968	0.486	2.18	0.785	0.312	1.40
1960	0.215	0.841	0.296	0.210	0.344	0.265	0.392	0.798	1.96	1.72	4.12	0.454	0.972

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	12.5	22.5	10.7	8.07	41.8	78.0	47.7	26.5	280	43.1	15.4	7.57	532
1952	46.8	17.2	7.23	19.1	25.7	45.1	52.8	26.9	22.1	13.1	32.1	19.7	290
1953	48.5	18.1	11.8	67.5	52.9	36.6	56.6	12.8	29.1	11.2	21.8	9.15	364
1954	8.67	1.7	7.53	6.45	4.81	15.3	11.2	18.4	37.0	14.6	21.1	21.0	180
1955	61.6	54.9	23.3	25.7	110	119	62.1	173	98.6	30.2	20.8	14.1	613
1956	14.7	30.2	13.4	8.45	13.7	86.0	29.9	43.7	26.1	42.9	45.4	51.5	406
1957	23.5	40.6	16.8	42.9	32.0	26.5	87.9	37.8	12.7	31.4	22.9	8.13	383
1958	7.28	15.9	8.6	8.33	56.9	59.8	31.0	18.6	178	20.2	34.5	14.2	476
1959	7.5	15.9	2.48	2.67	1.8	2.4	15.1	16.1	7.1	8.0	24.9	9.35	512
1960	6.68	26.1	8.88	6.50	10.3	8.22	12.2	23.1	60.8	51.8	128	13.5	356

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs		Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	1.23	1.90	448
1951	1219	719	1,110	Mar. 26, 1951	0.16	0.25	1.62	2.51	592	1.48	2.29	541	
1952	1249	240	371	Jan. 19, 1952	.12	.19	0.791	1.22	290	1.07	1.66	393	
1953	1298	380	568	Jan. 12, 1953	.25	.39	0.999	1.55	564	1.537	2.45	595	
1954	1349	92	140	Feb. 22, 1954	.13	.20	0.422	0.68	180	0.42	0.632	154	
1955	1399	530	820	Nov. 28, 1954	.29	.45	2.23	3.45	813	1.53	2.37	555	
1956	1449	283	438	Dec. 19, 1955	.19	.29	1.11	1.72	406	1.15	1.78	422	
1957	1569	273	422	Oct. 14, 1956	.24	.37	1.05	1.62	383	1.04	1.61	380	
1958	1569	650	1,010	Mar. 5, 1958	.24	.37	1.50	2.01	476	1.75	2.71	639	
1959	1639	375	580	Apr. 9, 1959	.24	.37	1.40	2.17	512	1.647	1.00	256	
1960	1719	461	713	May 12, 1960	.18	.28	0.972	1.50	356	-	-	-	

2460. Waiomao Stream above Pukele Stream, near Honolulu

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

Drainage area.--1.04 sq mi.

Records available.--April 1911 to December 1912, June 1926 to June 1960.

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

Average discharge.--34 years (1926-60), 1.16 mgd (1.79 cfs).

Extremes.--1911-12, 1926-60: Maximum discharge, 1,000 mgd (1,550 cfs) Apr. 11, 1930 (gage height, 6.27 ft), from rating curve extended above 58 mgd on basis of slope-area measurement at gage height 4.74 ft; no flow at times.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.506	1.06	0.391	0.172	3.88	4.49	2.20	1.16	15.5	1.20	0.305	0.026	2.60
1952	0.054	1.01	.620	1.61	1.30	3.25	2.80	2.29	.941	.345	1.54	.981	1.40
1953	3.05	.627	.238	3.88	2.44	.919	3.30	.633	1.50	.275	.976	.212	1.52
1954	3.17	.784	.0005	.002	.155	1.35	.385	1.95	1.70	.783	1.92	1.36	.885
1955	6.53	2.35	.507	1.19	5.59	5.12	1.76	12.7	3.85	.693	.826	.569	3.42
1956	.613	1.45	.489	.248	.893	5.66	1.51	1.92	.801	2.18	2.09	1.59	1.62
1957	.551	1.28	.387	2.61	1.73	1.04	5.89	1.29	.125	1.01	.650	1.35	1.38
1958	.743	1.54	.447	.497	4.05	1.90	1.09	.458	.868	.806	2.26	.574	1.93
1959	4.47	6.95	1.13	2.91	.509	1.12	1.25	1.20	.231	2.27	1.27	.077	1.96
1960	.156	2.20	.086	.107	.894	.511	.654	1.61	5.11	2.66	4.53	.255	1.56

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.327	0.688	0.253	0.111	2.51	2.90	1.42	0.751	10.0	0.773	0.197	0.017	1.68
1952	0.035	.653	.401	1.04	.841	2.10	1.61	1.48	.608	.223	.993	.634	.903
1953	1.97	.405	.184	2.51	1.58	.594	2.13	.409	.971	.178	.631	.137	.981
1954	4.205	.907	.0003	.001	.100	.873	.249	1.26	1.10	.505	1.24	.879	.572
1955	4.22	1.52	.328	.768	5.61	3.31	1.14	8.18	2.49	.448	.534	.368	2.21
1956	.396	.937	.316	.160	.577	3.66	.975	1.24	.518	1.41	1.35	1.03	1.05
1957	.358	.830	.250	1.69	1.12	.674	3.68	.836	.081	.655	.420	.087	.894
1958	.480	.998	.321	2.62	1.23	.707	.296	5.61	.521	1.46	.371	1.25	
1959	2.89	4.49	.728	1.86	.378	.727	.805	.777	.149	1.47	.619	.050	1.27
1960	.101	1.42	.036	.069	.578	.530	.423	1.04	3.30	1.72	2.93	.165	1.01

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	10.1	21.3	7.60	3.43	75.4	89.9	44.0	21.0	311	23.2	6.12	0.51	614
1952	1.09	20.2	12.0	32.1	25.2	65.1	56.2	42.9	18.8	6.69	30.8	19.0	330
1953	61.0	12.6	4.61	77.8	47.3	18.4	65.9	11.4	30.1	5.33	19.6	4.12	358
1954	6.36	15.7	.01	.04	2.99	27.1	7.73	35.1	34.0	15.1	38.3	26.4	209
1955	121	47.0	9.85	23.8	108	103	35.2	229	77.3	13.4	16.6	11.0	805
1956	12.3	29.1	9.48	4.95	17.3	113	30.2	36.0	16.0	42.3	42.0	31.0	384
1957	11.0	25.7	7.50	52.5	33.5	20.9	114	23.4	2.52	19.7	13.0	2.62	326
1958	14.9	31.0	8.67	9.94	78.7	38.2	21.9	8.30	17.4	15.6	45.3	11.1	458
1959	89.7	139	21.8	58.2	9.88	22.6	25.0	21.8	4.61	44.2	25.4	1.51	464
1960	3.13	44.0	1.07	2.15	17.4	10.2	13.1	30.1	102	51.5	90.9	4.94	370

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum discharge			Mean			Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs		Mgd	Cfs		Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	1.21	1.87	441
1951	1219	505	781	Mar. 26, 1951	0	0	0	1.68	2.60	614	1.54	2.38	562
1952	1249	295	456	Jan. 19, 1952	0	0	0	.903	1.40	330	1.08	1.67	396
1953	1289	590	913	Jan. 12, 1953	0	0	0	.981	1.52	358	1.517	.800	189
1954	1349	62	96	May 31, 1954	0	0	0	.572	.885	209	1.59	2.46	579
1955	1399	465	719	Nov. 29, 1954	.07	.11	2.21	3.42		805	1.56	2.41	569
1956	1449	375	580	Dec. 19, 1955	0	0	0	1.05	1.62	384	.955	1.48	349
1957	1569	252	390	Oct. 14, 1956	0	0	0	.894	1.38	326	.977	1.51	357
1958	1569	550	851	Mar. 5, 1958	.01	.02	1.25	1.93	458	1.69	2.61	617	
1959	1639	195	286	Aug. 2, 1958	0	0	0	1.27	1.96	464	.549	.849	200
1960	1719	319	494	May 12, 1960	0	0	0	1.01	1.56	370	-	-	-

2470. Palolo Stream near Honolulu

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

Drainage area.--3.63 sq mi.

Records available.--April 1952 to June 1960.

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

Average discharge.--8 years, 3.51 mgd (5.43 cfs).

Extremes.--1952-60: Maximum discharge, 2,100 mgd (3,250 cfs) Mar. 5, 1958 (gage height, 5.33 ft), from rating curve extended above 450 mgd by test on model of station site; minimum daily, 0.03 mgd (0.05 cfs) June 23-25, 1958.

Past floods have reached a gage height of at least 10 ft in natural unlined channel according to nearby residents.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	1.30	3.71	3.09	-
1953	4.53	1.90	1.45	9.18	8.62	4.94	6.25	2.74	7.50	1.38	3.19	.948	4.41
1954	.928	2.46	.393	.282	.487	3.06	1.42	5.48	6.02	2.21	3.08	3.33	2.41
1955	9.62	6.27	1.96	3.05	18.6	20.3	7.09	42.5	15.4	2.26	2.18	1.14	10.7
1956	1.67	2.86	1.27	.610	2.12	21.7	5.03	5.88	2.96	6.30	6.87	6.87	5.35
1957	2.68	5.29	1.87	7.40	5.51	3.20	23.5	4.61	1.900	3.99	2.48	.464	5.18
1958	1.21	4.12	1.15	.787	8.53	7.64	3.70	1.25	33.4	2.52	4.39	.973	5.86
1959	11.3	20.0	2.72	7.98	1.78	3.17	4.15	3.78	1.23	6.71	3.03	.702	5.59
1960	.729	4.18	.616	.560	2.12	1.20	1.75	3.39	8.14	5.55	18.7	1.06	4.02

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	0.842	2.40	2.00	-
1953	2.93	1.23	0.939	5.93	5.57	3.19	4.04	1.77	4.85	.891	2.06	.613	2.85
1954	15.00	1.59	.254	.182	.815	1.98	.920	3.54	3.89	1.43	1.99	2.15	1.56
1955	6.22	4.05	1.27	1.97	12.0	13.1	4.58	27.5	9.95	1.46	1.41	.735	6.89
1956	1.08	1.85	.823	.394	1.37	14.0	3.25	3.80	1.91	4.07	4.44	4.44	3.46
1957	1.73	3.42	1.21	4.78	3.56	2.07	15.2	2.98	.582	2.58	1.60	.300	3.35
1958	.782	2.66	.742	.515	5.51	4.94	2.39	.794	21.6	1.63	2.84	.629	3.79
1959	7.31	12.9	1.76	5.16	1.15	2.05	2.68	2.43	.794	4.54	1.96	.454	3.61
1960	.471	2.70	.398	.362	1.37	.775	1.13	2.19	5.26	5.59	12.1	.682	2.60

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	-	-	-	-	-	-	-	-	-	25.3	74.5	59.9	-
1953	90.7	38.1	28.2	184	167	99.0	125	49.5	150	26.7	63.9	18.4	1,040
1954	18.6	49.4	7.63	5.63	9.46	61.5	28.5	99.0	121	42.9	61.7	64.4	570
1955	193	125	38.2	61.1	359	407	142	770	308	43.7	43.8	22.0	2,510
1956	35.5	57.3	24.7	12.2	41.0	435	101	110	59.3	122	137	133	1,270
1957	53.5	106	36.4	148	107	64.3	471	83.4	18.0	77.3	49.5	9.01	1,220
1958	24.2	82.5	22.3	16.0	165	153	74.0	22.2	669	48.9	88.0	18.9	1,380
1959	227	399	52.7	160	34.6	63.4	83.2	67.9	24.6	130	60.6	13.6	1,320
1960	14.6	83.7	11.9	11.2	41.1	24.0	35.1	63.6	163	108	376	20.4	953

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge					Minimum day					Mean		
		Mgd	Cfs	Date			Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons
1952	1249	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	1269	830	1,280	Mar. 3,	1953		0.34	0.53	2.85	4.41	1,040	1.61	2.49	586
1954	1349	166	257	May 31,	1954		.15	.23	1.56	2.41	570	4.38	6.78	1,600
1955	1399	1,560	2,410	Nov. 29,	1954		.22	.34	6.89	10.7	2,510	5.30	8.20	1,930
1956	1449	1,150	1,780	Dec. 19,	1955		.16	.25	3.46	5.35	1,270	3.22	4.98	1,180
1957	1569	780	3,250	Jan. 20,	1957		.22	.34	3.35	5.18	1,220	3.21	4.97	1,170
1958	1569	2,100	3,250	Mar. 5,	1958		.03	.05	3.79	5.86	1,380	5.09	7.88	1,860
1959	1639	882	1,360	Aug. 2,	1958		.30	.46	3.61	5.59	1,320	1.55	2.40	566
1960	1719	810	1,250	May 12,	1960		.24	.37	2.60	4.02	953	-	-	-

2500. Maunawili ditch near Waimanalo

Location.--Lat 21°20'45", long 157°45'10", on left bank 80 ft downstream from Aniani Nui Ridge tunnel and 2.1 miles west of Waimanalo.

Records available.--March 1954 to June 1960.

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

Average discharge.--6 years (1954-60), 1.96 mgd (3.03 cfs).

Extremes.--1954-60: Maximum daily discharge, 7.0 mgd (10.8 cfs) Mar. 5, 1958; no flow at times.

Remarks.--Ditch diverts water from headwaters of Maunawili Stream for irrigation in vicinity of Waimanalo.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	-	-	-	-	-	-	-	-	78.9	78.4	79.4	-
1955	79.2	95.1	89.6	87.5	75.4	27.5	64.5	40.6	26.4	56.9	98.0	87.7	828
1956	80.4	81.4	84.1	72.6	73.6	47.2	20.5	38.1	78.0	55.1	65.2	74.8	771
1957	69.4	64.1	70.0	65.8	65.0	21.0	32.5	48.4	55.9	58.3	65.1	58.6	674
1958	69.3	61.7	60.5	59.3	62.0	51.8	54.3	48.1	28.4	57.1	81.5	64.5	698
1959	72.2	63.7	66.8	68.1	56.3	57.1	35.5	28.2	51.9	62.9	67.6	58.2	688
1960	55.7	65.9	63.5	62.7	59.8	53.4	43.0	31.6	16.2	26.8	60.6	76.6	624

2540. Makawao Stream near Kailua

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

Drainage area.--2.44 sq mi.

Records available.--November 1912 to June 1916, January 1958 to June 1960.

Gage.--Water-stage recorder. Altitude of gage is 75 ft (from topographic map). Prior to Jan. 13, 1958, staff gage at site approximately 200 ft upstream at different datum.

Average discharge.--5 years (1913-16, 1958-60), 3.35 mgd (5.18 cfs).

Extremes.--1912-16, 1958-60: Maximum discharge, 1,380 mgd (2,140 cfs) Mar. 5, 1958 (gage height, 9.08 ft), from rating curve extended above 300 mgd by logarithmic plotting; minimum, 0.62 mgd (0.96 cfs) July 22, 23, Aug. 1, 1959.

Remarks.--Maunawili ditch diverts water from headwaters of Maunawili and Makawao streams for irrigation in vicinity of Waimanalo. Intake to the irrigation ditch is no longer used; present station measures the same water as before.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	3.08	2.88	24.3	3.76	3.31	2.00	-
1959	2.99	7.92	3.67	5.52	4.75	3.65	7.80	5.06	2.52	2.26	1.61	1.43	4.10
1960	1.25	2.69	1.70	1.38	1.93	2.04	2.15	3.28	17.9	4.80	4.21	2.35	3.82

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	1.99	1.86	15.7	2.43	2.14	1.20	-
1959	1.93	5.12	2.37	3.57	3.07	2.36	5.04	3.27	1.63	1.46	1.04	.913	2.65
1960	.808	1.74	1.10	.895	1.25	1.32	1.39	2.12	11.6	3.10	2.72	1.52	2.47

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	61.7	52.2	488	73.0	66.3	38.7	-
1959	59.8	159	71.1	111	92.2	73.0	156	91.6	50.4	43.7	32.1	27.4	967
1960	25.0	53.8	32.8	27.8	37.4	41.0	43.2	61.6	359	93.1	84.2	45.7	905

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs
1958	1719	al,380	a2,140	Mar. 5, 1958		-	-	-	-	-	3.69	5.71
1959	1719	208	519	Jan. 17, 1959	0.71	1.10	2.65	4.10	967	1.70	2.63	1,350
1960	1719	440	681	Mar. 5, 1960	.67	1.04	2.47	3.82	905	-	-	619

a Maximum discharge during period January to June.

2739. Kamooalii Stream at Kaneohe

Location.--Lat 21°24'50", long 157°48'13", on right bank at dam 450 ft above Kamehameha Highway Bridge and 0.22 miles south of Parker School at Kaneohe.

Drainage area.--4.34 sq mi.

Records available.--January 1959 to June 1960.

Gage.--Water-stage recorder and masonry diversion dam and ditch culvert act as control. Datum of gage is 37.82 ft above mean sea level (levels by city and county of Honolulu).

Extremes.--1959-60: Maximum discharge, 1,230 mgd (1,900 cfs) May 13, 1960 (gage height, 6.16 ft), from rating curve extended above 82 mgd on basis of slope-area measurement at gage height 5.69 ft and logarithmic plotting above; minimum, 3.30 mgd (5.11 cfs) July 8, 9.

Flood of Oct. 23, 1958, reached a stage of 8.3 ft (discharge, about 4,270 mgd, 6,610 cfs, from rating curve extended above 82 mgd as explained above).

Remarks.--Many diversions upstream used for irrigation. Continuous rainfall record collected at this site.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1959	-	-	-	-	-	-	-	19.8	11.8	14.8	11.4	8.31	-
1960	7.54	11.0	9.19	7.63	9.33	7.40	8.34	10.3	29.7	15.2	19.6	9.73	12.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1959	-	-	-	-	-	-	-	12.8	7.61	9.56	7.37	5.37	-
1960	4.87	7.13	5.94	5.06	6.03	4.78	5.39	6.65	19.2	9.81	12.7	6.29	7.84

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1959	-	-	-	-	-	-	-	359	236	287	229	161	-
1960	151	221	178	157	181	148	167	193	597	294	394	189	2,870

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1959	1719	-	-	-	-	-	-	-	-	-	-	-
1960	1719	1,230	1,900	May 13, 1960	3.90	6.03	7.84	12.1	2,870	-	-	-

2750. Haiku Stream near Heela

Location.--Lat 21°24'45" (revised), long 157°49'35" (revised), on left bank 1.7 miles west of Kaneohe Post Office and 1.8 miles southwest of Heela.

Drainage area.--0.97 sq mi.

Records available.--January 1914 to October 1919, July 1939 to June 1960.

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

Average discharge.--17 years (1943-60), 1.30 mgd (2.01 cfs), unadjusted for diversions.

Extremes.--1914-19, 1939-60: Maximum discharge, 2,730 mgd (4,220 cfs) Mar. 26, 1951 (gage height, 5.39 ft), from rating curve extended above 37 mgd on basis of slope-area measurement at gage height 3.87 ft; minimum daily, 0.19 mgd (0.29 cfs) July 13, Oct. 17, 19-21, 23-26, 1945, Sept. 18-20, 1946.

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

Revisions.--Some periods for the fiscal years 1940-50 were revised in WSP 1719; the resulting revised records as summarized herewith supersede those published in WSP 1319.

Summary of revised records for Maiku Stream near Heeia

Month	Mean		Million gallons	Momentary maximum			Minimum day	
	Mgd	Cfs		Discharge		Date	Mgd	Cfs
				Mgd	Cfs			
Fiscal year 1939-40	-	-	-	614	950	May 9, 1940	-	-
Fiscal year 1940-41	-	-	-	254	393	Nov. 20, 1940	-	-
June 1942.....	3.56	5.51	107	-	-	-	-	-
Fiscal year 1941-42	2.81	4.35	1,030	742	1,150	June 17, 1942	1.20	1.9
September 1942.....	2.78	4.30	83.4	-	-	-	-	-
December.....	3.07	4.75	95.0	-	-	-	-	-
Calendar year 1942.	2.58	3.99	941	-	-	-	-	-
January 1943.....	4.78	7.40	148	-	-	-	-	-
Fiscal year 1942-43	2.65	4.10	966	1,960	3,030	Jan. 13, 1943	1.18	1.8
Calendar year 1943.	2.06	3.19	752	-	-	-	-	-
Fiscal year 1943-44	-	-	-	177	274	Dec. 5, 1943	-	-
Fiscal year 1944-45	-	-	-	154	238	Apr. 16, 1945	-	-
Fiscal year 1945-46	-	-	-	46.9	72.5	Jan. 25, 1946	-	-
March 1947.....	4.28	6.62	133	-	-	-	-	-
Fiscal year 1946-47	1.12	1.73	409	796	1,230	Mar. 29, 1947	.19	.3
Calendar year 1947.	1.52	2.35	555	-	-	-	-	-
Fiscal year 1947-48	-	-	-	360	557	Feb. 29, 1948	-	-
January 1949.....	6.27	9.70	194	-	-	-	-	-
Fiscal year 1948-49	1.52	2.35	555	976	1,510	Jan. 16, 1949	.50	.8
Calendar year 1949.	1.38	2.14	504	-	-	-	-	-
Fiscal year 1949-50	-	-	-	345	534	Jan. 22, 1950	-	-

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.27	2.09	1.30	1.07	1.62	3.13	1.51	1.61	14.7	3.54	1.76	1.33	2.94
1952	1.21	1.72	1.44	2.32	1.90	3.90	3.19	3.09	2.14	1.79	1.73	1.64	2.17
1953	1.62	1.44	1.09	2.26	2.60	1.64	1.52	1.70	2.23	1.64	1.38	1.16	1.69
1954	1.21	.933	.661	.975	1.00	1.15	1.36	.976	1.18	.927	.956	.969	1.03
1955	2.52	1.64	.900	.857	4.13	3.36	2.61	10.8	2.99	1.64	1.30	.968	2.74
1956	.907	2.01	.907	1.15	1.67	7.41	3.45	4.07	1.90	2.58	2.58	2.12	2.57
1957	1.66	2.94	.952	2.29	2.74	2.85	4.97	1.55	1.09	2.32	1.36	.908	2.14
1958	.725	.614	.540	.526	4.55	4.44	1.38	2.24	14.2	1.20	.952	.675	2.68
1959	2.86	3.96	1.89	10.1	2.15	1.61	2.32	1.81	1.49	2.21	1.03	.724	2.71
1960	.532	1.22	1.27	.639	.905	.634	1.08	.947	4.52	1.64	3.56	.956	1.50

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.824	1.35	0.858	0.694	1.05	2.02	0.979	1.04	9.51	2.29	1.14	0.858	1.90
1952	.785	1.11	.929	1.50	1.23	2.52	2.06	2.00	1.38	1.16	1.12	1.06	1.40
1953	1.05	.928	.707	1.46	1.68	1.06	.983	1.10	1.44	1.06	.894	.750	1.09
1954	.781	.642	.427	.630	.649	.743	.881	.631	.760	.599	.618	.626	.667
1955	1.63	1.06	.582	.541	2.67	2.17	1.69	6.95	1.93	1.06	.837	.600	1.77
1956	.586	1.30	.586	.745	1.08	4.79	2.23	2.63	1.23	1.67	1.67	1.37	1.66
1957	1.07	1.90	.615	1.48	1.77	1.84	3.21	1.00	.703	1.50	.879	.587	1.38
1958	.469	.397	.349	.340	2.94	2.87	.891	1.45	9.15	.774	.615	.436	1.73
1959	1.85	2.57	1.22	6.54	1.39	1.04	1.50	1.17	.963	1.43	.666	.468	1.75
1960	.344	.790	.820	.413	.585	.410	.700	.612	2.92	1.06	2.30	.618	.968

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	25.5	42.0	25.1	21.5	31.4	62.5	30.3	29.0	295	68.8	35.3	25.8	692
1952	24.3	34.4	27.9	46.4	36.8	78.2	63.9	58.1	42.7	34.8	34.9	31.8	514
1953	32.6	28.8	21.2	45.1	50.4	33.0	30.5	30.7	44.7	31.7	27.7	22.5	399
1954	24.2	19.9	12.8	19.5	19.5	23.0	27.3	17.7	23.6	18.0	19.2	18.8	244
1955	50.6	32.8	17.5	16.8	30.1	67.2	52.5	195	59.9	31.7	26.0	18.0	648
1956	18.2	40.3	17.6	23.1	32.4	148	69.2	76.3	38.2	50.2	51.7	41.1	606
1957	33.2	58.8	18.4	45.8	53.2	57.0	99.4	28.1	21.8	44.9	27.2	17.6	505
1958	14.5	12.3	10.5	10.6	89.1	89.1	27.6	40.6	284	23.2	19.1	13.1	633
1959	57.4	79.7	36.7	203	41.8	32.4	45.4	32.8	29.8	42.8	20.6	14.0	637
1960	10.7	24.5	24.6	12.8	17.6	12.7	21.7	17.8	90.5	31.8	71.2	18.6	354

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	1.34	2.07	488	
1951	1219	2,730	4,220	Mar. 26, 1951	0.66	1.02	1.90	2.94	692	2.01	3.11	732	
1952	1249	236	364	Oct. 26, 1951	.66	1.02	1.40	2.17	514	1.30	2.01	477	
1953	1269	168	260	Mar. 13, 1953	.61	.94	1.09	1.69	399	.840	1.30	307	
1954	1349	34.8	53.8	Apr. 29, 1954	.23	.36	1.667	1.03	244	1.07	1.66	390	
1955	1399	668	1,060	Feb. 23, 1955	.31	.48	1.77	2.74	648	1.82	2.82	663	
1956	1499	614	950	Dec. 20, 1955	.35	.54	1.66	2.57	606	1.62	2.51	593	
1957	1569	1,100	1,700	Dec. 6, 1956	.35	.54	1.38	2.14	505	1.27	1.96	464	
1958	1569	1,330	2,060	Mar. 5, 1958	.25	.39	1.73	2.68	633	2.35	3.64	859	
1959	1639	1,480	2,290	Oct. 23, 1958	.40	.62	1.75	2.71	637	.793	1.23	289	
1960	1719	395	611	May 12, 1960	.25	.39	.972	1.50	354	-	-	-	

2780. Iolekaa Stream mauka near Heeia

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

Drainage area.--0.28 sq mi.

Records available.--March 1940 to June 1960.

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

Average discharge.--19 years (1940-42, 1943-60), 0.398 mgd (0.616 cfs).

Extremes.--1940-60: Maximum discharge, 71 mgd (110 cfs) Oct. 23, 1956 (gage height, 2.43 ft), from rating curve extended above 4.0 mgd by rating for Columbus-type control and test on model of station site; minimum daily, 0.10 mgd (0.16 cfs) Oct. 31 to Nov. 9, Nov. 24, 27, 1946.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.333	0.607	0.410	0.359	0.676	1.01	0.470	0.554	2.51	0.982	0.819	0.576	0.761
1952	.639	.823	.645	1.07	.673	1.17	.817	.857	.613	.487	.555	.506	.740
1953	.586	.545	.429	.794	.637	.424	.509	.704	.681	.571	.507	.461	.586
1954	.435	.449	.416	.335	.379	.486	.549	.982	.450	.480	.393	.340	.472
1955	.848	.506	.366	.429	.859	.690	.827	1.43	.654	.582	.948	.641	.721
1956	.617	.820	.585	.535	.569	1.11	.788	.882	.651	.649	.774	.653	.736
1957	.712	1.03	.639	.846	.853	.716	1.22	.746	.599	.777	.607	.546	.775
1958	.455	.412	.453	.464	.961	.757	.470	.597	1.35	.627	.662	.591	.653
1959	.899	1.11	.746	1.56	.702	.618	1.03	.837	.766	1.09	.733	.607	.910
1960	.559	.699	.727	.542	.613	.464	.534	.546	1.43	.593	.916	.469	.562

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.215	0.392	0.265	0.232	0.437	0.655	0.304	0.358	1.62	0.635	0.400	0.372	0.492
1952	.413	.532	.417	.691	.435	.755	.526	.554	.396	.315	.359	.327	.478
1953	.379	.352	.277	.513	.541	.274	.329	.455	.440	.369	.328	.298	.379
1954	.281	.290	.269	.217	.245	.314	.355	.635	.291	.310	.254	.220	.305
1955	.548	.327	.251	.277	.555	.556	.405	.966	.552	.363	.419	.414	.466
1956	.399	.530	.378	.346	.366	.720	.509	.570	.421	.549	.500	.422	.475
1957	.460	.863	.413	.547	.551	.463	.786	.482	.367	.502	.392	.354	.501
1958	.294	.266	.293	.313	.634	.489	.304	.366	.670	.403	.428	.382	.422
1959	.561	.718	.462	1.01	.454	.529	.664	.541	.495	.704	.474	.392	.588
1960	.361	.452	.470	.350	.398	.313	.345	.354	.965	.383	.592	.303	.441

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.67	12.2	7.94	7.18	13.1	20.3	9.41	10.0	50.1	19.0	12.4	11.2	180
1952	12.8	16.5	12.5	21.4	13.1	23.4	16.4	16.1	12.3	9.44	11.1	9.61	175
1953	11.8	10.9	8.32	15.9	16.2	8.49	10.2	12.8	15.6	11.1	10.2	8.93	136
1954	8.70	6.99	6.07	6.74	7.34	9.72	11.0	17.6	9.02	9.31	7.68	6.61	111
1955	17.0	10.2	7.52	8.59	16.6	17.2	12.5	27.0	17.1	10.9	13.0	12.4	170
1956	12.4	16.4	11.3	10.7	11.0	22.3	15.8	16.5	13.0	16.5	15.5	12.6	174
1957	14.3	20.5	12.4	17.0	16.5	14.3	24.4	13.5	12.0	15.1	12.1	10.6	163
1958	9.12	6.26	6.80	9.70	19.0	15.2	9.41	10.8	27.0	12.2	13.3	11.5	154
1959	18.0	22.3	14.4	31.3	13.6	16.4	20.5	15.2	15.4	11.1	14.7	11.6	215
1960	11.2	14.0	14.1	10.6	11.9	9.71	10.7	10.3	29.9	11.5	18.3	9.10	162

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million gallons	
		Mgd		Cfs		Date		Mgd		Cfs		Mgd	
1950	-	-	-	-	-	-	-	-	-	-	-	0.363	0.562
1951	1219	-	-	-	-	-	-	-	-	-	-	.580	.897
1952	1249	32.5	50.3	Dec. 3, 1950	0.20	0.31	0.492	0.761	180	175	401	.620	147
1953	1289	(a)	(a)	Nov. 19, 1952	.30	.46	.478	.740	175	138	319	.494	116
1954	1349	10.0	15.5	Jan. 1, 1954	.25	.39	.379	.586	138	111	.580	.568	139
1955	1399	16.3	25.2	Nov. 28, 1954	.18	.28	.305	.472	111	170	.486	.752	177
1956	1449	33	51		.21	.32	.466	.721	170				
1956	1449	16.3	25.2	Dec. 19, 1955	.31	.48	.476	.735	174	.505	.781	185	
1957	1569	16.0	24.8	Aug. 8, 1956	.26	.43	.501	.775	183	.432	.668	158	
1958	1569	30	46	Feb. 28, 1958	.25	.39	.422	.653	154	.548	.846	200	
1959	1639	71	110	Oct. 23, 1958	.32	.50	.588	.912	215	.467	.723	171	
1960	1719	19.9	30.8	May 12, 1960	.22	.34	.441	.662	162	-	-	-	-

a Not determined.

2830. Kahaluu Stream near Heeia

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

Drainage area.--0.28 sq mi.

Records available.--October 1935 to June 1960.

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

Extremes.--1935-60: Maximum discharge, 230 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, 0.03 mgd (0.05 cfs) June 25, 1958.

Remarks.--Honolulu Board of Water Supply diverts ground water from tunnel in drainage area. Continuous records of rainfall are obtained at the station.

Revisions.--The fiscal years 1937-39 and 1943-44 were revised in WSP 1719; the records published in WSP 1319 thus affected are given herewith:

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1937	5.09	5.42	6.11	6.33	5.79	6.08	6.59	6.98	7.09	7.27	9.13	7.16	6.58
1938	7.15	7.13	7.77	6.78	6.75	7.66	6.99	7.92	7.43	7.54	7.58	7.54	7.35
1939	7.21	7.49	7.01	6.89	6.56	6.76	6.67	6.99	6.33	6.59	5.49	5.74	6.64
1943	4.67	5.21	4.75	4.50	4.58	5.09	4.97	3.74	4.16	3.84	4.56	3.64	4.49
1944	3.74	4.16	4.08	3.91	3.76	3.95	3.57	3.68	3.85	3.53	3.40	3.17	3.73
1951	.407	.608	.412	.518	.953	1.09	1.01	1.39	3.05	1.89	1.46	1.06	1.15
1952	1.02	.935	.885	.996	.996	1.66	1.45	1.81	1.29	.978	.876	.627	1.12
1953	.549	.362	.302	.685	1.03	.801	1.06	1.04	1.32	1.31	1.18	.952	.879
1954	.818	.798	.605	.642	.546	.758	.854	.962	.781	.713	.772	.576	.735
1955	1.51	.749	.761	.805	1.04	.857	.594	1.14	.780	.641	.588	.591	.836
1956	.622	1.03	.707	.768	.942	1.58	1.24	1.09	.950	.965	.671	.483	.921
1957	.328	.447	.280	.568	.867	.740	1.36	1.21	1.32	1.59	1.17	.557	.851
1958	.610	.512	.367	.317	.996	.851	.645	.691	1.86	.783	.671	.326	.735
1959	1.05	1.56	.840	2.65	1.13	1.75	2.31	2.15	1.72	2.07	1.08	.467	1.56
1960	.317	.467	.495	.214	.412	.231	.229	.316	1.11	.405	.467	.144	.401

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1937	3.29	3.50	3.95	4.09	3.74	3.93	4.26	4.51	4.58	4.70	5.90	4.63	4.25
1938	4.62	4.61	5.02	4.38	4.36	4.95	4.52	5.12	4.80	4.87	4.90	4.87	4.75
1939	4.66	4.84	4.53	4.45	4.24	4.37	4.31	4.52	4.09	4.26	3.55	3.71	4.29
1943	3.02	3.37	3.07	2.91	2.96	3.29	3.21	2.42	2.69	2.48	2.95	2.35	2.90
1944	2.42	2.69	2.52	2.53	2.43	2.55	2.31	2.38	2.49	2.28	2.20	2.05	2.41
1951	.263	.393	.266	.335	.616	.704	.650	.901	1.97	1.22	.944	.687	.745
1952	.658	.504	.572	.644	.644	1.07	.935	1.17	1.832	.632	.566	.405	.727
1953	.355	.234	.195	.443	.663	.518	.682	.674	.850	.844	.761	.615	.568
1954	.529	.516	.391	.415	.353	.490	.552	.622	.505	.461	.499	.372	.475
1955	.978	.484	.492	.520	.669	.554	.384	.737	.504	.414	.380	.382	.540
1956	.402	.666	.457	.495	.609	1.02	.800	.707	.614	.624	.434	.312	.595
1957	.212	.289	.181	.367	.431	.478	.879	.785	.856	1.03	.756	.360	.550
1958	.394	.331	.237	.205	.644	.550	.417	.576	1.20	.506	.434	.211	.475
1959	.681	1.01	.543	1.71	.732	1.13	1.49	1.39	1.11	1.34	.701	.302	1.01
1960	.205	.302	.320	.138	.266	.149	.148	.204	.716	.262	.302	.093	.259

Monthly and yearly discharge, in million gallons, of Kahaluu Stream near Heeia

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1937	102	108	118	127	112	122	132	128	142	141	183	139	1,550
1938	143	143	151	136	131	153	140	144	149	146	152	146	1,730
1939	144	150	136	138	127	136	134	127	127	128	110	113	1,570
1943	93.7	104	92.1	90.1	88.9	102	99.4	67.8	83.3	74.2	91.4	70.6	1,060
1944	75.0	83.4	78.5	78.4	73.0	79.0	71.6	69.0	77.2	68.6	68.2	61.4	883
1951	8.15	12.2	7.98	10.4	18.5	21.8	20.2	25.2	61.1	36.5	29.3	20.6	272
1952	20.4	18.7	17.2	20.0	19.3	33.2	29.0	34.0	25.8	19.0	17.6	12.2	266
1953	11.0	7.24	5.85	13.7	19.9	16.1	21.2	18.9	26.3	25.3	23.6	18.4	207
1954	16.4	18.0	11.7	12.8	10.6	15.2	17.1	17.4	15.6	13.8	15.5	11.2	173
1955	30.3	15.0	14.8	16.1	20.1	17.2	11.9	20.6	15.6	12.4	11.8	11.5	197
1956	12.4	20.7	13.7	15.3	18.3	31.6	24.8	20.5	19.0	18.7	13.4	9.37	218
1957	6.56	8.97	5.42	11.4	12.9	14.8	27.3	22.0	26.5	30.8	23.4	10.8	201
1958	12.2	10.3	7.12	6.34	19.3	17.1	12.9	16.1	37.2	15.2	13.4	6.32	173
1959	21.1	31.3	18.3	53.1	22.0	35.2	46.3	36.8	34.4	40.4	21.7	9.06	370
1960	6.36	9.37	9.59	4.29	7.99	4.61	4.59	5.91	22.2	7.85	9.38	2.79	94.9

Summary of yearly discharge

Summary of year 1962 discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1937	1719	153	237	May 5, 1937	3.05	4.72	4.25	6.58	1,550	4.71	7.29	1,720	
1938	1719	290	449	Sept. 27, 1937	4.00	6.19	4.75	7.35	1,730	4.68	7.24	1,710	
1939	1719	173	268	Feb. 28, 1939	3.50	5.42	4.29	6.64	1,570	3.93	6.08	1,430	
1943	1719	170	263	Jan. 13, May 18	2.25	3.48	2.90	4.49	1,060	2.61	4.04	954	
1944	1719	26	40	Dec. 5, 1943	1.91	2.96	2.41	3.73	883	2.11	3.26	772	
1950	-	-	-	-	-	-	-	-	-	.490	.758	179	
1951	1219	65	101	Mar. 26, 1951	.20	.31	.745	1.15	272	.861	1.36	322	
1952	1249	60	93	Feb. 14, 1952	.35	.54	.727	1.12	266	.577	.893	211	
1953	1289	56	87	Jan. 13, 1953	.18	.28	.568	.879	207	.593	.918	216	
1954	1349	32.5	50.3	Jan. 1, 1954	.29	.45	.475	.735	173	.559	.865	204	
1955	1399	67	104	Nov. 28, 1954	.15	.23	.540	.836	197	.537	.831	196	
1956	1449	59	91	Dec. 20, 1955	.26	.40	.595	.921	218	.453	.701	166	
1957	1569	63	98	Dec. 6, 1956	.11	.17	.550	.851	201	.584	.904	213	
1958	1569	(a)	(a)	Mar. 5, 1958	.08	.12	.475	.735	173	.767	1.19	280	
1959	1639	166	257	Oct. 23, 1958	.18	.26	1.01	1.56	370	.638	.987	233	
1960	1719	83.3	129	Apr. 16, 1960	.06	.09	.259	.401	94.9	-	-	-	

a Unknown.

2840. Waihee Stream near Heeia

Location--Lat 21°27'00", long 157°51'40" (revised), on left bank 70 ft upstream from intake of Kihe ditch, 120 ft downstream from forest-reserve boundary, 3.5 (revised) miles northwest of Heeia, and 4.4 miles northwest of Kaneohe.

Drainage area--0.93 sq mi.

Records available--December 1935 to June 1960.

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

Average discharge--24 years (1936-60), 6.42 mgd (9.93 cfs).

Extremes--1935-60: Maximum discharge, 466 mgd (721 cfs) Oct. 23, 1958 (gage height, 5.69 ft), from rating curve extended above 50 mgd; minimum, 2.75 mgd (4.25 cfs) Sept. 6, Oct. 31 to Nov. 2, 1955.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	7.27	8.28	7.25	6.71	8.65	9.92	8.25	8.51	19.5	10.2	9.76	9.58	9.50
1952	9.13	9.50	9.05	10.0	9.04	11.0	10.1	11.2	9.36	8.51	8.94	8.65	9.55
1953	9.30	9.18	8.62	10.2	10.6	7.81	8.68	8.96	9.89	8.73	8.26	7.92	9.00
1954	7.44	7.30	6.84	6.89	6.17	6.95	7.07	7.46	6.87	6.76	6.75	6.33	6.90
1955	9.67	8.85	8.49	9.55	10.7	11.7	10.9	23.8	21.7	26.1	25.5	22.7	15.8
1956	18.9	18.4	6.90	9.28	5.83	9.70	9.81	10.3	9.45	10.4	9.58	9.41	10.7
1957	9.08	10.8	9.75	9.70	9.96	9.52	13.0	9.86	9.33	10.5	9.14	8.68	9.95
1958	8.22	7.86	7.43	7.21	11.0	10.3	7.57	7.95	12.3	8.56	8.43	8.11	8.74
1959	10.7	11.5	8.93	15.2	11.1	12.0	12.0	12.3	11.6	12.3	10.6	9.42	11.5
1960	8.45	8.66	8.68	7.32	8.46	7.43	7.46	8.14	11.9	10.1	11.0	7.86	8.80

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	4.70	5.35	4.69	4.34	5.59	6.41	5.33	5.50	12.6	6.61	6.31	6.19	6.14
1952	5.90	6.14	5.86	6.48	5.84	7.14	6.51	7.22	6.05	5.50	5.78	5.59	6.17
1953	6.01	5.93	5.57	6.58	6.83	5.05	5.61	5.79	6.39	5.64	5.34	5.12	5.82
1954	4.81	4.72	4.42	4.45	3.99	4.49	4.57	4.82	4.44	4.37	4.36	4.09	4.46
1955	6.25	5.72	5.49	6.17	6.93	7.57	7.02	15.4	14.0	16.9	16.5	14.7	10.2
1956	12.2	11.9	4.46	6.00	3.77	6.27	6.34	6.67	6.11	6.71	6.19	6.08	6.91
1957	5.87	6.95	6.30	6.27	6.44	6.15	8.42	6.37	6.03	6.80	5.91	5.61	6.43
1958	5.31	5.08	4.80	4.66	7.10	6.63	4.89	5.14	7.92	5.53	5.45	5.24	5.65
1959	6.94	7.41	5.77	9.83	7.20	7.74	7.76	7.98	7.52	7.98	6.86	6.09	7.43
1960	5.46	5.60	5.61	4.73	5.47	4.80	4.82	5.26	7.71	6.53	7.13	5.08	5.69

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	146	166	141	134	168	199	165	154	390	198	196	186	2,240
1952	183	190	176	201	221	221	202	210	187	165	179	168	2,260
1953	186	184	167	204	205	157	174	162	198	169	166	154	2,130
1954	149	146	133	138	120	139	142	135	138	131	135	123	1,630
1955	194	197	165	191	208	235	218	430	433	506	513	440	3,710
1956	377	370	134	186	113	194	196	194	189	201	192	182	2,530
1957	182	215	189	194	193	191	261	178	187	204	183	168	2,340
1958	165	157	144	144	213	206	152	144	245	166	169	157	2,060
1959	215	230	173	305	216	240	240	223	233	240	213	183	2,710
1960	169	174	168	147	164	149	149	152	239	198	221	153	2,080

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30							Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	-
1951	1219	200	309	Mar. 26 or 27	4.0	6.2	6.14	9.50	2,240	6.67	10.3
1952	1249	(a)	(a)	-	5.2	8.0	6.17	9.55	2,260	6.05	9.36
1953	1289	255	395	Nov. 19, 1952	4.9	7.6	5.82	9.00	2,130	5.06	7.83
1954	1349	88	136	Jan. 1, 1954	3.7	5.7	4.46	6.90	1,630	5.40	8.36
1955	1599	255	395	Feb. 7, 1955	4.0	6.2	10.2	15.8	3,710	10.7	16.6
1956	1449	186	288	Dec. 20, 1955	2.75	4.25	6.91	10.7	2,530	6.34	9.81
1957	1569	122	189	Dec. 6, 1956	5.4	8.0	6.43	9.95	2,340	6.06	9.58
1958	1569	200	309	Mar. 6, 1958	4.4	6.8	5.85	8.74	2,060	6.61	10.2
1959	1639	466	721	Oct. 23, 1958	5.2	8.0	7.43	11.5	2,710	6.31	9.76
1960	1719	91.8	142	Mar. 5, 1960	4.48	6.93	5.69	8.80	2,080	-	-

a Not determined.

2850. Waiahole tunnel at Waialanu, near Waiahole

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

Records available.--December 1950 to June 1960. June 1916 to November 1950 in files of Waiahole Water Co.

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

Average discharge.--9 years (1951-60), 24.4 mgd (37.8 cfs).

Extremes.--1950-60: Maximum daily discharge, 74.0 mgd (114 cfs) July 28, 1954; minimum daily, 16.0 mgd (24.8 cfs) Jan. 24-29, 1952.

Remarks.--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.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	-	-	-	-	-	-	750	648	929	814	798	737	-
1952	725	751	651	688	696	766	706	715	834	739	768	751	8,790
1953	871	770	729	872	906	804	759	700	798	681	706	620	9,220
1954	624	651	571	593	542	582	563	554	577	572	605	584	7,020
1955	777	832	744	790	742	824	794	873	889	819	843	755	9,680
1956	788	821	709	705	726	790	794	836	854	852	914	856	9,640
1957	865	992	846	949	805	726	853	636	774	814	769	678	9,750
1958	702	767	671	676	616	681	782	551	586	542	574	650	8,200
1959	850	965	853	972	871	883	836	748	760	774	737	651	9,900
1960	641	660	653	603	612	575	609	563	828	765	850	776	8,140

2860. 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 1960.

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

Average discharge.--9 years, 0.902 mgd (1.40 cfs).

Extremes.--1951-60: Maximum daily discharge, 62.1 mgd (96.1 cfs) Dec. 1, 1957; no flow most of time.

Remarks.--Station measures releases from Waiahole tunnel.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	-	-	-	-	-	-	-	0	289	0	0	0	-
1952	0	0	0	2.30	0	0.36	19.0	.02	0	0	0	0	21.7
1953	0	0	0	.07	3.00	0	.03	0	0	0	0	0	3.10
1954	0	0	.27	0	0	0	0	.03	0	.12	0	0	.42
1955	.27	.01	0	0	29.5	18.9	10.7	138	93.5	0	0	0	291
1956	.01	1.69	0	0	.03	65.6	9.60	1.34	.38	.08	0	0	78.7
1957	.05	1.60	0.05	0	.94	208	380	516	0	.28	.05	0	1,250
1958	0	.07	0	0	9.05	102	.05	350	406	249	136	0	1,250
1959	.54	10.8	.12	24.8	.02	.36	9.62	.13	.02	.18	.09	0	46.7
1960	0	11.1	.05	0	.62	.02	.03	.51	.33	2.00	7.04	0	21.7

2870. Waiahole tunnel at north portal, near Waiahole

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

Records available.--January 1951 to June 1960. May 1916 to December 1950 in files of Waiahole Water Co.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 753 ft (by Waiahole Water Co.).

Average discharge.--9 years (1951-60), 26.0 mgd (40.2 cfs).

Extremes.--1951-60: Maximum daily discharge, 81.0 mgd (125 cfs) July 28, 1954; minimum daily, 1.48 mgd (2.29 cfs) Dec. 9, 1956.

Remarks.--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.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	-	-	-	-	-	-	-	720	707	876	904	831	-
1952	798	824	737	782	736	819	741	809	924	822	852	843	9,680
1953	968	889	820	945	962	856	815	752	854	754	776	682	10,050
1954	684	726	645	645	580	639	621	604	606	618	654	622	7,640
1955	827	864	786	845	776	854	823	762	856	874	937	841	10,020
1956	870	919	796	791	788	791	811	874	903	907	952	891	10,290
1957	985	1,130	962	1,060	675	384	781	153	843	895	878	771	9,520
1958	806	873	754	764	903	836	858	248	246	337	467	737	7,830
1959	977	1,070	986	1,100	980	999	937	845	835	866	858	742	11,200
1960	734	713	750	694	716	692	726	646	968	876	942	916	9,370

2872. Waiahole tunnel at adit 8, near Waipahu

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

Records available.--August 1956 to June 1960 in reports of Geological Survey. May 1916 to July 1956 in files of Waiahole Water Co.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 710 ft (by Waiahole Water Co.).

Extremes.--1956-60: Maximum daily discharge, 97.4 mgd (151 cfs) Oct. 23, 1958; minimum daily, 6.0 mgd (9.3 cfs) Dec. 9, 1956.

Remarks.--Water may be regulated by adjusting headgates or may be wasted by diversion above station.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	-	554	952	315	982	1,060	1,040	919	-
1958	950	1,000	891	897	1,050	998	1,040	443	453	513	654	903	9,790
1959	1,170	1,290	1,210	1,400	1,220	1,230	1,160	1,010	1,010	1,010	981	850	13,540
1960	863	849	874	828	619	780	827	759	1,050	1,010	1,120	1,090	10,870

2910. Waiahole Stream at altitude 250 ft, near Waiahole

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

Drainage area.--0.99 sq mi.

Records available.--July 1955 to June 1960.

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

Average discharge.--5 years (1955-60), 5.27 mgd (8.15 cfs).

Extremes.--1955-60: Maximum discharge, 625 mgd (967 cfs) Apr. 16, 1960 (gage height, 4.32 ft), from rating curve extended above 75 mgd on basis of field estimate of flow at gage height 4.23 ft; minimum daily, 1.71 mgd (2.65 cfs) Sept. 9, 10, 16, 1957.

Remarks.--An average of 1.4 million gallons were pumped daily upstream from station into Waiahole tunnel for irrigation in Central Oahu.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	4.25	5.69	3.73	3.17	5.48	11.1	10.9	8.60	7.98	8.29	6.76	6.58	6.89
1957	4.30	5.86	4.95	6.11	11.4	25.2	18.7	36.4	6.50	6.58	3.79	3.42	10.9
1958	3.03	3.25	2.92	2.96	7.32	12.6	4.47	24.8	29.7	17.9	12.7	3.56	10.4
1959	5.46	9.50	5.40	15.8	8.28	7.86	8.70	8.48	7.66	6.87	4.13	3.68	7.66
1960	3.25	5.06	3.62	3.19	4.24	3.78	3.64	4.75	8.22	6.90	8.01	4.70	4.95

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	2.75	3.68	2.41	2.05	3.54	7.20	7.05	5.56	5.16	5.36	4.37	4.25	4.45
1957	2.78	3.79	3.20	3.95	7.34	16.3	12.1	23.5	4.20	4.25	2.45	2.21	7.07
1958	1.96	2.10	1.89	1.91	4.73	8.17	2.89	16.0	19.2	11.6	8.18	2.30	6.69
1959	3.53	6.14	3.49	10.2	5.34	5.08	5.62	5.48	4.95	4.44	2.67	2.36	4.95
1960	2.10	3.27	2.34	2.06	2.74	2.44	2.35	3.07	5.31	4.46	5.18	3.04	3.20

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	85.2	114	72.4	63.7	106	223	218	161	160	161	136	128	1,630
1957	86.1	117	96.0	122	220	505	375	659	130	127	76.0	66.4	2,580
1958	60.9	65.1	56.7	59.1	142	253	89.7	449	595	349	254	69.2	2,440
1959	109	190	105	315	160	157	174	154	154	133	82.8	71.3	1,810
1960	65.2	102	70.3	63.8	82.2	75.6	73.0	89.2	165	134	161	91.3	1,170

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd		Cfs		Date		Mgd		Cfs		Mgd	
1956	1449	172	266	Dec. 20,	1955	1.80	2.79	4.45	6.89	1,630	5.77	8.93	2,110
1957	1569	238	368	Jan. 21,	1957	1.98	3.06	7.07	10.9	2,580	5.68	8.79	2,070
1958	1569	238	368	Mar. '5,	1958	1.71	2.65	6.69	10.4	2,440	7.79	12.1	2,840
1959	1639	580	897	Oct. 23,	1958	2.1	3.2	4.95	7.66	1,810	3.36	5.20	1,230
1960	1719	825	967	Apr. 16,	1960	1.90	2.94	3.20	4.95	1,170	-	-	-

2949. Waikane Stream at altitude 75 ft, at Waikane

Location.--Lat 21°30'00", long 157°51'54", on right bank a quarter of a mile below confluence with Waikeseke Stream, 400 ft above ditch on left bank, and 0.7 mile west of Waikane cemetery.

Drainage area.--2.25 sq mi.

Records available.--December 1959 to June 1960.

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

Extremes.--1960: Maximum discharge during period December to June, 1,530 mgd (2,370 cfs) May 12, 1960 (gage height, 7.45 ft) from rating curve extended above 74 mgd by logarithmic plotting; minimum, 1.15 mgd (1.78 cfs) Dec. 23, 1959.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	-	-	-	-	3.09	4.87	27.4	11.7	21.0	3.99	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	-	-	-	-	2.00	3.15	17.7	7.59	13.6	2.58	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	-	-	-	-	62.1	91.4	548	228	422	77.4	-

2965. Kahana Stream at altitude 30 ft, near Kahana

Location.--Lat 21°32'38", long 157°53'07", on right bank 600 ft above confluence with East Branch Kahana Stream, 1.1 miles southwest of Kahana, and 2.2 miles southwest of Kaaawa Post Office.

Drainage area.--3.74 sq mi.

Records available.--December 1958 to June 1960.

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

Extremes.--1959-60: Maximum discharge, 2,600 mgd (4,020 cfs) May 12, 1960 (gage height, 4.73 ft), from rating curve extended above 340 mgd by logarithmic plotting; minimum, 7.15 mgd (11.1 cfs) Feb. 8, 1960.

Remarks.--Approximately 6 million gallons are diverted daily by Waiahole Water Co. at 800 ft elevation, 2.3 miles above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1959	-	-	-	-	-	-	24.1	32.3	19.8	33.6	26.5	17.8	-
1960	17.3	25.4	29.9	19.6	25.2	17.6	31.1	21.4	63.7	41.6	62.8	23.2	31.7

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1959	-	-	-	-	-	-	15.6	20.9	12.8	21.7	17.1	11.5	-
1960	11.2	16.4	19.3	12.7	16.3	11.4	20.1	13.8	41.2	26.9	40.6	15.0	20.5

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1959	-	-	-	-	-	-	483	586	397	651	531	346	-
1960	348	510	579	393	489	352	624	401	1,280	806	1,260	451	7,490

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day				Mean		Million gallons
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Million gallons
1959	1719	-	-	-		-	-	-	-	15.5	24.0	5,660
1960	1719	2,600	4,020	May 12, 1960		7.45	11.5	20.5	31.7	7,490	-	-

3020. 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 1960.

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

Average discharge.--7 years, 7.08 mgd (11.0 cfs).

Extremes.--1953-60: Maximum daily discharge, 21.6 mgd (33.4 cfs) Jan. 14, 1960; minimum daily, 0.02 mgd (0.03 cfs) Jan. 3, 14, 1955, Nov. 8, 9, 1957.

Remarks.--Ditch diverts water from Punaluu Stream for irrigation of sugarcane in the Punaluu district.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	-	-	-	-	-	-	-	-	-	291	-
1954	280	290	270	162	108	118	102	81.0	68.5	278	331	242	2,350
1955	245	67.3	251	218	168	1.93	1.80	54.9	141	213	334	350	2,050
1956	358	233	118	121	130	111	26.1	5.35	70.5	250	393	376	2,190
1957	287	379	343	226	278	152	18.7	7.19	112	224	234	320	2,580
1958	316	271	284	288	246	269	162	119	218	235	160	158	2,710
1959	425	477	410	184	71.2	56.8	39.7	85.8	293	204	285	297	2,830
1960	293	313	326	307	239	282	354	228	158	277	239	371	3,390

3030. Punaluu Stream near Punaluu

Location.--Lat 21°33'35", long 157°54'05", on left bank at diversion dam, 1.8 miles southwest of Punaluu, and 3.5 miles southeast of Hauula.

Drainage area.--2.78 sq mi.

Records available.--May 1953 to June 1960.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 212 ft (from topographic map).

Average discharge.--7 years (1953-60), 8.85 mgd (13.7 cfs).

Extremes.--1953-60: Maximum discharge, 1,760 mgd (2,720 cfs) Aug. 20, 1955 (gage height, 5.03 ft), from rating curve extended above 110 mgd; no flow at times.

Remarks.--Records do not include flow of Punaluu ditch.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	-	-	-	-	-	-	-	-	-	0	-
1954	0	0.455	0.715	8.11	6.58	7.33	11.5	17.3	14.4	2.37	1.00	4.30	6.11
1955	13.4	28.0	7.07	8.31	22.1	34.0	30.5	58.0	26.5	14.5	12.0	4.50	21.5
1956	3.65	26.1	13.1	12.5	17.9	26.0	37.8	39.1	29.9	20.7	9.70	6.13	20.3
1957	11.8	9.75	4.16	19.5	17.9	17.9	32.2	28.3	13.5	18.7	8.37	6.28	15.2
1958	1.879	4.36	1.62	282	18.4	27.1	11.0	10.3	21.5	7.46	13.2	8.87	10.5
1959	7.69	11.9	31.1	38.7	23.4	22.7	21.4	22.4	5.74	13.6	5.38	1.18	14.7
1960	3.361	3.87	2.44	5.26	4.56	2.27	3.31	5.66	31.4	14.0	22.7	1.83	7.61

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	-	-	-	-	-	-	-	-	-	0	-
1954	0	0.294	0.462	5.24	4.25	4.74	7.43	11.2	9.29	1.53	0.648	2.78	5.95
1955	8.68	18.1	4.57	5.37	14.3	22.0	19.7	37.5	18.4	9.37	7.74	2.91	13.9
1956	2.36	16.9	8.46	8.05	11.6	18.1	24.4	25.3	19.3	13.4	6.27	3.96	13.1
1957	7.62	6.30	2.69	12.6	11.6	11.6	20.8	18.3	8.75	12.1	5.41	4.06	9.81
1958	1.568	2.82	1.05	182	11.9	17.5	7.11	6.91	13.9	4.82	8.53	5.73	6.76
1959	4.97	7.68	2.01	25.0	15.1	14.7	13.8	14.5	3.71	7.77	3.48	1.785	9.52
1960	2.233	2.50	1.58	3.40	2.96	1.47	2.14	3.79	20.3	9.05	14.7	1.18	4.92

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1953	-	-	-	-	-	-	-	-	-	-	-	0	-
1954	0	9.10	13.9	163	127	147	230	314	288	45.8	20.1	83.4	1,440
1955	269	561	137	166	429	681	612	1,050	570	281	240	87.3	5,080
1956	73.1	523	254	249	347	561	756	735	597	402	194	119	4,810
1957	236	195	80.6	391	348	359	645	512	271	363	188	12.2	3,580
1958	17.6	87.3	31.6	5.63	356	542	220	194	431	144	264	172	2,470
1959	154	238	60.4	774	453	456	426	406	115	263	108	25.0	3,480
1960	7.22	77.6	47.2	10.6	88.8	4.55	66.3	110	628	271	456	35.3	1,800

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge					Minimum day					Mean		
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons	
1953	1399	-	-	-	-	0	0	0	0	-	-	-	-	-
1954	1399	372	576	Apr. 29, 1954		0	0	3.95	6.11	1,440	8.84	13.7	3,220	
1955	1399	1,110	1,720	Feb. 7, 1955		0	0	13.9	21.5	5,080	13.3	20.6	4,850	
1956	1499	1,760	2,720	Aug. 20, 1955		0.76	1.18	13.1	20.3	4,810	12.1	18.7	4,410	
1957	1569	1,450	2,240	Apr. 14, 1957		.18	.28	9.81	15.2	3,580	8.25	12.8	3,010	
1958	1569	730	1,130	Dec. 6, 1957		0	0	6.76	10.5	2,470	9.76	15.1	3,560	
1959	1639	1,640	2,540	Oct. 23, 1958		0	0	9.52	14.7	3,480	4.32	6.68	1,590	
1960	1719	580	897	May 13, 1960		0	0	4.92	7.61	1,800	-	-	-	

3300. Kamananui Stream at Maunawai

Location--Lat 21°38'20", long 158°03'27", on right bank 25 ft above confluence with Eiehana Stream at Maunawai.

Drainage area--9.79 sq mi.

Records available--February 1958 to June 1960.

Gage--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Extremes--1958-60: Maximum discharge, 612 mgd (947 cfs) Oct. 23, 1958 (gage height, 7.60 ft), from rating curve extended above 180 mgd by logarithmic plotting; no flow at times.

Remarks--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	-	-	29.2	6.42	7.27	3.06	-
1959	35.3	55.9	12.2	38.2	8.45	10.5	12.4	13.3	3.88	14.7	5.29	.331	17.6
1960	1.69	6.79	8.88	1.49	4.33	1.55	5.32	4.70	40.4	32.2	19.0	6.54	11.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	-	-	18.9	4.15	4.70	1.98	-
1959	22.8	36.1	7.90	24.7	5.46	6.81	7.99	8.57	2.51	9.47	3.42	.214	11.4
1960	1.09	4.39	5.74	.965	2.80	1.00	3.44	3.04	28.1	20.8	12.3	4.23	7.18

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	-	-	585	125	146	59.4	-
1959	707	1,120	237	767	164	211	248	240	77.8	284	106	6.42	4,170
1960	33.9	136	172	29.9	84.0	31.2	107	88.2	808	624	380	127	2,620

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	
1958	1719	-	-	-	-	-	-	-	-	-	-	-
1959	1719	612	947	Oct. 23, 1958	0	0	11.4	17.6	4,170	3.97	6.14	1,450
1960	1719	524	811	Mar. 30, 1960	0	0	7.16	11.1	2,620	-	-	-

3450. Opaepala Stream near Wahiawa

Location--Lat 21°33'55", long 158°00'10", on left bank 8.1 miles east of Waiialua School and 4.3 miles northeast of Leliehua High School in Wahiawa.

Drainage area--2.98 sq mi.

Records available--August 1959 to June 1960.

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

Extremes--1959-60: Maximum discharge during period August to June, 1,820 mgd (2,820 cfs) Mar. 30, 1960 (gage height, 6.82 ft), from rating curve extended above 45 mgd by logarithmic plotting; minimum, 0.24 mgd (0.37 cfs) Oct. 22, 23, 1959.

Remarks--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	9.28	2.65	6.95	5.69	10.6	8.66	38.7	22.7	21.7	8.60	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	6.00	1.71	4.49	3.68	6.85	8.60	25.0	14.7	14.0	5.58	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1960	-	-	180	53.1	135	114	212	163	775	441	435	167	-

4000. Halawa Stream near Halawa

Location.--Lat 21°09'30", long 156°45'53" (revised), on right bank 600 ft downstream from confluence of two main branches, 1.5 miles west of Halawa, and 6.0 miles northeast of Pukoo.

Drainage area.--4.62 sq mi.

Records available.--August 1917 to July 1932, November 1937 to June 1960.

Gage.--Water-stage recorder. Altitude of gage is 200 ft (from topographic map). Prior to June 25, 1923, at site 350 ft upstream at different datum.

Average discharge.--37 years (1917-32, 1938-60), 19.1 mgd (29.6 cfs).

Extremes.--1917-32, 1937-60: Maximum discharge, 6,320 mgd (9,780 cfs) Apr. 2, 1948 (gage height, 12.30 ft), from rating curve extended above 45 mgd on basis of slope-area measurement at gage height 6.7 ft; minimum, 0.7 mgd (1.0 cfs) Oct. 26, 27, 1917.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	25.8	33.4	9.78	18.6	97.8	59.7	26.6	28.6	31.8	18.1	14.4	6.28	35.1
1952	12.9	26.5	9.82	25.3	20.7	36.7	41.9	24.8	33.1	15.8	17.2	25.4	24.1
1953	35.0	19.5	15.6	42.2	53.5	29.9	7.98	17.3	28.0	17.8	37.0	21.5	27.2
1954	16.9	25.4	13.1	16.1	16.6	22.7	14.0	14.4	39.1	14.9	32.3	24.6	20.9
1955	58.2	36.8	16.4	12.5	18.6	59.1	29.2	66.8	37.3	17.0	17.8	17.5	32.2
1956	31.6	34.2	15.8	22.9	44.1	62.7	28.5	41.9	22.4	32.8	31.3	34.5	33.6
1957	29.6	35.1	17.5	42.1	24.3	13.6	18.9	32.5	19.2	50.9	17.5	8.36	25.8
1958	17.6	37.9	16.1	15.0	72.7	41.9	16.9	26.8	29.1	19.8	35.1	20.0	29.1
1959	49.7	54.5	22.0	41.8	30.2	30.8	37.8	30.3	19.0	44.1	22.1	11.1	32.8
1960	13.0	19.8	24.8	20.1	37.0	25.7	21.4	30.9	67.0	35.4	22.7	24.0	28.5

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	16.7	21.6	6.32	12.0	65.2	58.6	17.2	18.5	52.9	11.7	9.31	4.06	22.7
1952	8.34	17.1	6.35	15.7	13.4	23.7	27.1	16.0	21.4	10.2	11.1	16.4	15.6
1953	22.6	12.6	10.1	27.3	34.6	19.5	5.16	11.2	18.1	11.5	23.9	13.9	17.6
1954	10.9	16.4	8.45	10.4	10.7	14.7	9.02	9.33	25.3	9.60	20.9	15.9	13.5
1955	37.6	23.8	10.6	8.06	12.0	38.2	18.9	43.2	24.1	11.0	11.5	11.3	20.8
1956	20.4	22.1	10.2	14.8	28.5	40.5	18.4	27.1	14.5	21.2	20.2	22.3	21.7
1957	19.1	23.3	11.5	27.2	15.7	8.78	12.2	21.0	12.4	32.9	11.3	5.40	16.7
1958	11.4	24.5	10.4	9.72	47.0	27.1	10.9	17.3	18.8	22.7	12.9	12.9	18.8
1959	32.1	35.2	14.2	27.0	19.5	19.3	24.4	19.6	12.3	28.5	14.3	7.19	21.2
1960	6.41	12.8	16.0	13.0	23.9	16.6	13.8	20.0	43.3	22.9	14.7	15.5	18.4

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	517	670	190	371	1,900	1,200	533	517	1,640	351	289	122	8,300
1952	259	531	190	488	402	736	841	465	662	307	344	491	5,720
1953	899	392	304	846	1,040	597	160	314	560	345	741	418	6,420
1954	357	508	253	321	322	455	280	261	785	286	648	477	4,940
1955	1,170	736	317	250	359	1,180	586	1,210	746	331	358	338	7,580
1956	634	686	305	458	856	1,250	572	786	451	635	626	669	7,930
1957	592	721	345	843	471	272	379	588	385	986	351	162	6,100
1958	352	748	310	301	1,410	841	338	483	582	383	704	387	6,850
1959	996	1,090	425	837	585	617	756	549	390	856	445	216	7,750
1960	261	598	480	402	718	516	429	580	1,340	688	457	466	6,740

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30											Calendar year		
		Nomentary maximum discharge					Minimum day		Mean		Million gallons		Mean		
		Mgd	Cfs	Date			Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	-	-	19.6	30.3	7,140
1951	1249	5,420	8,390	Dec. 3,	1950	1.85	2.86	22.7	35.1	8,300	16.6	25.7	6,060		
1952	1249	2,480	3,840	Jan. 19,	1952	1.85	2.86	15.6	24.1	5,720	19.1	29.6	6,990		
1953	1289	3,070	4,750	Nov. 21,	1952	2.45	3.79	17.6	27.2	6,420	13.0	20.1	4,730		
1954	1348	2,000	3,090	Mar. 1,	1954	1.9	2.9	13.5	20.9	4,940	18.5	28.6	6,750		
1955	1399	4,000	6,190	Feb. 7,	1955	1.9	2.9	20.8	32.2	7,580	21.3	33.0	7,760		
1956	1449	4,300	6,650	Dec. 20,	1955	1.68	2.60	21.7	33.6	7,930	19.1	29.6	6,980		
1957	1569	2,400	3,710	Apr. 14,	1957	1.66	2.57	16.7	25.8	6,100	18.7	28.9	6,820		
1958	1569	5,540	8,570	Nov. 21,	1957	2.4	3.7	18.8	29.1	6,850	20.4	31.6	7,430		
1959	1639	1,750	2,710	Aug. 2,	1958	3.0	4.6	21.2	32.8	7,750	16.4	25.4	5,980		
1960	1719	1,700	2,630	Aug. 18,	1959	2.37	3.67	18.4	28.5	6,740	-	-	-		

Location.--Lat 21°07'34", long 156°49'50", on left bank 0.5 mile upstream from confluence with Waiakeakua Stream, 3 miles south of Wailau, and 4 miles northwest of Pukoo.

Records available.--October 1919 to December 1928, September 1937 to August 1957.

Gage.--Water-stage recorder. Datum of gage is 591 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Sept. 1, 1937, at site 150 ft upstream at different datum.

Extremes.--1919-28, 1937-57: Maximum discharge, 5,970 mgd (9,240 cfs) Jan. 26, 1948 (stage 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.--No diversion above station.

[illegible][illegible][illegible][illegible]

ISLAND OF MOLOKAI

4030. Waiakeakua Stream near Wailau

Location.--Lat 21°07'26", long 156°49'43", on right bank 0.5 mile upstream from confluence with Pulena Stream, 3.1 miles south of Wailau, and 4.3 miles northwest of Pukoo.

Drainage area.--1.41 sq mi.

Records available.--November 1919 to September 1929, September 1937 to July 1957.

Gage.--Water-stage recorder. Datum of gage is 698 ft above mean sea level (hand levels by Bureau of Reclamation).

Average discharge.--28 years (1920-29, 1938-57), 7.52 mgd (11.6 cfs).

Extremes.--1919-29, 1937-57: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 26, Apr. 2, 1948, from rating curve extended above 25 mgd by test on model of station site; maximum gage height, 9.90 ft Jan. 26, 1948; minimum, 1.15 mgd (1.78 cfs) Nov. 1, 1949.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

[illegible]

Monthly and yearly mean discharge, in million gallons a day

[illegible]

Monthly and yearly discharge, in million gallons

[illegible]

Summary of yearly discharge

[illegible]

4040. Pelekunu Stream near Pelekunu

Location.--Lat 21°08'12" (revised), long 156°52'47" (revised), on right bank 0.6 mile upstream from Lanipuni Stream, 1.8 miles south of Pelekunu, and 5.8 miles northwest of Pukoo.

Drainage area.--2.62 sq mi.

Records available.--December 1919 to January 1929, September 1937 to August 1957.

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.--26 years (1920-28, 1938-47, 1948-57), 10.7 mgd (16.6 cfs).

Extremes.--1919-29, 1937-47, 1948-57: Maximum discharge, 2,660 mgd (4,120 cfs) Nov. 20, 1940 [gage height, 6.81 ft], from rating curve extended above 25 mgd by test on model of station site; minimum, 1.46 mgd (2.26 cfs) Nov. 26, 27, 1943.
Flood of undetermined magnitude destroyed station on Jan. 26, 1948.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	10.3	42.5	5.69	5.45	88.3	65.6	22.3	20.0	95.8	14.2	7.64	5.97	32.2
1952	5.85	9.55	4.94	14.9	14.5	15.1	38.7	11.6	15.3	10.0	9.05	14.3	13.2
1953	14.0	6.75	5.76	16.2	16.7	14.3	5.76	6.59	11.8	5.32	14.4	9.33	10.6
1954	7.64	9.52	4.08	4.50	8.48	16.2	13.5	8.11	23.2	10.6	13.8	14.0	11.2
1955	26.0	17.6	8.70	6.07	8.56	57.6	21.4	63.7	27.7	12.9	10.6	8.77	22.3
1956	14.5	15.3	7.77	7.49	18.9	37.0	17.6	29.6	13.6	16.4	14.0	26.8	18.3
1957	10.6	16.6	4.95	10.5	10.9	9.19	15.8	22.0	10.2	18.3	9.22	4.39	11.8
1958	6.07	-	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.64	27.5	3.68	3.52	57.1	42.4	14.4	12.9	61.9	9.18	4.94	3.86	20.8
1952	3.78	6.17	3.19	9.65	9.35	9.77	25.0	7.50	9.87	6.48	5.85	9.27	8.85
1953	9.03	4.36	3.72	10.5	10.8	9.26	3.72	4.13	7.60	3.44	9.29	6.03	6.86
1954	4.94	6.15	2.64	2.91	5.48	10.5	8.74	5.24	15.0	6.87	8.91	9.06	7.23
1955	16.8	11.4	5.62	3.92	5.53	37.2	13.8	41.2	17.9	8.33	6.84	5.67	14.4
1956	9.35	9.89	5.02	4.84	12.2	23.9	11.4	19.1	8.81	10.6	9.05	17.3	11.8
1957	6.87	10.7	3.20	6.76	7.05	5.94	10.2	14.2	6.82	11.8	5.96	2.84	7.63
1958	3.92	-	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	206	854	110	109	1,710	1,310	445	361	1,920	275	153	116	7,570
1952	117	191	95.8	299	280	303	775	217	308	194	181	278	3,240
1953	280	135	112	327	324	287	115	116	236	103	288	181	2,500
1954	153	191	79.4	90.1	164	325	271	147	464	206	276	272	2,640
1955	521	353	169	122	166	1,150	429	1,150	554	250	212	170	5,250
1956	290	307	150	150	365	740	355	554	273	317	280	520	4,300
1957	213	330	95.9	210	211	184	315	398	205	354	185	85.1	2,790
1958	122	-	-	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1950	-	-	-	-	-	-	-	-	-	20.2	31.3	7,350
1951	1249	(a)	(a)	-	2.2	3.4	20.8	32.2	7,570	12.5	19.3	4,560
1952	1249	1,800	2,790	Jan. 19, 1952	2.3	3.6	8.65	13.2	3,240	9.34	14.5	3,420
1953	1269	(a)	(a)	July 15, 1952	2.4	3.7	6.86	10.6	2,500	5.59	8.65	2,040
1954	1349	(a)	(a)	Dec. 27, 1953	1.71	2.65	7.23	11.2	2,640	11.3	17.5	4,120
1955	1399	(a)	(a)	-	2.4	3.7	14.4	22.3	5,250	13.1	20.3	4,770
1956	1449	2,000	3,090	Dec. 20, 1955	3.4	5.3	11.8	18.3	4,300	9.71	15.0	3,540
1957	1569	(a)	(a)	Nov. 30, 1956	2.1	3.2	7.63	11.8	2,790	-	-	-
1958	1569	-	-	-	-	-	-	-	-	-	-	-

a Not determined.

ISLAND OF MOLOKAI

4050. Lanipuni Stream near Pelekunu

Location.--Lat 21°08'38" (revised), long 156°52'26" (revised), on left bank 0.4 mile up-stream from mouth, 1.5 miles southeast of Pelekunu, and 6.8 miles northwest of Pukoo.

Drainage area.--1.09 sq mi.

Records available.--December 1919 to September 1929, September 1937 to August 1957.

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

Average discharge.--28 years (1920-29, 1938-57), 9.10 mgd (14.1 cfs).

Extremes.--1919-29, 1937-57: Maximum discharge, about 3,000 mgd (4,640 cfs) Jan. 26, 1948 (gage height, about 12 ft, from floodmark in shelter), 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.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	11.9	26.5	6.84	6.39	50.3	31.1	12.4	12.7	52.6	10.1	6.79	5.60	19.5
1952	5.74	10.4	4.39	9.19	9.39	10.8	15.9	9.44	11.2	7.95	8.20	13.9	9.72
1953	12.0	7.18	5.94	14.8	15.0	12.7	4.16	5.45	6.85	4.95	13.9	10.2	9.47
1954	7.95	9.93	4.81	6.05	9.05	11.7	6.87	6.02	12.5	6.98	12.4	11.2	8.82
1955	19.8	15.4	8.73	6.22	6.84	31.1	14.8	35.3	19.3	12.4	10.6	9.00	15.6
1956	14.1	15.1	7.64	8.12	12.3	20.4	11.0	21.7	9.64	13.0	12.5	19.3	13.7
1957	8.94	15.6	5.01	9.19	5.88	6.73	8.06	15.8	7.30	17.0	8.46	4.29	9.31
1958	7.36	-	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	7.72	17.1	4.42	4.13	32.5	20.1	8.01	8.23	34.0	6.53	4.39	3.62	12.6
1952	3.71	6.69	2.84	5.94	6.07	6.95	10.3	6.10	7.24	5.14	5.30	8.96	6.28
1953	7.76	4.64	3.84	9.58	9.67	8.23	2.69	3.52	4.43	3.20	8.96	6.58	6.12
1954	5.14	6.42	3.11	3.91	5.85	7.54	4.44	3.89	8.09	4.51	8.04	7.28	5.70
1955	12.8	9.95	5.64	4.02	4.42	20.1	9.54	22.8	12.5	8.03	6.88	5.82	10.1
1956	9.13	9.73	4.94	5.25	7.96	13.2	7.10	14.0	6.23	8.38	8.06	12.5	8.84
1957	5.78	10.1	3.24	5.94	3.80	4.35	5.21	10.2	4.72	11.0	5.47	2.77	6.02
1958	4.76	-	-	-	-	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	239	531	133	128	976	622	248	230	1,060	196	136	108	4,610
1952	115	208	85.4	184	182	215	319	177	224	154	164	269	2,300
1953	241	144	115	297	290	255	83.5	98.5	137	96.0	278	197	2,230
1954	159	199	93.4	121	176	234	138	109	251	135	249	218	2,080
1955	397	308	169	125	133	623	296	639	386	241	213	174	3,700
1956	283	302	148	163	239	408	220	405	193	251	250	375	3,240
1957	179	314	97.1	184	114	135	162	285	146	329	170	83.0	2,200
1958	148	-	-	-	-	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1950	-	-	-	-	-	-	-	-	-	12.4	19.2	*4,420		
1951	1219	*605	*936	Nov. 26, 1950	2.0	3.1	12.6	19.5	4,610	8.12	12.6	2,970		
1952	1249	530	820	Oct. 30, 1951	1.96	3.03	6.28	9.72	2,300	7.24	11.2	2,650		
1953	1289	430	665	Oct. 18, 1952	1.91	2.96	6.12	9.47	2,230	5.13	7.94	1,870		
1954	1349	233	361	Mar. 5, 1954	1.70	2.63	5.70	8.82	2,080	7.83	12.1	2,660		
1955	1399	455	704	Feb. 7, 1955	2.35	3.64	10.1	15.6	3,700	9.57	14.8	3,490		
1956	1449	530	820	Dec. 21, 1955	2.25	3.48	8.84	13.7	3,240	7.44	11.5	2,720		
1957	1589	290	449	Apr. 4, 1957	1.91	2.96	6.02	9.31	2,200	-	-	-		
1958	1569	-	-	-	-	-	-	-	-	-	-	-		

* Revised.

4055. Waikolu Stream at altitude 900 ft, near Kalaupapa

Location.--Lat 21°08'43", long 156°55'17", on right bank 2.3 miles from mouth and 5.3 miles southeast of Kalaupapa Post Office.

Drainage area.--1.99 sq mi.

Records available.--May 1956 to June 1960.

Gage.--Water-stage recorder. Altitude of gage is 900 ft (from topographic map).

Extremes.--1956-60: Maximum discharge, 790 mgd (1,220 cfs) Dec. 29, 1958 (gage height, 6.60 ft), from rating curve extended above 20 mgd; minimum, 1.40 mgd (2.17 cfs) Oct. 10, 1957.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	-	-	-	11.8	-
1957	4.98	9.47	3.47	8.18	8.31	5.03	9.25	12.8	6.42	13.6	4.80	3.30	7.43
1958	4.35	13.3	3.14	3.00	14.0	25.7	12.4	9.25	18.6	5.91	13.6	7.62	11.0
1959	17.9	20.9	7.25	16.9	13.4	20.9	20.4	14.9	8.70	17.8	9.44	5.12	14.5
1960	5.29	9.98	4.44	4.63	8.26	13.7	9.75	22.3	13.6	13.8	7.44	7.21	9.98

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	-	-	-	7.64	-
1957	3.22	6.12	2.24	5.29	5.37	3.25	5.98	8.26	4.15	8.79	3.10	2.13	4.80
1958	2.81	8.59	2.03	1.94	9.06	16.6	8.01	5.98	12.0	3.82	9.80	5.06	7.09
1959	11.6	13.5	4.69	10.9	8.65	13.5	13.2	9.60	5.62	11.5	6.10	3.31	9.37
1960	3.42	6.45	2.87	2.99	5.34	8.86	6.30	14.4	8.82	8.89	4.81	4.66	6.45

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	-	-	-	229	-
1957	99.8	190	67.2	164	161	101	185	231	129	264	96.2	63.9	1,750
1958	87.0	268	60.6	60.1	272	514	248	168	372	115	273	152	2,590
1959	359	420	141	339	260	418	408	269	174	344	189	99.4	3,420
1960	106	200	86.0	92.8	160	275	195	416	274	267	149	140	2,360

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30							Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Million gallons		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	
1956	1569	-	-	-	-	-	-	-	-	-	-
1957	1569	300	464	Nov. 30, 1956, Apr. 4, 1957	1.80	2.79	4.80	7.43	1,750	6.11	9.45
1958	1569	470	727	Nov. 21, 1957	1.50	2.32	7.09	11.0	2,590	8.94	13.8
1959	1719	790	1,220	Dec. 29, 1958	2.45	3.79	9.37	14.5	3,420	6.58	10.2
1960	1719	340	526	Feb. 16, 1960	2.29	3.54	6.45	9.98	2,360	-	-

4080. Waikolu Stream below pipeline crossing near Kalaupapa

Location.--Lat 21°09'45", long 156°55'54"(revised), on left bank 0.7 mile upstream from mouth and 4.4 miles southeast of Kalaupapa Lighthouse.

Drainage area.--3.68 sq mi.

Records available.--June 1919 to July 1932, September 1937 to June 1960. 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 29, 1948, water-stage recorder at present site at datum 0.49 ft higher.

Average discharge.--31 years (1919-30, 1938-47, 1949-60), 12.1 mgd (18.7 cfs).

Extremes.--1919-32, 1937-60: 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.--Kalaupapa water-supply system diverts water above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	11.4	25.7	8.22	8.99	58.0	47.8	25.1	25.4	59.7	17.6	14.5	12.6	26.3
1952	12.3	13.1	10.1	16.4	13.0	23.7	25.4	18.1	15.1	9.98	11.2	11.8	15.0
1953	11.8	8.14	6.89	21.0	16.4	15.9	9.35	8.94	11.2	8.22	21.5	10.2	12.5
1954	8.22	6.18	5.96	7.09	10.0	13.5	10.1	9.78	19.0	13.7	17.5	13.5	11.4
1955	20.9	15.1	9.16	8.66	12.9	65.1	26.5	72.9	37.1	23.7	19.0	15.8	26.9
1956	17.9	18.1	11.7	11.6	21.0	36.8	20.1	30.9	14.0	22.4	14.6	19.2	19.8
1957	11.7	17.3	9.41	15.1	15.8	11.5	15.8	19.8	12.5	23.4	11.2	7.55	14.2
1958	8.83	24.3	9.11	8.45	25.7	42.2	25.5	21.4	30.2	14.4	24.3	17.3	21.0
1959	35.0	40.2	17.9	34.5	26.3	42.7	45.0	31.6	20.4	40.1	21.6	15.1	30.9
1960	13.2	18.4	12.9	12.4	17.2	22.4	15.8	38.7	30.5	26.8	15.6	16.2	20.0

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	7.35	18.6	5.31	5.81	37.5	30.9	16.2	16.4	38.6	11.4	9.37	8.13	17.0
1952	7.98	8.47	6.52	10.6	8.43	15.3	16.4	11.7	9.74	6.45	7.21	7.60	9.72
1953	7.65	5.26	4.45	13.6	10.6	10.3	6.04	5.78	7.22	5.31	13.9	6.62	8.09
1954	5.31	5.29	3.85	4.58	6.46	8.58	6.53	6.32	12.3	8.84	11.3	8.73	7.35
1955	13.5	9.75	5.92	5.60	8.33	42.1	17.1	47.1	24.0	15.3	12.3	10.2	17.4
1956	11.6	11.7	7.59	7.49	13.6	23.8	13.0	20.8	9.05	14.5	9.45	12.4	12.8
1957	7.59	11.2	6.08	9.78	10.2	7.45	10.2	12.0	8.11	15.1	7.21	4.68	9.19
1958	5.71	15.7	5.89	5.46	16.6	27.3	16.5	13.8	19.5	9.32	15.7	11.2	13.6
1959	22.6	28.0	11.6	22.3	17.0	27.6	29.1	20.4	13.2	25.9	14.1	9.76	20.0
1960	8.55	11.9	8.36	7.99	11.1	14.5	10.2	25.0	19.7	17.3	10.1	10.5	12.9

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	228	514	159	180	1,120	957	502	459	1,200	343	291	244	6,200
1952	247	263	196	330	253	475	508	338	302	194	223	228	3,560
1953	237	163	133	420	319	519	187	162	224	159	432	198	2,950
1954	165	164	115	142	194	266	202	177	381	265	351	262	2,680
1955	419	302	178	174	250	1,510	530	1,320	744	459	380	305	6,370
1956	360	364	228	232	407	738	402	581	280	436	293	371	4,690
1957	235	348	182	303	306	231	315	360	251	454	224	146	3,360
1958	177	488	177	169	497	845	511	386	604	280	485	336	4,960
1959	700	808	349	692	512	854	901	570	409	778	436	293	7,300
1960	285	369	251	248	334	449	317	724	611	519	314	316	4,720

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Mean				Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	1219	1,850	2,860	Dec. 3, 1950	4.9	7.6	17.0	26.3	6,200	15.1	23.4	5,520	4,800
1952	1249	980	1,520	Jan. 19, 1952	4.5	7.0	9.72	15.2	3,560	9.25	14.3	3,380	3,380
1953	1289	415	642	Oct. 18, 1952	3.9	6.0	8.09	12.5	2,950	6.60	10.2	2,410	2,410
1954	1349	566	876	Mar. 5, 1954	3.35	5.18	7.35	11.4	2,680	11.7	18.1	4,270	4,270
1955	1399	1,800	2,790	Jan. 21, 1955	4.5	7.0	17.4	26.9	6,370	16.6	25.7	6,070	6,070
1956	1449	1,900	2,940	Dec. 20, 1955	5.6	8.7	12.8	19.8	4,690	10.8	16.7	3,970	3,970
1957	1569	601	930	Nov. 30, 1956	4.5	7.0	9.19	14.2	3,360	11.2	17.3	4,100	4,100
1958	1569	1,420	2,200	Nov. 21, 1957	4.5	7.0	13.6	21.0	4,960	17.9	27.7	5,520	5,520
1959	1639	2,150	3,330	Dec. 29, 1958	8.2	12.7	20.0	30.9	7,500	14.5	22.4	5,300	5,300
1960	1719	776	1,200	Feb. 16, 1960	6.50	10.1	12.9	20.0	4,720	-	-	-	-

4110. Waialala Springs near Kalae

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

Records available.--September 1940 to January 1960.

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

Average discharge.--18 years (1941-59), 0.016 mgd (0.025 cfs).

Extremes.--1940-60: Maximum daily discharge, 0.275 mgd (0.425 cfs) Mar. 11, 1942; minimum daily, 0.001 mgd (0.002 cfs) Feb. 8-16, 1956.

Remarks.--Maui County Water Works diverts entire flow below station for domestic use; surface runoff not admitted into supply line.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.558	0.531	0.465	0.515	0.445	0.444	0.758	0.723	0.569	0.411	0.556	0.431	6.41
1952	.499	.439	.419	.408	.372	.392	.384	.380	.374	.360	.371	.332	4.73
1953	.323	.346	.356	.411	.369	.381	.281	.278	.369	.364	.366	.300	4.14
1954	.313	.319	.305	.318	.376	.325	.279	.241	.270	.249	.279	.241	3.52
1955	.272	.284	.300	.310	.303	.409	.473	.558	.595	.571	.542	.496	5.11
1956	.419	.386	.336	.318	.281	.275	.297	.167	.328	.315	.324	.220	3.67
1957	.217	.188	.345	.319	.294	.291	.308	.280	.313	.332	.347	.330	3.56
1958	.314	.315	.285	.310	.309	.365	.405	.370	.513	.484	.479	.447	4.60
1959	.428	.468	.430	.417	.363	.416	.204	.240	.425	.385	.405	.390	4.57
1960	.400	.369	.330	.330	.301	.279	-	-	-	-	-	-	-

4140. Kaunakakai Gulch at Kaunakakai

Location.--Lat 21°06'21" (revised), long 157°00'34" (revised), on left bank 0.6 mile upstream from Molokai Ranch pipeline crossing, 1.3 miles northeast of Kaunakakai Post Office, and 1.7 miles upstream from mouth.

Drainage area.--6.57 sq mi.

Records available.--December 1949 to June 1960. Prior to July 1958, published as Kaunakakai Stream at Kaunakakai.

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

Average discharge.--10 years (1950-60), 1.00 mgd (1.55 cfs).

Extremes.--1949-60: 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.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0	6.54	0	0	25.4	9.10	0.933	1.55	26.8	0.006	0	0	5.89
1952	0	0	0	1.51	0	0.458	7.46	0.320	0	0	0	0	.822
1953	0	0	0	.026	0	0	0	0	0	0	0	0	.002
1954	0	0	0	0	0	.294	1.17	0	2.17	.210	0	0	.326
1955	0	0	0	0	2.21	10.2	2.09	10.7	4.50	0	0	0	2.43
1956	0	0	0	0	5.57	16.6	4.24	5.68	0	.110	0	.005	2.68
1957	0	0	0	.162	1.32	.837	.859	.187	0	.642	0	0	.333
1958	0	.382	0	0	.509	3.00	1.73	1.21	4.80	0	.062	0	.882
1959	.196	2.74	0	.706	.330	4.50	0.70	.579	0	.741	0	0	1.56
1960	0	0	0	0	0	.637	0	4.77	.412	0	0	0	.467

Monthly and yearly mean discharge, in million gallons a day													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0	4.23	0	0	16.4	5.88	.603	1.00	17.3	.006	0	0	3.81
1952	0	0	0	.979	0	.283	4.82	.207	0	0	0	0	.531
1953	0	0	0	.017	0	0	0	0	0	0	0	0	.001
1954	0	0	0	0	0	.190	.757	0	1.40	.136	0	0	.211
1955	0	0	0	0	1.43	6.62	1.35	6.89	2.91	0	0	0	1.57
1956	0	0	0	0	3.60	10.7	2.74	3.67	0	.071	0	.003	1.73
1957	0	0	0	.105	.850	.541	.555	.121	0	.415	0	0	.215
1958	0	.247	0	0	.329	1.94	1.12	.782	3.10	0	.040	0	.635
1959	.127	1.77	0	.456	.213	2.91	5.62	.374	0	.479	0	0	1.01
1960	0	0	0	0	0	.412	0	3.08	.266	0	0	0	.302

Monthly and yearly discharge, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0	131	0	0	493	182	18.7	28.0	537	0.18	0	0	1,390
1952	0	0	0	30.4	0	8.76	149	5.99	0	0	0	0	194
1953	0	0	0	.54	0	0	0	0	0	0	0	0	.54
1954	0	0	0	0	0	5.90	23.5	0	43.5	4.07	0	0	77.0
1955	0	0	0	0	42.9	205	42.0	193	90.1	0	0	0	573
1956	0	0	0	0	108	331	85.0	106	0	2.14	0	.09	632
1957	0	0	0	3.26	25.5	16.8	17.2	3.38	0	12.4	0	0	78.5
1958	0	7.67	0	0	9.87	60.2	34.8	21.9	96.1	0	1.24	0	352
1959	3.94	54.8	0	14.1	6.39	90.1	174	10.5	0	14.4	0	0	268
1960	0	0	0	0	0	12.8	0	89.4	8.26	0	0	0	110

Summary of yearly discharge													
Fiscal year ending June 30													
Year	WSP	Momentary maximum discharge			Minimum day		Mean		Million gallons	Calendar year			Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1950	1219	-	-	-	-	-	-	-	-	2.80	4.33	1,020	
1951	1213	1,120	1,730	Mar. 13, 1951	0	0	3.91	5.89	1,390	1.71	2.65	623	
1952	1289	710	1,100	Jan. 19, 1952	0	0	.531	.822	194	.426	.659	156	
1953	1289	4.6	7.1	Oct. 15, 1952	0	0	.001	.002	.54	.016	.025	5.90	
1954	1349	115	178	Jan. 5, 1954	0	0	.211	.326	77.0	.874	1.35	319	
1955	1399	560	866	Jan. 21, 1955, Feb. 7, 1955	0	0	1.57	2.43	573	2.09	3.23	764	
1956	1449	1,060	1,640	Dec. 20, 1955	0	0	1.73	2.68	632	.654	1.01	239	
1957	1569	245	379	Nov. 30, 1956	0	0	.215	.333	78.5	.303	.469	111	
1958	1569	190	294	Mar. 6, 1958	0	0	.635	.982	232	.886	1.37	323	
1959	1639	892	1,360	Dec. 29, 1958	0	0	1.01	1.56	368	.580	.897	212	
1960	1719	304	470	Feb. 16, 1960	0	0	.302	.467	110	-	-	-	

4150. Right Branch of East Fork Kawela Gulch near Kamalo

Location.--Lat 21°06'46" (revised), long 156°54'23" (revised), on left bank at Molokai Ranch pipeline intake, 4.7 miles northeast of Kamalo and 7.6 miles northeast of Kaunakakai.

Drainage area.--0.45 sq mi.

Records available.--September 1946 to June 1960. Prior to July 1958, published as Right Branch of East Fork Kawela Stream near Kamalo.

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

Average discharge.--13 years (1947-60), 1.53 mgd (2.37 cfs).

Extremes.--1946-60: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 38 mgd by test on model of station site; no flow for many days.

Remarks.--Molokai Ranch diverts low flow from gage pool.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.53	5.18	0.087	0.976	8.06	5.17	1.67	1.79	9.95	0.588	0.495	0.600	3.03
1952	.410	1.44	.379	2.44	1.90	2.35	4.46	.911	2.23	1.11	.763	2.29	1.73
1953	.956	.551	.354	2.32	2.40	2.27	.456	.616	1.10	.280	2.88	1.96	1.35
1954	1.08	1.08	0	.408	1.70	2.83	1.03	1.46	3.37	1.14	1.59	2.58	1.53
1955	4.80	2.92	.647	.619	1.32	8.42	2.40	8.09	3.43	2.26	1.70	1.50	3.16
1956	2.86	2.55	.673	1.08	5.74	5.03	3.26	5.91	1.18	2.15	1.49	4.18	2.83
1957	.685	2.09	.002	1.49	1.81	.885	2.72	3.25	1.33	2.55	.503	.487	1.47
1958	1.37	4.61	.376	.091	3.47	7.04	2.52	2.20	4.77	.356	3.68	2.06	2.72
1959	4.81	7.52	1.12	4.15	3.02	4.56	5.25	3.09	1.20	3.76	2.27	.608	3.47
1960	.952	2.01	.384	.271	1.31	4.35	3.06	5.72	2.34	3.00	1.53	2.21	2.24

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.992	3.35	0.056	0.631	5.21	3.34	1.08	1.16	6.43	0.380	0.320	0.388	1.96
1952	.285	.929	.245	1.58	1.23	1.52	2.88	.589	1.44	.720	.493	1.48	1.12
1953	.618	.358	.216	1.50	1.55	1.47	.295	.398	.714	.168	1.86	1.27	.873
1954	.701	.699	0	.264	1.10	1.83	.683	.941	2.18	.740	1.03	1.67	.986
1955	3.10	1.89	.418	.400	.855	5.44	1.55	5.23	2.22	1.46	1.10	.987	2.04
1956	1.85	1.65	.435	.695	2.42	3.25	2.11	3.82	.762	1.39	.966	2.70	1.83
1957	.449	1.35	.001	.966	1.17	.559	1.76	2.10	.857	1.65	.325	.315	1.951
1958	.886	2.98	.243	.059	2.24	4.55	1.63	1.42	3.08	.230	2.38	1.33	1.76
1959	3.11	4.86	.722	2.68	1.95	2.85	3.39	2.00	1.774	2.43	1.47	.393	2.24
1960	.615	1.30	.248	.175	.846	2.81	1.98	3.70	1.51	1.94	.988	1.43	1.45

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	30.8	104	1.67	19.6	156	104	33.5	32.6	199	11.4	9.91	11.6	714
1952	8.21	28.8	7.36	49.1	36.9	47.2	89.3	17.1	44.8	21.6	15.3	44.3	410
1953	19.2	11.0	6.49	46.6	46.4	45.6	9.14	11.1	22.1	5.04	57.7	38.0	318
1954	21.7	21.7	0	8.18	32.8	56.9	20.6	28.4	67.5	22.2	31.9	50.0	360
1955	96.0	58.7	12.5	12.4	25.6	169	47.9	146	68.7	43.9	34.2	29.0	744
1956	57.5	51.1	13.0	21.5	72.5	101	65.3	111	23.6	41.7	29.9	81.1	669
1957	15.9	41.9	.02	30.0	35.0	17.3	54.6	58.9	26.6	49.5	10.1	9.45	347
1958	27.5	92.5	7.29	1.83	67.2	141	50.4	39.7	95.4	6.91	73.9	39.8	643
1959	96.4	151	21.6	83.1	58.5	91.4	105	55.9	24.0	72.9	45.4	11.8	817
1960	19.1	40.4	7.45	5.42	25.4	87.2	61.4	107	46.8	58.2	30.6	42.8	532

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year				
		Momentary maximum discharge					Minimum day		Mean			Million gallons	Mean		Million gallons	
		Mgd		Cfs		Date	Mgd	Cfs	Mgd	Cfs						
1950	-	-	-	-	-	-	-	-	-	-	-	1.99	3.08	726		
1951	1219	238	368	Nov. 30, 1950	0	0	1.96	3.03	714	1.30	2.01	476				
1952	1249	135	209	Oct. 30, 1951	0	0	1.12	1.73	410	1.11	1.72	408				
				Jan. 19, 1952												
1953	1289	57	88	Oct. 15, 1952	0	0	.873	1.35	318	.779	1.21	284				
1954	1349	70	108	Dec. 27, 1953	0	0	.986	1.53	360	1.62	2.51	593				
1955	1399	205	317	Nov. 29, 1954	0	0	2.04	3.16	744	1.88	2.91	686				
1956	1449	189	292	Dec. 21, 1955	0	0	1.83	2.83	669	1.34	2.07	491				
1957	1569	76	118	Nov. 30, 1956	0	0	.951	1.47	347	1.50	2.32	546				
1958	1569	205	317	Feb. 28, 1958	0	0	1.76	2.72	643	2.21	3.42	808				
1959	1639	213	330	Jan. 17, 1959	0	0	2.24	3.47	817	1.37	2.12	500				
1960	1719	142	220	Feb. 16, 1960	0	0	1.45	2.24	532	-	-	-				

4160. Punaula Gulch near Pukoo

Location.--Lat 21°05'50", long 156°48'48", on right bank 1.8 miles northwest of Pukoo Post Office and 5.2 miles northeast of Kamalo.

Drainage area.--0.24 sq mi.

Records available.--March 1947 to June 1960. Prior to July 1958, published as Punaula Stream near Pukoo.

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

Average discharge.--13 years, 0.81 mgd (1.25 cfs).

Extremes.--1947-60: 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.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.05	1.93	0.292	0.418	4.47	2.65	1.92	1.20	4.90	0.862	0.684	0.224	1.72
1952	.738	1.79	.435	1.11	.996	1.36	2.35	.879	1.43	.593	.689	1.52	1.16
1953	1.62	.603	.620	2.29	2.55	1.55	.085	.641	.902	.594	1.24	.982	1.14
1954	.784	.941	.220	.600	.814	1.04	.525	.509	1.62	.569	1.15	1.09	.826
1955	2.51	2.04	.678	.382	.764	2.96	.984	2.97	1.32	.396	.719	.610	1.35
1956	1.61	1.79	.594	.563	2.69	4.72	1.10	2.12	.880	1.17	1.50	1.84	1.72
1957	1.19	1.48	1.52	1.95	1.308	.593	1.72	.636	2.09	.713	.299	1.12	1.12
1958	.777	1.93	.410	.382	2.72	2.54	.692	.984	1.17	.218	1.45	1.18	1.21
1959	2.77	2.92	.546	2.18	.987	1.35	2.00	1.20	1.10	1.75	.778	.513	1.50
1960	.410	.710	1.14	.572	1.30	1.33	.791	1.61	2.12	1.62	.797	1.23	1.13

Monthly and yearly mean discharge, in million gallons a day													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	0.676	1.25	0.189	0.270	2.89	1.71	1.24	0.778	3.17	0.557	0.442	0.145	1.11
1952	.477	1.16	.281	.715	.644	.882	1.52	.568	.926	.383	.445	.983	.751
1953	1.05	.390	.401	1.48	1.65	.999	.055	.414	.583	.394	.799	.635	.739
1954	.507	.608	.142	.588	.526	.873	.339	.329	1.05	.368	.741	.705	.534
1955	1.62	1.32	.438	.247	.494	1.91	.636	1.92	.854	.256	.465	.394	.875
1956	1.04	1.16	.384	.377	1.74	3.05	.710	1.37	.569	.757	.969	1.19	1.11
1957	.765	.955	.982	1.26	.687	.199	.383	1.11	.411	1.35	.461	.193	.726
1958	.502	1.25	.285	.247	1.76	1.64	.447	.636	.754	.141	.937	.763	.780
1959	1.79	1.89	.353	1.41	.638	.873	1.29	.774	.709	1.13	.503	.202	.969
1960	.265	.459	.736	.370	.840	.862	.511	1.04	1.37	1.05	.515	.796	.731

Monthly and yearly discharge, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	21.0	38.8	5.68	8.38	86.8	53.0	38.4	21.8	98.2	16.7	13.7	4.35	407
1952	14.8	35.8	8.43	22.2	19.3	27.3	47.2	16.5	28.7	11.5	13.8	29.5	275
1953	32.7	12.1	12.0	45.9	49.4	31.0	1.69	11.6	18.1	11.5	24.8	19.0	270
1954	15.7	18.8	4.27	12.0	15.8	20.9	10.5	9.21	32.4	11.0	23.0	21.2	195
1955	50.2	40.8	13.1	7.65	14.8	59.1	19.7	53.8	26.5	7.68	14.4	11.8	320
1956	32.1	36.0	11.5	11.7	52.1	94.7	22.0	39.7	17.6	22.7	30.0	35.6	406
1957	23.7	29.6	29.4	39.0	20.6	6.17	11.9	31.1	12.7	40.5	14.3	5.80	285
1958	15.6	38.7	7.96	7.66	52.6	50.9	13.8	17.8	23.4	4.24	29.1	22.9	285
1959	55.6	58.5	10.6	43.8	19.2	27.0	39.8	21.7	22.0	33.9	15.6	6.06	354
1960	8.21	14.2	22.1	11.5	25.2	26.7	15.8	30.1	42.4	31.4	16.0	23.9	268

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mean	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	0.966	1.49	355
1951	1219	271	419	Dec. 3, 1950	0.02	0.03	1.11	1.72	407	.879	1.35	321	
1952	1249	202	313	Jan. 19, 1952	.03	.05	.751	1.16	275	.902	1.40	330	
1953	1289	242	374	Nov. 21, 1952	.02	.03	.739	1.14	270	.477	1.738	174	
1954	1349	88	136	Sept. 30, 1953	.02	.03	.534	.826	195	.803	1.24	293	
1955	1399	210	325	Aug. 10, 1954	.02	.03	.875	1.35	320	1.02	1.58	372	
1956	1449	320	495	Nov. 10, 1955	.03	.05	1.11	1.72	406	.864	1.34	316	
1957	1569	284	439	Apr. 14, 1957	.03	.05	.728	1.12	285	.794	1.23	290	
1958	1569	279	430	Nov. 21, 1957	.03	.05	.780	1.21	285	.893	1.36	326	
1959	1639	182	282	Aug. 2, 1958	.05	.08	.969	1.50	354	.676	1.05	247	
1960	1719	240	371	Feb. 16, 1960	.04	.06	.731	1.13	268	-	-	-	

5010. Palikea 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 2.1 miles upstream from mouth.

Drainage area.--6.29 sq mi.

Records available.--February 1927 to September 1929, December 1931 to June 1960. Published as Oheo Stream at elevation 1,550 ft, near Kipahulu, 1927-29. Published as Oheo Stream below diversion dam, near Kipahulu, 1930-56.

Gage.--Water-stage recorder. Datum of gage is 1,546 ft above mean sea level (by vertical angles). Prior to Sept. 6, 1929, at site 100 ft upstream at different datum.

Average discharge.--25 years (1927-29, 1932-35, 1940-60), 36.3 mgd (56.2 cfs).

Extremes.--1927-29, 1931-60: Maximum discharge, 9,100 mgd (14,100 cfs) Dec. 20, 1955 (gage height, 17.5 ft, from floodmark), from rating curve extended above 2,100 mgd by critical depth measurement of gage height 17.5 ft; no flow at times.

Remarks.--Small diversion below station for domestic water supply and livestock.

Revisions.--Some periods for the fiscal years 1932-35, 1937-50, were revised in WSP 1719; the resulting revised records as summarized herewith supersede those published in WSP 1319.

Month	Mean		Million gallons	Momentary maximum		
	Mgd	Cfs		Discharge		Date
				Mgd	Cfs	
January 1932.....	92.8	144	2,880	-	-	-
February.....	280	402	7,530	-	-	-
April.....	71.1	110	2,130	-	-	-
Fiscal year 1931-32...	-	-	-	2,450	3,790	Feb. 13, 1932
December 1932.....	39.9	61.7	1,240	-	-	-
Calendar year 1932....	54.6	84.5	19,970	-	-	-
January 1933.....	148	229	4,600	-	-	-
February.....	75.3	117	2,110	-	-	-
March.....	51.6	79.8	1,600	-	-	-
Fiscal year 1932-33...	44.5	68.9	16,240	3,760	5,820	Jan. 4, 1933
November 1933.....	8.37	13.0	251	-	-	-
December.....	49.8	77.1	1,540	-	-	-
Calendar year 1933....	37.8	58.5	13,800	-	-	-
January 1934.....	33.8	52.3	1,050	-	-	-
April.....	33.3	51.5	999	-	-	-
May.....	26.4	40.8	817	-	-	-
June.....	50.1	77.5	1,500	-	-	-
Fiscal year 1933-34...	18.7	28.9	6,840	2,450	3,790	Dec. 22, 24, 1933
Calendar year 1934....	28.5	44.1	10,400	-	-	-
Fiscal year 1934-35...	-	-	-	2,420	3,740	July 6, 1934
December 1936.....	138	214	4,290	-	-	-
Calendar year 1936....	-	-	-	-	-	-
January 1937.....	92.8	144	2,880	-	-	-
February.....	97.8	151	2,740	-	-	-
March.....	84.8	131	2,630	-	-	-
April.....	66.5	103	1,990	-	-	-
Fiscal year 1936-37...	-	-	-	2,260	3,500	Dec. 29, 1936
August 1937.....	66.7	103	2,070	-	-	-
Fiscal year 1937-38...	-	-	-	3,510	5,430	Jan. 20, 1938
August 1938.....	49.9	77.2	1,550	-	-	-
Fiscal year 1938-39...	-	-	-	-	-	-
September 1939.....	28.4	43.9	852	-	-	-
Fiscal year 1939-40...	-	-	-	2,310	3,570	Sept. 3, 1939
Fiscal year 1940-41...	-	-	-	2,290	3,540	Oct. 22, 1940
Fiscal year 1941-42...	-	-	-	2,320	3,590	June 18, 1942
Fiscal year 1942-43...	-	-	-	2,750	4,250	Dec. 14, 1942
Fiscal year 1943-44...	-	-	-	2,570	3,980	Mar. 4, 1944
Fiscal year 1944-45...	-	-	-	2,250	3,480	Apr. 7, 1945
Fiscal year 1945-46...	-	-	-	2,250	3,480	Feb. 7, 1946
Fiscal year 1946-47...	-	-	-	4,450	6,890	Dec. 8, 1946
October 1947.....	30.8	47.7	954	-	-	-
Calendar year 1947....	31.6	48.9	11,540	-	-	-
January 1948.....	70.0	108	2,110	-	-	-
Calendar year 1948....	53.6	82.9	19,610	-	-	-
Fiscal year 1947-48...	47.5	73.8	17,370	3,510	5,430	Oct. 26, 1947
Fiscal year 1948-49...	-	-	-	2,330	3,610	Dec. 1, 1948
Fiscal year 1949-50...	-	-	-	2,260	3,500	Dec. 17, 1949

Monthly and yearly mean discharge, in cubic feet per second, of Palikea Stream below diversion dam, near Kipahulu

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	28.5	44.9	21.0	14.9	73.3	58.2	70.7	159	215	35.1	19.3	18.6	61.1
1952	32.0	62.4	6.87	61.9	78.4	90.7	148	26.8	189	20.9	12.2	65.9	66.7
1953	29.4	10.6	26.6	12.0	139	61.3	1.18	54.2	94.4	2.85	52.5	20.7	41.9
1954	10.4	34.3	6.44	13.0	36.2	43.8	25.4	56.8	74.1	5.45	7.98	11.4	27.1
1955	74.4	83.9	30.9	9.61	12.4	200	67.1	108	34.8	108	63.1	18.3	67.5
1956	66.1	59.3	15.2	15.6	81.2	161	74.4	283	83.1	41.8	75.4	73.5	85.1
1957	23.2	58.2	7.71	98.9	63.3	30.0	69.2	150	17.0	105	18.6	5.03	53.1
1958	50.6	139	13.2	12.4	81.1	124	11.2	45.0	49.5	9.00	22.1	15.0	47.8
1959	34.3	96.1	14.4	64.2	104	8.23	72.4	98.7	29.1	37.9	33.4	6.64	49.7
1960	15.1	61.3	17.0	4.01	47.7	88.0	198	112	12.5	116	58.6	41.2	64.2

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	18.4	29.0	13.6	9.66	47.4	24.7	45.6	103	139	22.7	12.5	12.0	39.5
1952	20.7	40.3	4.44	40.0	50.7	58.6	95.9	17.3	122	13.5	7.90	42.6	43.1
1953	19.0	6.85	17.2	7.77	90.1	39.6	.764	35.0	61.0	1.84	33.9	13.4	27.1
1954	6.72	22.2	4.16	8.39	23.4	28.3	16.4	36.7	47.9	3.52	5.16	7.40	17.5
1955	48.1	54.2	20.0	6.21	7.99	129	43.4	70.1	22.5	69.5	40.8	11.8	43.6
1956	42.7	38.3	9.83	10.1	52.5	104	48.1	183	53.7	27.0	48.7	47.5	55.0
1957	15.0	37.6	4.98	63.9	40.9	19.4	44.7	97.2	11.0	67.8	12.0	3.25	34.3
1958	32.7	90.0	8.56	8.01	52.4	79.9	7.21	29.1	32.0	5.82	14.3	9.71	30.9
1959	22.2	62.1	9.33	41.5	67.4	5.32	46.8	63.8	18.8	24.5	21.6	4.29	32.1
1960	9.74	39.6	11.0	2.59	30.8	56.9	128	72.1	8.09	75.0	37.9	26.6	41.5

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	570	898	407	300	1,420	765	1,410	2,900	4,320	681	387	361	14,420
1952	642	1,250	133	1,240	1,520	1,820	2,970	502	3,790	404	245	1,280	15,800
1953	590	212	516	241	2,700	1,230	23.7	981	1,890	55.1	1,050	403	9,890
1954	208	689	125	260	703	879	509	1,030	1,490	105	160	222	6,380
1955	1,490	1,680	600	192	240	4,000	1,350	1,960	696	2,080	1,260	355	15,900
1956	1,320	1,190	295	313	1,580	3,230	1,490	5,310	1,660	810	1,510	1,420	20,130
1957	466	1,160	149	1,980	1,230	800	1,390	2,720	340	2,030	372	97.4	12,530
1958	1,010	2,790	257	248	1,570	2,480	223	816	992	174	443	291	11,290
1959	688	1,920	280	1,290	2,020	1,65	1,450	1,790	584	735	669	129	11,720
1960	302	1,230	329	80.4	926	1,760	3,980	2,090	251	2,250	1,180	800	15,180

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year					
		Momentary maximum discharge					Minimum day		Mean		Million gallons	Mean		Million gallons			
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Mgd		Cfs					
1950	-	-	-	-	-	-	-	-	-	-	35.9	55.5	15,100				
1951	1219	5,740	8,880	Dec. 3, 1950	0.02	0.03	39.5	61.1	14,420	45.6	70.6	16,800					
1952	1249	2,330	3,610	Mar. 4, 1952	.02	.03	43.1	66.7	15,800	40.1	62.0	14,680					
1953	1289	2,270	3,510	Nov. 21, 1952	.01	.02	27.1	41.9	9,890	19.9	30.8	7,270					
				Feb. 28, 1953													
1954	1349	1,770	2,740	Mar. 1, 1954	.02	.03	17.5	27.1	6,380	32.1	49.7	11,720					
1955	1399	1,800	2,790	Dec. 10, 1954	.02	.03	43.6	67.5	15,900	42.8	66.2	15,630					
1956	1449	9,100	14,100	Dec. 20, 1955	.03	.05	55.0	85.1	20,130	48.6	75.2	17,780					
1957	1569	2,400	3,710	Oct. 15, 1956	.02	.03	34.3	53.1	12,530	41.9	64.8	15,300					
1958	1569	2,370	3,670	Aug. 24, 1957	.01	.02	30.9	47.8	11,290	25.5	39.5	9,300					
1959	1639	2,960	4,580	Feb. 13, 1959	.02	.03	32.1	49.7	11,720	27.4	42.4	9,980					
1960	1719	2,300	3,560	Apr. 16, 1960	.02	.03	41.5	64.2	15,180	-	-	-					

5020. Right Branch Mahalawe Stream near Kipahulu

Location.--Lat 20°40'54" (revised), long 156°02'50", on left bank at old ditch intake, 0.7 mile upstream from mouth of stream and 1.8 miles northeast of Kipahulu Church.

Drainage area.--0.43 sq mi.

Records available.--February 1927 to April 1937, April 1938 to June 1960. Prior to July 1956, published as Right Branch Kahalawe Stream near Kipahulu.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 885 ft (by vertical angles). Prior to Apr. 21, 1938, at datum 8 ft lower.

Average discharge.--30 years (1927-34, 1935-36, 1938-60), 3.52 mgd (5.45 cfs).

Extremes.--1927-37, 1938-60: 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.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	5.14	3.91	3.93	2.65	6.41	3.48	3.73	4.80	8.51	4.19	3.65	3.62	4.52
1952	4.12	8.09	3.25	6.85	8.00	9.25	8.56	6.44	9.86	3.68	2.99	6.65	6.48
1953	6.67	3.51	4.60	4.75	9.89	5.18	1.67	2.79	6.79	1.49	5.40	4.47	4.78
1954	4.05	5.09	3.03	3.25	4.25	4.24	2.85	2.01	7.94	3.14	3.26	4.70	4.01
1955	8.62	10.0	7.25	4.92	2.61	10.3	4.61	6.41	4.27	7.43	7.67	4.08	6.53
1956	7.04	7.27	4.13	3.87	6.70	8.28	5.88	10.6	5.80	4.44	7.02	6.75	6.47
1957	5.59	8.48	4.23	11.6	7.18	4.47	4.72	9.35	2.97	4.81	3.34	2.58	5.65
1958	5.59	9.42	3.23	3.17	8.80	8.91	2.51	5.06	4.18	3.67	4.46	3.68	5.23
1959	6.36	9.45	4.36	7.91	3.82	2.26	5.89	7.81	4.25	4.80	2.83	2.38	5.17
1960	2.71	5.04	5.49	3.50	7.50	6.70	9.69	5.06	3.65	5.89	4.77	5.42	5.46

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	3.32	2.53	2.54	1.71	4.14	2.25	2.41	3.10	5.50	2.71	2.49	2.34	2.92
1952	2.86	5.23	2.10	4.43	5.17	5.98	5.53	4.16	6.37	2.38	1.93	4.30	4.19
1953	4.31	2.27	2.97	3.07	6.39	3.55	1.08	1.80	4.39	1.964	3.49	2.89	3.09
1954	2.62	3.29	1.96	2.10	2.75	2.74	1.84	1.30	5.13	2.03	2.11	3.04	2.59
1955	5.57	6.46	4.69	3.18	1.69	6.63	2.98	4.14	2.76	4.80	4.96	2.64	4.22
1956	4.55	4.70	2.67	2.50	4.33	5.35	3.80	6.88	3.75	2.87	4.54	4.36	4.18
1957	3.61	5.48	1.83	7.51	4.64	2.89	3.05	6.04	1.92	3.11	2.16	1.67	3.65
1958	3.61	6.09	2.09	2.05	5.69	5.76	1.82	3.27	2.70	2.37	2.88	2.38	3.38
1959	4.11	6.11	2.82	5.11	2.47	1.46	3.81	5.05	2.75	3.10	1.83	1.54	3.34
1960	1.75	3.26	3.55	2.26	4.85	4.33	6.26	3.27	2.49	3.81	3.08	3.50	3.53

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	103	78.5	76.1	53.0	124	69.6	74.9	86.9	170	81.2	77.3	70.1	1,060
1952	82.3	162	63.1	137	155	185	171	121	197	71.4	59.7	129	1,530
1953	134	70.3	89.2	95.1	192	104	33.5	50.3	136	28.9	108	86.6	1,130
1954	81.2	102	58.9	65.1	82.6	84.8	57.0	36.5	159	61.0	65.3	91.4	945
1955	173	200	141	96.7	50.7	205	116	85.6	144	154	154	79.2	1,540
1956	141	146	80.0	77.4	130	166	118	200	116	86.1	141	131	1,530
1957	112	170	54.8	233	139	89.6	94.5	169	59.5	93.3	67.0	50.0	1,330
1958	112	189	62.7	63.5	171	178	50.1	91.5	83.8	71.2	89.3	71.5	1,230
1959	127	190	84.5	158	74.2	45.2	118	142	85.4	92.9	56.8	46.1	1,220
1960	54.3	101	106	70.1	145	134	194	94.9	77.3	114	95.5	105	1,290

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons	gallons
1950	-	-	-	-	-	-	-	-	-	-	-	3.25	5.03
1951	1219	382	591	Dec. 3, 1950	0.62	0.96	2.92	4.52	1,060	3.69	5.71	1,340	1,340
1952	1249	480	743	Dec. 31, 1951	.83	1.28	4.19	6.48	1,530	3.92	6.07	1,430	1,430
1953	1289	650	1,010	Nov. 20, 1952	.40	.62	3.09	4.78	1,130	2.52	3.90	918	918
1954	1349	460	712	Mar. 1, 1954	.35	.54	2.59	4.01	945	3.67	5.68	1,340	1,340
1955	1399	218	337	Dec. 10, 1954	.68	1.05	4.22	6.53	1,540	3.97	5.99	1,410	1,410
1956	1449	420	650	Feb. 11, 1956	.87	1.35	4.18	6.47	1,530	4.34	6.71	1,590	1,590
1957	1569	500	774	Feb. 28, 1957	.55	.85	3.55	5.65	1,330	3.59	5.55	1,310	1,310
1958	1569	650	1,010	Dec. 3, 1957	.47	.73	3.68	5.23	1,230	3.11	4.81	1,140	1,140
1959	1639	428	662	Feb. 13, 1959	.65	1.01	3.34	5.17	1,220	3.16	4.89	1,150	1,150
1960	1719	295	456	Apr. 16, 1960	.55	.85	3.53	5.46	1,290	-	-	-	-

5060. Makapipi ditch near Nahiku

Location.--Lat 20°48'17", long 156°06'25", on right bank at entrance to tunnel No. 1, 1.8 miles south of Nahiku and 4.7 (revised) miles southeast of Keanae.

Records available.--July 1948 to June 1960.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 1,300 ft above mean sea level (by vertical angles).

Average discharge.--12 years (1948-60), 2.95 mgd (4.56 cfs).

Extremes.--1948-60: Maximum daily discharge, 7.8 mgd (12.1 cfs) Nov. 21, 1951; minimum daily, 0.42 mgd (0.65 cfs) Mar. 22, 23, 25, Apr. 13, 14, 1958.

Remarks.--Station measures water from development tunnel. During extreme floods, some runoff from East Makapipi Stream may enter ditch above station.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	101	98.9	62.1	39.0	88.6	134	97.6	81.4	140	65.8	37.4	44.5	990
1952	55.5	113	56.7	30.1	102	107	126	83.7	130	87.4	129	114	1,130
1953	126	74.0	85.6	108	151	126	40.4	24.7	109	40.8	95.5	87.0	1,070
1954	66.4	94.4	33.2	23.9	65.8	101	58.7	36.2	120	61.1	156	104	921
1955	146	152	99.5	56.4	38.5	152	120	141	119	116	142	68.7	1,350
1956	101	134	76.9	66.8	57.4	61.0	101	126	118	132	133	140	1,250
1957	85.8	136	58.9	92.4	60.5	58.6	80.0	48.1	57.5	102	98.3	27.4	906
1958	87.5	156	85.1	68.6	108	28.2	69.2	53.6	40.4	40.2	118	100	955
1959	136	134	81.9	99.2	111	68.8	68.7	89.7	103	111	89.2	52.0	1,140
1960	58.1	103	66.3	37.0	50.1	124	114	84.9	84.4	139	99.4	64.2	1,020

5080. Hanawi Stream near Nahiku

Location.--Lat 20°48'35", long 156°07'00", on left bank 200 ft upstream from Koolau ditch intake and trail, 1.9 miles southwest of Nahiku, and 4.5 miles southeast of Keanae.

Drainage area.--3.49 sq mi.

Records available.--January 1914 to January 1916, November 1921 to June 1960. Monthly discharge only for some periods published in WSP 1319.

Gage.--Water-stage recorder. Datum of gage is 1,318 ft above mean sea level (vertical angles by Topographic Division). Prior to Nov. 11, 1921, at site 50 ft downstream at datum 0.12 ft lower.

Average discharge.--39 years (1914-15, 1922-60), 14.7 mgd (22.7 cfs).

Extremes.--1914-16, 1921-60: Maximum discharge, about 3,600 mgd (5,570 cfs) Jan. 18, 1916 (gage height, 11.6 ft, at site of present gage), by test on model of station site; minimum, 1.1 mgd (1.7 cfs) Feb. 19, 20, 1944.

Remarks.--No diversion above station.

Correction.--The month of November in fiscal year 1925 was corrected in WSP 1719; the resulting corrected records summarized herewith supersede those published in WSP 1319.

Month	Mean		Million gallons
	Mgd	Cfs	
November 1924.....	28.1	43.5	844
Calendar year 1924.....	11.2	17.3	4,090
Fiscal year 1924-25.....	13.3	20.6	4,850

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	14.4	19.2	8.56	6.27	31.9	49.7	27.1	61.4	35.4	8.43	4.10	6.14	22.4
1952	8.66	18.9	4.90	7.61	23.8	28.6	26.3	21.5	63.0	16.6	21.0	16.4	21.5
1953	14.0	8.54	7.97	19.6	39.5	28.3	3.28	8.22	28.9	3.70	20.1	6.24	15.6
1954	5.65	8.71	2.46	3.53	9.76	7.98	12.6	14.6	31.3	16.7	36.7	12.0	13.5
1955	32.5	26.1	16.1	5.15	6.20	127	27.7	81.7	44.4	32.2	21.5	6.31	35.4
1956	16.6	16.9	7.80	6.54	8.77	35.6	46.1	120	17.3	38.1	26.1	31.7	30.5
1957	11.0	22.9	4.70	25.8	4.84	10.2	17.3	43.0	10.8	45.8	18.4	3.36	†17.9
1958	12.4	66.2	8.70	9.56	52.0	76.4	23.5	17.8	28.3	6.90	21.5	10.6	28.0
1959	33.0	46.6	11.1	43.0	23.8	15.0	31.9	87.0	25.1	38.2	17.2	5.03	31.1
1960	8.82	27.4	5.71	3.54	5.46	48.4	29.6	99.5	23.4	71.8	30.2	14.6	30.3

† Corrected.

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	9.32	12.4	5.40	4.05	20.6	32.1	17.5	39.7	22.9	5.45	2.65	3.97	14.5
1952	5.60	12.2	3.17	4.92	15.4	18.5	17.0	13.9	40.7	10.7	13.6	10.6	13.9
1953	9.04	4.23	5.15	12.8	25.5	18.3	2.12	5.31	19.6	2.39	13.0	4.03	10.1
1954	3.65	5.63	1.59	2.28	6.51	5.16	8.13	9.43	20.2	10.8	23.7	7.73	8.73
1955	21.0	16.9	10.4	3.33	4.01	82.3	17.9	52.8	28.7	20.8	13.9	4.08	22.9
1956	10.7	10.9	5.04	4.23	5.67	23.0	29.8	77.3	11.2	24.6	16.9	20.5	19.7
1957	7.14	14.8	3.04	16.7	3.13	6.58	11.2	27.8	6.95	29.6	11.9	2.17	†11.6
1958	8.00	42.8	5.62	6.18	33.6	49.4	15.2	11.5	18.3	4.46	13.9	6.84	18.1
1959	21.3	30.1	7.16	27.8	15.4	9.72	20.6	56.2	16.2	24.7	11.1	3.25	20.1
1960	5.70	17.7	3.69	2.29	3.53	31.3	19.1	64.3	15.1	46.4	19.5	9.42	19.6

† Corrected.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	289	383	162	125	617	994	543	1,110	709	163	82.0	119	5,300
1952	174	377	95.1	152	462	574	526	403	1,260	322	422	318	5,090
1953	280	131	154	396	766	569	65.8	149	576	71.8	404	121	3,690
1954	113	175	47.8	70.8	189	160	252	264	627	323	734	232	3,190
1955	650	523	313	103	120	2,550	555	1,480	891	625	431	122	8,360
1956	332	337	151	131	170	712	924	2,240	348	738	524	614	7,220
1957	221	459	91.3	518	240.0	204	346	778	216	887	368	65.1	4,250
1958	248	1,330	169	192	1,010	1,530	471	321	567	134	432	205	6,610
1959	659	932	215	862	461	301	639	1,570	502	740	343	97.5	7,320
1960	177	547	111	70.9	106	971	592	1,870	468	1,390	605	283	7,190

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	gallons
1950	-	-	-	-	-	-	-	-	-	-	18.6	28.8	6,780
1951	1219	1,130	1,750	Feb. 18, 1951	1.7	2.6	14.5	22.4	5,300	12.5	19.3	4,560	
1952	1249	1,950	3,020	Dec. 11, 1951	1.60	2.48	13.9	21.5	5,090	15.2	23.5	5,550	
1953	1289	1,460	2,260	Mar. 4, 1953	1.43	2.21	10.1	15.6	3,690	5.98	9.10	2,150	
1954	1349	840	1,300	Mar. 5, 1954	1.25	1.93	8.73	13.5	3,190	18.3	28.3	6,690	
1955	1399	1,380	2,140	Feb. 7, 1955	1.48	2.29	22.9	35.4	8,360	16.3	25.2	5,940	
1956	1449	1,950	3,020	Jan. 26, 1956	1.60	2.48	19.7	30.5	7,220	†19.1	†29.6	6,980	
1957	1569	930	1,440	Oct. 14, 1956	1.72	2.66	†11.6	†17.9	4,250	19.5	30.2	7,140	
1958	1569	1,620	2,510	Nov. 22, 1957	1.94	3.00	18.1	28.0	6,610	15.2	23.5	5,560	
1959	1639	1,630	2,520	Jan. 18, 1959	1.72	2.74	20.1	31.1	7,320	16.1	24.9	5,870	
1960	1719	2,180	3,370	Apr. 16, 1960	1.38	2.14	19.6	30.3	7,190	-	-	-	

† Corrected.

5100. Kapaula Gulch near Nahiku

Location.--Lat 20°48'45", long 156°07'05", on right bank 40 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 1.9 miles southwest of Nahiku, and 4 miles southeast of Keanae.

Drainage area.--0.69 sq mi.

Records available.--November 1921 to June 1960. Prior to July 1958 published as Kapaula Stream near Nahiku.

Gage.--Water-stage recorder. Datum of gage is 1,346 ft above mean sea level (by vertical angle traverse).

Average discharge.--38 years (1922-60), 10.8 mgd (16.7 cfs).

Extremes.--1921-60: 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.--No diversion above station; below station water is diverted by Koolau ditch for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	12.9	10.2	6.58	6.51	21.2	31.7	17.0	36.8	26.5	7.15	2.65	4.77	15.2
1952	8.57	16.9	3.39	4.77	22.6	21.2	17.6	17.5	42.4	15.3	18.4	14.8	17.0
1953	11.9	5.34	7.36	19.3	30.6	21.4	1.56	6.98	18.6	1.75	15.6	5.00	12.2
1954	4.50	7.12	.930	2.46	6.39	6.82	6.73	6.40	24.1	12.5	32.0	8.77	10.3
1955	26.3	20.9	13.0	3.54	4.44	77.7	21.2	58.6	28.8	25.5	15.8	4.15	24.9
1956	13.8	13.5	5.37	4.83	7.49	14.8	22.1	66.8	10.1	28.3	19.6	24.3	19.0
1957	8.79	18.1	2.77	19.0	5.37	6.45	11.0	26.3	9.14	32.0	12.6	1.56	12.6
1958	10.8	43.6	5.18	7.98	32.5	56.0	13.6	10.4	19.5	5.55	16.3	6.22	19.5
1959	25.1	29.9	7.47	30.6	17.5	12.0	17.5	54.0	15.9	30.8	12.7	3.03	21.2
1960	7.69	19.6	3.95	2.49	4.81	32.5	19.6	50.3	18.1	41.3	19.0	11.6	19.2

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.33	6.57	4.25	4.08	13.7	20.5	11.0	23.8	17.1	4.62	1.71	3.08	9.82
1952	5.54	10.9	2.19	3.08	14.6	13.7	11.4	11.3	27.4	9.68	11.9	9.59	11.0
1953	7.72	3.45	4.76	12.5	19.6	13.8	1.01	4.51	12.0	1.13	10.1	3.23	7.88
1954	2.91	4.60	.601	1.60	5.42	4.41	4.35	5.43	15.6	8.06	20.7	5.67	6.64
1955	17.0	13.5	8.43	2.29	2.87	50.2	13.7	37.9	18.6	16.5	10.2	2.68	16.1
1956	8.89	8.75	3.47	3.12	4.84	9.55	14.3	43.2	6.56	18.3	12.7	15.7	12.3
1957	5.68	11.7	1.92	12.3	2.18	5.46	7.08	17.0	5.26	20.7	6.14	1.01	6.16
1958	7.01	28.2	3.35	5.16	21.0	36.2	8.82	6.89	12.6	3.59	11.8	75.31	12.6
1959	16.2	19.3	4.83	19.8	11.3	7.74	11.3	34.9	10.3	19.9	8.23	1.96	13.7
1960	4.97	12.7	2.55	1.61	3.11	21.0	12.7	32.5	11.7	26.7	12.3	7.49	12.4

† Corrected.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	256	204	127	126	412	636	339	667	529	138	53.1	92.5	3,580
1952	172	337	65.8	95.5	438	425	352	329	851	296	370	288	4,020
1953	239	107	143	388	595	428	31.3	126	372	34.0	315	97.0	2,880
1954	90.3	143	18.0	49.5	163	137	135	152	462	242	643	170	2,420
1955	527	418	253	71.0	86.2	1,560	426	1,060	576	495	37	60.5	5,870
1956	276	271	104	96.6	145	296	442	1,250	203	550	395	471	4,500
1957	176	363	57.7	382	65.5	169	219	477	163	621	252	30.3	2,980
1958	217	874	100	160	629	1,120	273	187	391	108	367	159	4,580
1959	502	600	145	613	340	240	351	978	320	597	255	58.7	5,000
1960	154	395	76.6	49.8	93.2	650	394	944	363	801	382	225	4,530

Summary of yearly discharge

Summary of yearly discharge														
Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs			
1950	-	-	-	-	-	-	-	-	-	-	12.5	19.3	4,550	
1951	1219	476	736	Feb. 19, 1951	0.73	1.13	9.82	15.2	3,580	9.19	14.2	3,350		
1952	1249	1,370	2,120	Dec. 11, 1951	.52	.80	11.0	17.0	4,020	12.0	18.6	4,390		
1953	1289	751	1,160	Mar. 9, 1953	.45	.70	7.88	12.2	2,880	4.32	6.68	1,980		
1954	1349	344	532	Mar. 5, 1954	.29	.45	6.64	10.3	2,420	13.0	20.1	4,740		
1955	1399	1,060	1,640	Feb. 7, 1955	.59	.91	16.1	24.9	5,870	11.4	17.6	4,150		
1956	1449	1,160	1,790	Jan. 26, 1956	.29	.45	12.3	19.0	4,500	12.4	19.2	4,520		
1957	1569	476	736	Oct. 14, 1956	.59	.91	8.16	12.6	2,980	13.3	20.6	4,660		
1958	1569	1,200	1,860	Nov. 22, 1957	.87	1.35	12.6	19.5	4,580	10.8	16.7	3,920		
1959	1639	1,060	1,640	Jan. 17, 1959	.73	1.13	13.7	21.2	5,000	10.9	16.9	3,980		
1960	1719	1,320	2,040	Apr. 16, 1960	.52	.80	12.4	19.2	4,530	-	-	-		

5120. Koolau ditch at Nahiku weir, near Nahiku

Location.--Lat 20°48'55", long 156°07'15", on right bank between Kapaula and Waiohue Gulches, 1.8 miles southwest of Nahiku and 3.8 miles southeast of Keanae.

Records available.--February 1919 to June 1960. Gage-height records collected in this vicinity since 1904 are contained in the 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.--41 years (1919-60), 22.0 mgd (34.0 cfs).

Extremes.--1919-60: Maximum daily discharge, 60 mgd (93 cfs) Feb. 18, 24, 1956; no flow at times.

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

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	831	591	472	378	594	255	700	649	1,070	539	299	373	6,750
1952	478	738	357	319	780	631	808	685	870	804	965	1,020	8,460
1953	814	474	547	828	1,200	1,030	253	318	708	242	683	486	7,580
1954	426	544	171	212	482	620	337	285	848	456	1,260	820	6,460
1955	1,330	1,400	828	400	308	899	1,010	1,250	1,060	1,110	1,260	505	11,360
1956	759	1,040	560	478	516	417	684	1,070	994	1,120	1,130	1,210	9,980
1957	728	1,000	390	739	410	468	622	320	529	963	697	241	7,110
1958	772	1,220	631	558	524	555	767	294	274	428	987	726	7,740
1959	1,130	1,180	706	885	797	629	515	912	842	962	786	394	9,740
1960	538	911	498	276	430	1,180	970	749	828	1,230	839	610	9,060

5150. Waiohue Gulch near Nahiku

Location.--Lat 20°49'05", long 156°07'45", on left bank 200 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 2.4 miles southwest of Nahiku, and 3.5 miles southeast of Keanae.

Drainage area.--0.32 sq mi.

Records available.--October 1921 to June 1960. Prior to July 1958 published as Waiohue Stream near Nahiku.

Gage.--Water-stage recorder. Datum of gage is 1,316.2 ft above mean sea level (by stadia traverse).

Average discharge.--38 years (1922-60), 7.55 mgd (11.7 cfs).

Extremes.--1921-60: Maximum discharge, 702 mgd (1,090 cfs) Apr. 16, 1960 (gage height, 6.24 ft), from rating curve extended above 95 mgd on basis of slope-area measurements at gage heights 4.57 and 5.60 ft; minimum, 1.36 mgd (2.10 cfs) Oct. 9, 10, 1953.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	9.53	8.31	5.96	4.97	14.0	17.5	10.2	17.8	15.2	6.02	4.02	4.83	9.82
1952	5.93	10.6	4.53	4.44	11.3	13.1	10.1	10.5	19.2	8.45	10.5	10.8	9.95
1953	10.0	5.52	6.05	11.3	16.7	12.0	3.28	4.46	12.5	3.51	10.7	5.38	8.49
1954	5.38	6.87	2.88	3.42	6.37	7.04	5.31	5.55	11.6	7.66	17.2	7.66	7.27
1955	14.9	14.8	9.35	4.75	4.86	30.9	11.4	27.1	15.8	14.4	11.2	5.54	13.7
1956	9.55	9.58	5.97	5.37	5.96	8.36	12.5	29.6	8.53	15.9	13.7	14.4	11.5
1957	7.80	12.9	4.63	12.5	4.44	5.37	6.79	14.0	5.42	15.8	9.44	3.20	8.49
1958	7.57	22.3	5.85	6.62	19.6	24.8	9.39	7.06	9.75	5.46	11.0	7.58	11.5
1959	14.9	17.8	6.89	16.1	10.6	9.10	10.2	21.5	10.2	16.9	8.26	4.83	12.2
1960	6.39	10.9	5.54	4.13	4.66	15.6	11.5	21.5	11.0	22.6	11.8	7.47	11.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.16	5.37	3.85	3.21	9.06	11.3	6.60	11.5	9.82	3.89	2.60	3.12	6.35
1952	3.83	6.83	2.93	2.87	7.29	8.44	6.56	6.76	12.4	5.46	6.80	6.95	6.43
1953	6.49	3.57	3.91	7.29	10.8	7.75	2.12	2.88	8.10	2.27	6.92	3.48	5.49
1954	3.48	4.44	1.86	2.21	4.12	4.55	3.43	3.59	7.52	4.95	11.1	4.85	4.70
1955	9.62	9.56	6.04	3.07	3.14	20.0	7.40	17.5	10.2	9.33	7.23	3.58	8.85
1956	6.17	6.19	3.86	3.47	3.85	5.40	8.08	19.1	5.51	10.3	8.85	9.33	7.45
1957	5.04	8.33	2.99	8.10	2.87	3.47	4.39	9.08	3.50	10.2	6.10	2.07	5.49
1958	4.89	14.4	3.78	4.28	12.7	16.0	6.07	4.56	6.30	3.53	7.13	4.90	7.42
1959	9.60	11.5	4.45	10.4	6.87	5.88	6.58	13.9	6.61	10.9	5.34	2.99	7.88
1960	4.13	7.05	3.58	2.67	3.01	10.1	7.43	13.9	7.13	14.6	7.62	4.83	7.15

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	191	167	115	99.6	272	351	205	323	304	117	80.4	†93.5	2,320
1952	119	212	87.8	88.8	219	262	203	196	385	184	211	209	2,360
1953	201	111	117	226	323	240	65.8	80.7	251	68.0	215	104	2,000
1954	108	138	55.8	68.4	124	141	106	101	233	148	344	148	1,720
1955	298	296	181	95.2	94.1	619	229	491	315	280	224	107	3,230
1956	191	192	116	108	116	167	251	553	171	310	274	280	2,730
1957	156	258	89.7	251	86.0	108	136	254	108	305	189	62.0	2,000
1958	152	447	114	133	381	495	188	128	195	106	221	147	2,710
1959	298	355	133	321	206	182	204	390	205	327	165	89.6	2,880
1960	128	219	108	82.9	90.2	314	230	404	221	438	236	145	2,620

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1950	-	-	-	-	-	-	-	-	-	7.75	12.0	2,630	
1951	1219, 1569	245	379	Feb. 19, 1951	1.92	2.97	6.35	9.82	2,320	5.78	8.94	2,110	
1952	1249, 1569	500	774	Dec. 11, 1951	1.73	2.68	6.43	9.95	2,360	7.06	10.9	2,590	
1953	1289, 1569	400	619	Mar. 4, 1953	1.51	2.34	5.49	8.49	2,000	3.89	6.02	1,420	
1954	1349, 1569	155	240	Mar. 5, 1954	1.41	2.18	4.70	7.27	1,720	7.30	11.3	2,660	
1955	1399, 1569	440	681	Feb. 7, 1955	1.86	2.88	8.85	13.7	3,230	6.95	10.8	2,540	
1956	1449	440	681	Jan. 26, 1956	1.92	2.97	7.45	11.5	2,730	7.61	11.8	2,790	
1957	1569	320	495	Oct. 15, 1956	1.73	2.68	5.49	8.49	2,000	7.60	11.8	2,780	
1958	1569	520	805	Nov. 22, 1957	1.92	2.97	7.42	11.5	2,710	6.80	10.5	2,480	
1959	1639	356	551	Jan. 17, 1959	2.15	3.33	7.88	12.2	2,880	6.36	9.84	2,320	
1960	1719	702	1,090	Apr. 16, 1960	1.80	2.79	7.15	11.1	2,620	-	-	-	

5160. Kopiliula Stream near Keanae

Location.--Lat 20°49'05", long 156°08'12" (revised), on left bank 600 ft upstream from Koolau ditch crossing and highway bridge and 3 miles southeast of Keanae Post Office.

Drainage area.--4.31 sq mi.

Records available.--January 1914 to September 1917, October 1921 to January 1958. Prior to July 1956, published as West Kopiliula Stream near Keanae.

Gage.--Water-stage recorder. Datum of gage is 1,292 (revised) 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.--35 years (1915-17, 1922-34, 1936-57), 17.7 mgd (27.4 cfs).

Extremes.--1914-17, 1921-58: 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.-- Water used for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	14.5	20.6	8.12	9.13	37.6	45.5	28.2	56.3	28.2	9.65	4.02	5.77	22.1
1952	9.75	18.7	5.31	6.90	22.6	24.4	18.7	20.1	44.6	15.5	19.2	14.2	18.4
1953	13.3	5.85	8.12	20.4	36.5	23.8	2.48	8.70	23.5	3.62	20.5	6.59	14.6
1954	5.12	7.78	1.84	3.61	11.0	10.1	13.8	6.59	29.2	21.2	33.9	11.2	13.2
1955	29.4	23.4	16.2	5.74	5.37	101	22.0	73.5	40.1	24.6	17.8	4.94	30.2
1956	14.1	16.1	7.71	7.07	9.14	30.9	42.1	103	10.8	31.7	20.6	25.1	26.1
1957	10.1	20.0	4.21	20.7	4.70	9.24	13.6	40.1	10.2	37.1	15.2	2.44	15.5
1958	11.9	58.5	7.02	10.3	47.5	60.7	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	9.39	13.3	5.25	5.90	24.3	29.4	18.2	36.4	18.2	6.24	2.60	3.73	14.3
1952	6.30	12.1	3.43	4.46	14.6	15.8	12.1	13.0	28.8	10.0	12.4	9.17	11.9
1953	8.60	3.78	5.25	13.2	24.9	15.4	1.60	5.62	15.2	2.34	13.1	4.13	19.46
1954	3.31	5.03	1.19	2.33	7.11	6.54	8.93	5.55	18.9	13.7	21.9	7.23	8.51
1955	19.0	15.1	10.5	3.71	3.47	65.1	14.2	47.5	25.9	15.9	11.5	3.19	19.5
1956	9.13	10.4	4.98	4.57	5.91	20.0	27.2	66.3	6.95	20.5	13.3	16.2	16.9
1957	6.5	12.9	2.72	13.4	3.04	5.97	8.80	25.9	6.59	24.0	9.84	1.58	10.0
1958	7.71	37.8	4.54	6.65	30.7	39.2	-	-	-	-	-	-	-

† Corrected.

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	291	412	157	183	750	913	565	1,020	563	187	80.7	112	5,210
1952	195	374	102	138	439	490	375	376	894	300	383	275	4,340
1953	266	117	158	409	747	477	49.6	157	470	70.1	1406	124	3,450
1954	105	156	35.6	72.1	213	203	277	155	586	410	680	217	3,110
1955	590	469	316	115	104	2,020	441	1,330	801	478	355	95.8	7,110
1956	285	324	149	142	177	620	843	1,920	216	615	411	487	6,190
1957	202	401	81.6	417	91.2	185	273	726	204	719	305	47.3	3,650
1958	239	1,170	136	206	922	1,210	-	-	-	-	-	-	-

† Corrected.

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year					
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons				
		Mgd		Cfs		Date		Mgd	Cfs		Mgd	Cfs					
		Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs					
1950	-	-	-	-	-	-	-	-	-	-	17.7	27.4	6,480				
1951	1219	1,300	2,010	Feb. 18, 1951	1.30	2.01	14.3	22.1	5,210	11.7	18.1	4,270					
1952	1249	1,980	3,060	Dec. 11, 1951	.82	1.27	11.9	18.4	4,340	13.1	20.3	4,780					
1953	1289	1,480	2,290	Mar. 4, 1953	.80	1.24	19.46	14.6	3,450	5.64	8.73	2,060					
1954	1349	780	1,210	Mar.-5, Apr. 18	.70	1.08	8.51	13.2	3,110	16.3	25.2	5,940					
1955	1399	1,120	1,750	Mar. 16, 1955	1.2	1.9	19.5	30.2	7,110	14.2	22.0	5,200					
1956	1449	1,760	2,720	Feb. 25, 1956	1.13	1.75	16.9	26.1	6,190	16.0	24.8	5,870					
1957	1569	1,120	1,750	Apr. 4, 1957	1.08	1.67	10.0	15.5	3,650	16.9	26.1	6,160					
1958	1569	1,480	2,290	Nov. 22, 1957	-	-	-	-	-	-	-	-	-				

† Corrected.

5170. East Wailuaiki Stream near Keanae

Location.--Lat 20°49'05", long 156°08'25", on left bank 950 (revised) ft upstream from Koolau ditch crossing and trail and 3 miles southeast of Keanae Post Office.

Drainage area.--3.11 sq mi.

Records available.--December 1913 to October 1917, July 1922 to January 1958.

Gage.--Water-stage recorder. Datum of gage is 1,329 ft above mean sea level (by vertical angles). Dec. 21, 1913, to Oct. 23, 1917, at site 50 ft downstream.

Average discharge.--37 years (1915-17, 1922-57), 19.7 mgd (30.5 cfs).

Extremes.--1913-17, 1922-58: Maximum discharge, 3,060 mgd (4,730 cfs) Apr. 6, 1938 (gage height, 9.28 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, 0.85 mgd (1.32 cfs) Oct. 10, 1953.

Remarks.--Water used for irrigation in Central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	22.6	25.5	12.6	12.0	44.9	61.6	31.9	64.7	30.8	11.4	5.18	8.29	27.4
1952	13.4	25.1	6.34	8.23	32.2	28.9	22.4	30.6	61.0	21.5	27.2	20.6	24.8
1953	20.1	8.79	11.5	33.9	54.4	34.2	3.22	11.3	31.1	4.80	30.2	8.20	21.0
1954	7.64	13.4	2.83	6.25	15.6	13.0	14.5	9.79	37.9	27.4	54.3	13.6	18.1
1955	42.2	33.4	23.8	7.09	8.18	150	33.4	99.3	51.8	39.1	27.4	8.06	43.5
1956	23.5	23.7	10.4	8.76	12.6	24.9	36.2	126	13.3	48.7	30.8	58.5	32.6
1957	16.1	32.3	6.03	32.2	5.32	12.0	16.4	57.2	12.8	50.6	23.2	3.58	22.1
1958	16.7	74.1	8.80	14.9	62.8	95.3	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	14.6	16.5	8.14	7.76	29.0	39.8	20.6	41.8	19.9	7.37	3.35	5.36	17.7
1952	8.69	16.2	4.10	5.32	20.8	18.7	14.5	19.8	39.4	13.9	17.6	13.5	16.0
1953	13.0	5.68	7.41	21.9	35.2	22.1	2.08	7.32	20.1	3.10	19.5	8.30	13.6
1954	4.94	8.67	1.83	4.04	10.1	8.43	9.36	6.33	24.5	17.7	35.1	8.79	11.7
1955	27.3	21.6	15.4	4.58	5.29	97.0	21.6	64.2	33.5	25.3	17.7	5.21	28.1
1956	15.2	15.3	6.70	5.66	8.14	16.1	23.4	81.6	8.62	31.5	19.9	24.9	21.1
1957	10.4	20.9	3.90	20.8	3.44	7.76	10.6	37.0	8.25	32.7	15.0	2.30	14.3
1958	10.8	47.9	5.69	9.66	40.6	61.6	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	451	510	244	241	870	1,230	639	1,170	618	221	104	161	6,460
1952	269	503	123	165	624	579	448	574	1,220	416	544	400	5,860
1953	404	176	222	679	1,060	686	64.6	205	624	93.0	604	159	4,980
1954	153	289	55.0	125	303	261	290	177	758	531	1,090	264	4,280
1955	846	670	463	142	159	3,010	670	1,800	1,040	760	547	156	10,260
1956	473	475	201	175	244	498	725	2,370	267	945	618	746	7,740
1957	323	649	117	646	103	240	330	1,040	256	982	464	69.1	5,220
1958	333	1,480	171	299	1,220	1,910	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30							Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons		Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	-	24.0	37.1
1951	1219	760	1,180	Nov. 25, 1950	1.67	2.58	17.7	27.4	6,460	14.2	22.0	5,180
1952	1249	2,250	3,480	Dec. 11, 1951	1.20	1.86	16.0	24.8	5,860	18.7	28.9	6,850
1953	1289	2,080	3,220	Mar. 4, 1953	1.24	1.92	13.6	21.0	4,980	7.99	12.4	2,920
1954	1349	800	1,240	Mar. 5, 1954	1.03	1.59	11.7	18.1	4,280	23.0	35.6	8,400
1955	1399	1,620	2,510	Dec. 10, 1954	1.37	2.12	28.1	43.5	10,260	19.3	29.9	7,040
1956	1449	2,080	3,220	Feb. 25, 1956	1.48	2.29	21.1	32.6	7,740	21.2	32.8	7,750
1957	1569	1,480	2,290	Oct. 15, 1956	1.65	2.55	14.3	22.1	5,220	23.4	36.2	8,550
1958	1569	2,250	3,480	Nov. 22, 1957	-	-	-	-	-	-	-	-

5180. West Wailuaiki Stream near Keanae

Location.--Lat 20°49'15", long 156°08'37" (revised), on left bank 500 ft upstream from Kooiāu ditch crossing and trail bridge and 2.8 miles south of Keanae Post Office.

Drainage area.--3.66 sq mi.

Records available.--January 1914 to October 1917, November 1921 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Datum of gage is 1,344 ft above mean sea level (by vertical angles).

Average discharge.--40 years (1914-15, 1916-17, 1922-60), 24.3 mgd (37.6 cfs).

Extremes.--1914-17, 1921-60: 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.--No diversion above station. Water used for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	24.1	32.5	13.8	13.0	62.7	75.0	37.9	71.8	32.6	12.7	5.15	8.39	32.2
1952	14.1	28.9	7.63	8.36	38.7	36.5	24.0	36.5	69.0	22.9	30.0	18.3	27.9
1953	20.7	8.42	12.4	37.6	63.6	39.6	3.19	12.3	37.1	5.15	37.9	8.46	24.0
1954	7.41	13.0	2.34	7.29	18.1	14.8	18.9	10.2	45.6	38.2	65.9	14.9	21.5
1955	48.4	33.6	25.5	6.92	8.36	193	36.1	121	60.2	41.6	27.4	6.87	50.6
1956	24.9	23.8	9.86	9.38	13.1	29.2	32.8	161	14.4	56.0	34.0	42.9	37.0
1957	17.3	33.7	6.31	34.5	6.16	14.0	17.6	68.7	14.8	58.5	26.6	3.99	24.9
1958	17.3	89.9	9.00	15.6	69.2	108	33.9	19.3	34.7	10.8	32.5	14.0	38.2
1959	56.0	62.7	13.3	63.6	26.9	22.4	48.0	110	31.1	64.2	23.8	6.53	43.6
1960	15.3	31.9	8.73	5.32	12.8	75.8	29.2	127	37.0	78.4	29.7	19.5	40.5

Monthly and yearly mean discharge, in million gallons a day													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	15.6	21.0	8.91	8.41	40.5	48.5	24.5	46.4	21.1	8.23	3.33	5.42	20.8
1952	9.13	18.7	4.93	5.40	25.0	23.6	15.5	23.6	44.6	14.8	19.4	11.8	18.0
1953	13.4	5.44	8.01	24.3	41.1	25.6	2.06	7.96	24.0	3.33	24.5	5.47	15.5
1954	4.79	8.43	1.51	4.71	11.7	9.59	12.2	6.62	29.5	24.7	42.6	9.62	13.9
1955	31.3	21.7	16.5	4.47	5.40	125	23.3	78.4	38.9	26.9	17.7	4.44	32.7
1956	16.1	15.4	6.37	6.06	8.45	18.9	21.2	104	9.32	36.2	22.0	27.7	23.9
1957	11.2	21.8	4.08	22.3	3.98	9.08	11.4	44.4	9.56	37.8	17.2	2.58	16.1
1958	11.2	58.1	5.82	10.1	44.7	70.1	21.9	12.5	22.4	7.00	21.0	9.03	24.7
1959	36.2	40.5	8.62	41.1	17.4	14.5	31.0	70.9	20.1	41.5	15.4	4.22	28.2
1960	9.98	20.6	5.64	3.44	8.29	49.0	18.9	95.2	23.9	50.7	19.2	12.6	26.2

Monthly and yearly discharge, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	483	650	267	261	1,210	1,500	761	1,300	654	247	103	163	7,600
1952	283	579	148	167	749	731	480	684	1,380	443	603	355	8,600
1953	416	168	240	754	1,230	794	63.9	223	744	99.9	760	164	5,660
1954	148	261	45.2	146	350	297	378	185	915	742	1,320	289	5,080
1955	971	672	494	139	162	3,880	723	2,200	1,200	806	549	133	11,930
1956	498	476	191	188	253	586	657	3,030	289	1,090	683	832	8,770
1957	346	677	122	690	119	282	354	1,240	296	1,130	534	77.4	5,870
1958	347	1,800	175	312	1,340	2,170	680	350	693	210	651	271	9,000
1959	1,120	1,260	259	1,270	523	451	962	1,980	624	1,250	476	127	10,300
1960	303	639	169	107	249	1,520	584	2,760	741	1,520	595	379	8,570

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	gallons	Mgd	Cfs	gallons
1950	-	-	-	-	-	-	-	-	-	-	28.3	43.8	10,340
1951	1219	1,230	1,900	Nov. 25, 1950	1.58	2.44	10.8	32.2	7,600	16.1	24.9	5,880	
1952	1249	2,680	4,150	Dec. 11, 1951	1.36	2.10	18.0	27.9	6,600	20.6	31.9	7,550	
1953	1289	2,750	4,220	Mar. 4, 1955	.86	1.33	15.5	24.0	5,660	9.05	14.0	3,300	
1954	1349	1,270	1,960	Apr. 18, 1954	.70	1.08	13.9	21.5	5,080	27.8	43.0	10,150	
1955	1399	2,680	4,150	Dec. 10, 1954	1.31	2.03	32.7	50.6	11,930	21.4	33.1	7,800	
1956	1449	2,340	3,620	Feb. 25, 1956	1.42	2.20	23.9	37.0	8,770	24.1	37.3	8,820	
1957	1569	1,660	2,570	Oct. 14, 1956	1.69	2.61	16.1	24.9	5,870	26.8	41.5	9,780	
1958	1569	2,020	3,130	Nov. 22, 1957	1.31	2.03	24.7	38.2	9,000	21.2	32.8	7,740	
1959	1639	2,660	4,120	Jan. 17, 1959	1.99	3.08	28.2	43.6	10,300	23.0	35.6	8,410	
1960	1719	2,680	4,150	Apr. 16, 1960	1.28	1.98	26.2	40.5	9,570	-	-	-	

5200. East Wailuanui Stream near Keanae

Location.--Lat 20°49'23", long 156°08'36", on left bank 125 ft upstream from Koolau ditch intake, 250 ft upstream from trail, and 2.5 (revised) miles south of Keanae.

Drainage area.--0.51 sq mi.

Records available.--January 1914 to October 1917, November 1921 to January 1958.

Gage.--Water-stage recorder. Datum of gage is 1,287 ft above mean sea level (by vertical angles). Jan. 1, 1914, to Oct. 23, 1917, at site 500 ft upstream at different datum.

Average discharge.--38 years (1914-17, 1922-57), 5.66 mgd (8.76 cfs).

Extremes.--1914-17, 1921-58: Maximum discharge, 1,510 mgd (2,340 cfs) Jan. 26, 1948 (gage height, 7.60 ft), from rating curve extended above 50 mgd; minimum, 0.1 mgd (0.2 cfs) Apr. 11, 1926.

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

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	8.56	5.17	3.68	2.97	10.1	13.2	6.07	11.3	9.87	3.13	1.96	3.34	6.59
1952	5.35	8.70	2.37	2.46	9.55	9.36	6.89	8.18	13.0	7.12	7.84	10.5	7.60
1953	7.94	3.78	4.67	12.5	12.7	9.13	9.78	3.23	8.70	1.78	9.04	5.81	8.54
1954	3.65	5.23	1.13	2.61	5.82	5.40	1.98	3.40	8.40	5.59	17.2	5.34	5.51
1955	12.3	12.3	6.75	1.83	3.03	22.3	8.18	20.3	10.0	11.7	8.22	2.97	9.95
1956	7.77	7.94	3.73	2.89	4.22	2.71	7.52	38.2	5.21	12.8	12.7	11.8	9.65
1957	6.47	12.2	2.40	11.1	2.35	3.90	4.21	10.6	3.43	13.2	7.54	1.25	6.54
1958	7.02	19.3	3.42	4.78	17.2	20.9	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	5.62	3.34	2.38	1.92	6.51	8.50	3.92	7.31	6.38	2.02	1.27	2.16	4.26
1952	3.46	8.62	1.53	1.59	6.17	6.05	4.45	5.29	8.39	4.80	4.94	6.81	4.91
1953	5.13	2.44	3.02	8.05	8.22	5.90	.632	2.09	5.62	1.15	5.84	2.46	4.23
1954	2.36	3.38	.728	1.69	3.76	3.49	1.28	2.20	5.43	3.61	11.1	3.45	3.56
1955	7.98	7.95	4.36	1.18	1.96	14.4	5.29	13.1	6.47	7.55	5.31	1.92	6.43
1956	5.02	5.13	2.41	1.87	2.73	1.75	4.86	24.7	3.37	8.26	8.22	7.84	6.24
1957	4.18	7.90	1.55	7.19	1.52	2.52	2.72	6.88	2.22	8.51	4.87	.807	4.23
1958	4.54	12.5	2.21	3.09	11.1	13.5	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	171	103	71.3	59.5	195	263	122	205	198	60.6	39.4	64.8	1,550
1952	107	174	45.8	49.4	185	188	138	153	260	138	153	204	1,800
1953	159	75.6	90.4	250	247	183	19.6	58.5	174	34.4	181	73.6	1,550
1954	73.3	105	21.8	52.5	113	108	39.6	61.6	168	109	344	103	1,300
1955	247	246	131	36.6	58.7	448	164	366	201	227	185	57.7	2,350
1956	156	159	72.2	57.9	82.0	54.2	151	718	104	248	255	229	2,290
1957	130	245	46.5	223	45.6	78.2	84.3	193	68.7	255	151	24.2	1,540
1958	141	389	66.3	95.9	333	418	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	6.09	9.42
1951	1219	275	425	Feb. 19, 1951	0.53	0.82	4.26	6.59	1,550	3.94	6.10
1952	1249	430	665	Dec. 11, 1951	.45	.70	4.81	7.60	1,800	5.60	8.66
1953	1289	655	1,010	Mar. 9, 1953	.37	.57	4.23	6.54	1,550	2.78	4.30
1954	1349	180	279	Mar. 5, 1954	.41	.63	3.56	5.51	1,300	5.46	8.45
1955	1399	860	1,330	Feb. 7, 1955	.55	.85	6.43	9.95	2,350	4.82	7.46
1956	1449	390	603	Feb. 25, 1956	.49	.76	6.24	9.65	2,290	6.75	10.4
1957	1569	480	743	Oct. 14, 1956	.49	.76	4.23	6.54	1,540	6.08	9.41
1958	1569	605	936	Nov. 22, 1957	-	-	-	-	-	-	-

5220. Taro patch feeder ditch at Keanae

Location.--Lat 20°51'40", long 156°09'00", on left bank 80 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 southwest of Kailua.

Records available.--September 1934 to June 1960.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 51 ft, revised (from topographic map).

Average discharge.--25 years (1935-60), 2.33 mgd (3.61 cfs).

Extremes.--1934-60: Maximum daily discharge, 7.9 mgd (12.2 cfs) June 30, 1941, Feb. 10, 1955; minimum daily, 0.05 mgd (0.08 cfs) Mar. 5, 1939.

Remarks.--Ditch diverts water from Palauhulu Stream, 80 ft above station, for irrigation of taro at Keanae.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	65.2	60.8	48.7	47.0	51.5	78.8	68.9	59.5	59.4	52.8	45.5	45.0	683
1952	50.3	52.2	50.3	51.0	54.9	58.5	68.7	62.3	68.9	72.2	79.1	72.7	741
1953	72.6	59.1	64.6	76.1	86.2	86.4	63.5	59.4	62.2	50.8	61.1	54.1	796
1954	51.8	53.1	52.4	52.0	54.8	66.8	59.4	49.7	72.6	64.6	87.2	68.6	733
1955	82.5	87.3	70.1	75.0	62.4	107	77.6	87.9	93.6	93.5	95.2	68.2	1,000
1956	64.1	65.9	54.5	58.2	61.0	60.7	74.5	98.6	64.1	75.8	76.2	73.4	827
1957	66.8	76.8	64.4	85.7	77.4	75.2	76.6	79.0	71.6	82.4	80.2	60.9	897
1958	76.2	96.1	76.5	76.4	78.6	108	69.4	67.9	83.2	63.3	78.4	66.5	940
1959	83.3	84.9	67.5	92.4	89.2	87.2	75.1	85.2	99.6	104	96.9	77.0	1,040
1960	81.6	95.1	78.7	68.5	68.6	96.1	90.7	92.2	91.8	94.6	78.9	68.0	1,000

5230. Koolau ditch near Keanae

Location.--Lat 20°49'53", long 156°10'30", on right bank on west side of Keanae Valley, 2.6 miles southwest of Keanae Post Office and 5.1 miles southeast of Kailua.

Records available.--January 1910 to December 1912, November 1917 to June 1960. Gage-height records collected in this vicinity since 1904 are contained in files of East Maui Irrigation Co.

Gage.--Water-stage recorder. Altitude of gage is 1,238 ft (from topographic map). Jan. 1, 1910, to Dec. 31, 1912, staff gage at same site and datum.

Average discharge.--44 years (1910-12, 1918-60), 66.8 mgd (103 cfs).

Extremes.--1910-12, 1917-60: Maximum daily discharge, 172 mgd (266 cfs) Apr. 10, 1935; no flow at times.

Remarks.--Flow regulated by gates and spillways. Ditch diverts water at altitude 1,260 ft from nearly all streams from the Makapipi west to the Aio for power and irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2,510	1,800	1,340	1,500	2,070	2,960	2,270	2,200	2,790	1,720	954	1,140	23,250
1952	1,630	2,190	1,110	1,010	2,360	1,910	2,390	2,050	2,860	2,490	2,820	3,140	25,960
1953	2,390	1,420	1,650	2,270	3,200	2,640	686	1,110	2,060	861	1,990	1,530	21,810
1954	1,420	1,680	565	791	1,610	1,990	1,090	846	2,350	1,500	3,450	2,460	19,730
1955	3,570	3,590	2,890	1,240	930	3,360	2,480	2,920	2,620	2,820	3,430	1,480	30,730
1956	2,410	3,100	1,740	1,480	1,540	1,100	1,720	2,900	2,510	3,110	3,320	3,400	28,330
1957	2,190	2,860	1,160	2,110	1,150	1,440	1,830	1,710	1,630	2,560	1,940	722	21,300
1958	2,290	3,260	1,680	1,640	2,130	2,940	1,900	848	719	1,370	2,960	2,160	23,900
1959	3,330	3,110	2,050	2,570	2,410	1,880	1,820	2,390	2,490	2,660	2,310	1,170	27,990
1960	1,780	2,650	1,560	772	1,430	3,390	2,540	1,940	2,350	3,030	2,340	1,860	25,620

5270. Honomau Stream near Keanae

Location.--Lat 20°50'05", long 156°11'20", on left bank at Spreckels ditch intake, 3.3 miles southwest of Keanae School and 4.5 miles southeast of Kailua.

Drainage area.--3.17 sq mi.

Records available.--November 1913 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and combination orifice and broad-crested weir control. Datum of gage is 1,733 ft above mean sea level (by plane table traverse). Prior to April 1950 at site 500 ft upstream at different datums.

Average discharge.--46 years (1914-60), 15.3 mgd (23.7 cfs).

Extremes.--1913-60: Maximum discharge, 2,310 mgd (3,570 cfs) Feb. 25, 1956 (gage height, 10.73 ft), from rating curve extended above 13 mgd by computation of flow through orifice and over dam; minimum, 0.08 mgd (0.12 cfs) Mar. 24, 1928.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	17.8	21.0	8.25	7.86	27.9	40.8	23.5	31.1	11.2	8.79	3.39	8.17	17.5
1952	9.98	19.5	6.61	5.31	19.5	15.1	11.0	17.2	35.6	16.7	18.4	13.7	15.8
1953	17.8	7.80	8.42	24.6	40.4	24.8	1.28	3.71	18.1	3.20	20.6	6.78	14.9
1954	5.60	9.96	1.76	5.74	11.5	8.08	10.5	3.23	24.4	18.6	39.5	11.2	12.6
1955	39.9	26.8	15.8	4.38	4.73	105	20.7	63.1	28.2	29.1	19.6	5.42	30.2
1956	20.9	21.2	6.56	5.82	6.70	10.0	14.6	112	6.44	28.3	21.5	28.0	22.9
1957	15.1	23.8	3.68	17.0	5.76	5.65	6.85	35.4	7.07	31.6	14.9	2.82	13.8
1958	12.7	50.4	5.28	9.42	30.6	58.3	21.0	8.87	15.4	6.61	20.3	10.4	21.0
1959	40.4	35.0	7.47	35.7	14.7	15.1	19.8	54.0	17.0	32.6	16.1	3.34	24.1
1960	9.87	17.9	7.12	4.02	10.7	43.5	15.6	78.3	19.3	38.5	16.7	13.8	22.7

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	11.5	13.6	5.33	5.08	18.0	26.4	15.2	20.1	7.24	5.68	2.19	5.28	11.3
1952	6.45	12.6	4.27	3.43	12.6	9.75	7.08	11.1	23.0	10.8	11.9	8.88	10.2
1953	11.5	5.04	5.44	15.9	26.1	16.0	.828	2.40	11.7	2.07	13.3	4.38	9.61
1954	3.62	6.44	1.14	3.71	7.53	5.22	6.78	2.09	15.8	12.0	25.5	7.25	8.14
1955	25.8	17.3	10.2	2.83	3.06	68.0	13.4	40.8	18.2	18.8	12.7	3.50	19.5
1956	13.5	13.7	4.24	3.76	4.33	6.49	9.44	72.6	4.16	18.3	13.9	18.1	14.8
1957	9.78	15.4	2.38	11.0	2.43	3.65	4.43	22.9	4.57	20.4	9.62	1.82	8.94
1958	8.21	32.6	3.41	6.09	19.8	37.7	13.6	5.73	9.93	4.27	13.1	6.70	13.6
1959	26.1	22.6	4.83	23.1	9.50	9.79	12.8	34.9	11.0	21.1	10.4	2.16	15.6
1960	6.38	11.6	4.60	2.60	6.92	28.1	10.1	50.6	12.5	24.9	10.8	8.95	14.7

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	358	421	160	158	541	819	472	563	225	170	68.0	158	4,110
1952	200	391	128	106	377	302	219	323	712	322	370	286	3,720
1953	356	156	163	492	783	495	25.7	67.3	361	62.0	412	131	3,500
1954	112	200	34.2	115	220	162	210	58.5	490	360	791	218	2,970
1955	799	535	307	87.8	91.8	2,110	416	1,140	565	563	393	105	7,110
1956	419	425	127	117	130	201	293	2,030	129	548	431	543	5,350
1957	303	477	71.4	343	73.0	113	137	640	142	111	298	54.6	3,260
1958	255	1,010	102	189	595	1,170	422	160	308	128	407	201	4,950
1959	808	699	145	715	285	304	397	977	342	634	321	64.9	5,690
1960	198	360	138	80.6	208	871	314	1,470	387	746	334	269	5,380

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		gallons		Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	-	-	14.6	22.6
1951	1449	420	650	Nov. 25, 1950	0.60	0.93	11.3	17.5	4,110	8.66	13.4	20.6	5,320
1952	1449	1,090	1,690	Feb. 19, 1952	.43	.66	10.2	15.8	3,720	12.7	19.6	4,660	3,660
1953	1449	1,090	1,690	Mar. 4, 1953	.25	.39	9.61	14.9	3,500	5.21	8.06	1,900	1,900
1954	1449	420	650	Apr. 18, 1954	.21	.32	8.14	12.6	2,970	18.6	25.7	6,060	6,060
1955	1449	980	1,520	Dec. 10, 1954	.38	.59	19.5	30.2	7,110	12.6	19.5	4,600	4,600
1956	1449	2,310	3,570	Feb. 25, 1956	.47	.73	14.8	22.9	5,350	14.7	22.7	5,350	5,350
1957	1569	420	650	July 18, 1956	.47	.73	8.94	13.8	3,260	14.3	22.1	5,200	5,200
1958	1569	830	1,280	Nov. 22, 1957	.80	1.24	13.6	21.0	4,950	12.6	19.5	4,580	4,580
1959	1639	660	1,020	Jan. 17, 1959	.69	1.07	15.6	24.1	5,690	12.6	19.5	4,590	4,590
1960	1719	2,150	3,330	Feb. 12, 1960	.65	1.01	14.7	22.7	5,380	-	-	-	-

5310. Kula diversion from Haipuaena Stream near Olinda

Location (revised).--Lat 20°48'24", long 156°13'27", on left bank 3.4 miles east of Olinda and 6.2 miles south of Kailua.

Records available.--July 1945 to June 1960.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,320 ft (from topographic map).

Average discharge.--14 years (1946-60), 0.447 mgd (0.692 cfs).

Extremes.--1945-60: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; minimum daily, 0.01 mgd (0.02 cfs) for several days in 1953, 1954, and 1955.

Remarks.--Water is diverted into Kula pipeline for domestic use and irrigation on the western slopes of Haleakala.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	19.4	12.5	8.96	13.9	11.1	23.9	12.4	15.5	14.2	13.8	7.19	10.2	163
1952	10.8	17.5	7.91	8.05	19.6	10.6	14.7	12.0	21.1	17.2	18.4	14.8	173
1953	15.7	11.5	11.9	16.4	24.0	18.2	.48	4.55	12.9	3.84	15.0	12.3	147
1954	4.67	9.11	3.18	4.66	11.8	9.26	5.22	2.47	22.0	6.12	25.2	12.2	116
1955	30.7	22.7	10.9	7.84	4.12	23.6	12.8	18.3	18.3	20.6	21.6	9.99	201
1956	20.5	21.0	8.13	7.87	8.38	3.19	10.1	20.9	8.89	23.5	25.6	22.6	181
1957	17.1	18.5	4.05	15.3	8.21	7.42	11.8	11.4	6.79	20.5	14.6	5.36	141
1958	17.6	19.6	3.80	8.94	14.9	33.1	8.52	8.11	15.2	9.94	23.1	11.6	174
1959	28.8	16.8	11.5	18.0	12.1	16.6	9.58	19.9	13.2	16.0	17.2	2.35	182
1960	13.1	18.7	10.5	3.25	14.6	20.5	12.8	10.3	14.5	22.3	11.2	13.1	165

5311. Haipuaena Stream at Kula pipeline intake, near Olinda

Location--Lat 20°48'24", long 156°13'27", on left bank, at Kula pipeline intake, 3.4 miles east of Maui County Olinda Reservoir and 6.2 miles south of Kailua.

Drainage area--0.26 sq mi.

Records available--January to April 1946 (fragmentary), May 1946 to June 1960.

Gage--Water-stage recorder and concrete control. Altitude of gage is 4,320 ft (from topographic map).

Average discharge--14 years, 0.541 mgd (0.837 cfs).

Extremes--1946-60: Maximum discharge, 87 mgd (135 cfs) between Jan. 23 and Feb. 9, 1948 (gage height, 3.72 ft), from rating curve extended above 1.3 mgd; no flow at times each year.

Remarks--Kula pipeline diverts all water from Haipuaena Stream at low stages.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1946	-	-	-	-	-	-	-	-	-	-	0	0.026	-
1947	2.26	0.009	0.002	0.022	0.701	1.87	0.511	0.268	1.10	0.416	1.50	0.254	0.750
1948	.258	.704	.566	.430	.624	1.40	1.27	.175	3.05	1.29	.484	.246	.880
1949	.781	.576	.353	.896	.879	3.59	.432	.170	.518	.359	.054	.167	.740
1950	.337	.006	0	.028	1.30	.427	.501	.856	2.06	2.94	.455	.096	.743
1951	.611	1.61	.367	.362	1.61	2.27	1.30	1.53	.526	.246	.031	.243	.891
1952	.203	.914	.227	.514	.890	1.54	.534	.549	1.92	.257	.466	.090	.596
1953	.653	.135	.132	.607	2.54	1.05	0	.023	.809	.003	.905	.073	.580
1954	.056	.345	.002	.187	.382	.008	.815	.091	.891	.794	.987	.062	.395
1955	1.67	.401	.500	.083	.116	7.01	.806	3.70	1.25	.826	.455	.080	1.40
1956	.935	.769	.042	.039	.167	.902	.805	5.17	.039	1.58	.627	1.09	.995
1957	.659	.681	.017	.832	.074	1.16	.299	2.53	.323	1.64	.435	.005	.628
1958	.381	3.37	.005	.217	1.56	3.22	1.28	.370	.897	.019	.489	.105	1.00
1959	1.96	1.78	.116	2.00	.328	.407	1.26	2.80	.444	1.52	.460	0	1.08
1960	.217	.754	.101	.135	.433	2.92	.395	4.84	.701	1.33	.385	.393	1.04

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1946	-	-	-	-	-	-	-	-	-	-	-	0.017	-
1947	1.46	0.006	0.001	0.014	0.453	1.21	0.330	0.173	0.711	0.269	0.968	.164	0.485
1948	.167	.455	.366	.278	.908	.818	1.97	.856	.315	.315	.159	.569	.569
1949	.505	.372	.228	.579	.568	2.32	.279	1.10	.355	.232	.035	.068	.478
1950	.218	.004	0	.018	.841	.276	.324	.540	1.33	1.90	.294	.062	.480
1951	.395	1.04	.237	.234	1.04	1.47	.841	.991	.341	.159	.020	.157	.576
1952	.131	.591	.147	.332	.575	.332	.345	.355	1.24	.166	.314	.058	.385
1953	.422	.087	.085	.392	1.64	.677	0	.015	.523	.002	.585	.047	.375
1954	.036	.223	.001	.121	.247	.005	.527	.059	.576	.513	.638	.040	.255
1955	1.08	.259	.323	.954	.075	4.53	.521	2.39	.811	.534	.294	.052	.905
1956	.604	.497	.027	.025	.108	.583	.520	3.34	.025	1.02	.405	.704	.643
1957	.426	.440	.011	.538	.048	.075	.193	1.70	.209	1.06	.280	.003	.606
1958	.246	2.18	.003	1.04	1.02	2.08	.828	.239	.580	.012	.316	.068	.449
1959	1.27	1.15	.075	1.29	.212	.263	.817	1.81	.287	.984	.297	0	.700
1960	.140	.487	.065	.087	.280	1.89	.255	3.13	.453	.861	.249	.254	.670

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1946	-	-	-	-	-	-	-	-	-	-	-	0.51	-
1947	45.2	0.19	0.03	0.42	13.6	37.4	10.2	4.85	22.0	8.07	30.0	4.91	177
1948	5.19	14.1	11.0	8.63	12.1	28.2	25.4	3.28	61.1	25.1	9.69	4.76	209
1949	15.6	11.5	6.84	18.0	17.0	72.0	8.65	3.09	10.4	6.95	1.10	3.24	174
1950	6.76	.12	0	.56	25.2	8.57	10.0	15.1	41.1	56.9	9.12	1.86	175
1951	12.2	32.4	7.10	7.25	31.3	45.4	26.1	27.8	10.6	4.77	.62	4.71	210
1952	4.06	18.3	4.42	10.3	17.8	10.3	10.7	10.3	38.4	4.98	9.74	1.73	141
1953	13.1	2.71	2.54	12.2	49.1	21.0	0	.43	16.2	.06	18.1	1.42	137
1954	1.13	6.92	.04	3.76	7.41	1.42	16.3	1.65	17.8	15.4	19.8	1.21	92.8
1955	33.5	8.02	9.68	1.66	2.24	140	16.2	66.9	25.1	16.0	9.10	1.57	330
1956	18.7	15.4	.81	.78	3.24	18.1	18.1	97.0	.78	30.7	12.6	21.1	235
1957	13.2	13.6	.34	16.7	1.45	2.33	5.97	47.5	6.49	51.9	8.69	.09	148
1958	7.63	67.7	.10	4.34	30.4	64.4	25.7	6.69	16.0	.35	9.81	2.05	237
1959	39.4	35.7	2.25	40.1	6.36	8.14	25.3	50.7	8.90	29.5	9.21	0	256
1960	4.33	15.1	1.96	2.69	8.41	58.7	7.92	90.9	14.0	25.8	7.73	7.61	245

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day				Mean		Million
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons
1946	1449	-	-	-	0	0	-	-	-	-	-	-
1947	1449	52	80	Dec. 16, 1946	0	0	0.485	0.750	177	0.436	0.675	159
1948	1449	87	135	Between Jan. 23 and Feb. 9, 1948	0	0	.569	.880	209	.739	1.14	270
1949	1449	52	80	Aug. 15, 1948	0	0	.478	.740	174	.205	.317	74.6
1950	1449	50	77	Apr. 28, 1950	0	0	.480	.743	175	.739	1.14	270
1951	1449	44	68	Aug. 17, 1950	0	0	.576	.891	210	.583	.593	140
1952	1449	44	68	Dec. 11, 1951	0	0	.585	.596	141	.482	.746	176
1953	1449	60	93	Feb. 19, 1952	0	0	.375	.580	137	.156	.241	56.9
1954	1449	47	73	Mar. 4, 1953	0	0	.255	.395	92.8	.734	1.14	267
1955	1449	60	93	Jan. 5, 1954	0	0	.905	1.40	330	.526	.814	192
1956	1449	65	101	Dec. 10, 1954	0	0	.643	.995	235	.617	.955	226
1957	1569	57	88	Feb. 25, 1956	0	0	.406	.628	148	.754	1.17	275
1958	1569	60	93	July 18, 1956	0	0	.649	1.00	237	.533	.825	195
1959	1639	60	93	Nov. 22, 1957	0	0	.700	1.08	256	.568	.910	235
1960	1743	62.0	95.9	Feb. 21, 1959	0	0	.670	1.04	245	-	-	-
				Feb. 12, 1960	0	0						

5350. Haipuaena diversion ditch at Kolea Gulch, near Keanae

Location.--Lat 20°50'37", long 156°11'46", on right bank 15 ft downstream from end of tunnel in Kolea Gulch, 3.3 miles southwest of Keanae, and 3.7 miles southeast of Kailua.

Records available.--March 1938 to June 1960.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 1,866 ft (from plane table survey).

Average discharge.--22 years, 1.95 mgd (3.02 cfs).

Extremes.--1938-60: Maximum daily discharge, 11.4 mgd (17.6 cfs) Aug. 14, 1950; minimum daily, 0.02 mgd (0.03 cfs) for several days in 1956 and 1960.

Remarks.--Flow regulated by gate and spillway. Ditch diverts water from Haipuaena Stream for East Maui Irrigation Co.'s hydroelectric plant about 1 mile downstream, from where it discharges into Koolau ditch for irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	92.8	91.5	70.1	63.0	81.0	115	85.0	81.9	79.3	65.9	47.7	54.8	928
1952	68.5	86.3	53.9	49.2	87.5	75.6	75.8	71.9	99.2	82.9	77.0	76.7	904
1953	77.7	58.0	58.2	84.2	106	89.5	27.2	38.4	72.1	43.8	82.9	59.1	797
1954	50.6	56.6	28.9	35.0	53.2	53.9	42.6	24.9	64.5	50.9	79.1	57.0	597
1955	76.0	73.8	56.3	43.6	34.1	112	60.0	63.6	73.9	63.9	66.7	46.3	793
1956	65.2	67.1	50.8	49.4	43.7	39.6	50.1	65.6	2.96	13.2	69.0	68.6	585
1957	60.3	67.6	40.4	58.1	43.4	44.2	48.7	57.7	46.0	64.5	53.0	33.2	619
1958	58.6	74.6	47.0	47.0	60.2	77.7	51.0	39.5	50.2	51.4	64.0	57.5	679
1959	70.0	61.3	44.2	56.7	53.8	57.8	48.1	57.4	53.6	56.2	54.5	40.7	654
1960	50.3	57.2	47.5	36.2	49.4	68.6	56.9	45.3	43.5	34.3	3.54	3.64	496

5360. Haipuaena Stream above Spreckels ditch, near Huelo

Location.--Lat 20°51'04" (revised), long 156°11'28" (revised), on left bank 200 ft up-stream from Spreckels ditch, 2.8 miles west of Keanae, 3.3 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Drainage area.--1.19 sq mi.

Records available.--October 1913 to June 1960. Prior to July 1954, published as Haipuaena Stream near Huelo. December 1910 to September 1913 at site 600 ft downstream; records not equivalent owing to inflow from Spreckels ditch. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Datum of gage is 1,512.22 ft above mean sea level (East Maui Irrigation Co. bench mark).

Average discharge.--46 years (1914-60), 9.92 mgd (15.3 cfs).

Extremes.--1913-60: Maximum discharge, 1,750 mgd (2,710 cfs) Aug. 12, 1940 (gage height, 6.91 ft), from rating curve extended above 150 mgd; minimum, slightly less than 0.1 mgd (about 0.2 cfs) several days during January, February, May, June, 1945 and October 1953.

Remarks.--Haipuaena diversion ditch and Kula pipeline divert water above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	10.7	11.3	3.71	3.30	21.2	24.4	12.8	14.1	7.29	3.22	1.05	3.30	9.67
1952	4.63	10.7	2.31	2.68	11.8	8.26	6.08	9.24	17.0	7.63	7.71	10.1	8.17
1953	11.4	4.95	5.12	13.7	20.0	11.8	.351	1.73	7.33	1.01	11.6	3.50	7.75
1954	3.19	6.81	.619	2.72	6.62	5.40	4.69	1.84	13.6	9.82	24.4	6.25	7.23
1955	19.8	16.1	7.72	1.93	2.91	56.5	12.3	34.3	15.9	17.5	12.2	2.94	16.7
1956	11.6	12.6	3.74	3.30	3.87	4.12	7.19	56.3	7.77	23.8	17.6	19.0	14.0
1957	11.0	18.3	1.76	14.8	2.01	5.54	4.13	22.7	4.35	23.7	11.4	1.07	9.82
1958	10.4	40.4	3.40	7.23	24.6	41.9	13.5	6.71	10.2	4.49	15.2	8.01	15.6
1959	28.5	25.7	5.31	27.4	11.8	11.6	10.5	37.1	11.8	26.1	10.5	2.03	17.3
1960	6.84	14.0	4.73	3.11	6.44	26.8	12.3	44.1	15.8	35.9	14.7	10.5	16.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.91	7.29	2.40	2.13	15.7	15.8	8.25	9.14	4.71	2.08	0.678	2.13	6.25
1952	2.99	6.89	1.49	1.73	7.60	5.34	3.93	5.97	11.0	4.93	4.98	6.52	5.28
1953	7.34	3.20	3.31	8.88	12.9	7.63	2.27	1.12	4.74	6.50	7.50	2.26	5.01
1954	2.06	4.40	.400	1.76	4.28	3.49	3.03	1.19	8.78	6.35	15.8	4.04	4.67
1955	12.8	10.4	4.99	1.25	1.88	36.5	7.94	22.2	10.3	11.3	7.88	1.90	10.8
1956	7.52	8.14	2.42	2.13	2.50	2.66	4.65	36.4	5.02	15.4	11.4	12.3	9.08
1957	7.12	11.8	1.14	9.55	1.30	2.29	2.67	14.7	2.80	15.3	7.36	.690	6.35
1958	6.74	26.1	2.20	4.67	15.8	27.1	8.71	4.34	6.58	2.90	9.83	5.18	10.1
1959	18.4	16.6	5.43	17.7	7.61	7.51	6.81	24.0	7.63	16.9	6.78	1.31	11.2
1960	4.42	9.05	3.06	2.01	4.16	17.3	7.93	28.5	10.2	23.2	9.51	6.77	10.4

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	214	226	71.9	66.0	410	488	256	256	146	62.5	21.0	64.0	2,280
1952	92.7	214	44.7	53.6	228	166	122	173	342	148	154	196	1,930
1953	227	99.2	99.2	275	287	236	7.04	31.3	147	19.5	233	67.7	1,830
1954	63.8	136	12.0	54.6	128	108	94.0	33.3	272	190	389	121	1,700
1955	398	232	150	38.7	56.5	1,130	246	621	320	338	244	57.1	3,920
1956	233	252	72.5	66.0	74.9	82.5	144	1,060	156	462	353	370	3,330
1957	221	367	34.1	296	39.0	71.0	82.8	412	85.8	459	228	20.7	2,320
1958	209	809	65.9	145	478	839	270	122	204	87.1	305	155	3,690
1959	570	515	103	550	228	233	211	671	237	508	210	39.4	4,080
1960	137	281	91.7	62.2	125	537	246	826	318	697	295	203	3,820

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons			
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs				
1950	-	-	-	-	-	-	-	-	-	-	-	11.5	17.8	4,210	
1951	1219	192	297	Nov. 25, 1950	0.13	0.20	6.25	9.67	2,280	4.39	6.79	1,600			
1952	1249	680	1,050	Feb. 19, 1952	.12	.19	5.28	8.17	1,930	6.72	10.4	2,460			
1953	1289	500	774	Mar. 4, 1953	.12	.19	5.01	7.75	1,830	2.76	4.27	1,010			
1954	1349	220	340	Apr. 18, 1954	.10	.16	4.67	7.23	1,700	9.04	14.0	3,300			
1955	1399	470	727	Dec. 10, 1954	.31	.48	10.8	16.7	3,920	7.15	11.1	2,610			
1956	1449	1,110	1,720	Feb. 25, 1956	.12	.19	9.08	14.0	3,330	9.75	15.1	3,570			
1957	1569	420	650	Oct. 17, 1956	.24	.37	6.35	9.82	2,320	10.5	16.2	3,840			
1958	1569	620	959	Aug. 24, 1957	.23	.36	10.1	15.6	3,690	9.16	14.2	3,340			
1959	1639	553	856	Oct. 23, 1958	.23	.36	11.2	17.3	4,080	8.52	13.2	3,110			
1960	1719	1,260	1,950	Apr. 16, 1960	.18	.28	10.4	16.1	3,820	-	-	-			

5380. Spreckels ditch at Haipuaena weir, near Huelo

Location.--Lat 20°51'15", long 156°11'25", on left bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.7 (revised) miles west of Keanae, 3.3 (revised) miles southeast of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1960. 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. bench mark). Apr. 29, 1922, to Feb. 19, 1930, at same site at different datum. Feb. 20, 1930, to Oct. 25, 1935, at site 100 ft upstream at different datum.

Average discharge.--37 years (1922-29, 1930-60), 13.4 mgd (20.7 cfs).

Extremes.--1922-60: Maximum daily discharge, 97 mgd (150 cfs) Feb. 10, 1955, Feb. 18, 1956; no flow at times.

Remarks.--Flow regulated by gates and spillways. Spreckels ditch diverts water from all streams between Nuuaillua and Kailua Streams, above Koolau ditch east of Puohokamoa and below Koolau ditch west of 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.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	447	322	181	191	341	532	262	363	212	97.5	51.0	147	3,140
1952	210	292	75.4	102	370	170	141	211	488	429	421	398	3,310
1953	443	295	298	547	650	483	10.1	136	340	109	464	308	4,080
1954	237	398	42.9	131	401	411	183	96.7	587	333	969	490	4,280
1955	909	758	449	159	121	1,050	469	807	519	662	718	258	6,880
1956	588	632	266	179	217	131	308	688	299	614	794	787	5,500
1957	475	661	118	448	141	166	250	476	197	640	342	70.6	3,980
1958	534	815	251	280	441	921	353	220	384	289	707	420	5,600
1959	931	775	311	638	460	534	287	633	446	582	491	148	6,240
1960	358	549	301	60.0	282	724	411	341	574	679	515	535	5,330

5410. Koolau ditch at Haipuaena, near Huelo

Location.--Lat 20°51'17" (revised), long 156°11'19" (revised), on right bank 1,000 ft upstream from intake at Puohokamoa Stream, 3.3 miles southeast of Kailua, and 4.5 miles southeast of Huelo Church.

Records available.--April 1932 to June 1960.

Gage.--Duplex water-stage recorder and Parshall flume. Altitude of gage is 1,240 ft (from topographic map). Prior to Mar. 21, 1933, at datum 1.94 ft lower. Mar. 21, 1933, to Mar. 20, 1935, at datum 0.25 ft lower than present datum.

Average discharge.--28 years (1932-60), 79.9 mgd (124 cfs).

Extremes.--1932-60: Maximum daily discharge, 193 mgd (299 cfs) Jan. 17, 1946; no flow at times.

Remarks.--Diversion by gates and spillways above and below station. Water used for domestic supply and irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2,960	2,110	1,580	1,700	2,310	3,240	2,620	2,740	3,190	1,980	1,100	1,380	26,910
1952	1,900	2,630	1,320	2,800	3,360	2,920	2,820	2,520	1,640	2,680	3,370	3,900	31,360
1953	2,810	1,610	1,880	2,820	2,870	3,180	747	1,260	2,280	958	2,290	1,670	25,380
1954	1,590	1,850	637	908	1,780	2,180	1,210	926	2,760	1,700	4,010	2,790	22,340
1955	4,230	4,370	2,510	1,330	1,040	3,950	2,890	3,400	2,980	3,200	3,800	1,580	35,280
1956	2,730	3,500	1,930	1,720	1,730	1,280	2,020	3,580	2,820	3,770	4,010	4,040	33,130
1957	2,550	3,380	1,310	2,430	1,290	1,860	1,980	1,800	1,860	3,230	2,370	827	24,790
1958	2,560	3,900	1,870	1,930	2,530	3,950	2,220	1,090	1,020	1,540	3,470	2,420	28,500
1959	4,000	3,870	2,310	3,170	2,800	2,310	1,860	2,940	2,850	3,110	2,610	1,310	33,140
1960	1,970	2,970	1,790	913	1,700	3,970	2,990	2,160	2,760	3,710	2,640	2,010	29,580

5415. Manuel Luis ditch at Puohokamoa Gulch, near Huelo

Location.--Lat 20°51'48" (revised), long 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.2 (revised) miles west of Keanae, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Records available.--December 1917 to June 1960.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (from topographic map).

Average discharge.--41 years (1918-24, 1925-60), 5.86 mgd (9.07 cfs).

Extremes.--1917-60: Maximum daily discharge, 92 mgd (143 cfs) Jan. 3, 1927; no flow at times.

Remarks.--Flow regulated by gates. Ditch is extension of Center ditch and picks up water from streams between the Kolea and Waikamoi Streams. Water used for irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	155	130	69.0	45.0	246	621	143	184	190	27.3	17.6	71.3	1,900
1952	108	208	57.1	59.1	179	229	147	112	327	80.6	130	143	1,780
1953	153	63.3	79.8	243	278	204	11.2	28.4	84.3	11.3	133	36.8	1,330
1954	41.0	88.1	8.06	29.6	47.8	55.2	48.0	32.8	128	84.1	304	57.3	924
1955	203	183	71.6	22.1	32.2	614	145	559	192	189	77.8	38.2	2,330
1956	126	157	60.3	46.0	44.8	42.4	93.6	535	138	291	211	176	1,920
1957	97.6	226	21.0	195	26.9	58.5	57.3	33.7	34.7	255	169	9.72	1,490
1958	95.6	380	55.0	98.5	351	543	138	72.8	116	64.8	213	124	2,260
1959	326	311	84.4	287	168	163	125	289	123	285	85.0	35.8	2,280
1960	74.8	210	49.8	32.8	75.5	274	162	295	322	409	103	47.0	2,060

5450. Puohokamoa Stream above Spreckels ditch near Huelo

Location.--Lat 20°51'21" (revised), long 156°11'29" (revised), on right bank 150 ft up-stream from Spreckels ditch inflow and trail crossing, 3.2 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Drainage area.--2.31 sq mi.

Records available.--June 1913 to June 1960. Prior to July 1954, published as Puohokamoa Stream near Huelo, December 1910 to May 1913 at site 200 ft downstream; records not equivalent due to inflow of Spreckels ditch. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,322.04 ft above mean sea level (East Maui Irrigation Co. bench mark). Prior to May 31, 1934, water-stage recorder at site 130 ft downstream at different datum.

Average discharge.--47 years (1913-60), 21.7 mgd (33.6 cfs).

Extremes.--1913-60: Maximum discharge, 2,360 mgd (3,650 cfs) Apr. 16, 1960 (gage height, 9.31 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum, 0.4 mgd (0.6 cfs) Oct. 26, 1917.

Remarks.--Kula pipeline diverts small amount of water above station at altitude 4,300 ft, for domestic supply.

Revisions.--Some periods for the fiscal years 1920, 1930, and 1933 were revised in WSP 1719; the resulting revised records as summarized herewith supersede those published in WSP 1319.

Month	Mean		Million gallons	Minimum day	
	Mgd	Cfs		Mgd	Cfs
December 1919.....	13.7	21.2	423	-	-
Calendar year 1919.....	12.6	19.5	4,590	0	-
Fiscal year 1919-20.....	13.1	20.3	4,780	0.7	1.1
August 1929.....	12.7	19.6	393	-	-
September.....	3.58	5.54	107	-	-
October.....	10.5	16.2	324	-	-
November.....	18.9	29.2	566	-	-
Calendar year 1929.....	23.0	35.6	8,390	-	-
Fiscal year 1929-30.....	27.8	42.7	10,060	1.0	1.6
October 1932.....	1.97	3.05	61.1	-	-
November.....	11.1	17.2	333	-	-
Calendar year 1932.....	22.7	35.1	8,300	-	-
Fiscal year 1932-33.....	14.7	22.7	5,370	1.1	1.7

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	32.2	25.8	13.0	10.9	36.8	59.1	31.1	41.0	21.7	11.4	5.51	10.8	24.9
1952	15.2	31.4	8.79	10.2	36.1	26.3	28.9	50.1	26.3	26.9	30.2	26.0	
1953	32.3	14.8	16.4	39.8	54.3	37.9	25.7	6.47	19.6	4.92	31.3	11.5	22.7
1954	10.3	17.3	2.44	7.50	17.9	15.8	11.0	6.39	34.2	26.0	61.4	18.6	19.2
1955	52.1	43.6	19.6	6.24	8.45	122	33.4	83.1	43.6	47.5	34.2	9.82	41.9
1956	30.2	33.7	11.3	10.6	10.6	10.4	18.3	123	17.3	55.7	46.4	50.1	34.3
1957	28.2	47.5	7.12	34.7	6.78	10.0	11.6	47.7	9.08	54.0	28.6	3.81	24.0
1958	24.8	80.0	11.1	19.3	55.7	98.7	51.7	18.1	24.0	12.1	37.5	22.1	36.4
1959	66.4	59.3	16.6	54.0	30.5	29.4	22.6	29.6	56.3	26.8	7.46	39.6	
1960	17.3	32.0	13.5	8.91	16.1	53.2	30.0	74.0	37.3	77.1	29.9	22.9	34.2

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	20.8	16.7	8.42	7.07	23.8	38.2	20.1	26.5	14.0	7.35	3.56	6.96	16.1
1952	9.81	20.3	5.69	6.58	23.3	17.0	13.5	18.7	32.4	17.0	17.4	19.5	16.8
1953	20.9	9.57	16.7	25.7	37.9	24.5	16.6	6.18	19.7	3.18	20.0	7.29	14.7
1954	6.63	11.2	1.58	4.85	11.6	10.2	7.09	4.13	22.1	16.8	39.7	12.0	12.4
1955	33.7	28.2	12.7	4.03	5.46	78.8	21.6	53.7	28.2	30.7	22.1	6.35	27.1
1956	19.5	21.8	7.30	6.86	6.85	6.69	11.8	79.5	11.2	36.0	30.0	32.4	22.2
1957	18.2	30.7	4.60	22.4	4.38	6.46	7.49	30.8	5.87	34.9	18.5	2.46	15.5
1958	18.0	51.7	7.15	12.5	34.7	65.8	20.5	11.7	15.5	7.79	24.1	14.3	23.5
1959	42.4	38.3	10.7	34.9	19.7	19.0	14.6	50.7	19.1	36.4	17.3	4.82	25.6
1960	11.2	20.7	8.73	5.76	10.4	34.4	19.4	47.8	24.1	49.8	19.3	14.8	22.1

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	644	517	253	219	715	1,180	623	741	434	220	110	209	5,860
1952	304	630	170	204	705	526	417	541	1,010	509	540	584	6,140
1953	647	297	318	796	1,050	760	51.6	117	392	95.4	625	219	5,370
1954	205	346	47.4	150	347	315	220	116	685	505	1,230	361	4,530
1955	1,050	874	380	125	164	2,440	669	1,500	874	922	684	191	9,870
1956	606	676	219	213	206	208	365	2,310	347	1,080	929	971	8,130
1957	564	950	138	693	131	200	232	863	182	1,050	573	73.8	5,650
1958	497	1,600	214	389	1,040	1,980	637	326	482	234	748	430	8,580
1959	1,330	1,190	322	1,080	590	590	453	1,420	591	1,030	536	144	9,340
1960	348	642	262	379	312	1,070	602	1,390	747	1,490	597	443	8,080

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year			
		Momentary maximum discharge			Minimum day			Mean		Million gallons	Mean		Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs				
1950	-	760	1,180	Feb. 18, 1951	1.56	2.41	-	-	5,860	24.6	38.1	8,980			
1951	1219	1,210	1,870	Feb. 19, 1952	1.20	1.86	16.1	24.9	6,140	13.3	20.6	4,870			
1952	1249	790	1,220	Mar. 4, 1953	.58	.90	14.7	22.7	5,370	20.4	31.6	7,470			
1953	1289	506	783	Apr. 18, 1954	.58	.90	12.4	19.2	4,530	7.98	12.3	2,910			
1954	1349	1,060	1,640	Dec. 10, 1954	1.11	1.72	27.1	41.9	9,870	22.3	34.5	8,150			
1955	1399									19.1	29.6	6,970			
1956	1499	1,310	2,030	Feb. 25, 1956	1.28	1.98	22.2	34.3	8,130	23.7	36.7	8,680			
1957	1569	850	1,320	Oct. 17, 1956	1.37	2.12	15.5	24.0	5,650	23.8	36.8	8,690			
1958	1569	940	1,450	Nov. 22, 1957	1.5	2.3	23.5	36.4	8,580	21.8	33.7	7,960			
1959	1639	895	1,380	Feb. 21, 1959	2.25	3.48	25.6	39.6	9,340	19.3	29.9	7,050			
1960	1719	2,360	3,650	Apr. 16, 1960	1.50	2.32	22.1	34.2	8,080	-	-	-			

5528. Waikamoi Stream above reservoir at Kula pipeline intake, near Olinda

Location.--Lat 20°48'25", long 156°14'00", on left bank 1,500 ft upstream from Kula pipeline at Waikamoi intake and 3.0 miles east of Olinda.

Drainage area.--2.49 sq mi.

Records available.--July 1954 to June 1960. Prior to July 1956, published as Waikamoi Stream above reservoir at Kula pipeline intake, near Olinda.

Gage.--Water-stage recorder and concrete control. Datum of gage is 4,487 ft above mean sea level (levels by Maui County Waterworks).

Average discharge.--6 years (1954-60), 1.93 mgd (2.99 cfs).

Extremes.--1953-60: Maximum discharge, 1,680 mgd (2,600 cfs) Dec. 10, 1954 (gage height, 8.16 ft), from rating curve extended above 6.4 mgd on basis of computation of flow over dam; no flow at times.

Remarks.--No diversion above station. All low water diverted into Olinda Reservoir and Kula pipeline downstream from gage.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	0.419	0.050	0.198	0.557	0.181	1.59	0.070	1.56	1.01	1.44	0.258	-
1955	2.97	.964	.805	.186	.158	36.4	1.25	9.31	2.24	1.52	.959	.172	4.75
1956	1.47	1.26	.118	.144	.186	8.43	8.42	15.2	.128	2.24	1.12	2.10	3.20
1957	.993	1.13	.063	1.21	.141	.149	.501	6.64	.436	2.71	.956	.070	1.21
1958	.673	6.87	.121	.271	2.27	6.00	2.03	.986	1.58	.204	.922	.215	1.87
1959	3.30	6.95	.336	4.39	.679	.897	12.7	5.48	.715	2.94	1.10	.050	3.31
1960	.362	1.23	.192	.176	.836	7.72	.809	28.6	1.07	2.34	.662	.574	3.61

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	0.271	0.032	0.128	0.360	0.117	1.03	0.045	1.01	0.655	0.928	0.167	-
1955	1.92	.623	.520	.120	.102	23.5	.810	6.02	1.45	.982	.607	.111	3.07
1956	.950	.816	.076	.093	.120	5.45	4.15	9.83	.083	1.45	.725	1.36	2.07
1957	.642	.732	.041	.785	.091	.096	.324	4.29	.282	1.75	.618	.045	.783
1958	.435	4.44	.078	.175	1.47	3.88	1.31	.637	1.02	.132	.596	.139	1.21
1959	2.13	4.49	.217	2.84	.439	.580	8.24	3.54	.462	1.90	.712	.032	2.14
1960	.234	.797	.124	.114	.540	4.99	.523	18.5	.692	1.51	.428	.371	2.33

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	8.40	0.96	3.97	10.8	3.63	31.9	1.26	31.3	19.6	28.8	5.00	-
1955	59.4	19.3	15.6	3.71	3.05	728	25.1	169	45.1	29.5	18.8	3.34	1,120
1956	29.4	25.3	2.27	2.87	3.60	169	129	285	2.58	43.5	22.5	40.9	756
1957	19.9	22.7	1.23	24.3	2.74	2.98	10.0	120	8.74	52.5	19.2	1.34	286
1958	13.5	138	2.33	5.42	44.2	120	40.5	17.8	31.8	3.97	18.5	4.16	440
1959	65.9	139	6.52	88.0	13.2	18.0	255	99.1	14.3	57.0	22.1	.96	779
1960	7.25	24.7	3.72	3.52	16.2	155	16.2	537	21.4	45.3	13.3	11.1	855

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Date	Mgd	Cfs	Date	Mgd	Cfs	Million gallons
1954	1449	80	124	Jan. 5, 1954	-	-	-	-	-	-	2.59	4.01	947
1955	1449	1,680	2,600	Dec. 10, 1954	0.01	0.02	3.07	4.75	1,120	1.43	2.21	523	
1956	1449	365	565	Jan. 12, 1956	0	0	2.07	3.20	756	1.63	2.52	597	
1957	1569	235	364	Feb. 6, 1957	.02	.03	.783	1.21	286	1.47	2.27	535	
1958	1569	325	503	Aug. 24, 1957	0	0	1.21	1.87	440	1.23	1.90	447	
1959	1639	1,210	1,870	Jan. 17, 1959	.01	.02	2.14	3.31	779	1.80	2.79	659	
1960	1719	1,260	1,950	Feb. 12, 1960	.02	.03	2.33	3.61	855	-	-	-	

ISLAND OF MAUI

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5650. Kaaiea Gulch near Huelo

Location--Lat 20°52'02", long 156°12'17", on left bank 700 ft upstream from Hamakua ditch crossing, 2 miles southeast of Kailua, 3.2 miles southeast of Huelo, and 3.5 miles west of Keanae.

Drainage area--0.58 sq mi.

Records available--December 1921 to June 1960. Prior to July 1958, published as Kaaiea Stream near Huelo.

Gage--Water-stage recorder and concrete weir. Altitude of gage is 1,310 ft (from topographic map). Prior to Aug. 1, 1934, water-stage recorder at site 40 ft downstream at different datum.

Average discharge--38 years (1922-60), 4.43 mgd (6.85 cfs).

Extremes--1921-60: Maximum discharge, 2,300 mgd (3,560 cfs) Nov. 18, 1930 (gage height, 7.93 ft, site and datum then in use), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.22 mgd (0.34 cfs) June 1, 1945.

Remarks--No diversion above station. Below station all low water diverted into Wailoa ditch for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	7.71	4.84	2.92	2.44	10.2	12.2	5.85	7.88	6.45	2.49	1.45	2.77	5.80
1952	3.53	7.89	2.23	3.65	8.90	7.52	6.02	6.25	10.7	5.79	8.24	10.8	6.61
1953	8.00	4.01	4.58	10.3	11.2	8.34	.687	3.14	6.17	1.36	8.06	3.39	5.71
1954	3.62	4.86	.803	1.87	5.00	5.25	2.20	2.63	7.33	4.33	14.4	5.63	4.86
1955	11.0	11.2	5.03	1.76	2.61	17.3	7.60	15.9	8.03	12.1	8.22	3.23	8.65
1956	7.66	7.54	3.05	2.85	3.08	2.04	4.30	24.3	4.15	11.3	11.7	10.5	7.63
1957	6.67	10.7	1.72	11.4	2.23	3.22	3.26	9.76	2.61	11.5	6.16	.951	5.83
1958	6.75	16.6	2.97	4.55	14.9	16.4	4.87	4.04	4.21	3.53	8.53	5.76	7.90
1959	12.0	13.4	3.71	11.7	7.61	8.03	5.03	11.9	6.17	12.9	4.77	2.06	6.26
1960	4.10	7.83	3.30	2.94	3.59	6.46	6.62	10.1	9.44	18.3	7.07	4.64	7.18

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	4.98	3.13	1.89	1.58	6.60	7.89	3.78	5.09	4.17	1.61	0.934	1.79	3.62
1952	2.28	5.10	1.44	2.36	5.69	4.86	3.89	4.04	6.91	3.74	4.03	6.97	4.27
1953	5.17	2.59	2.96	6.68	7.23	5.39	.444	2.03	3.34	.878	5.21	2.19	3.69
1954	2.34	3.14	.519	1.21	3.23	3.39	1.42	1.70	4.74	2.80	9.29	3.64	3.14
1955	7.11	7.25	3.25	1.14	1.69	11.2	4.91	10.3	5.19	7.61	5.31	2.09	5.59
1956	4.95	4.87	1.97	1.84	1.99	1.32	2.78	15.7	2.68	7.29	7.58	6.81	4.93
1957	4.31	6.93	1.11	7.36	1.44	2.08	2.11	6.31	1.69	7.41	3.98	.602	3.77
1958	4.36	10.7	1.92	2.94	9.64	10.6	3.15	2.61	2.72	2.28	5.51	3.72	5.04
1959	7.76	8.67	2.40	7.55	4.92	5.19	3.25	7.68	3.99	8.31	3.08	1.33	5.34
1960	2.65	5.06	2.13	1.90	2.32	5.47	4.28	6.52	6.10	11.8	4.57	3.00	4.64

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	155	97.1	56.8	49.0	198	245	117	142	129	48.2	29.0	53.8	1,320
1952	70.5	158	43.2	73.2	171	151	121	117	214	112	125	209	1,560
1953	160	80.2	88.8	207	217	167	13.8	56.8	104	26.3	162	65.8	1,350
1954	72.7	97.3	15.6	37.5	96.9	105	44.0	47.7	147	83.9	288	109	1,140
1955	220	225	97.4	35.2	50.6	347	152	289	161	234	164	62.6	2,040
1956	153	151	59.2	57.1	59.6	41.0	86.3	458	82.9	219	235	204	1,800
1957	133	215	33.3	22.8	43.3	64.5	65.6	177	52.3	222	123	18.1	1,380
1958	135	331	57.5	91.1	289	328	97.7	73.0	84.2	68.5	171	112	1,840
1959	240	269	72.0	234	148	161	101	215	124	249	95.5	39.9	1,950
1960	82.0	157	63.9	59.0	69.8	169	133	189	189	355	142	90.1	1,700

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30							Calendar year			
		Momentary maximum discharge		Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	-	-	-
1951	1219	240	371	Feb. 18, 1951	0.42	0.65	3.62	5.61	1,320	5.34	8.26	1,950
1952	1249	202	313	Dec. 11, 1951	.39	.60	4.27	6.61	1,560	3.25	5.03	1,190
1953	1289	143	221	July 15, 1952	.27	.42	3.69	5.71	1,350	4.97	7.89	1,820
1954	1349	143	221	Mar. 5, 1954	.27	.42	3.14	4.66	1,140	2.34	3.62	854
1955	1399	251	388	Apr. 26, 1955	.39	.60	5.59	8.65	2,040	4.34	6.71	1,580
1956	1449	460	712	Feb. 25, 1956	.36	.56	4.93	7.63	1,800	5.47	8.46	2,000
1957	1569	495	766	Oct. 17, 1956	.35	.54	3.77	5.83	1,380	5.18	8.01	1,890
1958	1569	354	548	Nov. 22, 1957	.39	.60	5.04	7.80	1,840	4.74	7.33	1,730
1959	1659	260	402	Oct. 22, 1958	.50	.77	5.34	8.26	1,950	3.91	6.05	1,430
1960	1719	766	1,190	Apr. 16, 1960	.42	.65	4.64	7.18	1,700	-	-	-

5660. Oopuola 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 south-east of Huelo, and 3.8 miles west of Keanae.

Drainage area.--0.2 sq mi, approximately.

Records available.--August 1930 to December 1957. December 1910 to June 1915, at site half a mile downstream; records not equivalent.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,205 ft (by plane-table traverse).

Average discharge.--26 years (1931-57), 1.75 mgd (2.71 cfs).

Extremes.--1930-57: 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.--No diversion above station. Water used for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	5.22	2.00	1.33	1.06	4.64	4.33	2.04	3.08	2.82	0.893	0.503	1.12	2.24
1952	1.14	3.17	.862	1.24	3.23	3.45	2.61	2.66	4.08	1.70	2.54	3.95	2.55
1953	5.50	1.76	2.05	3.93	4.63	2.80	.271	1.33	2.31	.523	3.76	1.34	2.35
1954	1.33	1.81	.265	.713	1.96	2.14	.956	1.51	3.62	1.42	5.96	1.89	1.98
1955	4.10	3.96	1.83	.727	.921	6.16	3.09	7.91	3.98	4.64	2.79	1.29	3.42
1956	2.80	2.72	1.15	1.17	1.26	1.03	1.96	10.5	1.56	4.64	4.70	3.86	3.08
1957	2.75	3.82	.681	6.71	1.01	1.35	1.59	4.53	1.09	4.89	2.15	.345	2.57
1958	2.49	7.25	1.18	2.26	9.41	-	-	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.08	1.29	0.859	0.687	3.00	2.80	1.32	1.99	1.82	0.577	0.325	0.725	1.45
1952	1.740	2.05	.557	.799	2.09	2.23	1.69	1.72	2.64	1.10	1.64	2.55	1.65
1953	2.26	1.14	1.31	2.54	2.99	1.81	.175	.858	1.49	.338	2.43	.863	1.52
1954	.896	1.17	.171	.461	1.27	1.38	.618	.976	2.34	.918	3.85	1.22	1.28
1955	2.56	2.56	1.18	.470	.595	3.98	2.00	5.11	2.57	3.00	1.80	.832	2.21
1956	1.81	1.76	.743	.755	.816	.663	1.28	6.80	1.01	3.00	3.04	2.51	1.99
1957	1.78	2.47	.440	4.34	.656	.870	1.03	2.93	.704	3.16	1.59	.223	1.66
1958	1.61	4.69	.763	1.46	6.08	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	64.3	40.0	25.8	21.3	90.0	86.7	41.0	55.6	56.4	17.3	10.1	21.7	530
1952	23.0	63.4	16.7	24.8	62.6	69.0	52.3	49.8	81.7	33.1	50.8	76.4	604
1953	70.0	35.3	39.2	78.8	89.6	56.0	5.42	24.0	46.2	10.1	75.2	25.9	556
1954	27.8	36.3	5.14	14.3	38.1	42.8	19.2	27.3	72.7	27.6	120	36.5	468
1955	82.1	79.4	35.4	14.6	17.9	125	62.0	145	79.6	90.0	55.9	25.0	808
1956	56.0	54.7	22.3	23.4	24.5	20.6	39.6	197	31.4	89.9	94.2	75.4	729
1957	55.0	76.5	13.2	135	19.7	27.0	32.1	82.1	21.8	94.9	43.0	6.69	607
1958	49.8	146	22.9	45.1	182	-	-	-	-	-	-	-	-

Summary of yearly discharge

Summary of yearly discharge												
		Fiscal year ending June 30							Calendar year			
Year	WSP	Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1950	-	-	-	-	-	-	-	-	-	2.21	3.42	807
1951	1219	136	210	Nov. 26, 1950 ^a	0.16	0.25	1.45	2.24	530	1.26	1.95	462
1952	1249	181	280	Dec. 11, 1951	.14	.22	1.65	2.55	604	1.95	3.02	713
1953	1289	191	296	Mar. 7, 1953	1.10	.16	1.52	2.35	558	.962	1.49	351
1954	1349	262	405	Mar. 2, 1954	.10	.16	1.28	1.98	468	1.80	2.79	656
1955	1399	288	446	Feb. 7, 1955	.14	.22	2.21	3.42	809	1.80	2.79	657
1956	1449	288	446	Feb. 25, 1956	.16	.25	1.99	3.08	729	2.33	3.61	854
1957	1569	338	523	Oct. 17, 1956	.14	.22	1.66	2.57	607	-	-	-
1958	1569	305	472	Nov. 22, 1957	-	-	-	-	-	-	-	-

† Corrected.

a Probably.

5700. Nailiilihaele Stream near Huelo

Location.--Lat 20°52'28", long 156°13'06", on left bank 200 ft upstream from Wailoa ditch intake, 1,000 ft upstream from New Hamakua ditch trail, 1.5 miles south of Kailua, and 2.4 miles southeast of Huelo Church.

Drainage area.--3.57 sq mi.

Records available.--December 1910 to December 1911, October 1913 to June 1918, August 1919 to June 1960. July to December 1912, at site 700 ft downstream; records not equivalent due to diversion. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,205 ft above mean sea level (by vertical angles). Dec. 9, 1910, to Dec. 31, 1911, staff gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 20, 1922, at present site at datum 0.50 ft higher.

Average discharge.--43 years (1914-18, 1920-24, 1925-60), 24.9 mgd (38.5 cfs).

Extremes.--1910-18, 1919-60: Maximum discharge, 4,140 mgd (6,410 cfs) Nov. 18, 1930 (gage height, 10.74 ft), from rating curve extended above 400 mgd; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	32.6	30.5	16.7	14.0	52.0	74.0	36.1	52.9	32.8	14.8	8.08	14.1	31.4
1952	18.6	39.5	13.2	15.8	47.2	37.6	30.5	35.7	61.9	35.6	33.9	50.6	34.7
1953	43.2	22.7	24.0	54.3	64.7	49.5	5.06	11.9	27.4	7.98	42.4	17.8	31.1
1954	17.0	24.4	4.52	9.44	26.6	27.1	14.1	12.3	41.2	27.1	80.9	29.4	26.3
1955	61.9	60.3	24.4	9.86	13.6	119	45.6	97.0	52.1	68.5	46.6	17.0	51.2
1956	40.1	42.1	17.3	16.6	14.6	13.0	25.7	147	22.7	67.6	62.4	62.0	43.8
1957	35.6	55.1	10.5	51.5	11.0	14.3	17.9	55.2	15.5	60.0	33.9	5.01	30.3
1958	31.1	84.9	16.2	25.1	80.5	117	36.5	26.8	27.9	18.7	51.7	35.6	45.3
1959	79.8	82.6	22.7	71.9	47.3	48.6	35.1	79.1	38.4	74.3	33.4	11.9	51.8
1960	23.5	45.3	18.4	17.2	22.1	59.3	43.5	74.9	51.2	104	38.2	26.6	43.5

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	21.1	19.7	10.8	9.03	33.6	47.8	23.3	34.2	21.2	9.59	5.22	9.12	20.3
1952	12.0	25.5	8.50	10.1	30.5	24.3	19.7	21.8	40.0	21.7	21.9	32.7	22.4
1953	27.9	14.7	15.5	35.1	41.8	32.0	3.27	7.68	17.7	5.16	27.4	11.5	20.1
1954	11.0	15.8	2.92	6.10	17.2	17.5	9.12	7.94	28.6	17.5	52.3	19.0	17.0
1955	40.0	39.0	15.8	6.37	8.76	76.9	29.5	62.7	33.7	44.3	30.1	11.0	33.1
1956	25.9	27.2	11.2	10.7	9.44	8.40	16.6	95.2	14.7	43.7	40.3	40.1	28.3
1957	23.0	35.6	6.81	33.3	7.12	9.24	11.6	35.7	10.0	38.8	21.9	3.24	19.6
1958	20.1	54.9	10.5	16.2	52.0	75.4	23.6	17.3	18.0	12.1	33.4	23.0	29.9
1959	51.6	53.4	14.7	46.5	30.6	31.4	21.4	51.1	24.8	48.0	21.6	7.67	33.5
1960	15.2	29.3	11.9	11.1	14.3	38.3	28.1	48.4	33.1	67.1	24.7	17.2	28.1

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	655	610	324	280	1,010	1,480	724	959	656	286	162	274	7,420
1952	372	792	255	313	915	752	611	632	1,240	651	679	962	8,190
1953	865	456	464	1,090	1,260	992	102	215	549	155	849	345	7,340
1954	342	469	87.7	189	517	543	283	222	826	526	1,620	569	6,210
1955	1,240	1,210	475	197	263	2,380	915	1,750	1,040	1,330	933	330	12,060
1956	804	842	337	332	283	260	514	2,760	456	1,310	1,250	1,200	10,350
1957	712	1,100	204	1,050	214	286	359	1,000	310	1,160	680	97.0	7,150
1958	622	700	314	503	1,550	2,340	732	484	559	362	1,040	691	10,910
1959	1,600	1,660	442	1,440	917	975	662	1,430	770	1,440	670	230	12,240
1960	471	908	358	343	430	1,190	872	1,400	1,030	2,010	767	517	10,300

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30											Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean			Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons	
1950	-	-	-	-	-	-	-	-	-	-	-	29.1	45.0	-	10,610
1951	1569	910	1,410	Feb. 18, 1951	2.3	3.6	20.3	31.4	7	420	17.7	27.4	45.0	6,460	
1952	1569	910	1,410	Feb. 19, 1952	2.3	3.6	22.4	34.7	8	190	27.1	41.9	9,920		
1953	1569	790	1,220	Mar. 7, 1953	1.64	2.54	20.1	31.1	7	340	12.0	18.6	4,380		
1954	1569	680	1,050	Feb. 26, 1954	1.64	2.54	17.0	26.3	6	210	26.9	41.6	9,810		
1955	1569	990	1,530	Feb. 26, 1955	2.5	3.9	33.1	51.2	12	060	25.1	38.8	9,160		
1956	1569	2,490	3,850	Feb. 25, 1956	2.5	3.9	28.3	43.8	10	350	30.2	46.7	11,040		
1957	1569	1,770	2,740	Oct. 15, 1956	2.3	3.6	19.6	30.3	7	150	29.2	45.2	10,640		
1958	1569	1,450	2,240	Nov. 22, 1957	2.9	4.5	29.9	46.3	10	910	29.9	46.3	10,910		
1959	1639	1,160	1,790	Oct. 22, 1958	3.7	5.7	33.5	51.8	12	240	24.4	37.8	8,900		
1960	1719	2,840	4,390	Apr. 16, 1960	2.74	4.24	28.1	43.5	10	300	-	-	-		

ISLAND OF MAUI

5770. Kailua Stream near Huelo

Location--Lat 20°52'36" (revised), long 156°13'25", on left bank just upstream from Walloa ditch intake, 1.2 miles southwest of Kailua and 2.5 miles south of Huelo.

Drainage area--2.41 sq mi.

Records available--December 1910 to December 1911, June 1913 to June 1918, July 1919 to March 1958. July 1912 to May 1913 at site 1 mile downstream, records not equivalent.

Gage--Water-stage recorder and masonry 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--39 years (1916-17, 1919-57), 18.9 mgd (29.2 cfs).

Extremes--1910-11, 1913-18, 1919-57: Maximum discharge, about 5,900 mgd (about 9,100 cfs) Feb. 1, 1922 (gage height, 10.5 ft, estimated from floodmarks), from rating curve extended above 650 mgd by logarithmic plotting; minimum, 0.07 mgd (0.11 cfs) June 27, 1921.

Remarks--No diversion above station. Water used for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	26.6	31.7	9.55	8.43	43.6	66.7	36.7	45.8	18.7	10.4	4.08	7.01	25.7
1952	9.18	27.2	7.64	9.24	32.6	+25.5	21.4	23.5	54.8	21.4	22.0	24.8	+25.2
1953	29.7	11.4	13.0	33.9	861.7	41.9	2.65	4.83	22.7	5.54	3.06	8.87	22.3
1954	7.63	12.8	1.78	5.17	16.1	14.3	14.6	6.25	34.0	24.3	54.8	17.0	17.5
1955	53.2	36.7	14.5	5.29	6.78	161	36.1	97.9	43.3	44.6	30.3	7.89	44.6
1956	27.9	29.4	8.42	8.93	6.67	15.9	23.7	203	11.6	52.9	33.4	46.1	38.1
1957	23.7	36.5	4.97	30.0	4.86	7.60	10.5	51.4	9.89	56.2	24.6	2.68	21.7
1958	17.5	91.1	8.11	12.0	52.0	104	33.6	18.7	-	-	-	-	-

† Corrected.

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	17.2	20.5	6.17	5.45	28.2	43.1	23.7	29.6	12.1	6.69	2.64	4.53	16.6
1952	5.93	17.6	4.94	5.97	21.1	+16.5	13.8	19.2	35.4	13.8	14.2	16.0	+15.0
1953	19.2	7.35	8.39	21.9	39.9	27.1	1.71	3.12	14.7	2.29	19.8	5.73	14.4
1954	4.93	8.27	1.15	3.34	10.4	9.27	9.43	4.04	22.0	15.7	35.4	11.0	11.3
1955	34.4	23.7	9.40	3.42	4.38	104	23.3	63.3	28.0	28.8	19.6	5.10	28.8
1956	18.0	19.0	5.44	5.77	4.31	10.3	15.3	131	7.48	34.2	21.6	29.8	24.6
1957	15.3	25.6	3.21	19.4	5.14	4.91	6.78	33.2	6.39	56.3	15.9	1.73	14.0
1958	11.3	58.9	5.24	7.75	33.6	67.4	21.7	12.1	-	-	-	-	-

† Corrected

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	534	635	185	169	845	1,340	736	829	374	201	81.8	136	6,070
1952	184	545	148	185	633	511	427	442	1,100	412	441	479	5,510
1953	595	228	252	678	2,000	841	52.9	87.5	457	68.8	614	172	5,250
1954	153	256	34.4	104	313	287	292	113	681	470	1,100	330	4,130
1955	1,070	734	282	106	131	3,210	721	1,770	867	865	609	153	10,520
1956	557	590	163	179	129	318	473	3,790	232	1,030	671	893	9,020
1957	474	732	96.3	601	94.2	152	210	930	198	1,090	492	51.9	5,120
1958	352	1,830	157	240	1,010	2,090	672	340	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons.	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	26.3	40.7	9,600	
1951	1219	1,120	1,730	Feb. 18, 1951	1.10	1.70	16.6	25.7	6,070	12.5	19.3	4,560	
1952	1249	2,390	3,700	Feb. 19, 1952	1.00	1.55	15.0	23.2	5,510	19.4	30.0	7,100	
1953	1289	1,460	2,260	Mar. 4, 1953	.79	1.22	14.4	22.3	5,250	7.12	11.0	2,600	
1954	1349	750	1,160	Feb. 26, 1954	.60	.93	11.3	17.5	4,130	23.3	36.1	8,520	
1955	1399	2,850	4,380	Dec. 10, 1954	.93	1.44	28.8	44.6	10,520	19.0	29.4	6,920	
1956	1449	5,470	8,460	Feb. 25, 1956	1.00	1.55	24.6	38.1	9,020	25.2	39.0	9,240	
1957	1569	1,860	2,890	July 18, 1956	1.20	1.86	14.0	21.7	5,120	23.7	36.7	8,650	
1958	1569	2,170	3,360	Aug. 24, 1957	-	-	-	-	-	-	-	-	

† Corrected.

5850. 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.

Drainage area.--1.34 sq mi.

Records available.--December 1910 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,219.42 ft above mean sea level (East Maui Irrigation Co. bench mark). Prior to June 20, 1914, staff gage at site 180 ft downstream at different datum. June 20, 1914, to Oct. 24, 1933, water-stage recorder at site 80 ft downstream at datum 4.43 ft lower.

Average discharge.--49 years (1911-60), 7.98 mgd (12.3 cfs).

Extremes.--1910-60: 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.--No diversion above station. Water used for irrigation in central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	9.50	10.5	3.50	2.66	17.2	22.6	9.81	15.8	9.48	4.38	1.86	2.00	9.08
1952	1.98	8.32	2.83	2.48	9.27	12.0	10.1	8.08	19.2	7.86	9.41	13.3	8.74
1953	13.9	5.23	4.98	11.1	20.1	15.3	2.09	1.69	10.1	1.98	11.2	4.01	8.54
1954	3.05	4.75	1.31	1.19	3.82	6.84	4.41	4.69	11.1	6.50	22.0	9.16	6.59
1955	18.3	16.6	6.50	2.51	2.74	41.6	16.1	39.3	18.4	18.3	14.5	5.06	16.6
1956	8.80	11.2	4.92	4.07	2.58	3.25	7.10	85.7	7.50	22.6	15.2	19.2	15.6
1957	10.7	16.2	2.98	14.4	3.09	5.03	4.08	17.0	3.59	18.4	12.0	1.53	8.90
1958	4.92	20.3	5.57	8.56	21.5	37.4	10.8	8.09	7.41	5.09	11.9	8.53	12.2
1959	21.7	25.2	6.03	18.3	13.2	14.5	12.0	25.5	10.5	27.4	9.45	3.00	15.5
1960	3.96	9.44	3.26	6.30	4.89	12.7	10.5	28.2	13.2	40.1	11.5	4.95	12.3

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.14	6.79	2.26	1.72	11.1	14.6	6.34	10.2	6.13	2.83	1.20	1.29	5.87
1952	1.28	5.38	1.83	1.60	5.99	7.75	6.55	5.22	12.4	5.08	6.08	8.57	5.65
1953	6.86	3.38	3.22	7.19	13.0	9.91	1.35	1.09	6.55	1.28	7.25	2.59	5.52
1954	1.97	3.07	0.849	0.770	2.47	4.42	2.85	3.03	7.19	4.20	14.2	5.92	4.28
1955	11.8	10.7	4.20	1.62	1.77	26.9	10.4	25.4	11.9	11.8	9.36	3.27	10.7
1956	5.69	7.22	3.18	2.63	1.67	2.10	4.59	55.4	4.85	14.6	9.80	12.4	10.1
1957	6.93	10.5	1.93	9.32	2.00	1.96	2.64	11.0	2.32	11.9	7.77	.99	5.75
1958	3.18	13.1	3.60	2.95	13.9	24.2	6.98	5.23	4.79	3.29	7.71	5.51	7.91
1959	14.0	16.3	3.90	11.8	8.55	9.37	7.75	16.5	6.76	17.7	6.11	1.94	10.0
1960	2.56	6.10	2.11	4.07	3.16	8.23	6.78	18.2	8.50	25.9	7.43	3.20	7.96

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	190	211	67.7	53.4	334	453	196	286	190	85.0	37.3	38.7	2,140
1952	39.6	167	54.9	49.7	180	240	203	152	384	152	188	257	2,070
1953	278	105	96.7	223	390	307	42.0	30.5	203	38.5	225	77.8	2,020
1954	61.0	95.3	25.5	23.9	74.0	137	88.3	84.8	223	126	440	178	1,560
1955	367	330	126	50.4	53.2	832	324	712	368	353	290	98.2	3,900
1956	176	224	95.5	81.6	50.2	65.0	142	1,610	150	437	304	374	3,710
1957	215	326	57.9	289	60.0	60.6	81.8	309	71.8	358	241	29.6	2,100
1958	98.5	407	108	91.6	41.6	750	218	146	148	98.7	239	165	2,880
1959	435	505	117	365	256	290	240	463	210	532	189	58.2	3,660
1960	79.3	189	63.3	126	94.9	255	210	529	264	777	230	95.9	2,910

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year				
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs			
1950	-	-	-	-	-	-	-	-	-	10.4	16.1	3,800		
1951	1219	420	650	Nov. 26, 1950	0.71	1.10	5.87	9.08	2,140	4.29	6.64	1,560		
1952	1249	460	712	Dec. 11, 1951	.65	1.01	5.65	8.74	2,070	7.47	11.6	2,740		
1953	1289	2,000	3,090	Mar. 7, 1953	.59	.91	5.52	8.54	2,020	2.83	4.38	1,030		
1954	1349	480	743	Feb. 26, 1954	.48	.74	4.26	6.59	1,560	7.94	12.3	2,900		
1955	1399	440	681	Feb. 27, 1955	.79	1.22	10.7	16.6	3,900	7.77	12.0	2,840		
1956	1449	3,080	4,770	Feb. 25, 1956	.79	1.22	10.1	15.6	3,710	11.0	17.0	4,030		
1957	1569	1,210	1,870	Oct. 15, 1956	.72	1.11	5.75	8.90	2,100	8.12	12.6	2,980		
1958	1569	808	1,250	Nov. 22, 1957	.79	1.22	7.91	12.2	2,880	8.17	12.6	2,980		
1959	1639	546	845	Oct. 22, 1958	1.10	1.70	10.0	15.5	3,660	6.85	10.6	2,500		
1960	1719	2,820	4,360	Apr. 17, 1960	.72	1.11	7.96	12.3	2,910	-	-	-		

5860. Hoolawali1111 Stream near Huelo

Location--Lat 20°53'17", long 156°14'35", on right bank just upstream from Wailoa ditch intake, 1.8 miles west of Kailua and 1.6 miles southwest of Huelo.

Drainage area--0.55 sq mi.

Records available--January 1912 to December 1957. Monthly discharge only for some periods published in WSP 1319. Records for Apr. 6 to December 1911, published in WSP 318, have been found to be unreliable and should not be used.

Gage--Water-stage recorder and concrete control. Altitude of gage is 1,245 ft (from topographic map). Prior to June 19, 1914, staff gage at same site and datum.

Average discharge--45 years (1912-57), 4.87 mgd (7.54 cfs).

Extremes--1912-57: Maximum discharge, 657 mgd (1,020 cfs) Nov. 18, 1930 (gage height, 6.74 ft, control then in use) from rating curve extended above 22 mgd; minimum, 0.5 mgd (0.8 cfs) Dec. 11, 1919, Mar. 24, 1928, Nov. 17-24, 1933.

Remarks--No diversion above station. Water is diverted below station for irrigation use in central Maui.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	5.96	5.91	2.94	2.74	9.52	12.1	6.24	6.62	6.58	3.51	2.21	2.24	5.54
1952	2.54	6.30	2.88	2.38	6.08	6.81	6.59	5.77	8.48	4.32	5.85	8.97	5.59
1953	6.63	4.07	4.39	6.89	10.6	8.14	2.07	1.84	5.01	2.00	7.30	3.62	5.42
1954	2.96	4.12	1.61	1.30	3.28	5.43	3.70	3.43	6.68	3.42	11.4	5.45	4.41
1955	9.10	9.31	4.25	2.43	2.40	14.1	7.92	16.7	8.65	10.1	7.57	3.67	†7.97
1956	5.76	6.56	3.45	3.17	2.44	2.68	4.18	23.4	4.75	10.7	9.58	10.3	7.16
1957	6.03	8.39	2.54	9.61	3.42	3.09	3.90	9.41	3.02	10.2	6.27	1.67	5.62
1958	3.99	16.4	4.22	3.78	13.2	-	-	-	-	-	-	-	-

† Corrected.

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	3.85	3.82	1.90	1.77	6.15	7.80	4.03	4.28	4.25	2.27	1.43	1.45	3.58
1952	1.64	4.07	1.86	1.54	3.93	4.40	4.26	3.73	5.48	2.79	3.78	5.80	3.61
1953	5.58	2.63	2.84	4.45	6.87	5.26	1.34	1.19	3.24	1.29	4.72	2.34	3.50
1954	1.91	2.66	1.04	.843	2.11	3.51	2.39	2.22	4.32	2.21	7.38	3.52	2.85
1955	5.88	6.02	2.75	1.57	1.55	9.13	5.12	10.8	5.59	6.50	4.89	2.37	5.15
1956	3.72	4.24	2.23	2.05	1.58	1.73	2.70	15.1	3.07	6.93	6.19	6.67	4.63
1957	3.90	5.42	1.64	6.21	2.21	2.00	2.52	6.08	1.95	6.60	4.05	1.08	3.63
1958	2.58	10.6	2.73	2.44	8.55	-	-	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	119	119	57.0	54.8	184	242	125	120	132	68.1	44.2	43.6	1,310
1952	51.0	126	55.8	47.7	118	136	132	108	170	83.7	117	174	1,320
1953	173	81.4	85.1	138	206	163	41.7	33.4	100	38.6	146	70.3	1,280
1954	59.1	82.5	31.3	28.1	63.4	109	74.0	62.1	134	66.4	229	106	1,040
1955	182	186	82.4	48.7	46.4	283	159	303	173	195	152	71.1	1,880
1956	115	132	66.9	63.6	47.4	53.7	83.8	438	95.2	208	192	200	1,700
1957	121	168	49.2	192	66.2	62.1	78.0	170	60.5	198	126	32.3	1,320
1958	80.0	328	81.9	75.5	257	-	-	-	-	-	-	-	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean			
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	Million gallons
1950	-	-	-	-		-	-	-	-	-	5.15	7.97	1,880
1951	1219	139	215	Nov. 26, 1950		1.08	1.67	3.58	5.54	1,310	2.92	4.52	1,070
1952	1249	210	325	Dec. 11, 1951		.98	1.52	3.61	5.59	1,320	4.46	6.90	1,630
1953	1289	375	580	Mar. 7, 1953		.86	1.33	3.50	5.42	1,280	2.20	3.40	801
1954	1349	172	266	Feb. 26, 1954		.68	1.05	2.85	4.41	1,040	4.11	6.36	1,500
1955	1399	180	279	Feb. 26, 1955		.98	1.52	5.15	†7.97	1,880	4.19	6.48	1,530
1956	1449	465	719	Feb. 25, 1956		1.05	1.62	4.63	7.16	1,700	5.13	7.94	1,880
1957	1569	235	364	Oct. 14, 1956		.92	1.42	3.63	5.62	1,320	-	-	-
1958	1569	-	-	-		-	-	-	-	-	-	-	-

† Corrected.

5870. Honopou Stream near Huelo

Location--Lat 20°53'20", long 156°15'20" (revised), on left bank just upstream from Wailoa ditch intake, 2.2 miles southwest of Huelo and 2.5 miles west of Kailua.

Drainage area--0.64 sq mi.

Records available--December 1910 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Gage--Water-stage recorder and concrete control. Datum of gage is 1,208 ft, corrected (by vertical angles). Prior to June 19, 1914, staff gage at same site and datum.

Average discharge--49 years (1911-60), 3.18 mgd (4.92 cfs).

Extremes--1910-60: 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) several days in 1933, 1934.

Remarks--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	5.76	3.99	1.47	1.12	6.67	10.4	4.92	5.28	4.52	1.96	0.897	0.883	3.82
1952	.809	3.39	1.22	1.20	3.36	4.90	4.36	3.68	6.67	2.75	3.61	5.77	3.48
1953	6.53	2.31	2.20	4.24	8.63	6.44	.984	.794	3.39	.846	4.86	1.55	3.59
1954	1.29	1.96	.484	.384	1.56	3.09	2.04	2.21	4.80	1.93	8.56	3.81	2.69
1955	5.91	6.61	2.44	.942	1.08	12.4	6.47	13.9	7.25	7.52	5.80	2.14	6.00
1956	3.33	4.66	2.10	1.46	.877	1.08	2.35	22.7	4.48	9.28	8.57	8.59	5.71
1957	4.02	6.34	1.36	6.13	1.62	1.44	2.01	7.33	1.55	7.21	5.59	.816	3.74
1958	1.96	12.9	3.30	1.98	8.97	13.9	3.68	3.14	3.31	2.40	4.66	4.02	5.37
1959	8.39	10.0	2.61	6.51	6.10	7.47	5.25	8.18	4.73	11.1	3.33	1.20	6.24
1960	1.36	4.10	1.39	2.17	2.38	5.37	4.77	6.92	5.68	13.6	5.21	2.00	4.56

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.43	2.58	0.947	0.727	4.31	6.72	3.18	3.41	2.92	1.27	0.580	0.571	2.47
1952	.523	2.19	.786	.773	2.17	3.17	2.82	2.38	4.31	1.78	2.33	3.73	2.25
1953	4.22	1.49	1.42	2.74	5.58	4.16	.658	.513	2.19	.547	3.14	1.00	2.32
1954	.836	1.27	.319	.248	1.01	2.00	1.32	1.43	3.10	1.25	5.53	2.46	1.74
1955	3.82	4.27	1.58	.809	.701	8.02	4.18	8.98	4.69	4.86	3.75	1.88	3.88
1956	2.15	3.01	1.36	.945	.567	.700	1.52	14.7	2.88	6.00	5.54	5.55	3.69
1957	2.60	4.10	.879	3.98	1.05	.933	1.30	4.74	1.00	4.66	3.61	.398	2.42
1958	1.20	8.32	2.13	1.28	5.80	8.98	2.38	2.03	2.14	1.55	5.01	2.60	3.47
1959	5.42	6.49	1.69	4.21	3.94	4.83	3.39	5.29	3.06	7.16	2.15	.776	4.03
1960	.881	2.65	.896	1.40	1.54	3.47	3.08	4.47	3.67	8.80	3.37	1.29	2.95

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	75.2	80.0	28.4	22.5	129	208	98.5	95.4	90.5	38.2	18.0	17.1	901
1952	16.2	68.0	23.8	24.0	85.1	98.2	87.5	69.2	134	53.5	72.4	112	824
1953	131	46.3	42.7	84.8	168	129	19.7	14.4	67.9	16.4	97.3	30.1	848
1954	25.9	39.4	9.56	7.69	30.3	61.9	40.8	40.0	96.0	37.5	171	73.8	534
1955	118	132	47.4	18.9	21.0	249	129	251	145	146	116	41.5	1,410
1956	66.8	93.4	40.9	29.3	17.0	21.7	47.0	426	89.2	180	172	168	1,350
1957	80.6	127	26.4	123	31.6	28.9	40.3	133	31.0	140	112	11.9	886
1958	37.3	258	63.9	39.7	174	278	73.8	57.0	66.4	46.6	93.4	78.0	1,270
1959	168	201	50.8	131	118	150	105	148	94.9	215	66.8	23.3	1,470
1960	27.3	82.0	26.9	43.3	46.2	108	95.8	130	114	284	104	38.7	1,080

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30						Calendar year					
		Momentary maximum discharge			Minimum day			Mean			Million gallons		
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Million gallons
1950	-	-	-	-	-	-	-	-	-	-	4.18	6.47	1,530
1951	1219	110	170	Nov. 25, 1950	0.28	0.40	2.47	3.82	901	1.79	2.77	653	
1952	1249	202	313	Feb. 19, 1952	.30	.46	2.25	3.48	824	3.08	4.77	1,130	
1953	1269	710	1,100	Mar. 7, 1953	.30	.46	8.32	3.59	848	1.15	1.78	421	
1954	1349	220	340	Feb. 26, 1954	.11	.17	1.74	2.89	634	2.87	4.44	1,050	
1955	1399	185	240	Feb. 7, 1955	.30	.46	3.88	6.00	1,410	3.01	4.66	1,109	
1956	1449	1,090	1,690	Feb. 25, 1956	.25	.38	3.69	5.71	1,350	4.10	6.34	1,509	
1957	1569	285	441	Feb. 6, 1957	.20	.31	2.42	3.74	886	3.61	5.59	1,326	
1958	1569	150	201	Aug. 24, Nov. 22	.25	.39	3.47	5.37	1,270	3.58	5.23	1,230	
1959	1639	162	282	Oct. 22, 1958	.48	.74	4.03	6.24	1,470	2.70	4.18	987	
1960	1719	668	1,030	Apr. 17, 1960	.30	.46	2.95	4.56	1,080	-	-	-	

5880. Wailoa ditch at Honopou, near Huelo

Location.--Lat 20°53'20", long 156°15'19", on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mile west of Lupi, 2.2 miles southwest of Huelo, and 2.5 miles west of Kailua.

Records available.--November 1922 to June 1960.

Gage.--Water-stage recorder. Datum of gage is 1,208 ft above mean sea level (by vertical angles).

Average discharge.--37 years (1923-60), 114 mgd (176 cfs).

Extremes.--1922-60: Maximum daily discharge, 195 mgd (302 cfs) several days in 1954-56; no flow at times.

Remarks.--Complete regulation by gates and wasteways. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from the Alo west to the Halehaku Gulch at altitude of about 1,200 ft. Water is used for irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	3,910	3,430	2,290	2,530	3,390	3,440	3,500	2,140	4,040	3,030	1,830	2,000	35,530
1952	2,730	3,600	2,140	1,930	3,770	3,190	3,570	3,360	4,410	4,580	4,760	42,230	
1953	4,520	2,980	3,080	3,540	4,810	4,150	1,240	1,880	3,490	1,690	3,500	3,010	37,830
1954	2,780	3,230	1,100	1,380	2,780	3,590	2,320	1,570	4,300	2,820	5,590	4,570	36,040
1955	5,820	5,900	3,920	2,240	1,630	3,410	2,800	2,990	4,430	4,660	5,920	3,080	46,680
1956	4,410	5,450	3,250	2,720	2,550	1,800	2,510	2,090	3,890	5,010	5,570	5,530	44,780
1957	4,110	4,880	2,240	3,770	2,310	2,440	3,160	3,090	2,720	4,150	3,370	1,330	37,550
1958	3,950	5,220	3,110	2,710	3,960	4,650	3,240	1,910	2,350	2,900	4,850	4,000	42,650
1959	5,390	5,310	3,680	4,210	4,320	4,350	2,590	2,760	4,460	4,480	4,140	2,230	47,920
1960	3,200	4,580	3,040	1,500	2,920	5,240	4,150	3,170	4,080	5,180	4,160	3,250	44,450

5890. New Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'28", long 156°15'22", on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, 2.1 miles southwest of Huelo, and 2.5 miles west of Kailua.

Records available.--January 1918 to June 1960.

Gage.--Water-stage recorder. Datum of gage is 1,170 ft above mean sea level (by vertical angles). Prior to May 15, 1921, at site 300 ft upstream at different datum.

Average discharge.--42 years (1918-60), 25.5 mgd (39.5 cfs).

Extremes.--1918-60: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; no flow at times.

Remarks.--Ditch diverts water from streams between Waikamoi Stream and Halehaku Gulch above Center and Lowrie ditches. Flow regulated by gates and spillways. Water used for irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1,070	484	88.4	333	806	255	201	236	1,010	299	69.3	250	5,100
1952	398	741	214	229	982	380	721	453	1,480	791	948	1,860	9,200
1953	926	361	507	1,150	1,760	768	14.5	209	573	38.4	714	335	7,360
1954	200	401	6.89	137	542	712	179	187	1,100	404	2,000	716	6,810
1955	1,930	1,970	458	99.8	163	704	96.7	110	678	533	363	28.3	7,130
1956	201	278	156	324	317	30.4	1.31	59.3	103	520	727	1,880	4,580
1957	651	1,180	57.8	869	101	263	382	216	298	1,200	657	10.2	5,880
1958	678	1,600	323	469	929	255	323	16.2	506	319	1,480	753	7,820
1959	1,770	1,570	498	1,280	852	239	50.5	125	166	89.6	1.59	74.4	6,720
1960	334	816	262	61.4	455	802	103	56.6	928	1,480	763	639	6,700

5900. Old Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'31", long 156°15'16", on right bank 400 ft downstream from Honopou Stream and Wailoa ditch trail crossing in Honopou Gulch, 2.0 miles southwest of Huelo, 2.5 miles west of Kailua, and 5.0 miles east of Haiku.

Records available.--January 1918 to June 1922, November 1936 to June 30, 1960.

Gage.--Water-stage recorder and modified Parshall flume. Datum of gage is 1,117 ft above mean sea level (by vertical angles).

Average discharge.--27 years (1918-22, 1937-60), 2.24 mgd (3.47 cfs).

Extremes.--1918-22, 1936-60: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow at times.

Remarks.--Wailoa and New Hamakua ditches divert most of flow above this station. Water used for irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	89.8	40.4	6.41	3.08	97.0	27.4	17.7	1.19	80.1	15.7	0.53	16.0	395
1952	19.7	59.1	13.0	12.3	82.6	2.08	1.82	1.53	166	36.1	62.9	134	591
1953	70.2	26.5	40.0	144	119	20.2	.79	8.87	41.4	.53	80.6	7.59	560
1954	8.54	37.2	.36	2.97	33.2	20.2	3.55	18.4	80.9	29.4	228	11.1	474
1955	181	159	17.4	1.26	11.3	22.0	48.8	45.8	59.8	66.2	10.8	1.64	605
1956	16.5	8.90	2.72	14.1	6.27	1.16	2.31	3.38	48.2	93.6	59.6	160	417
1957	38.2	116	1.49	78.1	2.83	4.21	2.68	1.58	40.0	120	2.13	.93	408
1958	37.1	71.8	5.23	39.9	61.9	2.05	1.90	1.33	1.70	.70	.87	1.56	226
1959	223	197	13.4	70.9	33.0	1.40	1.35	1.68	208	354	347	4.64	1,460
1960	13.5	59.3	2.71	11.5	28.1	109	1.14	1.31	74.8	14.1	36.7	32.2	384

5920. Lowrie ditch at Honopou Gulch, near Huelo

Location (revised).--Lat 20°54'57", long 156°15'07", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.7 miles northwest of Kailua.

Records available.--January 1910 to March 1927, February 1930 to June 1960. 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.--46 years (1910-26, 1930-60), 27.7 mgd (42.9 cfs).

Extremes.--1910-27, 1930-60: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Lowrie ditch diverts water from all streams between Kailua and Halehaku Streams. Flow regulated by gates. Water used for irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	751	715	390	352	746	310	388	238	904	404	174	286	5,660
1952	351	747	344	271	868	515	767	700	1,170	658	895	1,190	8,300
1953	1,150	599	595	854	1,360	734	182	198	478	130	606	407	7,290
1954	268	455	93.0	174	410	599	403	284	932	459	1,110	662	5,850
1955	1,310	1,420	665	261	234	323	330	368	1,050	980	1,350	413	8,700
1956	910	1,240	498	379	515	138	371	390	607	1,510	1,300	1,380	9,040
1957	689	997	307	871	580	413	438	664	396	772	401	120	6,430
1958	489	1,150	576	417	996	331	508	36.6	10.9	9.42	57.5	632	5,210
1959	1,300	1,260	654	892	1,040	431	146	155	624	1,070	726	243	8,540
1960	404	776	415	181	558	1,190	893	584	1,040	1,070	777	487	8,380

5940. 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 1960. Published as at "Peahi weir" January 1910 to June 1919, as "at Manawai Gulch" July 1919 to December 1928, and as "at Kapalalaea Gulch" February 1930 to January 1940. Monthly discharge only for some periods published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 421.54 ft above mean sea level, datum of 1929. Jan. 1, 1910, to Oct. 6, 1914, water-stage recorder at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, water-stage recorder at site 2.9 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, water-stage recorder at site 0.9 mile downstream at different datum.

Average discharge.--46 years (1910-12, 1913-14, 1915-28, 1930-60), 19.3 mgd (29.9 cfs) averages prior to 1960 includes incomplete fiscal years 1913 and 1915.

Extremes.--1910-28, 1930-60: 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.--Haiku ditch diverts water from all streams between Kailua Stream and Maliko Gulch. Flow regulated by gates. Water used for irrigation in central Maui.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	323	163	174	65.2	473	106	76.7	32.6	356	88.8	12.6	92.5	1,960
1952	87.9	283	68.4	79.1	442	334	263	80.1	779	214	428	626	3,680
1953	420	178	212	602	872	136	19.7	26.6	148	7.90	322	38.3	2,980
1954	52.3	102	5.28	77.4	170	138	60.0	59.4	474	130	912	125	2,300
1955	868	769	201	18.2	84.0	200	190	255	486	696	522	52.8	4,330
1956	488	714	118	116	74.1	11.3	88.1	19.4	480	994	960	859	4,940
1957	246	577	20.5	395	63.6	126	159	146	100	805	513	4.32	3,160
1958	204	404	158	195	502	258	122	3.16	675	342	676	285	3,800
1959	830	772	152	519	439	377	255	137	482	790	449	27.6	5,230
1960	136	308	26.0	44.1	170	462	268	148	535	988	298	275	3,660

6170. Left Branch Makamakaole Stream near Waihee

Location.--Lat 20°57'35", long 156°32'55", on left bank at intake to Marshall Ranch diversion ditch, 0.2 mile upstream from mouth, 2.8 miles south of Kahakuloa village, and 3 miles northwest of Waihee.

Drainage area.--0.4 sq mi, approximately.

Records available.--July 1939 to July 1952.

Gage.--Water-stage recorder and combined orifice and concrete control. Altitude of gage is 1,500 ft (by barometer).

Average discharge.--13 years (1939-52), 1.89 mgd (2.92 cfs).

Extremes.--1939-52: Maximum discharge, 287 mgd (444 cfs) Apr. 2, 1948 (gage height, 4.98 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.43 mgd (0.66 cfs) Jan. 10, 11, 1946.

Remarks.--Marshall Ranch diversion ditch diverts water from gage pool for stock water.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.83	3.57	1.34	1.21	9.24	9.62	3.42	3.84	4.12	1.67	1.30	1.05	3.61
1952	1.44	2.32	1.66	2.35	2.46	6.54	3.33	4.02	1.79	1.73	2.91	1.93	2.71

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.83	2.31	0.866	0.779	5.97	6.22	2.21	2.48	2.66	1.08	0.842	0.678	2.33
1952	.928	1.50	1.07	1.52	1.59	4.23	2.15	2.60	1.16	1.12	1.88	1.25	1.75

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	56.7	71.6	26.0	24.2	179	193	68.6	69.5	82.4	32.5	26.1	20.4	850
1952	28.8	46.5	32.0	47.2	47.7	131	66.7	75.4	35.8	33.5	58.1	37.6	640

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs		Mgd	Cfs
1950	-	-	-	-		-	-	-	-	-	2.80	4.33
1951	1219	174	269	Nov. 30, 1950		0.55	0.85	2.33	3.61	850	1.73	2.68
1952	1249	252	390	Dec. 31, 1951		.58	.90	1.75	2.71	640	-	-

6180. Kahakuloa Stream near Honokohau

Location.--Lat 20°58'54" (revised), long 156°33'26" (revised), on right bank 0.5 mile downstream from Kapuna Stream, 1.3 miles south of Kahakuloa, 2 miles west of Puu Makawana, and 4.3 miles southeast of Honokohau.

Drainage area.--3.47 sq mi.

Records available.--July 1939 to August 1943, September 1947 to June 1960. 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. Altitude of gage is 330 ft (from topographic map).

Average discharge.--15 years (1940-43, 1948-60), 11.4 mgd (17.6 cfs).

Extremes.--1939-43, 1947-60: Maximum discharge, 1,990 mgd (3,080 cfs) Dec. 14, 1942 (gage height, 7.02 ft, control then in use), from rating curve extended above 55 mgd by test on model of station site; minimum, 1.95 mgd (3.02 cfs) Feb. 9-11, 1954.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	17.9	21.2	8.62	8.77	58.8	36.7	17.5	17.9	18.4	9.10	8.12	6.96	17.5
1952	9.58	14.7	8.85	10.3	13.2	25.2	14.0	21.5	11.9	11.5	15.5	13.5	13.1
1953	24.8	14.6	8.90	23.7	19.2	17.3	8.06	10.0	13.2	7.88	17.6	9.36	14.6
1954	10.6	13.5	4.73	5.69	11.0	15.1	6.19	6.08	16.2	9.16	28.5	10.8	11.4
1955	26.8	19.8	11.5	10.0	11.4	37.4	16.2	36.1	21.2	16.4	16.2	13.8	19.6
1956	14.5	16.9	10.1	9.76	9.21	20.6	17.9	23.8	14.1	28.0	26.1	18.1	17.5
1957	16.1	24.8	8.25	22.0	9.31	11.5	8.12	14.0	7.81	24.6	16.8	5.83	14.1
1958	12.2	37.1	10.2	11.4	56.2	35.4	16.6	10.6	13.7	11.7	21.8	13.2	19.0
1959	28.5	31.4	13.0	28.3	16.4	28.9	25.8	26.3	15.1	30.9	11.4	8.03	21.8
1960	9.73	11.7	13.4	8.29	15.9	15.3	8.03	21.2	31.3	25.5	17.0	12.4	15.8

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	11.6	13.7	5.57	5.67	25.1	23.7	11.3	11.6	11.9	5.88	5.25	4.50	11.3
1952	6.08	9.50	5.71	6.64	8.54	16.3	9.04	13.9	7.68	7.30	10.0	8.74	9.11
1953	16.0	9.42	5.75	15.3	12.4	11.2	5.21	6.49	8.54	5.09	11.4	6.05	9.45
1954	6.87	8.71	3.06	3.68	7.10	8.47	4.00	3.93	10.5	5.92	18.4	7.00	7.35
1955	17.3	12.8	7.45	6.46	7.37	24.2	10.5	23.3	13.7	10.6	10.5	8.93	12.7
1956	9.35	10.9	6.52	6.31	5.95	13.3	11.6	15.4	9.14	18.1	16.9	11.7	11.3
1957	10.4	16.0	5.33	14.2	6.02	7.46	5.25	9.06	5.05	15.9	10.7	3.77	9.11
1958	7.88	24.0	6.62	7.35	23.4	21.6	10.7	6.86	8.65	7.53	14.1	8.51	12.3
1959	18.4	20.3	8.39	18.3	10.6	18.7	15.4	17.0	9.73	20.0	7.35	5.19	14.1
1960	6.29	7.55	8.64	5.36	10.3	9.92	5.19	13.7	20.2	16.5	11.0	8.00	10.2

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	369	424	167	176	754	735	350	326	368	176	163	135	4,130
1952	168	294	171	206	256	505	280	402	238	219	311	262	3,330
1953	496	292	172	476	371	346	162	182	265	153	353	161	3,450
1954	213	270	91.6	114	213	262	124	110	326	178	570	210	2,680
1955	536	396	224	200	221	750	324	652	426	319	324	268	4,640
1956	290	338	195	196	178	412	360	447	283	544	523	352	4,120
1957	322	496	160	441	180	231	163	254	156	476	333	113	3,320
1958	244	745	199	228	702	669	331	192	274	226	438	255	4,500
1959	571	629	252	568	317	578	478	475	302	601	228	156	5,160
1960	195	234	259	166	310	308	161	397	625	494	343	240	3,730

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1950	-	-	-	-	-	-	-	-	-	13.4	20.7	4,900
1951	1219	680	1,050	Dec. 3, 1950	3.05	4.72	11.3	17.5	4,130	8.60	13.3	3,140
1952	1249	1,080	1,670	Dec. 31, 1951	2.8	4.3	9.11	14.1	3,330	10.6	16.4	3,860
1953	1289	338	523	July 15, 1952	3.2	5.0	9.45	14.6	3,450	6.74	10.4	2,460
1954	1349	430	665	Mar. 1, 1954	1.95	3.02	7.35	11.4	2,680	10.5	16.2	3,840
1955	1399	660	1,020	Feb. 7, 1955	3.2	5.0	12.7	19.6	4,640	10.7	16.6	3,920
1956	1449	430	665	Dec. 20, 1955	2.85	4.41	11.3	17.5	4,120	11.9	18.4	4,340
1957	1569	499	772	Oct. 14, 1956	2.85	4.41	9.11	14.1	3,320	11.7	18.1	4,280
1958	1569	860	1,330	Dec. 3, 1957	2.85	4.41	12.3	19.0	4,500	12.7	19.6	4,630
1959	1639	550	851	Jan. 17, 1959	3.8	5.9	14.1	21.8	5,160	10.2	15.8	3,710
1960	1719	437	676	Mar. 5, 1960	2.85	4.41	10.2	15.8	3,730	-	-	-

6200. Honokohau Stream near Honokohau

Location.--Lat 20°57'48", long 156°35'22", on right bank 1,000 ft upstream from intake of Honokohau ditch and 5 miles southeast of Honokohau.

Drainage area.--4.09 sq mi.

Records available.--March 1913 to September 1920, May 1922 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 950 ft (by barometer).

Average discharge.--45 years (1913-20, 1922-60), 26.4 mgd (40.8 cfs).

Extremes.--1913-20, 1922-60: Maximum discharge, 2,420 mgd (3,740 cfs) Dec. 14, 1942, Aug. 30, 1957 (gage height, 8.40 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 5.4 mgd (8.4 cfs) May 1, 1945, Jan. 5, 1946.

Remarks.--No diversion above station. All ordinary flow and inflow from two development tunnels below station is diverted into Honokohau ditch.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	54.2	48.9	26.5	32.2	58.6	59.3	35.1	40.8	37.9	22.0	20.7	21.7	38.2
1952	27.5	41.2	18.7	23.8	42.1	38.8	31.3	35.3	33.1	29.9	34.0	49.5	33.7
1953	52.9	38.7	28.5	46.4	46.4	46.6	20.1	27.1	26.5	18.7	40.8	30.0	35.3
1954	32.0	32.8	15.1	18.1	32.8	29.4	17.5	16.1	36.8	21.2	46.7	31.7	27.7
1955	62.4	64.4	35.4	28.0	27.4	97.5	38.1	67.1	46.1	57.9	42.5	37.3	50.1
1956	42.1	46.3	29.6	27.4	28.3	44.6	32.8	64.5	34.7	43.3	69.0	60.2	43.5
1957	48.1	71.8	25.6	46.6	24.1	26.9	20.0	37.4	20.0	46.7	32.2	18.9	35.0
1958	36.7	89.0	26.8	24.0	53.7	80.9	42.7	29.4	36.7	28.3	43.8	41.9	44.9
1959	70.1	83.6	36.2	59.6	41.5	50.6	48.9	71.2	41.5	60.0	41.9	29.1	52.8
1960	29.2	37.9	29.1	22.3	28.6	41.9	32.6	53.5	43.0	69.0	50.9	40.1	39.8

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	35.0	31.6	17.1	20.8	37.9	38.3	22.7	26.4	24.5	14.2	13.4	14.0	24.7
1952	17.8	26.6	12.1	15.4	27.2	25.1	20.2	22.8	21.4	19.3	22.0	32.0	21.8
1953	34.2	25.0	18.4	30.0	30.0	30.1	13.0	17.5	17.1	12.1	26.4	19.4	22.8
1954	20.7	21.2	9.79	11.7	21.2	19.0	11.3	10.4	23.8	13.7	30.2	20.5	17.9
1955	40.3	41.6	21.6	18.1	17.7	63.0	24.6	43.4	29.8	37.4	27.5	24.1	32.4
1956	27.2	29.9	19.1	17.7	18.3	28.8	21.2	41.7	22.4	28.0	44.6	38.9	28.1
1957	31.1	46.4	17.2	30.1	15.6	17.4	12.9	24.2	12.9	30.2	20.9	12.2	22.6
1958	23.7	57.5	17.3	15.5	34.7	52.3	27.6	19.0	25.0	18.3	28.3	27.1	29.0
1959	45.3	54.0	23.4	38.5	26.8	32.7	31.6	46.0	26.8	38.8	27.1	18.8	34.1
1960	18.9	24.5	18.8	14.4	18.5	27.1	21.1	34.6	27.8	44.6	32.9	25.9	25.7

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1,080	981	513	644	1,140	1,190	704	740	758	428	414	419	9,010
1952	550	824	363	479	816	779	627	661	662	578	682	960	7,980
1953	1,060	775	551	929	898	932	404	489	530	363	618	592	8,330
1954	643	656	294	352	637	589	349	292	758	410	936	616	6,520
1955	1,250	1,290	648	562	531	1,950	763	1,210	924	1,120	852	723	11,820
1956	844	928	574	549	548	894	657	1,210	693	841	1,580	1,170	10,290
1957	964	1,440	514	934	467	538	398	677	399	906	644	365	8,250
1958	735	1,780	520	482	1,040	1,620	856	532	774	548	877	812	10,580
1959	1,400	1,670	702	1,190	803	1,010	980	1,290	852	1,160	839	565	12,440
1960	585	760	564	445	554	840	656	1,000	863	1,340	1,020	778	9,400

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge					Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	
1950	-	-	-	-	-	-	-	-	-	-	-	33.2	51.4	12,110
1951	1219	1,370	2,120	Dec. 3, 1950	8.4	13.0	24.7	38.2	-	-	9,010	19.9	30.8	7,270
1952	1249	1,070	1,660	Oct. 30, 1951	7.9	12.2	21.8	33.7	7,980	25.5	39.5	39.5	9,320	9,320
1953	1289	760	1,180	Mar. 4, 1953	8.7	13.5	22.8	35.3	8,330	17.4	26.9	6,370	6,370	6,370
1954	1349	605	976	Mar. 1, 1954	6.9	10.7	17.9	27.7	6,520	26.2	40.5	9,570	9,570	9,570
1955	1399	1,220	1,890	Dec. 7, 1954	10.4	16.1	32.4	50.1	11,820	27.2	42.1	9,930	9,930	9,930
1956	1449	800	1,240	Aug. 18, 1955	9.5	14.7	28.1	43.5	10,290	29.5	45.6	10,810	10,810	10,810
1957	1569	720	1,110	Oct. 17, 1956	8.1	12.5	22.6	35.0	8,250	26.2	40.5	9,570	9,570	9,570
1958	1589	2,420	3,740	Aug. 30, 1957	9.0	13.9	29.0	44.9	10,580	30.7	47.5	11,170	11,170	11,170
1959	1639	1,480	2,260	Jan. 17, 1959	11.0	17.0	34.1	52.8	12,440	25.8	39.9	9,410	9,410	9,410
1960	1719	948	1,520	May 12, 1960	7.86	12.2	25.7	39.8	9,400	-	-	-	-	-

6290. Honokowai ditch near Lahaina

Location (revised).--Lat 20°55'57", long 156°37'31", on left bank just downstream from intake on Kapaloa Stream, 5.4 miles northeast of Lahaina Lighthouse.

Records available.--July 1912 to January 1958, June 1958 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 1,600 ft (from topographic map). Prior to Dec. 31, 1917, staff gage at site 0.5 mile downstream at different datum. Nov. 14, 1918, to May 27, 1921, water-stage recorder at site 1.5 miles downstream at different datum.

Average discharge.--44 years (1912-16, 1919-57, 1958-60), 5.86 mgd (9.07 cfs).

Extremes.--1912-60: Maximum daily discharge, 43 mgd (66 cfs) June 30, 1930; no flow at times.

Remarks.--Ditch diverts water for power and irrigation from Amalu and Kapaloa Streams just above station. Flow regulated by headgates at intake.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	262	323	241	226	244	274	216	173	192	165	198	216	2,730
1952	215	209	139	141	197	156	162	147	198	161	160	273	2,160
1953	192	151	132	189	191	232	99.7	108	122	115	211	160	1,900
1954	173	164	80.4	96.6	150	152	105	89.0	184	106	188	176	1,660
1955	254	263	102	101	114	296	171	233	194	270	252	193	2,440
1956	234	240	160	158	161	132	141	236	160	153	248	298	2,330
1957	209	280	134	202	141	160	146	172	132	200	148	103	2,030
1958	182	230	125	104	201	224	156	-	-	-	-	216	-
1959	281	246	118	190	176	232	157	247	179	177	204	155	2,360
1960	157	179	135	109	128	190	166	133	132	220	135	166	1,850

6460. Olowalu ditch near Olowalu

Location.--Lat 20°49'33" (revised), long 156°36'47" (revised), on left bank, 1.2 miles northeast of Olowalu and 5.5 miles southeast of Lahaina.

Records available.--August 1911 to June 1960. Monthly discharge only for some periods, published in WSP 1319.

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.--44 years (1912-15, 1917-20, 1921-57, 1958-60), 4.86 mgd (7.52 cfs).

Extremes.--1911-60: 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 power and irrigation. Regulated by headgates.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	187	198	133	129	164	249	224	182	244	193	126	107	2,140
1952	119	147	88.9	107	160	151	159	149	143	141	156	201	1,720
1953	227	146	105	180	198	226	121	82.7	106	69.6	104	96.0	1,660
1954	109	129	59.7	61.3	85.0	127	92.9	64.6	178	86.2	182	149	1,330
1955	222	252	134	97.8	87.4	254	176	209	210	165	192	144	2,140
1956	143	186	129	91.4	96.0	93.7	160	246	211	162	235	262	2,020
1957	176	207	111	124	76.5	116	121	160	92.2	126	151	70.8	1,530
1958	108	198	163	96.4	159	293	187	-	-	-	-	200	-
1959	263	261	173	177	141	183	166	209	250	226	196	117	2,360
1960	113	134	104	79.0	98.5	178	135	180	174	233	183	150	1,760

7000. Waiakea Stream at middle flume house, near Mountain View

Location.--Lat 19°38'25", long 155°10'35", on left bank at middle flume house, 800 ft up-stream from Olaa Sugar Co.'s main flume and 7.5 miles northwest of Mountain View.

Drainage area.--Not determined.

Records available.--September 1930 to June 1960.

Gage.--Water-stage recorder and combined Parshall flume and concrete weir. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--29 years (1931-60), 7.55 mgd (11.7 cfs).

Extremes.--1930-60: 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.--No diversion above station. Large part of flow comes from three tunnels.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	11.0	12.0	1.95	0.944	4.27	6.05	11.8	19.6	28.8	8.01	4.53	6.36	9.58
1952	3.65	20.0	8.49	6.30	24.3	10.4	24.4	12.1	35.1	12.1	11.7	8.43	14.8
1953	14.2	6.50	8.73	8.96	20.9	18.9	2.09	3.09	27.9	6.51	8.79	10.0	11.3
1954	3.17	7.94	1.70	1.81	8.29	12.5	5.62	3.91	11.4	1.98	6.36	12.5	6.45
1955	11.4	23.8	11.5	7.18	4.22	33.4	22.3	21.8	13.5	18.4	25.1	8.26	16.7
1956	4.90	10.3	6.53	8.05	8.97	10.7	9.27	28.9	23.2	17.2	20.0	17.2	13.7
1957	7.58	29.6	11.9	8.20	28.0	7.64	17.36	15.2	3.64	14.0	16.2	2.61	12.7
1958	8.26	29.6	15.8	7.81	12.2	26.6	9.84	2.82	4.46	15.1	13.4	6.89	13.1
1959	18.6	23.8	12.9	12.7	23.2	4.41	3.82	14.3	11.7	11.7	12.8	4.49	12.9
1960	3.30	12.5	7.67	5.69	18.4	24.6	26.8	17.8	11.5	29.9	17.2	6.76	15.1

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	7.11	7.76	1.26	0.610	2.76	3.91	7.65	12.7	18.6	5.18	2.93	4.11	6.19
1952	2.36	12.9	5.49	4.07	15.7	6.72	15.8	7.85	22.7	7.84	7.55	5.45	9.55
1953	9.15	4.20	5.64	5.79	13.5	10.9	1.35	2.00	18.0	4.21	5.68	6.46	7.28
1954	2.05	5.13	1.10	1.17	5.36	8.05	3.63	2.53	7.37	1.28	4.11	8.06	4.17
1955	7.37	15.4	7.42	4.64	2.73	21.6	14.4	14.1	8.71	11.9	16.2	5.34	10.8
1956	3.17	6.64	4.22	5.20	5.80	6.91	5.99	18.7	15.0	11.1	12.9	11.1	8.84
1957	4.77	19.1	7.71	5.30	18.1	4.94	4.76	10.2	2.35	9.04	10.5	1.69	8.18
1958	5.34	19.1	10.2	5.05	7.89	17.2	6.36	1.82	2.88	9.73	8.66	6.39	8.44
1959	12.0	15.4	8.31	8.24	15.0	2.85	2.47	9.27	7.58	7.57	8.30	2.90	8.31
1960	2.13	8.08	4.96	3.81	11.9	15.9	17.3	11.5	7.41	19.3	11.1	4.37	9.79

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	220	241	37.8	18.9	82.7	121	237	356	576	155	90.8	123	2,280
1952	73.1	400	165	126	472	209	488	228	703	235	234	163	3,500
1953	284	130	169	179	404	338	41.9	55.9	558	126	176	194	2,660
1954	63.4	159	32.9	36.4	161	250	113	70.7	229	38.4	127	242	1,520
1955	229	478	222	144	82.0	670	447	395	270	356	503	160	3,960
1956	98.4	206	126	161	174	214	166	542	465	332	399	333	3,240
1957	148	595	231	164	542	153	148	284	73.0	271	327	50.8	2,980
1958	165	594	306	157	237	532	197	50.9	89.3	292	269	192	3,080
1959	372	476	249	255	450	98.3	76.6	260	235	227	257	87.0	3,030
1960	66.2	251	149	118	356	492	535	334	230	578	345	131	3,590

Summary of yearly discharge

Summary of yearly discharge														
Year	WSP	Fiscal year ending June 30										Calendar year		
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs			
1950	-	-	-	-	-	-	-	-	-	-	-	7.47	11.6	2,730
1951	1219	66	102	Feb. 18, 1951	0.22	0.34	6.19	9.58	2,260	8.17	12.6	2,980		
1952	1249	163	252	Nov. 21, 1951	.82	1.27	9.55	14.8	3,500	9.72	15.0	3,560		
1953	1289	142	220	Mar. 9, 1953	.12	.19	7.28	11.3	2,660	5.08	7.86	1,850		
1954	1349	62	96	Nov. 16, 1953	.32	.50	4.17	6.45	1,520	7.25	11.2	2,650		
1955	1399	162	251	Dec. 14, 1954	1.35	2.09	10.8	16.7	3,960	8.53	13.2	3,110		
1956	1449	69	107	Feb. 18, 1956	1.61	2.49	8.84	13.7	3,240	11.2	17.3	4,090		
1957	1569	162	251	Aug. 17, 1956	.73	1.13	8.18	12.7	2,980	8.61	13.3	3,140		
1958	1569	82	127	Aug. 24, 1957	.69	1.07	8.44	13.1	3,080	8.17	12.6	2,980		
1959	1639	69	107	July 17, 1958	.54	.84	8.31	12.9	3,050	7.05	10.9	2,570		
1960	1719	98	152	May 14, 1960	1.07	1.66	9.79	15.1	3,590	-	-	-		

7012. Waiakea Stream near Hilo

Location.--Lat 19°41'35", long 155°05'55", on right bank 2.5 miles south of Hilo Post Office.

Drainage area.--97 sq mi, of which about 18 sq mi contribute directly to surface runoff.

Records available.--May 1957 to June 1960.

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

Extremes.--1957-60: Maximum discharge, 790 mgd (1,220 cfs) Aug. 30, 1957 (gage height, 5.88 ft), from rating curve extended above 100 mgd by logarithmic plotting; no flow at times.

Remarks.--Hawaii Board of Water Supply diverts water at 1,500 ft elevation at rate of about 25,000,000 gal per year.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	-	-	-	-	-	-	-	0	-
1958	0	58.0	13.1	6.47	0.181	24.0	0.364	0	0	0	0	0	8.63
1959	7.12	7.19	.114	1.87	12.1	0	0	9.02	.340	.698	0	0	3.14
1960	0	.116	0	.006	30.5	11.4	30.2	15.9	1.62	29.6	6.56	0	10.4

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	-	-	-	-	-	-	-	0	-
1958	0	37.5	8.46	4.18	0.117	15.5	0.248	0	0	0	0	0	5.58
1959	4.60	4.65	.074	1.08	7.82	0	0	5.83	2.220	.451	0	0	2.03
1960	0	.075	0	.004	19.7	7.35	19.5	10.3	1.05	19.1	4.24	0	6.72

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1957	-	-	-	-	-	-	-	-	-	-	-	0	-
1958	0	1,160	254	129	3.51	480	7.69	0	0	0	0	0	2,030
1959	143	144	2.23	35.5	235	0	0	163	6.81	13.5	0	0	741
1960	0	2.32	0	.12	591	228	805	298	32.6	572	131	0	2,460

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		
1958	1839	790	1,220	Aug. 30, 1957	0	0	5.58	8.63	2,030	1.55	2.40	585	
1959	1839	255	395	July 17, 1958	0	0	2.03	3.14	741	2.75	4.25	1,000	
1960	1719	715	1,110	Nov. 2, 1959	0	0	6.72	10.4	2,460	-	-	-	

7040. Wailuku River above Hilo Boarding School ditch intake, near Hilo

Location.--Lat 19°42'55", long 155°09'10", on left bank 1,000 ft upstream from intake of Hilo Boarding School ditch, 0.8 mile west of reservoir 1, and 4 miles west of Hilo.

Drainage area.--125 sq mi.

Records available.--July 1928 to June 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--30 years (1928-40, 1941-47, 1948-60), 178 mgd (275 cfs).

Extremes.--1928-60: 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 as explained above; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.

Remarks.--Board of Water Supply, County of Hawaii, diverts about 1 mgd above station for domestic supply, and water passing station is used for power by Hilo Electric Light Co. Kapehu ditch diverts water from Kapehu Stream into Wailuku River above Pukamaui Falls.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	275	104	17.5	68.5	76.7	58.2	255	914	973	139	61.4	93.5	249
1952	137	455	47.7	210	863	620	214	1,210	138	126	103	359	
1953	238	58.9	86.3	212	511	269	9.72	108	774	72.9	176	82.9	218
1954	32.5	187	16.2	27.1	178	149 *	63.6	115	147	14.4	106	123	96.5
1955	186	610	147	80.5	36.7	1,190	444	528	263	529	418	92.1	378
1956	94.8	148	68.7	87.1	322	129	172	1,140	461	294	404	288	287
1957	49.2	1,110	84.8	271	579	89.6	227	246	34.0	671	183	18.1	297
1958	196	1,180	254	220	204	890	76.4	241	175	188	99.0	317	
1959	487	774	184	235	492	23.2	71.9	538	120	144	183	25.2	272
1960	101	294	100	88.0	408	607	778	424	134	678	212	87.3	325

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	178	67.1	11.3	44.3	49.6	37.6	165	591	629	89.9	39.7	60.4	161
1952	88.7	294	30.8	136	571	89.5	401	138	785	89.4	81.5	66.4	232
1953	154	38.1	55.8	137	330	174	6.28	70.0	500	47.1	114	53.6	141
1954	21.0	121	10.5	17.5	115	96.2	41.1	74.6	95.0	9.30	68.8	79.5	62.4
1955	120	394	95.2	52.0	23.7	768	287	341	170	342	270	59.5	244
1956	61.3	95.7	44.4	56.3	208	83.1	111	737	298	190	261	186	192
1957	31.8	716	54.8	175	374	57.9	147	159	22.0	434	118	11.7	192
1958	127	765	164	142	132	575	49.4	31.3	156	113	109	64.0	205
1959	315	500	119	152	318	15.0	46.5	348	77.6	92.8	118	16.3	176
1960	65.6	190	64.6	56.9	264	392	503	274	86.7	438	137	56.4	210

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	5,510	2,080	339	1,370	1,490	1,180	5,130	16,550	19,510	2,700	1,230	1,810	58,880
1952	2,750	9,100	923	4,210	17,140	2,770	12,420	4,000	24,340	2,680	2,530	1,990	84,850
1953	4,760	1,180	1,670	4,240	9,910	5,400	195	1,980	15,510	1,410	3,520	1,610	51,360
1954	652	3,750	316	544	3,440	2,980	1,270	2,090	2,950	279	2,130	2,380	22,780
1955	3,720	12,210	2,860	1,610	712	23,820	8,890	9,550	5,260	10,250	6,380	1,780	89,040
1956	1,900	2,970	1,330	1,750	6,250	2,570	3,460	21,380	9,230	5,690	8,090	5,570	70,190
1957	985	22,200	1,640	5,430	11,240	1,790	4,560	4,440	681	13,010	3,670	352	70,000
1958	3,940	25,710	4,930	4,390	3,950	17,810	1,530	878	4,850	3,390	3,380	1,920	74,660
1959	9,770	15,510	3,560	4,720	9,530	4,661	1,440	9,740	2,400	2,780	3,660	489	64,060
1960	2,030	5,890	1,940	1,760	7,910	12,160	15,590	7,340	2,690	13,140	4,260	1,690	77,000

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		Million gallons
1950	-	-	-	-	-	-	-	-	-	-	-	137	212
1951	1219	8,940	15,800	Mar. 1, 1951	2.55	3.64	161	249	58,880	230	356	83,820	
1952	1249	15,100	25,400	Nov. 20, 1951	1.80	2.79	232	358	84,850	205	317	75,120	
1953	1289	6,700	10,400	Nov. 11, 1952	1.5	2.3	141	218	51,360	98.3	152	35,890	
1954	1349	3,330	5,150	Aug. 2, 1953	2.3	.56	62.4	96.5	22,780	154	238	56,030	
1955	1399	8,780	15,600	Dec. 14, 1954	7.2	11.1	244	378	89,040	167	258	60,880	
1956	1449	7,980	12,500	Feb. 18, 1956	9.5	14.7	192	297	70,190	264	408	96,700	
1957	1569	24,900	38,900	Aug. 17, 1956	1.48	2.29	192	297	70,000	234	362	85,440	
1958	1569	18,000	27,500	Aug. 24, 1957	2.8	4.3	205	317	74,660	163	252	59,480	
1959	1639	17,400	26,900	July 17, 1958	3.0	4.6	176	272	84,060	143	221	52,200	
1960	1719	7,940	12,500	Dec. 18, 1959	6.00	9.28	210	325	77,000	-	-	-	

7070. Kapehu ditch diversion near Hilo

Location.--Lat 19°43'45", long 155°11'05", on left bank 40 ft downstream from gate on Kapehu ditch, 3.1 miles northwest of Pihihouna, and 6.2 miles west of Hilo.

Records available.--May 1954 to June 1960.

Gage.--Water-stage recorder and de Fabritis type-H flume.

Average discharge.--6 years (1954-60), 1.51 mgd (2.34 cfs).

Extremes.--1954-60: Maximum daily discharge, 11.0 mgd (17.0 cfs) Apr. 25, 1957; no flow occasionally.

Remarks.--Ditch diverts water from Kapehu ditch for fluming of sugarcane near Hilo.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1954	-	-	-	-	-	-	-	-	-	-	-	80.3	-
1955	87.2	58.2	0.37	0.44	0.58	0.47	0.32	0.21	0.40	0.43	0.31	28.6	178
1956	59.3	46.8	30	26.9	40.1	.40	65.9	112	142	125	123	104	846
1957	79.2	67.2	13.1	58.6	47.3	.39	.44	.38	39.5	118	82.4	43.9	550
1958	82.5	135	107	74.1	35.0	.22	42.1	20.7	2.16	.89	.40	58.8	557
1959	91.1	114	102	102	121	72.0	40.9	77.8	43.9	1.16	49.9	7.51	823
1960	35.6	.10	.18	.32	.28	.33	.40	41.6	57.4	70.0	62.0	75.9	344

7080. Kapehu ditch near Hilo

Location.--Lat 19°43'40", long 155°11'00", on left bank 0.9 mile downstream from intake, 3 miles west of Pihihouna, and 6 miles west of Hilo.

Records available.--March 1938 to June 1941, July 1942 to June 1948, July 1953 to June 1960. September 1948 to April 1951; June 1951 to September 1952; November 1952 to February 1953, June 1953 (monthly discharge only).

Gage.--Water-stage recorder and de Fabritis flume. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--18 years (1938-41, 1942-48, 1949-50, 1951-52, 1953-60), 1.54 mgd (2.38 cfs).

Extremes.--1938-41, 1942-48, 1953-60: Maximum daily discharge, 7.56 mgd (11.7 cfs) Nov. 1, 1959; no flow at times.

Remarks.--Ditch diverts water from Kapehu Stream 0.6 mile northwest of station for domestic use in Hilo. Flow sometimes diverted into Kapehu diversion ditch.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1949	-	-	-	-	-	-	-	-	-	-	-	-	-
1950	64.0	62.6	57.2	63.7	63.8	54.0	66.2	62.0	72.2	68.6	64.5	52.4	809
							64.9	70.2	76.0	86.1	79.0	67.6	
1951	64.7	64.1	59.9	48.7	91.2	97.5	57.6	60.6	67.3	50.3	-	55.7	-
1952	63.5	61.9	57.9	68.6	71.8	78.1	88.4	78.9	77.6	96.4	89.2	80.2	914
1953	81.0	82.0	81.0	-	78.9	90.8	63.3	48.9	-	-	-	75.2	-
1954	73.6	74.6	53.4	51.9	64.5	75.0	80.6	45.8	72.9	58.3	27.8	2.09	680
1955	1.75	36.3	68.0	80.4	61.7	74.0	84.6	75.0	77.0	77.0	87.4	44.2	787
1956	6.38	22.5	71.8	42.9	31.9	78.4	11.0	4.83	1.98	2.11	2.40	1.58	278
1957	1.90	3.74	14.3	2.12	22.3	57.1	68.4	92.4	24.1	3.28	15.9	19.0	325
1958	1.26	4.67	4.26	2.72	60.1	123	56.2	42.9	59.6	99.4	104	30.6	589
1959	5.98	3.88	1.15	1.99	2.10	6.16	24.5	5.04	40.0	89.4	48.3	57.8	284
1960	21.4	77.0	77.5	73.4	93.5	104	120	27.9	1.36	1.10	.64	.88	599

7370. Waillikahi Stream near Waimanu

Location.--Lat 20°07'40", long 155°39'55", on right bank 30 ft upstream from Waimanu trail bridge, 1.7 miles upstream from mouth, 1.9 miles southeast of head of Awini ditch, and 2.2 miles southwest of Waimanu.

Drainage area.--0.4 sq mi, approximately.

Records available.--March 1939 to January 1960. Prior to July 1941, published as Waimanu-Iiili Stream near Waimanu.

Gage.--Water-stage recorder. Altitude of gage is 2,740 ft (by barometer).

Average discharge.--20 years (1939-59), 6.56 mgd (10.1 cfs).

Extremes.--1939-60: 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.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	17.0	9.56	3.39	3.68	10.4	22.0	5.63	10.9	3.61	6.75	5.23	8.66
1952	8.94	11.2	5.93	4.47	13.4	7.61	7.72	11.7	15.6	11.1	12.0	10.4
1953	17.2	12.3	5.04	10.9	12.2	9.73	.809	3.68	7.95	6.33	13.7	8.97
1954	15.4	12.7	2.41	4.43	12.5	9.42	6.42	.492	9.96	6.67	13.1	8.88
1955	13.0	21.7	2.82	2.63	.948	30.3	8.37	21.4	9.25	13.4	15.9	12.9
1956	13.0	8.82	4.95	5.83	9.19	3.71	6.75	18.7	9.30	12.1	12.9	10.1
1957	8.93	20.6	3.17	11.2	5.37	9.95	3.61	7.32	3.19	13.1	6.19	8.06
1958	12.0	20.9	4.87	14.1	7.95	28.5	8.95	4.01	7.02	10.6	13.4	12.3
1959	21.5	27.7	7.46	12.7	6.41	9.61	9.30	17.6	7.54	13.5	11.8	12.4
1960	6.47	10.4	7.64	3.71	8.83	18.7	-	-	-	-	-	-

Monthly and yearly mean discharge, in million gallons a day												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	11.0	6.18	2.19	2.38	6.74	14.2	3.64	7.05	2.33	4.36	3.38	5.60
1952	5.78	7.27	3.83	2.89	8.69	4.92	4.99	7.58	10.1	7.20	7.75	6.75
1953	11.1	7.97	3.26	7.05	7.86	6.29	.523	2.38	5.14	4.09	8.87	5.80
1954	9.94	8.19	1.56	2.86	8.10	6.09	4.15	.318	6.44	4.31	8.45	7.86
1955	8.43	14.0	1.82	1.70	.613	19.6	5.41	13.8	5.98	8.67	10.3	8.35
1956	8.40	5.70	3.20	3.77	5.94	2.40	4.36	12.1	6.01	7.83	8.33	6.50
1957	5.77	13.3	2.05	7.27	3.47	6.43	2.33	4.73	2.06	8.44	4.00	5.21
1958	7.73	13.5	3.15	9.12	5.14	18.4	5.79	2.59	4.54	6.87	8.67	7.95
1959	13.9	17.9	4.82	8.24	4.14	6.21	6.01	11.4	4.87	8.71	7.65	8.04
1960	4.18	6.73	4.94	2.40	5.71	12.1	-	-	-	-	-	-

Monthly and yearly discharge, in million gallons												
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	The year
1951	341	192	65.7	73.9	202	439	113	197	72.3	131	105	2,040
1952	179	225	115	89.6	261	153	155	220	313	216	240	2,470
1953	344	247	97.8	219	236	195	16.2	66.7	159	123	275	2,120
1954	308	254	46.8	88.8	243	189	129	8.89	200	129	262	2,090
1955	261	432	54.6	52.7	18.4	609	168	386	186	260	318	3,050
1956	260	177	95.9	117	178	74.4	135	350	186	235	258	2,380
1957	179	413	61.4	225	104	199	72.2	132	83.7	253	124	1,900
1958	240	418	94.5	283	154	569	180	72.4	141	206	269	2,900
1959	432	554	145	255	124	193	186	318	151	261	237	2,930
1960	130	209	148	74.5	171	376	-	-	-	-	-	-

Summary of yearly discharge												
Year	WSP	Fiscal year ending June 30							Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	gallons		Mgd	Cfs
1950	-	-	-	-	-	-	-	-	-	-	7.32	11.3
1951	1219	178	275	Aug. 14, 1950	0.60	0.93	5.60	8.66	2,040	4.80	7.43	1,750
1952	1249	210	325	Dec. 11, 1951	.60	.93	6.75	10.4	2,470	7.62	11.8	2,790
1953	1289	186	288	Nov. 11, 1952	.28	.43	5.80	8.97	2,120	5.23	8.09	1,910
1954	1349	239	370	Nov. 16, 1953	.21	.32	5.74	8.88	2,090	6.55	10.1	2,390
1955	1399	(a)	(a)	Dec. 10, 1954	.27	.42	8.35	12.9	3,050	6.91	10.7	2,520
1956	1449	210	325	Jan. 13, Feb. 18, 1956	.73	1.13	6.50	10.1	2,380	7.27	11.2	2,660
1957	1569	375	580	Oct. 15, 1956	.45	.70	5.21	8.06	1,900	6.79	10.5	2,480
1958	1569	470	727	Oct. 23, 1957	.33	.51	7.95	12.3	2,900	7.79	12.1	2,850
1959	1639	485	750	Aug. 7, 1958	.52	.80	8.04	12.4	2,930	6.41	9.92	2,340
1960	1719	-	-	-	-	-	-	-	-	-	-	-

a Not determined.

7380. Kaimu Stream near Waimanu

Location.--Lat 20°08'30", long 155°39'40", on right bank 300 ft upstream from Waimanu trail crossing, 1.5 miles west of Waimanu, and 1.6 miles upstream from mouth.

Drainage area.--0.90 sq mi.

Records available.--March 1939 to June 1947, July 1950 to July 1952.

Gage.--Water-stage recorder. Altitude of gage is 1,980 ft (by barometer).

Average discharge.--10 years (1939-47, 1950-52), 5.54 mgd (8.57 cfs).

Extremes.--1939-47, 1950-52: Maximum discharge, 3,050 mgd (4,720 cfs) June 30, 1941 (gage height, 9.6 ft, from floodmarks), from rating curve extended above 7 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Feb. 16, 17, 1942, Feb. 1, 1943.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	13.5	7.77	2.71	2.72	12.6	18.7	5.42	8.97	2.79	4.80	4.29	4.63	7.41
1952	7.43	8.99	5.26	3.40	11.2	6.71	6.65	10.3	12.7	10.2	10.8	12.6	8.83

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	8.71	5.02	1.75	1.76	8.16	12.1	3.50	5.80	1.80	3.10	2.77	2.99	4.79
1952	4.80	5.81	3.40	2.20	7.24	4.34	4.30	6.63	8.23	6.57	6.99	8.13	5.71

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	270	156	52.6	54.5	245	376	109	162	55.8	93.0	85.8	89.7	1,750
1952	149	180	102	68.3	217	135	133	192	255	197	217	244	2,090

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs
1951	1219	600	928	Nov. 9, 1950		0.41	0.63	4.79	7.41	1,750	3.96	6.13	1,450
1952	1249	600	928	Sept. 7, Dec. 11		.51	.79	5.71	8.83	2,090	-	-	-

7390. Punalulu Stream near Waimanu

Location.--Lat 20°08'50", long 155°39'40", on right bank 200 ft upstream from Waimanu trail, 1.0 mile southeast of head of Awini ditch, 1.5 miles upstream from mouth, and 1.5 miles west of Waimanu.

Drainage area.--1.4 sq mi, approximately.

Records available.--March 1939 to July 1952.

Gage.--Water-stage recorder. Altitude of gage is 1,870 ft (by barometer).

Average discharge.--13 years (1939-52), 4.14 mgd (6.41 cfs).

Extremes.--1939-52: Maximum discharge, 980 mgd (1,520 cfs) June 30, 1941 (gage height, 4.90 ft), from rating curve extended above 8 mgd by test on model of station site (pool conditions then existing); minimum, 0.06 mgd (0.09 cfs) Oct. 14, 25, 26, 1945.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	9.79	5.23	1.54	1.66	7.19	14.8	3.16	6.79	1.81	3.28	2.86	3.26	5.12
1952	5.23	6.65	3.14	2.20	8.00	4.63	4.95	8.18	9.50	7.55	7.49	9.76	6.42

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	6.33	3.38	0.994	1.07	4.65	9.59	2.04	4.39	1.17	2.12	1.85	2.11	3.31
1952	3.38	4.30	2.03	1.42	5.17	2.99	3.20	5.29	6.14	4.88	4.84	6.31	4.15

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	196	105	29.8	33.0	140	297	63.4	123	36.4	63.7	57.2	63.2	1,210
1952	105	133	60.8	44.1	155	92.7	99.1	153	190	146	150	169	1,520

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	Mgd	Cfs	Mgd	Cfs
1950	-	-	198	Nov. 25, 1950		0.18	0.28	3.31	5.12	-	4.39	6.79	1,600
1951	1219	128	198	Dec. 11, 1951		.21	.32	4.15	6.42	1,210	2.73	4.22	998
1952	1249	150	232							1,520	-	-	-

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7420. Kukui Stream near Waimanu

Location (revised).--Lat 20°09'14", long 155°40'15", on left bank 300 ft upstream from Waimanu trail crossing, 0.4 mile east from head of Awini ditch, and 2.2 miles west of Waimanu.

Drainage area.--0.21 sq mi.

Records available.--February 1939 to July 1952, September 1959 to June 1960.

Gage.--Water-stage recorder. Altitude of gage is 1,940 ft (by barometer).

Average discharge.--13 years (1939-52), 1.29 mgd (2.00 cfs).

Extremes.--1939-52: Maximum discharge, 116 mgd (179 cfs) Oct. 23, 1941 (gage height, 3.97 ft), from rating curve extended above 5 mgd by test on model of station site; minimum, 0.13 mgd (0.20 cfs) Oct. 25, 1945.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	2.77	1.76	0.613	0.563	3.22	6.73	1.23	2.68	0.933	0.811	0.913	0.769	1.92
1952	1.35	2.23	1.26	.689	2.66	2.00	1.69	3.53	2.69	2.23	2.92	2.75	2.17
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	-	-	-	.987	2.01	3.76	1.93	4.35	3.42	4.63	2.00	1.61	-

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1.79	1.14	0.396	0.364	2.08	4.35	0.792	1.73	0.603	0.524	0.590	0.497	1.24
1952	.875	1.44	.816	.445	1.72	1.29	1.09	2.28	1.74	1.44	1.89	1.78	1.40
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	-	-	-	.638	1.30	2.43	1.25	2.81	2.21	2.99	1.29	1.04	-

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	55.4	35.2	11.9	11.3	62.3	135	24.6	48.3	18.7	15.7	18.3	14.9	452
1952	27.1	44.6	24.5	13.8	51.7	40.1	33.8	66.1	53.9	43.1	58.7	53.4	511
1953	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	-	-	-	19.8	39.0	75.4	38.7	81.6	68.6	89.6	40.0	31.1	-

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge			Minimum day		Mean		Million gallons	Mean		Million gallons	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfe		Mgd	Cfs		
1950	-	-	-	-	-	-	-	-	-	1.56	2.41	571	
1951	1219	56	87	Dec. 6, 1950	0.14	0.22	1.24	1.92	452	.938	1.45	342	
1952	1249	40	62	Dec. 11, 1951	.21	.32	1.40	2.17	511	-	-	-	
1953	1249	-	-	-	-	-	-	-	-	-	-	-	
1960	1719	-	-	-	-	-	-	-	-	-	-	-	

7430. Awini ditch at East Honokane Iki Gulch, near Niulii

Location.--Lat 20°09'55", long 155°43'10", at flume across East Honokane Iki Gulch, 4.5 miles southeast of Niulii.

Records available.--October 1927 to June 1949, July 1950 to June 1960.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--30 years (1928-38, 1939-49, 1950-60), 12.0 mgd (18.6 cfs).

Extremes.--1927-49, 1950-60: Maximum daily discharge, 33 mgd (51 cfs) Jan. 8, 1935,

Aug. 10, 1938; no flow at times.

Remarks.--Ditch diverts water at altitude 2,000 ft from all streams between the Waikalooa and the Honokane. Flow regulated by gates and spillways. Water used for irrigation in vicinity of Kohala.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	600	465	216	191	294	362	319	388	309	313	297	329	4,080
1952	359	470	263	245	399	355	497	484	552	580	608	612	5,420
1953	616	586	326	313	458	430	31.6	183	351	343	486	383	4,560
1954	602	536	143	207	436	420	252	58.0	180	262	490	568	4,350
1955	542	661	359	210	102	250	218	252	389	493	704	655	4,620
1956	555	447	289	293	281	188	226	427	334	483	620	646	4,790
1957	408	496	266	267	321	411	333	335	244	470	397	244	4,190
1958	559	652	337	278	378	480	363	186	278	247	419	378	4,560
1959	514	483	312	282	260	447	293	415	401	403	542	281	4,630
1960	392	547	383	208	320	389	189	163	297	469	362	298	3,840

7440. East Honokane Iki intake to Awini ditch at East Honokane Iki Gulch, near Niulii

Location.--Lat 20°09'55", long 155°43'15", on intake tunnel delivering water from East Honokane Iki Gulch to Awini ditch, on west side of gulch, and 4.5 miles southeast of Niulii.

Records available.--October 1927 to June 1938, July 1939 to June 1949, July 1951 to June 1960.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--27 years (1928-36, 1937-38, 1939-40, 1941-49, 1951-60), 1.20 mgd (1.86 cfs).

Extremes.--1927-38, 1939-49, 1951-60: Maximum daily discharge, 8.4 mgd (13.0 cfs) Aug. 6, 1957; no flow at times.

Remarks.--Intake diverts water from East Honokane Iki Gulch to Awini ditch for irrigation in vicinity of Kohala.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1952	35.7	49.0	16.0	13.7	38.8	30.1	45.6	47.6	62.7	54.6	62.4	83.4	540
1953	59.1	56.1	15.4	40.7	51.0	38.6	2.38	15.4	25.5	30.5	51.6	38.5	425
1954	84.0	60.9	1.79	10.6	41.6	41.6	12.3	2.80	58.2	30.0	51.6	54.4	450
1955	51.9	77.6	27.0	35.8	9.06	23.5	23.6	22.7	32.0	70.5	82.6	62.1	518
1956	46.4	37.3	16.2	29.2	33.8	14.1	16.6	39.1	40.7	12.1	26.7	77.0	389
1957	47.1	85.4	18.0	74.1	84.0	63.6	32.0	40.0	15.4	68.6	36.3	15.5	580
1958	71.7	95.1	20.8	28.0	47.6	36.6	29.6	13.6	42.0	28.0	38.5	53.3	505
1959	62.5	50.9	3.99	26.1	37.9	41.2	22.6	31.5	40.2	53.7	72.1	16.3	459
1960	38.3	38.2	51.8	11.7	32.6	56.4	39.9	20.3	35.0	77.7	38.8	30.8	472

7510. Kohala ditch at Pololu, near Niulii

Location.--Lat 20°10'20", long 155°44'15", on right bank of open section of ditch in Pololu Valley, just downstream from boundary between land of Honokane and land of Pololu, 2.8 miles upstream from mouth of Pololu Stream, and 4 miles south of Niulii.

Records available.--August 1927 to June 1960.

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

Average discharge.--31 years (1928-38, 1939-60), 27.2 mgd (42.1 cfs).

Extremes.--1927-60: Maximum daily discharge, 65 mgd (101 cfs) July 16, 1958; no flow at times.

Remarks.--Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 ft from Honokane and all streams west. Water is used for irrigation in vicinity of Kohala.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	1,170	974	671	656	701	803	874	872	714	794	723	788	9,740
1952	902	1,010	728	671	1,010	875	1,100	1,010	1,120	1,130	1,200	1,290	12,050
1953	1,250	1,230	847	837	1,060	1,110	554	638	866	844	1,090	857	11,200
1954	1,210	1,080	572	636	1,020	1,050	714	412	978	737	1,060	1,280	10,730
1955	1,260	1,470	840	713	528	376	548	242	468	923	1,150	1,120	9,640
1956	1,080	956	738	808	745	575	580	811	798	814	1,120	1,110	10,140
1957	915	1,060	735	737	778	814	748	733	716	973	871	647	9,730
1958	1,110	1,260	790	804	1,030	1,340	914	642	913	880	1,110	1,070	11,860
1959	1,190	1,270	746	818	750	1,040	784	1,040	1,040	1,070	1,220	804	11,770
1960	921	960	911	678	910	1,190	868	842	926	1,230	969	901	11,310

7550. Kehena ditch near Kohala

Location.--Lat 20°07'25", long 155°45'05", on right bank at old Honokane weir, near head of West Branch of Honokane Nui Stream, 8.5 miles southeast of Kohala.

Records available.--December 1917 to November 1919, April 1928 to June 1960.

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.--33 years (1918-19, 1928-60), 7.73 mgd (12.0 cfs).

Extremes.--1917-19, 1928-60: Maximum daily discharge, 54 mgd (84 cfs) Mar. 23, 1919; no flow at times.

Remarks.--Intake on Honokane Nui Stream 2 miles upstream from station at altitude of about 4,200 ft. Kahua Ranch diverts small quantity of water from ditch 2 miles above station for watering stock. Water used for irrigation in vicinity of Hawi.

Monthly and yearly diversion, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	492	290	83.6	107	242	589	155	326	182	208	122	165	2,960
1952	186	231	92.6	111	379	202	344	242	441	317	268	517	3,330
1953	319	337	146	202	356	406	4.28	39.7	154	133	363	282	2,740
1954	422	291	26.3	89.4	300	294	106	1.97	364	98.1	285	374	2,650
1955	333	416	45.0	84.6	12.3	596	204	400	266	421	498	395	3,670
1956	311	235	180	199	220	114	154	426	236	320	332	595	3,300
1957	202	403	65.4	204	147	240	71.7	214	125	274	149	118	2,210
1958	593	468	91.7	119	139	577	177	102	276	295	353	512	3,500
1959	377	368	196	270	168	310	150	351	218	209	305	107	3,030
1960	203	228	138	37.7	245	484	157	209	123	286	168	180	2,480

7560. Kohakohau Stream near Kamuela

Location.--Lat 20°03'02", long 155°40'58", 0.2 mile below Kohala Forest Reserve Boundary and 2 miles northwest of Kamuela.

Drainage area.--2.34 sq mi.

Records available.--March 1956 to June 1960.

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

Extremes.--1956-60: Maximum discharge, 2,510 mgd (3,880 cfs) Aug. 7, 1958 (gage height, 10.76 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.28 mgd (0.43 cfs) June 10, 11, 1957.

Remarks.--Parker Ranch pipeline diverts water above station.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	-	7.24	9.04	22.0	--
1957	6.78	20.6	2.10	11.9	5.18	13.7	2.03	8.11	1.70	8.17	3.28	2.41	7.18
1958	10.4	24.0	3.99	9.96	3.39	28.3	8.60	3.93	10.3	14.5	20.0	19.5	13.2
1959	29.6	46.1	9.42	14.2	7.09	6.71	32.0	26.1	8.87	11.6	16.6	4.49	17.8
1960	5.73	14.8	6.61	1.55	11.6	38.3	10.3	39.8	8.63	24.8	9.18	6.91	14.9

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	-	4.68	5.84	14.2	--
1957	4.39	13.3	1.36	7.68	3.35	8.65	1.31	5.24	1.10	5.29	2.12	1.56	4.64
1958	6.70	15.5	2.58	6.44	2.19	18.3	5.56	2.54	6.67	9.36	12.9	12.6	8.51
1959	19.1	29.8	6.09	9.21	4.58	4.34	20.7	16.9	5.73	7.49	10.7	2.90	11.5
1960	3.70	9.59	5.56	1.870	7.51	24.7	6.63	25.7	5.58	16.0	5.93	4.47	9.62

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	-	140	181	426	-
1957	156	412	40.8	236	101	274	40.8	147	34.2	158	65.8	46.7	1,690
1958	206	481	77.4	200	65.8	566	172	71.1	207	281	399	379	3,110
1959	591	923	163	286	137	135	642	472	178	225	330	87.0	4,190
1960	115	297	167	27.0	225	767	206	747	173	481	184	134	3,520

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs		Million gallons
1956	1569	-	-	-	-	-	-	-	-	-	-	-	-
1957	1569	1,460	2,260	Oct. 15, 1956	0.28	0.43	4.64	7.18	1,690	5.73	6.87	2,090	
1958	1569	1,460	2,260	Oct. 23, 1957	.29	.45	8.51	13.2	3,110	10.3	15.9	3,760	
1959	1639	2,510	3,880	Aug. 7, 1958	.33	.51	11.5	17.8	4,190	9.68	15.0	2,840	
1960	1719	1,270	1,960	Apr. 15, 1960	.31	.48	9.62	14.9	3,520	-	-	-	

7570. Waikoloa Stream near Kamuela

Location.--Lat 20°03'17", long 155°40'02", on left bank 350 ft downstream from Parker Ranch boundary and 2.1 miles north of Kamuela.

Drainage area.--0.78 sq mi.

Records available.--May 1947 to June 1960.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,580 ft (from topographic map).

Average discharge.--13 years (1947-60), 5.09 mgd (7.88 cfs).

Extremes.--1947-60: Maximum discharge, 860 mgd (1,330 cfs) Oct. 23, 1957 (gage height, 6.55 ft), from rating curve extended above 19 mgd by logarithmic plotting; minimum, 0.79 mgd (1.22 cfs) June 9, 1957.

Remarks.--No diversion above station.

Monthly and yearly mean discharge, in cubic feet per second													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	14.9	10.5	3.51	2.91	7.06	17.8	3.40	6.25	4.19	4.49	3.95	5.00	7.02
1952	6.37	8.57	4.67	5.14	7.69	4.50	6.89	6.92	9.56	9.62	9.35	13.0	7.67
1953	12.6	9.67	4.77	6.51	7.46	6.90	2.14	3.17	5.63	5.11	8.59	6.96	6.65
1954	13.0	10.9	3.14	3.95	6.09	6.68	6.99	1.95	7.27	5.49	9.85	10.6	7.29
1955	11.7	18.3	4.84	3.85	2.55	19.0	6.62	14.0	5.55	9.73	12.3	12.3	10.1
1956	8.46	7.40	4.24	4.55	4.89	3.11	5.38	11.7	5.35	5.26	9.50	12.2	6.81
1957	6.27	13.9	3.53	6.20	4.41	6.62	2.71	5.66	2.92	5.71	4.07	3.05	5.43
1958	8.23	15.3	5.31	9.13	6.00	20.4	6.95	3.98	6.11	8.62	13.2	12.7	9.73
1959	16.7	22.9	7.95	10.0	5.86	6.78	10.7	11.8	5.62	8.32	8.54	4.53	10.0
1960	4.81	9.22	7.16	3.08	6.11	16.9	5.89	17.0	6.81	14.5	7.86	5.48	8.85

Monthly and yearly mean discharge, in million gallons a day													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	9.61	6.78	2.27	1.88	4.56	11.5	2.20	4.04	2.71	2.90	2.55	3.23	4.54
1952	4.12	5.54	3.02	3.32	4.97	2.91	4.45	4.47	6.18	6.22	6.04	8.41	4.96
1953	8.12	6.25	3.08	4.21	4.82	4.46	1.38	2.05	3.64	3.30	5.55	4.50	4.30
1954	8.40	7.02	2.03	2.55	5.23	4.32	4.52	1.26	4.70	3.55	5.71	6.86	4.71
1955	7.58	11.8	3.13	2.49	1.65	12.3	4.28	9.03	3.59	6.29	7.97	7.96	6.51
1956	5.47	4.78	2.74	2.94	3.16	2.01	3.48	7.56	3.46	3.40	6.14	7.65	4.40
1957	4.05	8.98	2.28	4.01	2.85	4.28	1.75	3.66	1.89	3.69	2.65	1.97	3.51
1958	5.32	9.88	3.43	5.90	3.88	13.2	4.49	2.57	3.95	5.57	8.56	8.20	6.29
1959	10.8	14.8	5.14	6.47	3.79	4.38	6.90	7.62	3.63	5.38	5.52	2.93	6.46
1960	3.11	5.96	4.63	1.99	5.24	10.9	3.68	11.0	4.40	9.38	5.08	3.54	5.72

Monthly and yearly discharge, in million gallons													
Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	298	210	68.2	58.4	137	355	68.2	113	84.1	87.0	79.0	97.0	1,650
1952	128	172	90.7	103	149	90.2	138	130	191	186	187	252	1,820
1953	252	194	92.5	130	145	138	42.8	57.5	113	99.0	172	135	1,570
1954	260	218	60.8	79.2	157	134	140	35.2	146	106	177	208	1,720
1955	235	366	94.0	77.1	49.4	382	133	255	111	189	247	239	2,380
1956	170	148	82.2	91.1	94.9	62.4	108	219	107	102	190	236	1,610
1957	126	278	68.3	124	85.5	133	54.3	102	58.6	111	81.5	59.2	1,280
1958	165	306	103	183	117	410	139	71.8	122	167	265	246	2,290
1959	336	458	154	201	114	136	214	213	113	161	171	87.8	2,360
1960	96.3	185	139	61.6	157	338	114	320	136	282	157	106	2,090

Summary of yearly discharge													
Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons	Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Mgd		Cfs		
1950	-	-	-	-	-	-	-	-	-	5.95	9.21	2,170	
1951	1219	300	464	Aug. 14, 1950	1.04	1.61	4.54	7.02	1,650	3.45	5.34	1,260	
1952	1249	110	170	Oct. 30, 1951	1.38	2.14	4.96	7.67	1,820	5.56	8.60	2,040	
1953	1289	57	88	Nov. 27, 1952	1.14	1.76	4.30	6.65	1,570	4.19	6.48	1,530	
1954	1349	220	340	Jan. 5, 1954	1.20	1.86	4.71	7.29	1,720	5.52	8.54	2,010	
1955	1399	545	843	Dec. 10, 1954	1.20	1.86	6.51	10.1	2,380	4.99	7.72	1,820	
1956	1499	210	325	Jan. 12, 1956	.91	1.41	4.40	6.81	1,610	4.86	7.52	1,780	
1957	1569	240	371	Oct. 15, 1956	.85	1.32	3.51	5.43	1,280	4.80	7.43	1,750	
1958	1569	860	1,330	Oct. 23, 1957	1.20	1.86	6.29	9.73	2,290	6.60	10.2	2,410	
1959	1639	608	941	Aug. 7, 1958	1.32	2.04	6.46	10.0	2,360	5.31	8.22	1,940	
1960	1719	362	560	Dec. 17, 1959	1.24	1.92	5.72	8.85	2,090	-	-	-	

7580. Waikoloa Stream at Marine Dam, near Kamuela

Location.--Lat 20°02'48" (revised), long 155°39'58" (revised), on right bank 160 ft up-stream from Marine Dam and 1.5 miles north of Kamuela.

Drainage area.--1.18 sq mi.

Records available.--May 1947 to June 1960.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,450 ft (from topographic map).

Average discharge.--13 years (1947-60), 6.47 mgd (10.0 cfs).

Extremes.--1947-60: Maximum discharge, 1,180 mgd (1,830 cfs) Oct. 23, 1957 (gage height, 6.99 ft), from rating curve extended above 14 mgd by logarithmic plotting; minimum, 0.65 mgd (1.01 cfs) Dec. 1, 1954.

Remarks.--Diversion above station for stock and domestic use.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	21.4	12.3	3.31	2.91	8.60	25.5	3.87	8.01	5.18	4.86	4.08	6.03	8.87
1952	8.43	11.3	5.54	6.03	10.0	5.23	9.69	9.59	12.9	12.7	13.1	20.0	10.4
1953	18.4	12.7	4.89	8.20	9.86	8.56	1.46	2.71	6.79	5.37	11.9	8.12	8.29
1954	18.1	15.0	2.48	3.87	9.59	7.88	7.54	1.30	8.51	6.07	10.6	13.4	8.78
1955	15.1	25.1	4.55	3.20	1.67	25.1	8.56	18.7	6.31	13.1	16.4	15.9	12.8
1956	9.93	8.42	3.84	4.64	5.38	3.95	7.18	16.9	7.19	6.96	12.7	16.9	8.62
1957	8.91	21.0	4.80	8.26	5.77	6.57	3.11	7.58	3.42	7.86	5.26	3.53	7.35
1958	10.1	20.9	6.22	11.9	7.78	31.4	9.55	5.29	8.80	11.1	17.9	18.4	13.4
1959	21.0	31.4	9.87	13.4	7.13	8.63	12.8	16.2	7.55	11.8	12.6	4.80	13.1
1960	5.59	11.7	8.62	3.10	11.2	25.4	7.79	20.5	8.82	22.3	10.3	6.34	11.8

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	13.8	7.96	2.14	1.88	5.56	16.5	2.50	5.18	3.35	3.14	2.64	3.90	5.73
1952	5.45	7.32	3.58	3.90	6.47	3.38	6.26	6.20	8.33	8.24	8.48	12.9	6.70
1953	11.9	8.22	3.16	5.30	6.37	5.40	.943	1.75	4.39	3.47	7.69	5.25	5.56
1954	11.7	9.67	1.60	2.50	6.20	5.09	4.87	8.59	5.50	3.92	6.84	8.68	5.66
1955	9.73	16.2	2.94	2.07	1.08	16.2	5.53	12.1	4.08	8.47	10.6	10.3	8.27
1956	6.42	5.44	2.48	3.00	3.48	2.55	4.64	10.9	4.65	4.50	8.22	10.9	5.57
1957	5.76	13.6	2.91	5.34	3.75	5.54	2.01	4.90	2.21	5.08	3.40	2.28	4.74
1958	6.52	13.5	4.02	7.69	5.03	20.3	6.17	3.42	5.69	7.19	11.6	11.9	8.64
1959	13.6	20.3	6.58	8.63	4.61	5.58	8.26	10.5	4.88	7.50	8.13	3.10	8.47
1960	3.62	7.58	5.57	2.00	7.24	16.4	5.04	13.3	5.70	14.4	6.84	4.10	7.60

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1951	426	247	64.3	58.1	167	510	77.6	145	104	94.1	81.8	117	2,090
1952	169	227	107	121	194	105	194	180	258	247	263	387	2,450
1953	369	255	94.7	164	191	167	29.2	49.1	136	104	238	158	1,980
1954	364	300	47.9	77.4	186	158	151	23.5	171	119	212	260	2,070
1955	302	503	88.2	64.2	32.4	503	171	338	126	254	328	309	3,020
1956	199	169	74.5	92.9	104	79.0	144	315	144	135	255	326	2,040
1957	178	421	87.4	166	112	172	62.3	137	68.6	153	105	68.4	1,730
1958	202	417	121	239	151	630	191	95.8	176	216	359	357	3,150
1959	421	529	131	268	135	173	256	226	151	221	252	93.1	3,090
1960	112	235	167	62.1	217	508	158	385	177	433	206	123	2,780

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year		
		Momentary maximum discharge				Minimum day				Mean		Million gallons
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs	Million gallons	Mgd	Cfs	
1950	-	-	-	-	-	-	-	-	-	7.61	11.8	2,780
1951	1219	282	436	Aug. 14, 1950	0.90	1.39	5.73	8.87	2,090	4.23	6.54	1,540
1952	1249	129	200	Oct. 30, 1951	1.23	1.90	6.70	10.4	2,450	7.57	11.7	2,770
1953	1298	81	126	Nov. 27, 1952	.74	1.14	3.58	8.28	1,960	5.06	7.63	1,850
1954	1349	121	298	Jan. 5, 1954	.70	1.08	5.66	8.78	2,070	6.65	10.3	2,430
1955	1398	720	1,110	Dec. 10, 1954	.70	1.08	8.27	12.8	3,020	6.15	9.52	2,240
1956	1449	209	323	Jan. 12, 1956	.96	1.49	5.57	8.62	2,040	6.71	10.4	2,460
1957	1569	259	401	Oct. 15, 1956	.85	1.32	4.74	7.33	1,730	6.45	9.98	2,350
1958	1569	1,180	1,830	Oct. 23, 1957	1.22	1.89	8.64	13.4	3,150	8.81	13.6	3,210
1959	1639	755	1,170	Aug. 7, 1958	1.29	2.00	8.47	13.1	3,090	7.05	10.9	2,570
1960	1719	375	580	Dec. 17, 1959	1.29	2.00	7.60	11.8	2,780	-	-	-

7590. Hauani Stream near Kamuela

Location.--Lat 20°02'28", long 155°39'05", on left bank 1,350 ft below Hawaii County pipeline intake and 1.8 miles northeast of Kamuela.

Drainage area.--0.47 sq mi.

Records available.--March 1956 to June 1960.

Gage.--Water-stage recorder. Datum of gage is 3,117.42 ft above mean sea level (Hawaii County Board of Water Supply bench mark).

Extremes.--1956-60: Maximum discharge, 325 mgd (503 cfs) Oct. 23, 1957 (gage height, 4.65 ft), from rating curve extended above 23 mgd by slope-conveyance study; minimum, 0.01 mgd (0.02 cfs) Apr. 3, 4, June 9, 10, 1957.

Remarks.--Diversions above station to Parker Ranch and county intakes (for small diversion dam).

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	1.50	1.06	2.27	1.84	-
1957	1.12	5.45	0.631	2.00	0.786	1.76	0.305	1.36	.243	1.36	6.27	.272	1.33
1958	1.95	5.29	1.12	2.85	1.34	5.72	1.73	.651	1.19	1.64	3.14	3.94	2.55
1959	6.68	8.17	1.70	3.62	1.37	1.47	2.29	4.24	1.07	2.44	2.26	.658	3.00
1960	.684	2.74	1.17	.223	2.65	6.99	1.07	6.71	1.42	4.05	2.03	.817	2.52

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	0.970	0.688	1.47	1.19	-
1957	0.726	3.52	0.408	1.29	0.508	1.14	0.197	0.879	.157	.882	1.405	.176	0.861
1958	1.25	3.42	.725	1.84	.868	3.70	1.12	.421	.763	1.06	2.05	2.48	1.65
1959	4.32	5.28	1.10	2.34	.897	.953	1.48	2.74	.691	1.58	1.46	.425	1.94
1960	.442	1.77	.755	.144	1.71	4.52	.690	4.34	.916	2.62	1.31	.528	1.63

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1956	-	-	-	-	-	-	-	-	30.1	20.6	45.5	35.6	-
1957	22.5	109	12.2	40.0	15.2	35.2	6.10	24.6	4.87	26.5	12.5	5.28	314
1958	38.6	106	21.8	57.2	26.0	115	34.8	11.8	23.7	31.8	63.0	74.5	604
1959	134	164	33.0	72.4	26.6	29.6	45.8	76.6	21.4	47.4	45.2	12.7	709
1960	13.7	54.8	22.7	4.46	51.3	140	21.4	126	28.4	79.6	40.5	15.8	598

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day		Mean		Million gallons		Mean	
		Mgd	Cfs	Date	Mgd	Cfs	Mgd	Cfs		Mgd	Cfs	Mgd	Cfs
1956	1449	-	-	-	-	-	-	-	-	-	-	-	-
1957	1569	138	214	Oct. 15, 1956	0.01	0.02	0.861	1.33	314	1.22	1.89	444	
1958	1569	325	503	Oct. 23, 1957	.04	.06	1.65	2.55	604	1.91	2.96	699	
1959	1639	206	319	Aug. 7, 1958	.07	.11	1.94	3.00	709	1.47	2.27	556	
1960	1719	222	343	Feb. 12, 1960	.03	.05	1.63	2.52	598	-	-	-	

7595. Waiaha Stream near Holualoa

Location.--Lat 19°38'20", long 155°56'35", on left bank half a mile upstream from Board of Water Supply office, 1.2 miles north of Holualoa Post Office, and 3.5 miles east of Kailua, Kona.

Drainage area.--About 7.3 sq. mi. (High flows break out of channel and enter adjacent streams.)

Records available.--December 1957 to June 1960.

Gage.--Water-stage recorder and concrete and rock control. Altitude of gage is 1,940 ft (from topographic map).

Extremes.--1957-60: Maximum discharge, 558 mgd (863 cfs) Jan. 18, 1959 (gage height, 4.76 ft), from rating curve extended above 8.3 mgd by logarithmic plotting; no flow for many days.

Remarks.--Kona Inn has an offstream reservoir about 1 mile upstream from gage and diverts water from stream.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	0	0	0.080	0	0.040	0.085	-
1959	0.012	1.13	0.006	0.272	0.002	0.0005	9.47	0.026	.116	0.039	.062	.014	0.947
1960	.114	.589	.048	.012	.149	0	0	0	.020	.114	.514	.170	.345

Monthly and yearly mean discharge, in million gallons a day, of Waiaha Stream
near Holualoa--Continued

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	0	0	0.052	0	0.026	0.055	-
1959	0.008	0.729	0.004	0.176	0.001	0.0003	6.12	0.017	.075	.025	.040	.009	0.612
1960	.074	.381	.031	.008	.096	0	0	0	.013	.074	.332	.110	.094

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	0	0	1.60	0	0.81	1.65	-
1959	0.25	22.6	0.13	5.45	0.03	0.01	190	.47	2.31	.74	1.24	.27	224
1960	2.29	11.8	.92	.25	2.88	0	0	0	.41	2.22	10.3	3.31	34.4

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons
1958	1639	-	-	-	-	-	-	-	-	-	0.089	0.138	32.5
1959	1639	558	883	Jan. 18, 1959		0	0	0.812	0.947	224	.583	.902	213
1960	1719	61.4	95.0	May 12, 1960		0	0	.094	.145	34.4	-	-	-

7598. Killae Stream near Honaunau

Location--Lat 19°24'52", long 155°50'56", on right bank 2.3 miles east of Mamalahoa Highway (State route 11) and 3.2 miles southeast of Honaunau cemetery.

Drainage area--Indeterminate.

Records available--April 1958 to June 1960.

Gage--Water-stage recorder and natural rock control. Datum of gage is 2,898 ft above mean sea level (by stadia traverse).

Extremes--1958-60: Maximum discharge, 67 mgd (104 cfs) Jan. 13, 1959 (gage height, 2.32 ft), from rating curve extended above 4 mgd by logarithmic plotting; no flow for many days.

Remarks--McCandless Ranch diverts water for domestic use from downstream tributary.

Monthly and yearly mean discharge, in cubic feet per second

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	-	-	-	-	0.384	0.467	-
1959	0.271	0.525	0.127	0.248	0.029	0.031	0.430	0.195	0.111	0.214	.251	.232	0.223
1960	.379	.408	.132	.110	.246	.002	.034	.074	.085	.167	.326	.110	.175

Monthly and yearly mean discharge, in million gallons a day

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	-	-	-	-	0.248	0.302	-
1959	0.175	0.339	0.082	0.160	0.019	0.020	0.278	0.126	0.072	0.138	.162	.150	0.144
1960	.245	.264	.085	.071	.159	.001	.022	.048	.055	.121	.211	.071	.113

Monthly and yearly discharge, in million gallons

Fiscal year	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	The year
1958	-	-	-	-	-	-	-	-	-	-	7.68	9.07	-
1959	5.43	10.5	2.47	4.97	0.58	0.61	8.61	3.53	2.24	4.14	5.01	4.49	52.6
1960	7.61	8.19	2.55	2.21	4.78	.03	.69	1.39	1.70	3.64	6.53	2.14	41.5

Summary of yearly discharge

Year	WSP	Fiscal year ending June 30								Calendar year			
		Momentary maximum discharge				Minimum day				Mean		Million gallons	
		Mgd	Cfs	Date		Mgd	Cfs	Mgd	Cfs	gallons	Mgd	Cfs	gallons
1958	1639	-	-	-	-	0	0	0.144	0.223	52.6	0.146	0.226	53.4
1959	1639	67	104	Jan. 13, 1959		0	0	.113	.175	41.5	-	-	-
1960	1719	54.9	84.9	Nov. 9, 1959		0	0	-	-	-	-	-	-

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